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BUGUNGI KUN TIBBIYOTINING TURLI SOHALARIDA NANOTEXNOLOGIYALARDAN FOYDALANISHNING ASOSIY SABABLARI HAMDA UNING NATIJALARI

Annotasiya: *Nanotexnologiyalar bugungi tibbiyotda inqilobiy o‘zgarishlar yaratmoqda. Bu maqolada nanotexnologiyalarning tibbiyotda qo‘llanilishiga asosiy sabablar-ya’ni maqsadga mo‘ljallangan dori yo‘llanishi, ta’sirchanligi va xavfsizligini oshirish, erta diagnostika imkoniyatlari, biosensorlar, nanotasniflovchilar to‘g‘risida ma’lumotlar keltiriladi. Shuningdek, nanotexnologiyalarni qo‘llash natijasida tibbiy amaliyotda qaysi yutuqlar kuzatilgani (masalan, onkologiyada, reparativ tibbiyotda, transplantasiyada) ham muhokama qilinadi.*

Kalit so‘zlar*: nanotexnologiya, nanomeditsina, tashhis, davolash, biosensorlar, onkologiya.*

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THE MAIN REASONS FOR THE USE OF NANOTECHNOLOGY IN VARIOUS FIELDS OF MODERN MEDICINE AND ITS RESULTS

Abstract: *Nanotechnology is creating revolutionary changes in modern medicine. This article will provide information about the main reasons for the use of nanotechnology in medicine, namely, the focus, effectiveness and safety of target drugs, early diagnosis capabilities, biosensors, and nanoclassifiers. It also discusses what achievements are being observed in medical practice as a result of the use of nanotechnology (for example, in oncology, reparative medicine, and transplantation).*

Keywords: *nanotechnology, nanomedicine, diagnostics, treatment, biosensors, oncology.*

Kirish

XXI asrning boshidan boshlab, nanotexnologiyalar (odatda 1-100 nm oralig‘idagi materiallar va tizimlar) ilm-fan va sanoatda keng qo‘llanila boshlandi. Tibbiyot sohasida esa nanomateriallar va nano-yondashuvlar yangi ufqlarni ochmoqda: ular biologik tizimlar bilan o‘zaro aloqada bo‘lishi, hujayra darajasiga kirishi va ma’lum joylarda maqsadli aksiyalarni amalga oshirishi mumkin. Nanotexnologiyalar - bu atomlar va molekulalar darajasidagi moddalarni yaratish, nazorat qilish va ushbu darajadagi materiallardan turli maqsadlarda - jumladan tibbiy maqsadlarda foydalanish sohasidir. Bugungi kunda tibbiyotining diagnostika, davolash, dori yo‘llash va to‘qima qayta tiklash kabi sohalarida nanotexnologiyalarni joriy etish tendensiyasi katta qiziqishga sabab bo‘lmoqda.

An’anaviy usullar ko‘pincha dori molekulalarining past erishi, noaniq biodistribyusiya, ya’ni ta’sir va pasaytirilgan samaradorlik kabi muammolarga duch keladi. Nanotexnologiyalar ushbu cheklovlarni yengillashtirishga xizmat qilishi mumkin. Masalan, nanopartikullar dori moddasini hujayra ichiga olib kirish, ularni mo‘ljallangan joyda chiqarish va sog‘lom to‘qimalarga zarar bermaslik xususiyatlariga ega bo‘lishi mumkin.

Shu bois, tibbiyotning turli sohalarida nanotexnologiyalar qo‘llanilishi sabab va natijalarini tizimli tarzda sharhlash zarur bo‘ladi.

Tibbiy sohada nanotexnologiyalarni qo‘llash “nanomeditsina” deb ataladi. Nanomeditsina atom va molekul darajasidagi ta’sirlarni nazorat qilish imkonini beradi, shu bilan birga organizmdagi hujayra, boshqaruv tizimi va molekul mexanizmlarni maqsadga mo‘ljallangan tarzda o‘zgartirishga imkon yaratadi.

So‘nggi yillarda biotibbiyot sohasida nanotexnologiyalar tez rivojlanib, ularning qo‘llanilishi onkologiyada katta imkoniyatlar yaratmoqda. Xususan, retroperitoneal o‘smalarni erta aniqlash, lokalizatsiya qilish va samarali jarrohlik amaliyotini o‘tkazishda nanotexnologik yondashuvlar katta ahamiyatga ega bo‘lmoqda. Qorin parda orti (retroperitoneal) sohasi inson anatomiyasidagi murakkab va chuqur joylashgan qismlardan biri bo‘lib, bu yerdagi o‘smalarni aniqlash va davolashda katta qiyinchiliklar yuzaga keladi. Ushbu sohada joylashgan noo‘rgan o‘smalar (masalan, liposarkoma, leyomiosarkoma, neyrogen o‘smalar) ko‘pincha kech aniqlanadi va jarrohlik yo‘li bilan butunlay olib tashlash murakkab jarayon hisoblanadi.

Adabiyotlar tahlili va metodologiyasi

O‘z kitoblarida, maqolalarida mualliflar dori tashqi tizimlar (nanopolimerlar, dendrimerlar, nanoemulsiyalar) tibbiy qo‘llanmada qo‘llanilishi va o‘sib borayotgan roli haqida so‘z yuritadi, hamda diagnostika va terapevtika yo‘nalishlarida nanotexnologiyalar roli haqida ta’kidlaydi. Nanotexnologiyalarning katta istiqbollari bilan birga xavf va salbiy natijalar (toksiklik, immun javob, bioakkumulyatsiya) masalalari ham ko‘rib chiqilgan. Shuningdek, nanotexnologiyalarning xavfsizlik, ekologik ta’sir va regulyator muammolariga e’tibor beriladi. Shu bilan birga, diagnostika yo‘nalishlarida yangicha texnikalarning qo‘llanilishi haqida so‘zlaydi.

Tadqiqotlar shuni ko‘rsatadiki, hatto mukammal dizaynga ega nanopartikullar ham klinik sinovlarda muvaffaqiyatga erisha olmaydi, chunki regulyator talablar va ishlab chiqarish miqyosi muammolar tug‘dira oladi. Ba’zi tadqiqotlarda nanopartikullarning uzun muddatli toksiklik, immunitet reaksiyalari va bioakkumulyasiya masalalari samarali tarzda o‘rganilmagan.

Kuchli tomonlari:

• Nanotexnologiyalar diagnostika va terapiyada sezilarli samaradorlikni taklif qilmoqda.

• Yangi usullar (theranostics, multimodal imaging) an’anaviy yondashuvlardan farq qiladi

• Tadqiqotlar tez sur’atda rivojlanmoqda va istiqbolli natijalar bermoqda.

Nanochastitsalar onkologiyada hujayraga maqsadlangan dori tashuvchi tizim sifatida sinov davomida katta umidlar keltirishi to‘g‘risida mualliflar qayd qilib o‘tganlar. Jumladan, diagnostikada nanobionuqtalar (nanobiosensors) va imidjingda kontrast agentlar roli katta ekanini ta’kidlaganlar. Shu bilan birga, to‘qima injiniringida nanoskeletlar va 3D nanomateriallardan foydalanish imkoniyatlari haqida fikr yuritganlar.

Shuningdek, ularning maqolasida nanotexnologiyalarning ikki qarama-qarshi tomonlari-katta imkoniyatlari va xavflari muhokama qilingan va albatta nanorobotlarning maqsadli dori yo‘llanishi, bir hujayra bilan interaksiya, miniinvaziv xirurgiya, biosensor yoki diagnostika funksiyalari kabi sohalardagi qo‘llanilishi ko‘rib chiqilgan. Shu bilan birga, biosovoqlik (biokompatibillik), nazorat va manevr qilish muammolari, etik masalalar va texnologiya joriy etish qiyinchiligi ham ta’kidlangan.

Adabiyotlar tahlili ko‘rsatadiki, nanotexnologiyalar tibbiyotda juda katta imkoniyatlar ochmoqda. Ularning qo‘llanilishi bemorlar uchun yanada xavfsiz, samarali va maqsadli terapiya va diagnostika imkoniyatlarini taklif qiladi. Ayniqsa, saraton, yurak-qon tomir, neurodegenerativ kasalliklar va infeksion kasalliklar sohasida nanotexnologiyalarning ahamiyati katta bo‘lishi mumkin.

Ilmiy adabiyotlardan kelib chiqqan holda, nanotexnologiyalar bir qator ilk muvaffaqiyatlarga erishgan: onkologiyada dori tashuvchi tizimlar, kontrast agentlar, nanobionuqtalar, neyron regenerasiya va transplantasiyada immunomodulyasiya. Ammo, ularning qo‘llanilishida biokompatibillik, toksiklik, nazorat, masshtabli ishlab chiqarish, etika va moliyaviy qiyinchiliklar kabi chegaralar mavjud. Kelajakda nanotexnologiyalarning amaliyotda keng joriy etilishi uchun muloqatli fanlar orasidagi hamkorlik, munosabatli xavf baholash, standartlashtirish va klinik sinovlar muhim ahamiyatga ega bo‘ladi.

Qorin parda orti sohasidagi noorgan o‘smalarni samarali aniqlash va davolash murakkab vazifa bo‘lib qolmoqda. Ammo zamonaviy nanotexnologiyalarning joriy etilishi onkologiyada yangi sahifa ochmoqda. Har tomonlama-diagnostika, jarrohlik, va davo usullarida-ushbu texnologiyalar orqali yuqori samaradorlikka erishish mumkin. Bunda, shifokorlar, bioinjenerlar va onkologlar o‘rtasidagi hamkorlik muhim ahamiyatga ega.

Kelajakda, nanotexnologiyalarni sun’iy intellekt, genetik tahrir, mikrorobotika kabi boshqa ilg‘or texnologiyalar bilan birlashtirib, tibbiyoti butunlay o‘zgartirish mumkin.

MUHOKAMA: Nanotexnologiyalarni tibbiy sohada qo‘llash zarurati (asosiy sabablar)

Tibbiy soha tomonidan nanotexnologiyalarga qiziqishning bir necha asosiy sabablari bor:

- **Maqsadli dori yo‘llash (targeted drug delivery)** - dorini organizmda aniq hujayra yoki tokibaga yo‘llash orqali atrofdagi sog‘lom to‘qimalarga ta’sirini kamaytirish mumkin.
- **Davrdagi ta’sirchanlikni oshirish va dorining bioyaroqliligini (bioavailability) yaxshilash** - nanochastitsalar dorini hamqabul qilish, hujayra ichiga kirish, parchalanish jarayonlarini nazorat qilish imkoniyatini beradi.
- **Erta diagnostika va sensor texnologiyalari** - nanomateriallar orqali biomarkerlarni juda sezgirlik bilan aniqlash, nozik signallar bilan kasalliklarni simptomlar paydo bo‘lishidan avval aniqlash mumkin.
- **Kontrast agentlar va imidjing (tasvirlash)ni yaxshilash** - magnit nanochastitsalar, kvant nuqtalar (quantum dots) kabi materiallar MRT, KT, fluoressent va radiologiyada kontrast effektini oshiradi.
- **Reparativ tibbiyot va to‘qima injiniringi** - nanoskeletlar (scaffolds), nanofibrlar, biosovg‘alar (biomaterials) hujayra o‘sishi, regeneratsiya va integratsiyani rag‘batlantirishi mumkin.
- **Immunomodulyatorlar va vaksina adyuvantlari** - nanochastitsalar orqali antigen tashuvchi tizimlar va immunotejovuz xususiyatlarini nazorat qilish mumkin.
- **Antimikrob va povrsanitar qoplamalar** - serebro nanochastitsalari va boshqa nanomateriallar bakteriya va viruslarga qarshi qoplamalarda ishlatiladi.

Nanotexnologiyalardan foydalanishning asosiy sabab va maqsadlari

Nanotexnologiya-bu materiyani atom va molekulyar darajada boshqarish imkonini beradigan ilg‘or fan sohasi bo‘lib, tibbiyotda uning imkoniyatlari juda keng. Quyida ushbu texnologiyalarni tibbiy sohada qo‘llashning asosiy sabablari haqida ma’lumotlar berib o‘tamiz:

➢ **Diagnostika samaradorligini oshirish**

Nanotexnologiyalar asosida yaratilgan sensor va biomarkerlar yordamida kasalliklarni ilk bosqichda aniqlash mumkin. Bu, ayniqsa, rak, diabet va boshqa xastaliklarni vaqtida aniqlashda muhim ahamiyatga ega.

2. Davolash samaradorligini oshirish

Nanokapsulalar va nanotashuvchilar (nanochastitsalar) dori vositalarini bevosita shikastlangan hujayralarga yetkazish imkonini beradi. Bu orqali dori vositalarining ta’siri kuchayadi va noxush ta’sirlari kamayadi.

3. Hujayraviy darajadagi muolajalar

Nanotexnologiyalar hujayra va gen darajasidagi muammolarni hal qilishga yordam beradi. Masalan, genetik kasalliklarni davolash, shikastlangan to‘qimalarni qayta tiklash kabi murakkab muolajalarni amalga oshirish mumkin.

4. Implant va protezlar sifati yaxshilanadi

Nanomateriallardan tayyorlangan implantlar (masalan, suyak yoki tish implantlari) an’anaviy materiallarga qaraganda mustahkam, yengil va organizm bilan mos keladi. Bu ularning organizmga moslashishini osonlashtiradi.

5. Onkologik kasalliklarga qarshi kurash

Nano-targetli terapiya orqali rak hujayralariga aniq ta’sir qilish mumkin. Bu usul orqali sog‘lom to‘qimalarga zarar yetkazmasdan, faqat zararlangan hujayralarga ta’sir etish imkoni yaratiladi.

6. Dori vositalarining dozasini aniq nazorat qilish

Nanotexnologiya orqali dorilarni aniq miqdorda va belgilangan vaqtda chiqarish tizimlari (controlled release systems) ishlab chiqilmoqda. Bu uzoq muddatli va barqaror davolash jarayonlarini ta’minlaydi.

TIBBIYOTNING TURLI SOHALARIDA QO‘LLANILISHI VA NATIJALARI

Quyida nanotexnologiyalarning qanday tibbiyot yo‘nalishlarida qo‘llanilayotgani va erishilgan natijalar haqida ba’zi misollarni keltirish mumkin:

Diagnostika va tasvirlash (Imaging)

- **Nanokontrast agentlar**: Magnit nanopartikullar (Fe_3O_4) MRI kontrast agentlari sifatida ishlatiladi, bu esa kichik o‘lchamdagi lezyonlarni aniqlashni osonlashtiradi.
- **Multimodal imaging**: Bir nechta modallik (masalan, optik + yadroviy) kombinatsiyasini amalga oshiruvchi nanopartikullar diagnostika sezgirligini oshiradi.
- **Biosensorlar va biomarkyor detektorlar**: Nanobiosensorlar orqali qon, siydik yoki boshqa suyuqliklarda juda past konsentratsiyadagi biomarkyorlarni aniqlash mumkin.
- **Kvant nuqtalar**: Ultraboy fluorescent yorug‘lik chiqaruvchi nanopartikullar hujayra darajasidagi aniqlik bilan diagnostika yorug‘ligini oshiradi. Natija sifatida: diagnostika sezgirligi va aniqligi oshadi, kasallikni erta fazalarda aniqlash imkoniyati yaxshilanadi.

Dori yetkazib berish va terapiya

- **Saraton terapiyasi**: Nanopartikullar yordamida kimyoterapiya preparatlari faqat o‘sha tumorga yo‘naltiriladi, sog‘lom hujayralarga zarar yetkazilmasligi mumkin.
- Masalan, liposomal doxorubicin formulalari konvensional dorilarga nisbatan kardiyotoksiklikni kamaytirgan.
- Boshqa misol: BIND-014 — docetaxelga asoslangan nanopartikula bo‘lib, klinik sinovlarda dori faqat saraton joyida faol bo‘lishini yuqori natijalar bilan ko‘rsatgan.

- **Antimikrobial terapiya**: AgNP (kumush nanopartikullari), ZNO nanopartikullari mikroblarga qarshi faoliyat ko‘rsatadi, yara davolashlarda, infeksion sohalarda ishlatiladi.
- **Nazoratli dori chiqarilishi**: Dori nanopartikullarga joylashtirilib, pH, harorat yoki fermentlar ta’sirida ma’lum sharoitda chiqarilishi mumkin. Bu toksiklikni kamaytirishda yordam beradi.
- **Genez terapiyasi va RNA dori vositalari**: Nanopartikullar SIRNA, MRNA, gen tashuvchi vektor sifatida ishlatiladi, hujayra ichida maqsadli sekansni ifodalash uchun.
- **Termoterapiya, fotodinamik terapiya**: Nanopartikullarni isitish orqali saraton to‘qimalarini yoqish, yoki fotosensitizator yuklangan nanopartikullar yorug‘lik orqali reaktiv oksigen turkumlarini hosil qilish mumkin. Natijalar: dori samaradorligi oshadi, doza kamayadi, yon ta’sirlar kamayadi va bemorning yashash sifati yaxshilanadi.

Regenerasiya va to‘qima muhandisligi

- **Nanotoplardan foydalanish**: Nanofibrillar matritsalar (nano-fibrillarning tolalari) suyak, to‘qima yoki nerv tolalarini regenerasiya qilishda biomaterial sifatida ishlatiladi.
- **O‘sish omillari, sitokinlar yetkazilishi**: Nanopartikullar yordamida hujayra o‘sishini rag‘batlantiruvchi moddalar, genlar yoki polimerlar maqsadli tarzda yetkazilishi mumkin.

Natija: jarrohlikdan so‘ng tiklanish jarayoni tezlashadi, to‘qima tiklanishi yaxshilanadi.

Infeksion kasalliklar va imunoterapiya

- **Vaksina adjuvantlari**: Nanoadjuvantlar (nano-partikullar) immun tizimni qo‘zg‘atishda ishlatiladi, antigenlarni samarali tarzda immun hujayralarga yetkazadi.
- **Antimikrobial nanopartikullar**: Kumush nanopartikullar, kvars nanopartikullari, boshqa oksid nanopartikullari mikroblarga qarshi kurashda qo‘llaniladi.
- **Diagnostik testlar**: Nanopartikullar yordamida tezkor diagnostika tizimlari (rapid testlar) sezgirligi oshiriladi.

Natijalar: infeksiyalar tezroq aniqlanadi va nazorat qilinadi, emlash samaradorligi oshadi.

Xulosa

Nanotexnologiyalar tibbiyotda katta potensialga ega va ular diagnostika, davolash, to‘qima regenerasiyasi va nanorobotika kabi sohalarda yangi imkoniyatlar ochmoqda. Nanotexnologiyalarni joriy etishning asosiy sabablari-maqsadli dori yo‘llanishi, ta’sirchanlikni oshirish, erta diagnostika imkoniyatlari, sensor texnologiyalar va to‘qima injiniringidagi innovasiyalardir. Tibbiyotning turli yo‘nalishlarida nanotexnologiyalardan foydalanish sabablari - yuqori yuzasi, maqsadli dori yetkazib berish, nazoratli dori chiqarilishi, dori stabilizatsiyasi va

diagnostikada yuqori sezgirlik-aniq va isbotlangan. Bular orqali dori samaradorligi oshiriladi, yon ta’sirlar kamayadi, kasalliklarni erta aniqlash mumkin bo‘ladi.

Amalda nanotexnologiyalar diagnostika, terapiya, regeneratsiya va infeksion sohalarda ijobiy natijalar bermoqda: masalan, nanopartikullar orqali yo‘naltirilgan kimyoterapiya, multimodal imaging, biomarkyor aniqlash, nanoadjuvantlar va regeneratsiya materiallari shular jumlasidandir. Shu bilan birga, nanopartikullarning toksikligi, immunogenligi, uzoq muddatli akkumulyasiyasi, oqilona regulyasiya yo‘qligi va yuqori ishlab chiqarish harajatlari kabi muammolar hanuzgacha to‘liq hal qilinmagan.

Shunday ekan, nanotexnologiyalar tibbiyot rivojida juda istiqbolli yo‘l bo‘lishiga qaramay, ularning keng qo‘llanilishi uchun chuqur tadqiqot, me’yoriy huquqiy bazalar va xavfsizlik kafolati zarur. Kelajakda ushbu yo‘nalish bo‘yicha integratsiyalashgan, interdisiplinar tadqiqotlar va klinik sinovlar bilan nanotexnologiyalarning real imkoniyatlarini amalga oshirish mumkin bo‘ladi.

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CHRONIC ARTERIAL HYPOTENSION IN WOMEN OF REPRODUCTIVE AGE

Annotation: *It is unclear what causes hypotension in expectant mothers. A relative deficiency of the sympatho-adrenal system and adrenal cortex is linked to this condition. The amount of 11-oxycorticosteroids in the blood and their excretion in the urine are decreased in pregnant women in addition to arterial hypotension. However, women who have prenatal hypotension also have the same abnormalities in adrenal function. Inhibition of ovarian function, placenta influence, prostaglandin action, and the immune response to placental and fetal antigens are some of the theories being put forth to explain hypotension in pregnant women. These theories include the reduction or increase of the release of various biological substances, including catecholamines, acetylcholine, serotonin, and histamine.*

Many studies distinguish between hypotension in pregnant women that developed earlier in life and that developed during pregnancy (seeing it as a form of toxicosis). It is thought that women who had hypotension before to becoming pregnant are more used to it and can handle it more readily during pregnancy. We believe that this distinction between the two types of hypotension is essentially meaningless because the clinical presentation, complications, and course of treatment are identical, and the statistically different incidence of specific symptoms or complications has no bearing on the management strategies used for any given patient.

Key words: *pregnancy, arterial hypotension, vascular tone problem*

Introduction

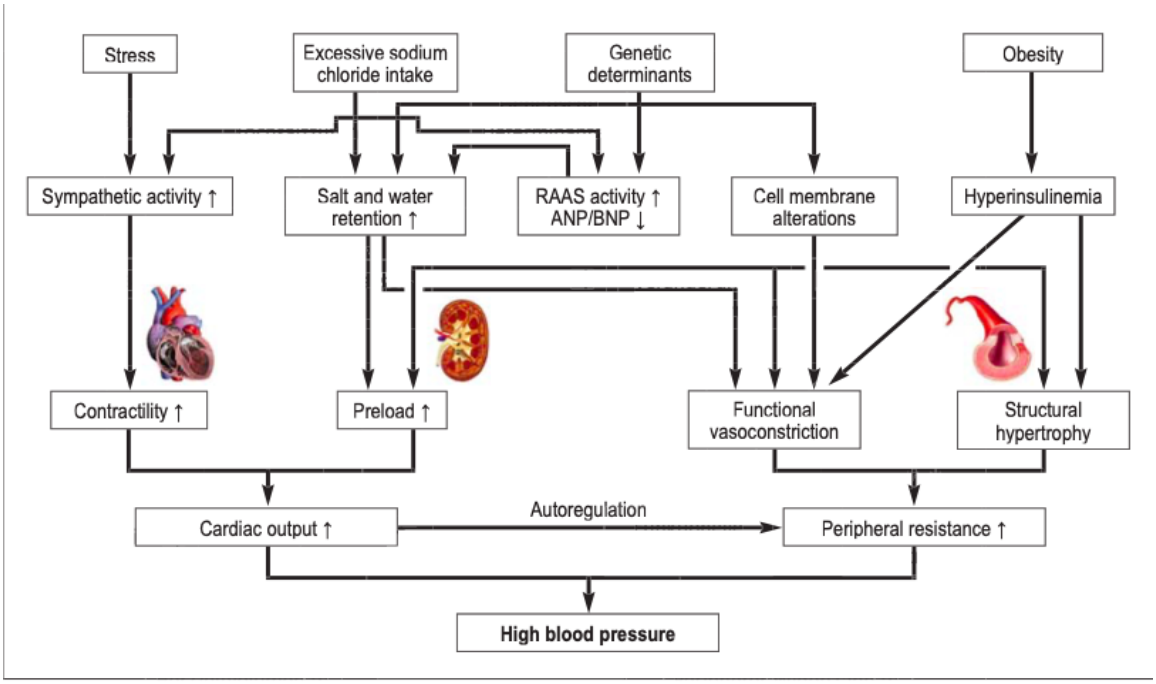
If blood pressure (BP) is less than 100/60 mm Hg, arterial hypotension is a sign of vascular tone violation. Pregnant women experience this pressure much more frequently (on average, 12%), with 5-7% of both sexes in the 20–40 age range experiencing it. They shouldn't all be regarded as ill, though. Physiological or constitutional hypotension is the term used to describe the condition in which many women do not react to lower blood pressure, keep excellent health, have normal working ability, and do not complain. Others have trouble performing their regular tasks because they feel ill. major and symptomatic hypotension are differentiated because hypotension may be the major symptom of the disease or one of the symptoms of another illness (e.g., stomach ulcer, infectious disease, allergy disorders, hypothyroidism, adrenal insufficiency, etc.).

One common vascular neurosis is primary arterial hypotension, which is a hypotonic form of neurocirculatory dystonia. Overwork, emotional strain, and neuropsychiatric injuries are frequently linked to the disease's beginnings. It is known as a stable (compensated) stage of the illness when arterial hypotension is only characterized by a drop in blood pressure. Numerous objective and subjective symptoms manifest during the disease's unstable (subcompensated) stage.

Hypotonic crises, readily occurring fainting, sleep disturbances, the onset of acrocyanosis, and incapacity are all signs of decompensated arterial hypotension. The most common complaints from patients are headache, lightheadedness, weakness, palpitations, heart discomfort and other unpleasant feelings, perspiration, memory loss, reduced productivity, cold hands and feet, and meteosensitivity. When getting out of bed, some women suffer orthostatic symptoms, such as lightheadedness, darkening of the eyes, and even fainting. Non-orthostatic syncope can occur against a backdrop of health or during a disease aggravation. Patients frequently experience mood swings, emotional instability, and irritation. Colaptoid states that co

Patients experience a sudden weakness, a sense of ear congestion, pale skin and mucous membranes, cold sweats, headaches, dizziness, and vomiting when their blood pressure falls below 80/50 mm Hg or lower during a crisis. Blood pressure may not always stay consistently low; on occasion, it may rise to normal or even higher levels, as in the case of agitation or hospitalization.

But it is dwindling quickly. Women with hypotension are more likely to have acrocyanosis, pale complexion, and an asthenic build. Varicose veins are present in about half of them. Cold hands and feet, a labile pulse, decreased filling and tension, bradycardia, an enlarged left ventricle, and a systolic murmur at the apex are all common symptoms. ntinue for many minutes are the result of hypotonic crises.



The pathophysiology of essential arterial hypertension. Multiple hemodynamic, neural, humoral, and renal mechanisms lead to increased cardiac output and/or peripheral vascular resistance. The product of these two hemodynamic variables determines the blood pressure. ANP, atrial natriuretic peptide; BNP, B-type natriuretic peptide; RAAS, renin-angiotensin-aldosterone system

Picture 1

However, pathological alterations are not seen in the majority of patients with cardiac percussion and auscultation. The ECG also shows no particular alterations. Blood pressure drops as a result of an increase in the minute volume of blood and an insufficient reduction in peripheral blood flow resistance.91% of women saw an increase in their pre-existing hypotension symptoms when they became pregnant. The majority of the time, the decline happened early in pregnancy.

As pregnancy went on, all women had an increase in permanent paroxysmal autonomic abnormalities. The presence and severity of early toxicosis during pregnancy had a detrimental impact on the dynamics of hypotension in 85% of cases. The first background factor causing early toxicosis in pregnant women is violations of suprasegmental autonomic control, of which hypotension is one specific manifestation. It's unclear what causes pregnant women to have hypotension. This syndrome is linked to a relative deficiency of the sympatho-adrenal system and adrenal cortex.

Along with arterial hypotension, pregnant women had lower blood levels of 11-oxycorticosteroids and lower urine excretion of these hormones. Nonetheless, women with prenatal hypotension have the same alterations in adrenal function. The immune response to placental and fetal antigens, the placenta's influence, prostaglandin action, and inhibition of ovarian function are some of the theories being put forth to explain hypotension in pregnant women. These theories include decreased or increased release of various biological substances, including catecholamines, acetylcholine, serotonin, and histamine. It is incorrect to think of

inferior vena cava syndrome as a sign of hypotension in expectant mothers. It appears while a lady is resting on her back during the second half of her pregnancy.

As a result of compression of the inferior vena cava by the pregnant uterus, blood flow to the heart is disrupted and fainting develops with a drop in blood pressure, a weakening of the pulse, and often loss of consciousness. When the uterus is moved, the lady turns over on her side or sits down, and the situation rapidly returns to normal. Many studies distinguish between hypotension in pregnant women that developed earlier in life and that developed during pregnancy (think of it as a form of toxicosis).

It is thought that pregnant women who has had hypotension are more accustomed to it and can handle it more readily. We believe that the distinction between the two types of hypotension is essentially meaningless because the clinic picture, complications, and treatment are the same, and a statistically different frequency of a particular symptom or complication has no bearing on the management strategies used for any given patient. As with other vascular illnesses, gestosis is common among pregnant women with arterial hypotension (in 25% of cases).

When people with nephropathy have hypotension, their blood pressure may not rise over normal (120/80 mmHg), but it will be 30% higher than it was before; this is regarded as pathology. Compared to healthy women with arterial hypotension, pregnant women are more likely to develop early toxicosis. Spontaneous abortion is one of the primary consequences of pregnancy with arterial hypotension. It is five times more common than in healthy women at different points during pregnancy.

The reverse impact is also observed: blood pressure gradually drops in women who remain bedridden for an extended period of time because of a threatened miscarriage, presumably as a result of muscular inactivity. Because of decreased uteroplacental blood flow, arterial hypotension plays a role in the development of fetal growth retardation syndrome.

Calcium chloride, glucose, and estrogens should be utilized to reduce the lengthy prenatal period in women with arterial hypotension, but do not seek an emergency prescription for medication to induce labor. Primary weakness of labor may be confused with the sluggish rate of labor development seen in women experiencing arterial hypotension during labor.

Because women with arterial hypotension have slow-moving metabolisms, this disease is linked to a severe depletion of the body's energy resources. Rhodostimulation in these situations involves a disarray of general forces. Sedatives, antispasmodic medications, and paracervical anesthesia are used to treat disorganized labor, which is characterized by extremely painful contractions and a delayed opening of the uterine pharynx. Women should be given relaxation and sleep in order to effectively recover from this disease.

Conclusion

Among women of reproductive age, idiopathic arterial hypotension is a prevalent but frequently underdiagnosed disease. Its many clinical symptoms and complex origins have a substantial impact on quality of life and may make pregnancy and childbirth more difficult. IAH raises the risk of intrauterine growth restriction, early toxicosis, gestosis, and postpartum problems such poor labor activity throughout pregnancy. Therefore, to lessen unfavorable maternal and perinatal outcomes, careful monitoring, prompt diagnosis, and all-encompassing therapy are crucial. Both the fetal prognosis and the mother's health can be enhanced by early detection of hypotension and the use of preventative measures.

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MOLIYAVIY HISOBOTLARNI XALQARO STANDARTLARGA MUVOFIQLASHTIRISH

Annotatsiya. *Xalqaro miqyosda chuqurlashib borayotgan iqtisodiy inqiroz iqtisodiyotning barcha tarmoqlariga ta’sir ko‘rsatmoqda. Bunday sharoitda aholining barqaror o‘sishi, iqtisodiyotning barqaror rivojlanishiga erishish, aholi farovonligini ta’minlash, doimiy ish o‘rinlari yaratish kabi masalalar kun tartibidan o‘rin olgan. O‘z navbatida, mamlakatimizda buxgalteriya hisobi va hisobot tizimini xalqaro moliyaviy hisobot standartlari talablariga moslashtirish iqtisodiyotni rivojlantirishning asosiy omillaridan biridir. Yuqoridagi talablarga muvofiq, ushbu maqolada men milliy va xalqaro moliyaviy hisobot standartlariga muvofiq moliyaviy vositalarni hisobga olishdagi farqlarni ko‘rib chiqdik.*
Kalit so‘zlar: *xalqaro standartlar moliyaviy hisobot, xalqaro sertifikatlash, investitsion siyosat, iqtisodiy inqiroz.*

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HARMONIZATION OF FINANCIAL STATEMENTS TO INTERNATIONAL STANDARDS

Annotation. *The deepening economic crisis on an international scale is affecting all sectors of the economy. In such conditions, issues such as sustainable population growth, achieving sustainable economic development, ensuring the well-being of the population, and creating permanent jobs are on the agenda. In turn, adapting the accounting and reporting system in our country to the requirements of international financial reporting standards is one of the main factors for economic development. In accordance with the above requirements, in this article I examined the differences in accounting for financial instruments in accordance with national and international financial reporting standards.*
Keywords: *international standards financial reporting, international certification, investment policy, economic crisis.*

O‘zbekiston Respublikasining Prezidenti Shavkat Mirziyoevning Moliyaviy hisobotning xalqaro standartlariga o‘tish bo‘yicha qo‘shimcha chora tadbirlar

to‘g‘risidagi qarorida aksiyadorlik jamiyatlari, tijorat banklari, sug‘urta tashkilotlari va yirik soliq to‘lovchilar toifasiga kiritilgan yuridik shaxslar uchun 2021-yil yakuniga qadar buxgalterlarni xalqaro sertifikatlash doirasida “MHXS bo‘yicha moliyaviy hisobot” fanini muvaffaqiyatli topshirganligi to‘g‘risida hujjatga yoxud “Sertifikatlangan xalqaro professional buxgalter (CIPA)”, “Sertifikatlangan diplomli buxgalter (ASSA)”, “Sertifikatlangan jamoatchi buxgalter (SRA)” va “Xalqaro moliyaviy hisobot bo‘yicha diplom (DipIFR)” sertifikatlaridan (keyingi o‘rinlarda – xalqaro buxgalter sertifikati) biriga ega kamida uch nafar mutaxassis miqdorida MHXSni sifatli qo‘llash uchun yetarli bo‘lgan buxgalteriya xizmati xodimlari bilan ta’minlanishi natijasida yurtimizda ushbu yo‘nalishda ham jiddiy ishlarga qo‘l urilayotganidan dalolat.

Bunday imkoniyatga faqat moliyaviy hisobotning xalqaro standartlarini (MHXS) tan olish va unga muvofiq holda hisobotlar tuzish orqali erishish mumkin. Buxgalteriya hisobi to‘g‘risidagi qonunning yangi tahririda ham buxgalteriya hisobi sub’ektlari belgilangan tartibda MHXSlarni qo‘llash mumkinligi e’tirof etildi. MHXSlarni qo‘llash zaruriyati quyidagi omillar bilan belgilanadi: – turli mamlakatlarda investorlar va aksionerlar potensial kompaniyalarning bir xil tamoyillar, ya’ni taqqoslanuvchanlik asosida tayyorlangan moliyaviy hisobotni yaxshiroq tahlil qilish imkoniyatiga ega bo‘ladilar; – turli mamlakatlarda turli fond birjalariga ularning har biriga o‘sha mamlakatning standartlari asosida tuzilgan moliyaviy hisobotdan ko‘ra hammasi uchun yagona tan olinadigan bitta moliyaviy hisobotni tuzish maqsadga muvofiqdir. Natijada hisobotni tuzish xarajatlari qisqaradi va kapitalni jalb qilish imkoniyatlari kengayadi. Xalqaro moliyaviy sekin xalqaro standartlarga yaqinlashmoqda, ammo moliyaviy investitsiyalarni hisobga olishda sezilarli tafovutlar mavjud.

Buxgalteriya hisobi xalqaro standartlari qo‘mitasi (IASC) – butun dunyodagi buxgalteriya hisobi sohasi faoliyatidagi vakillardan iborat a’zolarni birlashtirgan, hukumatga oid bo‘lmagan xalqaro buxgalteriya hisobi tashkiloti bo‘lib, uning asosiy maqsadi moliyaviy hisobotlarni tayyorlash uchun buxgalteriya hisobining xalqaro standartlarini ishlab chiqish, qabul qilish va doimiy takomillashtirib borish hisoblanadi.

IASC bosh qarorgohi London shahrida joylashgan. Bu xalqaro tashkilotning Kengashiga global tashkilot va kompaniyalarda, dunyo banklarida katta mansablarda ishlagan yuqori obro‘-e’tibor va malakaga ega bo‘lgan mutaxassislar jalb qilingan.

Davlatning investitsion siyosati umumiy iqtisodiy siyosatning eng muhim tarkibiy qismidir. Bu kapital qo'yilmalarni ko'paytirish, ularning tarkibini optimallashtirish va samaradorligini oshirish bo'yicha amalga oshiriladigan maqsad, vazifalar, yo'nalishlar va tadbirlar majmuidir.

O‘zbekiston moliya bozorining globallashuv bosqichida bo‘lib, milliy tovar, mehnat bozorlari, shuningdek, valyuta va moliya bozorlari o‘rtasida o‘zaro bog‘liqlik mavjud.

Ayni paytda o‘zimizda aksiyalari sotilayotgan kompaniyalar bir vaqtning o‘zida ham milliy buxgalteriya hisobi standartlari, ham moliyaviy hisobotning xalqaro standartlari bo‘yicha hisobot berilmoqda. Bundan bilish mumkinki, taqdim etilgan moliyaviy natijalar bir-biriga mos kelmaydi. NAS tartibga soluvchi va soliq organlarini ma'lumot bilan ta'minlash uchun mo'ljallanganligi sababli, UFRS hisoboti investorlar va kreditorlar tomonidan investitsiya qarorlarini qabul qilish uchun ko'proq qo'llaniladi.

O‘zbekiston Respublikasida MHXSlarga o‘tishda milliy iqtisodiyotimizga xos va mos yo‘l tanlandi. Bu xalqaro standartlarga monand keladigan buxgalteriya hisobi bo‘yicha milliy standartlarni ishlab chiqish hamda amaliyotga joriy qilish yo‘li bo‘ldi. Hozirgi kunda ishlab chiqilgan milliy standartlarimiz xalqaro standartlarga muvofiq keladi. Shu bilan bir qatorda hozirgi kunda korporativ boshqaruvga asoslangan aksiyadorlik jamiyatlarida xalqaro standartlar asosida moliyaviy hisobotni tuzishga o‘tilmoqda. Bu esa bevosita xalqaro standartlar asosida moliyaviy hisobotni tuzish yoki milliy standartlar asosida tuzilgan moliyaviy hisobotni xalqaro standartlarga transformatsiya qilish orqali erishilishi mumkin. Birinchi yo‘l xalqaro standartlar asosida to‘g‘ri va sifatli moliyaviy hisobot tuzishga erishishni ta’minlaydi. Ikkinchi yo‘lda esa transformatsiya jarayonida ko‘plab muammo va to‘siqlarga duch kelish mumkin. Lekin ikkita yo‘lning yechimi ham xalqaro standartlarning mazmun va mohiyatini chuqur o‘rganish, uning metodologik masalalarini qo‘llash, milliy standartlarimizni imkon qadar xalqaro standartlarga muvofiqlashtirish, dunyo universitetlarida o‘qitilayotgan «Moliyaviy buxgalteriya hisobi va hisoboti» fanini o‘rganish, ingliz tilidagi adabiyotlarni o‘zbek tiliga tarjima qilish, buxgalteriya hisobi sohasida xalqaro atamalarni qabul qilish, amaliyotchi xodimlar va ilmiy tadqiqotchilarni xorijiy mamlakatlarda tajriba almashinishini tashkil etish va amaliyotchi buxgalterlarni sertifikatlash ishlarini yo‘lga qo‘yishda kerak bo‘ladi.

Xalqaro miqyosda chuqurlashib borayotgan iqtisodiy inqiroz iqtisodiyotning barcha tarmoqlariga ta’sir ko‘rsatmoqda. Bunday sharoitda aholining barqaror o‘sishi, iqtisodiyotning barqaror rivojlanishiga erishish, aholi farovonligini ta’minlash, doimiy ish o‘rinlari yaratish kabi masalalar kun tartibidan o‘rin olgan. O‘z navbatida, mamlakatimizda buxgalteriya hisobi va hisobot tizimini xalqaro moliyaviy hisobot standartlari talablariga moslashtirish iqtisodiyotni rivojlantirishning asosiy omillaridan biridir. Yuqoridagi talablarga muvofiq, ushbu maqolada men milliy va xalqaro moliyaviy hisobot standartlariga muvofiq moliyaviy vositalarni hisobga olishdagi farqlarni ko‘rib chiqdik.

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INNOVATION AND EDUCATION: MODERN APPROACHES AND DEVELOPMENT PROSPECTS

Annotation: *This article analyzes innovation and education as interconnected concepts. Dog examines the role of innovative technologies in improving the quality of education, as well as the opportunities and challenges in their implementation. In addition, the article discusses the readiness of modern students and teachers for innovations, digital competencies , and creative approaches .*

Keywords: *innovation, educational technologies, digital competence, creative approach, STEAM, interactive methods.*

The 21st century education field in front of standing the most current from issues one is this **innovative technologies effective current Because** modern in society information of the flow increase , digital of technologies development and labor in the market requirements is changing . Education and this demand and to needs adapt can at the level **flexible, interactive and creative** to be Innovations exactly this to changes answer give can powerful is a tool.

Today on the day education in the field changes fast at a pace is happening. Digital technologies, new pedagogical approaches and globalization education to the process his/her own new requirements is putting. This attitude with modern teacher only traditional knowledge giver not, maybe innovative ideas active applied to the individual needs of students adaptable and himself permanent accordingly developing leader to the person rotation need.

Innovative teacher is pedagogical in the activity permanent the news implementation modern, modern technologies and methods students who use creative to think and independent knowledge to take encouraging He is an expert. He is his professional skill to increase striving, education process further effective and interesting to do movement does.

Innovation is news input, available systems improve, new method, tool or technology to practice current to do that means.

Pedagogical innovation is education process effective organization to grow for new method, technology, organizational form or training environment create and current is to reach.

In education innovation importance

- Lessons interesting and effective organization to do;
- In students independent thinking and problem solution to do skills development;

- Teacher's professional skill increase;
- Education process to the person directed as organization to grow;
- Remote and mixture education opportunities expansion.

INNOVATION ADVANTAGES

- Lesson quality and efficiency increases;
- In students motivation increases;
- Knowledge to practice implementation to do it becomes easier;
- Student in the center organization done education is provided;
- From a distance standing teaching opportunity is created.

INNOVATIVE OF EDUCATION MAIN PRINCIPLES

1. **To the person orientation** – every one student's interest, potential into account to take.
2. **Activity** – student in class active participation to provide.
3. **Analytical approach** – thinking, comparing, evaluating skills development
4. **For information justification** – digital sources, via the internet knowledge to take.
5. **Collaboration** – teamwork work, social activity.

INNOVATION CURRENT IN THE PROCESS OF BEING PROBLEMS

- Teachers' digital literacy enough at the level it's not;
- Technical base and with the internet provision enough it's not;
- Parents by new approaches lack of support;
- Methodical help and qualification increase of courses sluggishness;
- Education of programs to innovations suitable not.

INNOVATIVE TEACHER – MODERN EDUCATION IS A REQUIREMENT

Modern teacher not only knowledge giving, maybe:

- motivator,
- coordinator,
- consultant,
- from technologies user to be an innovator necessary.

That's why for, educators following in the fields own on performance must:

- Digital competencies;
- Methodical news;
- Psychological stability;
- Communicative skills.

Modern education system effective performance and quality in increasing innovative teachers role extremely important. That's why for educators' preparation and their professional activity support regarding systematic and complex approach demand Training and supporting innovative teachers is a key condition for improving the quality of modern education. This ensures the effective functioning of the entire education system and provides the future generation with modern knowledge and skills.

Innovation is time demand. Today on the day education process ineffective, old-fashioned styles with take to go possible not. The students thinking level, information was need and social activity increased in the circumstances, teacher innovations own to the activity implementation to be able condition . Innovative approaches through education in the process student person every one-sided develop it to life preparation possible. Innovative teacher is education process important condition and modern society He is demanding. He is his technological literacy , creativity and flexibility with education quality increases , students active , independent and critical to think road opens . That's why for pedagogical education in the system innovative teachers preparation and them support according to systematic affairs take to go necessary.

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LEVERAGING GIS TECHNOLOGIES FOR SUSTAINABLE DEVELOPMENT: INTEGRATING NDVI, AIR QUALITY MONITORING, AND WASTE MANAGEMENT

Abstract: *Geographic Information Systems (GIS) are becoming an increasingly important tool for achieving sustainable development goals. This article explores the role and potential of GIS technologies in environmental monitoring, land use optimization, agricultural planning, and waste management, based on case studies from the Andijan, Tashkent, and Samarkand regions of Uzbekistan. The study employs a mixed-methods approach, utilizing statistical analysis, satellite data, and GIS modeling. The results show that GIS has significantly contributed to real-time environmental monitoring, the accuracy of decision-making, and public transparency. However, a number of challenges, such as a shortage of specialists, outdated infrastructure, and insufficient funding, still hinder its full implementation.*

Keywords: *GIS, sustainable development, environmental monitoring, spatial analysis, regional planning.*

Introduction

Sustainable development is a concept that involves meeting the needs of the present generation without compromising the ability of future generations to meet their own needs, based on a balance between economic, social, and environmental factors [1]. In recent years, the development of information and communication technologies, particularly GIS, has opened up new opportunities for ensuring sustainable development. GIS technologies play a crucial role in optimizing decision-making in land resource management, environmental monitoring, natural disaster prevention, urban planning, and the agricultural and industrial sectors [2], [3].

Globally, GIS technologies are widely used for the early detection of environmental threats, the rational use of natural resources, and planning measures against climate change [4]. For example, in countries such as the USA, the European Union, and China, the practice of assessing landscape conditions, monitoring water resources, and tracking atmospheric pollution levels in real time through GIS platforms is well-developed[5].

In the context of Uzbekistan, the implementation of GIS technologies is also of great importance for ensuring ecological and socio-economic stability. Specifically, in the Andijan, Tashkent, and Samarkand regions, GIS-based projects for digitizing land and water resources, waste management, and infrastructure development are being implemented[6].

Therefore, this article analyzes the role of GIS technologies in sustainable development, their potential, and their practical applications. The purpose of the article is to scientifically illuminate the contribution of GIS technologies to sustainability processes at the regional and national levels, to highlight existing problems, and to provide recommendations.

Methods

In this study, a comprehensive methodological approach was used to assess the role and potential of GIS technologies in sustainable development. The main objective is to identify the functions of GIS technologies in ensuring ecological, economic, and social stability and to analyze their effectiveness based on real-world cases.

1. Data Sources

The necessary data for the study were collected from the following main sources:

- Open data databases of the State Statistics Committee of the Republic of Uzbekistan and the Ministry of Ecology;
- Global geodata portals: USGS Earth Explorer, Copernicus Open Access Hub, NASA Giovanni;
- Scientific articles, reports, and open sources on GIS projects (Google Scholar, Scopus, and ResearchGate);
- GIS-based project documents implemented in the Andijan, Tashkent, and Samarkand regions (in collaboration with local authorities and regional ecology departments).

2. Analysis Tools and Software Platforms

Geoinformation analyses were performed using the following platforms and tools:

- QGIS 3.34 and ArcGIS Pro 3.0 – for cartographic visualization, layer analysis, and creating digital maps;
- Google Earth Engine – for analyzing changes over time based on remote sensing (RS) data;
- Excel, R, and Python (pandas, geopandas, matplotlib) – for statistical analyses, graphs, and calculating indices.

3. Research Approach

The research was conducted in the following sequence:

- Stage 1: Forming the theoretical basis to determine the impact of GIS technologies on the principles of sustainable development;
- Stage 2: Analyzing GIS-based projects implemented in the three selected regions (Andijan, Tashkent, Samarkand);

• Stage 3: Assessing the correlation between ecological, social, and economic indicators and GIS projects;

• Stage 4: Identifying current problems and developing recommendations.

4. Research Limitations

This study only considered GIS projects from 2020–2024 and their results at the regional (oblast) level. A deep epidemiological analysis of the impact on public health or micro-level economic indicators was beyond the scope of the research.

Results

As a result of the analysis of GIS-based projects and programs implemented in three regions of Uzbekistan (Andijan, Tashkent, Samarkand), the following main results were achieved:

1. Improvement of Environmental Monitoring

In areas where GIS technologies were implemented, real-time monitoring of atmospheric air pollution levels was established. Specifically, in the city of Andijan between 2021 and 2023, a 12% reduction in pollution was recorded through the PM2.5 concentration monitoring system [7].

2. Increased Accuracy in Land Resource Use

In the Tashkent region in 2022, illegal constructions were identified through a GIS-based land balance map, and legal action was taken in 46 cases. This increased the transparency of the regional governance system [8].

3. Crop Yield Forecasting in Agriculture

In the Samarkand region in 2023, based on remote sensing data, NDVI (Normalized Difference Vegetation Index) indicators were calculated, and the vegetative growth status of cotton and wheat crops was determined. This allowed for up to 18% higher accuracy in yield forecasting [8].

4. Waste Management via GIS

In the Andijan region, a GIS map of waste collection and recycling points was created, ensuring that 24% of waste was recycled in 2023. This is significantly higher than the 13% figure in 2020 [7].

Discussion

These results prove that GIS technologies are an important tool for ensuring sustainable development. Through GIS systems, the ability to identify regional problems, model them, and make effective decisions has expanded.

1. GIS and Digital Transformation

Through the integration of GIS technologies into digital governance systems, the quality and speed of public services have increased. In particular, early warnings were implemented through real-time monitoring systems for environmental risks, which accelerated adaptation to climate change[4], [5].

2. Openness and Transparency in Regional Policy

Through open GIS-based maps, citizens and the public gained free access to information on the environmental situation, land allocation, and waste status in the area. This strengthened the accountability mechanisms of local government bodies [8].

3. Existing Challenges of GIS Technologies

Nevertheless, the full implementation of GIS technologies is facing a number of challenges. Including a shortage of qualified specialists, limitations in technical infrastructure at the local level, and slow funding are causing this process to slow down [2],[3].

4. National-Level Replication of Best Practices

According to the analysis results, the pilot GIS projects implemented in Tashkent and Samarkand were successful, and there are opportunities to expand them nationwide. In particular, the potential for using GIS in water resource management, separate waste collection, and identifying optimal crop areas in agriculture is high.

Conclusion

Sustainable development is one of the most pressing challenges facing humanity globally, and it requires harmony between social, economic, and environmental factors. The analyses conducted within this study have shown that GIS serve as an effective tool for ensuring sustainable development. The contribution of GIS technologies is invaluable, especially in environmental monitoring, rational resource management, developing digital infrastructure, and increasing the transparency of public administration.

According to the research findings, in areas where GIS technologies have been implemented, it was found that the quality of environmental control, the efficiency of land and water resource use, systematic waste management, and the accuracy of yield forecasts in agriculture have significantly increased. Furthermore, the ability to analyze, visualize, and disseminate data in real time with the help of GIS tools is enabling local and central government structures to make prompt and scientifically-based decisions.

At the same time, the development of GIS technologies also gives rise to a number of problems. In particular, factors such as a shortage of qualified personnel, insufficiently collected digital data, outdated technical equipment, and slow funding from local budgets are hindering their full implementation. In this regard, close cooperation between research institutes, higher education institutions, and public administration bodies is necessary.

To further develop GIS technologies in the future, the following recommendations can be made:

- Forming a single national GIS platform by standardizing and integrating regional-level GIS databases;
- Developing higher education programs for training GIS specialists, and expanding practical training and certification systems;
- Modernizing GIS infrastructure and implementing real-time monitoring systems on the basis of public-private partnership;
- Bringing civil society closer to digital information by creating open GIS maps for monitoring the environment, climate change, and natural resources.

In conclusion, the role of GIS technologies in sustainable development strategies is becoming increasingly important. Their effective implementation serves as an important factor not only in maintaining ecological balance but also in achieving economic growth and social stability. Therefore, adopting GIS technologies as an integral part of sustainable development policy can usher in a new stage in the country's development.

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USE OF FOLIC ACID IN PRESCHOOL CHILDREN WITH EPILEPSY

Abstract. *The condition of 50 children with epilepsy was studied. The level of folate in erythrocytes and the level of homocysteine in venous blood plasma were studied in children of three study groups. Based on the results of homocysteine in the groups, it was noted that its concentration was distributed as follows: II - 10.5 ± 0.3 μmol/l, while in the control group - 5.1 ± 0.1 μmol/l, which indicates significant hyperhomocysteinemia in the groups with epilepsy, while the expected effect on this indicator of folic acid (Folacin) intake at a dose of 5 mg per day was noted. This indicates a direct correlation between the use of folic acid during the neuropsychiatric development of children and the degree of identified pathology.*

Keywords: *epilepsy, folic acid, children under school age.*

Congenital diseases and developmental defects of the central nervous system (CNS) serve as one of the main causes of perinatal and early childhood mortality, as well as psychoneurological disability from childhood (1,2). Mental retardation in 85% of observations is congenital. Every case of birth of a disabled child represents a serious medical, social, and economic problem (3-5). Its solution requires the most complete information about the features and nature of CNS damage even before childbirth.

Epilepsy is a chronic brain disorder characterized by recurrent seizures that result from excessive neuronal activity and are accompanied by various clinical and paraclinical manifestations.

Epilepsy in children is a long-term ongoing neurological disease of a chronic nature, in which the central nervous system is affected. The condition is manifested by sudden attacks of seizures, loss of consciousness, motor disorders and other unpleasant signs. Finding the causes of epilepsy in children, assessing the symptoms and selecting the best treatment is the responsibility of pediatric neurologist-epileptologists, with input from a number of other specialists as needed (6).

Statistics show that 1-5% of children of various ages, including adolescents, are diagnosed with some form of epilepsy, and almost one in two adults report experiencing the first signs of epilepsy as a child.

The incidence of epilepsy is 50-70 cases per 100,000 population per year, the prevalence of epilepsy is 5-10 cases per 1,000 people, at least 1 seizure during life is suffered by 5% of the population, in 20-30% of patients the disease is lifelong (4,5,7).

The cause of high perinatal morbidity in the majority of newborns from mothers with epilepsy is damage to the central nervous system (CNS). Thus, during clinical observation, neurologic symptoms are detected in 35.4% of newborns from epileptic mothers, and in 11.6% they persist after discharge from the hospital.

This is explained by the fact that fetuses with maternal epilepsy have a delay in the maturation of the nervous system due to the use of anticonvulsant therapy for the underlying disease (5).

The percentage of cases causing death of children in the first years of life from congenital and hereditary diseases is quite high, despite well-developed pediatric care in developed countries. In the absence of prevention, congenital and hereditary diseases cause the death of at least 14 out of 1,000 children in the first 3 years of life, with congenital and hereditary diseases accounting for congenital malformations (CMDs) account for half of the cases (7).

Neural tube defects (NTDs) account for 5.3% of all birth defects in the structure of the pathology of children with malformations, and the share of this pathology among the causes of death from NTDs is much higher. Almost every fourth child who died from complications associated with malformations suffered from DND (3).

When analyzing the database obtained from the regional registers of Andijan Oblast territories monitoring congenital malformations in children, spinal hernias and anencephaly (up to 70% of all central nervous system malformations), cleft lip and palate (57.23% in the group of digestive system malformations) were the most numerous in the structure of CHD within each group of malformations (1,2,6).

It is known that selective information that folic acid deficiency in children is a risk factor for the most severe, uncorrectable fetal malformations - fetal DNTs - appeared in the world medical press in the early 1990s.

Published in 2000, the summary results of clinical studies conducted in Hungary, Great Britain, France, USA and other countries showed that daily use of folic acid or multivitamins containing 0.4-1.0 mg of folic acid by women in the period before conception and in the first months of pregnancy reduces the risk of primary and recurrent birth of children with brain and spinal cord defects and other malformations (4).

This scientific discovery and the resulting preventive effect were of great importance for practical health care in many countries, since this group of malformations occupies a leading place in the structure of CHD leading to infant mortality and early disability (7).

Thus, in addition to DNTs, the group of so-called folate-dependent malformations includes limb reduction malformations, genitourinary defects and some maxillofacial anomalies, as well as a number of malformations of the

cardiovascular system. The main risk factors for primary fetal or infant malformations, besides maternal folic acid deficiency and impaired vitamin B1 status, are diabetes mellitus, use of valproic acid and carbamazepine, and obesity (4).

The only accurate way to calculate folate content is to measure blood folate levels, with plasma folate levels reflecting current folic acid intake, whereas erythrocyte folate levels are related to folate intake in previous months when currently circulating red blood cells were still developing in the bone marrow.

Materials and methods. We studied the condition of 50 children with epilepsy. 28 (56.0%) children (group I) received folacin (folic acid) at the recommended dose of 5 mg/day. 22 (44.0%) children (II study group) did not receive the drug for various socio-economic reasons. The analysis was compared with the condition of 25 school-aged children in the control group (III study group).In addition, we studied the level of folate in erythrocytes and the level of homocysteine in venous blood plasma in children of all three study groups.

Analyzing the obtained results, it was noted that the concentration of homocysteine in the groups was distributed as follows: 6.3 ± 0.2 μmol/L in group I, 10.5 ± 0.3 μmol/L in group II, and 5.1 ± 0.1 μmol/L in the control group, which shows significant hyperhomocysteinemia in the groups with epilepsy, with a positive effect of folic acid intake at a dose of 5 mg per day (Folacin) on this index.

When assessing the results of the folate status of erythrocytes, a significant decrease in the majority of folates was noted, but it should be noted that only the level of methylenetetrahydrofolate decreased insignificantly and on average approached physiologic values. Initially, immediately after birth, the condition of newborns was assessed according to the Apgar scale in order to tentatively determine the severity of asphyxia and to carry out the necessary volume of resuscitation measures. Subsequently, all infants were subjected to a detailed clinical and laboratory examination, after which the degree of asphyxia was finally determined.

Results.

The most frequent complication of epilepsy in group II children was a change in neurologic status - 21.4%, while in group I this index was lower and amounted to 18.3% of cases, and in the control group - 6.7%. Acute changes in neurologic status were observed in labor in group II in 5.7% of cases, in group I - in 4.3%, along with 3.3% - in the control group. It should be noted that one of the immediate complications in children born to mothers with epilepsy was fetal adynamia in group II 18.6%, along with 6.7% in the control group. Morpho-functional immaturity is a characteristic feature of newborns born to mothers with epilepsy, accounting for 25.7% in group II and 18.6% in group I. In Group I, 89.5% of newborns were premature and 10.5% were premature.

The mean body weight of the premature newborns was 3320 ± 290 g, while the body weight of the preterm infants was 2250 ± 180 g. The height of the children was 50.4 ± 1.1 cm and 43.8 ± 1.8 cm, respectively.

In group II of the study group, 87.5% of the newborns were premature and 12.5% were premature. The average body weight of the preterm infants was 3080 ± 310 g, and that of the preterm infants was 2110 ± 140 g. The height of the children was 49.8 ± 1.4 cm and 42.6 ± 1.2 cm, respectively.

No cases of severe asphyxia were registered in the observed groups. 7.9% and 12.5% of children were born in the state of moderate asphyxia (Apgar score of 6-7 points at the first minute of life), respectively. The state of medium degree asphyxia was characterized by weakened breathing, perioral and acrocyanosis, and decreased muscle tone. In general, the rate of asphyxia in the studied groups exceeded the frequency of asphyxia in the control group of newborns.

These newborns had disorders of the adaptation period, accompanied by changes in the CNS (impaired hemoliquorodynamics), a large initial weight loss and its late recovery, and the development of respiratory distress syndrome. Compared to birth, the weight deficit in this group amounted to 124.1 ± 46.6 g.

The development of distress and failure of adaptation in newborns often occurred on the 1st-3rd day of life. Children with manifestations of intrauterine hypotrophy were especially vulnerable in this respect.

As can be seen from the presented data, the use of the drug has a positive effect not only on congenital pathology, but also improves the course of the gestation process itself, reducing the risk of obstetric c The problems of newborns from mothers with epilepsy were caused by both intrauterine fetal suffering due to deterioration of metabolic processes in the mother's body, the use of various regimens of anticonvulsant therapy, and a number of obstetric complications, and depended on the degree of epilepsy compensation in the mother, timely diagnosis of pregnancy complications, and the term and method of delivery.

Conclusions.

Thus, our data have once again shown that there is a definite correlation between the degree of CNS lesions in children under school age in the process of physical development and the severity of the course. In this case, the favorable factor was the use of Folacin.

The study revealed a direct correlation between the use of folic acid preparation and the degree of detected pathology in the period of neuropsychiatric development of children.

All of the above points to the need for further study of this pathology in order to improve the indicators of neuropsychiatric development in this contingent of children. The application of preventive technologies by physicians will reduce the frequency of neuropsychiatric pathology in children with epilepsy omplications.

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IQLIM OMILLARINING TURIZM RIVOJLANISHIGA TA’SIRI: GIS VA MASOFADAN ZONDSHLASH MA’LUMOTLARI ASOSIDA TAHLIL (JIZZAX VILOYATI MISOLIDA)

Annotatsiya. *Ushbu tadqiqotda Jizzax viloyatining turizm salohiyatiga iqlim omillarining ta’siri GIS va masofadan zondlash (MZ) ma’lumotlari asosida tahlil qilindi. ERA5 iqlim ma’lumotlari, Sentinel-2 tasvirlari hamda SRTM raqamli relyef modeli (DEM) asosida harorat, yog‘in, quyosh radiatsiyasi va shamol tezligi kabi ko‘rsatkichlar tahlil qilinib, ular turizmga qulaylik darajasi (Tourism Climate Index – TCI) modeli orqali baholandi. Natijada viloyat hududining iqlim sharoitlariga ko‘ra turizm faoliyati uchun eng qulay fasllar va hududlar aniqlandi.*

Kalit so‘zlar: *turizm, iqlim omillari, ERA5, TCI, GIS, masofadan zondlash, Jizzax viloyati, harorat, yog‘in, quyosh radiatsiyasi, barqaror turizm.*

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THE IMPACT OF CLIMATIC FACTORS ON TOURISM DEVELOPMENT: AN ANALYSIS BASED ON GIS AND REMOTE SENSING DATA (CASE STUDY OF THE JIZZAKH REGION)

Abstract*. This study analyzes the contribution of climatic factors to the tourism potential of the Jizzakh Region using GIS and remote sensing (RS) data. Using ERA5 climate data, Sentinel-2 imagery, and the SRTM digital elevation model (DEM), temperature, precipitation, solar radiation, and wind speed were*

analyzed and assessed using the Tourism Climate Index (TCI) model. This allowed the most favorable seasons and regions for tourism to be identified based on regional climatic conditions.

***Keywords**: tourism, climate factors, ERA5, TCI, GIS, remote sensing, Jizzakh Region, temperature, precipitation, solar radiation, sustainable tourism.*

Kirish

Iqlim turizmning geografik taqsimlanishida, mavsumiyligi va qulaylik darajasida hal qiluvchi ahamiyatga ega. Har bir turistik hududning jozibadorligi nafaqat tabiiy manzaralar va madaniy resurslarga, balki iqlimning qulayligi, barqarorligi va xavfsizligiga ham bog‘liqdir [1-4]. Masalan, Zomin milliy tabiat bog‘i, Forish tog‘ tizmalari yoki Sangzor vodiysi kabi Jizzax viloyatining tabiiy hududlarida yoz oylaridagi yuqori harorat, qish mavsumidagi sovuq va yog‘in miqdori turistik faoliyatning davomiyligi va turi (ekoturizm, trekking, dam olish)ga bevosita ta’sir qiladi [5-8].

Iqlim o‘zgarishlari (global warming) ham turizm sektoriga jiddiy ta’sir ko‘rsatmoqda — ayniqsa tog‘li hududlarda qor qoplamining kamayishi, yozgi haroratlarning oshishi va yomg‘irlar rejimining o‘zgarishi dam olish mavsumlarini qisqartirmoqda. Shu sababli GIS va masofadan zondlash asosidagi iqlim tahlili turizmni rejalashtirish, ekologik xavflarni baholash va barqaror turizm strategiyalarini ishlab chiqishda zarur vosita hisoblanadi [5-7].

Tadqiqotning maqsadi — Jizzax viloyati hududida iqlim omillarini fazoviy tahlil qilish, ularning turizm salohiyatiga ta’sirini aniqlash va iqlim qulayligi xaritasini yaratishdan iborat.

Materiallar va metodlar

Tadqiqotda quyidagi asosiy ma’lumotlar manbalaridan foydalanildi:

- ERA5 Reanalysis Data (ECMWF, 2010–2024) – harorat (°C), yog‘in (mm), shamol tezligi (m/s), havo namligi (%) va quyosh radiatsiyasi (W/m²).
- Sentinel-2 (MSI, 10–20 m) – o‘simlik indeksi (NDVI) orqali landshaftning iqlim bilan bog‘liqligini baholash uchun.
- SRTM DEM (30 m) – relyef balandligi iqlim farqlanishining vertikal gradientlarini hisoblash uchun.

Iqlim qulayligi Tourism Climate Index (TCI) modeli yordamida hisoblandi (Mieczkowski, 1985):

$$TCI = 2(4C+4R+2S+2W)$$

Bu yerda:

- **C** – qulay harorat komponenti (20–26°C oralig‘i eng optimal),
- **R** – yog‘in darajasi (kam yog‘in – yuqori ball),
- **S** – quyosh radiatsiyasi va kunduz soatlari,
- **W** – shamol tezligi (o‘rtacha 2–5 m/s – qulay).

Hisoblash GEE va ArcGIS dasturlari yordamida amalga oshirildi. ERA5 ma’lumotlari hourly → monthly average shaklida qayta ishlanib, “Raster Calculator” yordamida TCI qiymatlari 0–100 oralig‘ida normallashtirildi.

TCI qiymati	*Bahosi*	*Turizm uchun qulaylik*
80–100	A’lo	Juda qulay (faol dam olish)
60–79	Yaxshi	Qulay (ko‘p turdagi turizm)
40–59	O‘rtacha	Qisman qulay (mavsumiy turizm)
20–39	Past	Noqulay (cheklangan turizm)
0–19	Juda past	Noqulay iqlim sharoiti

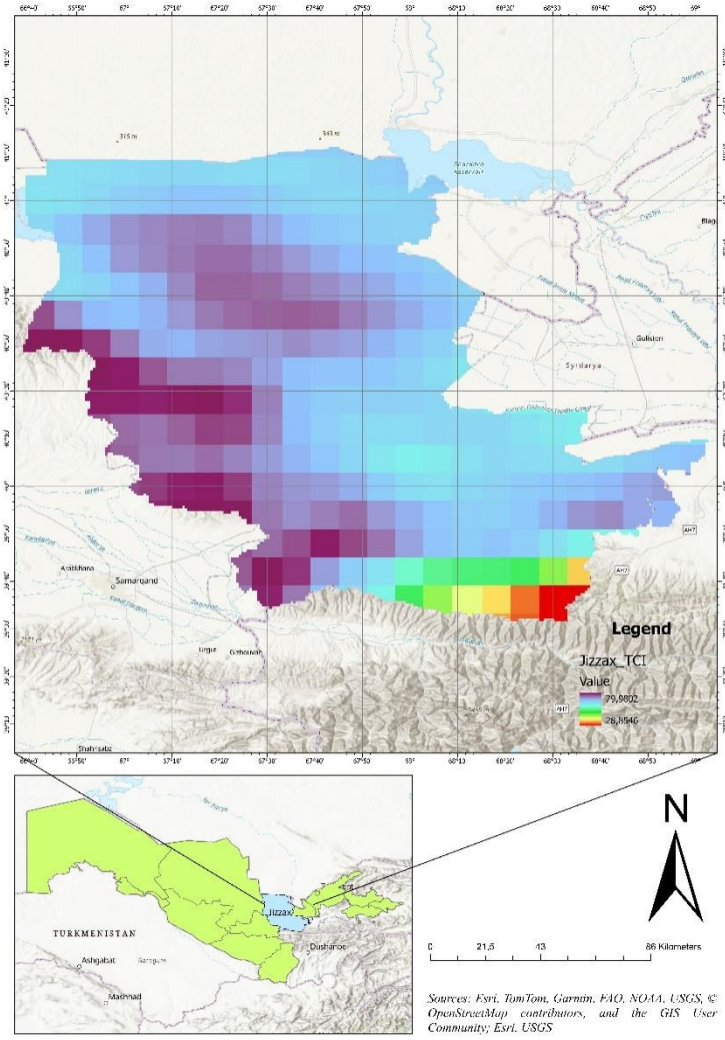
Natijalar va tahlil

Natijalar Jizzax viloyati hududida iqlim omillarining turizm faoliyatiga aniq ta’sirini ko‘rsatdi. ERA5 harorat ma’lumotlariga ko‘ra, iyun–avgust oylarida o‘rtacha harorat 28–33°C ni tashkil etib, Zomin va Forish tog‘ oldi hududlarida esa bu ko‘rsatkich 22–25°C atrofida bo‘ladi. Bu esa yozgi ekoturizm va tog‘ sayohatlari uchun eng qulay hududlar hisoblanadi.

Yog‘in miqdori tahliliga ko‘ra, bahor (mart–may) oylarida Zomin va Baxmal tumanlarida oylik yog‘in 80–100 mm gacha bo‘ladi, bu esa ekologik sayohatlar uchun cheklov yaratadi. Yoz oylarida yog‘in 10–20 mm oralig‘ida kamayadi va TCI qiymatlari 75–85 oralig‘ida bo‘ladi — bu hududlar “juda qulay” toifasiga kiradi.

Shamol tezligi bo‘yicha eng barqaror sharoit Sangzor vodiysi va Jizzax tekisliklarida qayd etilgan (3–5 m/s), bu sayyohlik faoliyati uchun qulay bo‘lgan diapazon hisoblanadi. Tog‘li hududlarda (Forish, Zomin) esa shamol tezligi 6–9 m/s gacha yetadi, bu ekstremal turizm turlari (paragliding, tog‘ sporti) uchun afzal.

Yakunda TCI integratsion xaritasi shakllantirildi. Unda Zomin, Forish va Baxmal tumanlarining tog‘ oldi zonalari TCI = 80–90 oralig‘ida chiqdi — bu hududlar yilning 7–8 oyi davomida turizm uchun juda qulay deb baholandi. Mirzacho‘l dasht zonasi esa yuqori harorat va past namlik sababli TCI = 35–50 oraliqda bo‘lib, faqat qisqa muddatli mavsumiy turizm uchun mos hisoblanadi.



1-Rasm. Jizzax viloyatining TCI (Tourism Climate Index) xaritasi
Manba: ERA5 va Sentinel-2 integratsiyasi asosida, 2024-yil yoz fasli.

Xulosa

Tadqiqot natijalari shuni ko‘rsatdiki, Jizzax viloyatida turizm salohiyatiga iqlim omillari sezilarli ta’sir ko‘rsatadi. ERA5 ma’lumotlari asosida aniqlangan TCI qiymatlariga ko‘ra:

- Zomin va Forish tog‘ oldi hududlari — iqlim jihatidan eng qulay ekoturistik zonalar;
- Mirzacho‘l dasht hududi — faqat bahor va kuz mavsumlarida qisqa muddatli dam olish uchun qulay;
- Yozgi haroratning oshishi va yog‘inlarning kamayishi — iqlim o‘zgarishining salbiy ta’sirini ko‘rsatmoqda.

GIS va masofadan zondlash ma’lumotlari asosida yaratilgan TCI xaritasi viloyatda turizm mavsumlarini rejalashtirish, ekoturistik infratuzilmani joylashtirish va barqaror turizmni boshqarish uchun muhim amaliy ahamiyatga ega.

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MANAGING THE DEVELOPMENT, IMPLEMENTATION AND CREATION OF INNOVATIONS IN ENTERPRISES

Abstract *Management of the development, implementation and creation of innovations in enterprises is one of the main factors of innovative development. Today, increased competition in the market, the acceleration of technological progress and changes in customer needs force enterprises to constantly conduct innovative activities. In this regard, the formation of an innovation management system, its effective organization and coordination with the enterprise strategy are becoming an urgent issue.*

This article analyzes the main stages of innovation processes in enterprises, institutional and practical mechanisms for the development and implementation of innovations. It also studies modern approaches, management methods and successful foreign experiences in managing the process from the development of innovative ideas to their transformation into a product or service. The recommendations put forward in the article are of great importance for enterprises in developing their innovative potential and increasing their competitiveness.

Keywords: *innovation, innovation management, enterprise strategy, innovation process, technological progress, innovation activity, management system, competitiveness, institutional mechanism, implementation.*

Introduction

The changes and competitive environment that have occurred in the global economy in recent years have radically increased the requirements for increasing the innovative potential of enterprises. Innovation processes are of strategic importance in modern enterprises not only for ensuring the competitiveness of products and services, but also for the long-term sustainable development of the enterprise. Therefore, the development of innovations, their effective implementation, and the formation of innovative activity management systems are becoming a decisive factor in the success of the enterprise and strengthening its position in the market.

The complex and multi-stage nature of innovation processes require enterprises not only to introduce technological innovations, but also to effectively manage research and development activities, integrate internal and external resources in a comprehensive manner, as well as identify and manage risks in advance. As a result, modern methods and methodologies of innovation management, including strategic planning, project management, the formation of creative teams, and the adoption of advanced technologies, make the processes of

creating and implementing innovations in enterprises more systematic and efficient. Also, areas such as digital transformation, intellectual property protection, and innovation ecosystem development play an important role in increasing the innovation capacity of enterprises.

Research Methodology

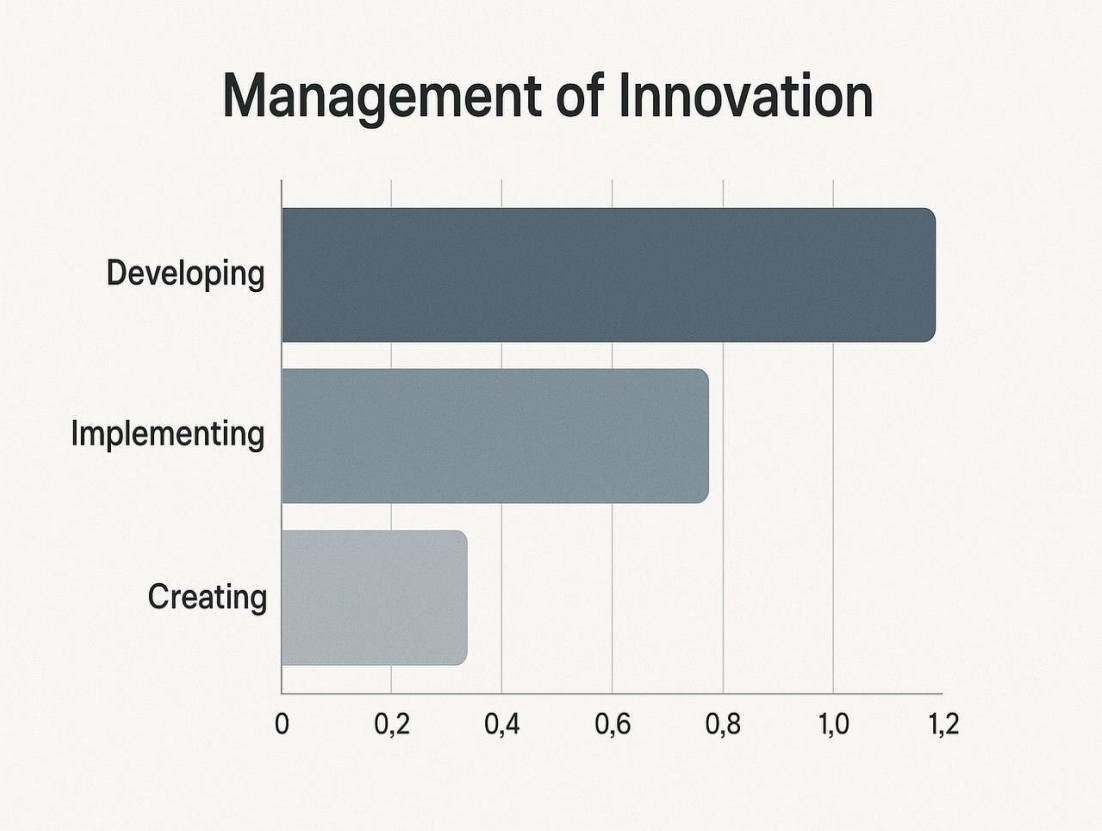
The process of developing innovations in enterprises includes several important stages. First, idea identification and research and development (R&D) are carried out. Enterprises around the world spend an average of 3–5% of their revenues on this activity. For example, large technology companies in the United States are significantly increasing their innovation potential by allocating 7% of their budget for R&D. The next stage is prototyping and testing, during which approximately 60–70% of projects are successful and introduced to the market.

Effective project planning and the formation of creative teams are of great importance in managing innovation processes. Studies show that such methods increase the success rates of enterprises by 30–40%. Also, in creative teams, employees devote 25% more time to their creative potential, which helps to develop innovations faster and with higher quality.

Effective integration of resources allows enterprises to implement innovative projects on average 50 percent faster. In addition, establishing contacts with universities, research centers and other external partners increases the success rate of innovation processes by 20–25 percent.

Quality control and constant study of customer feedback are of great importance in the process of introducing innovations to the market. Studies have shown that more than 70 percent of products released to the market are improved based on consumer feedback. Through monitoring systems, enterprises have the opportunity to increase product efficiency by 15–20 percent.

Innovation management experiences of foreign countries are an effective guide for enterprises. In European countries, the speed of innovative products entering the market has increased by 35 percent with the help of digital tools and advanced management methodologies. In Asian countries, state funds allocated for innovation projects have increased by 40 percent.



The following bar chart titled “Management of Innovation” shows the importance and share of the processes of creating, developing and implementing innovations in enterprises. The graph focuses on three main stages:

1. Developing

✓ The greatest advantage is at this stage.

✓ At this stage, ideas are transformed into concepts, feasibility studies and project plans are developed.

✓ Market and technological analyses play a major role.

✓ If this stage is not successful, it is impossible to proceed to the remaining stages.

2. Implementing

✓ At this stage, the innovations developed are implemented in real activities.

✓ Internal decisions, resource mobilization, employee training and process adaptation are required.

✓ This stage usually requires a lot of time and money.

3. Creating

✓ The lowest share fell on this stage.

✓ This is the stage of putting forward the original innovative idea or problem.

✓ Although this stage is depicted in the smallest form, this process is the starting point of innovation.

The diagram shows that enterprises focus the most resources and attention in the innovation process on the development and implementation stages. This means

that the successful development and implementation of innovative ideas requires effective management and strategy.

Analysis and Results

Studies have shown that every 1% increase in funds allocated for innovative activities in enterprises helps to reduce the time to develop new products by 20–30%. Also, effective management and the formation of creative teams increase the success rate of projects by 35–40%.

External cooperation and pooling of resources improves the success of innovation processes by about 25%. Taking into account customer feedback when launching products on the market allows you to increase product quality by 15–20%.

Digital management tools and innovative approaches introduced based on foreign experience have allowed enterprises to introduce products to the market 30% faster. At the same time, it is observed that the funds allocated by the state for innovation have increased by an average of 40%.

As a result, systematic innovation management increases the competitiveness of enterprises by 25–35% and significantly increases their market share.

Conclusion

The effectiveness of innovation development and management systems in enterprises allows them to significantly increase their market competitiveness. Financial and human resources allocated for innovative activities accelerate the process of creating products and services and improve their quality. At the same time, creative teams and effective project management increase the success rate of innovation processes and ensure the production of products that meet market requirements.

Systematic consideration of customer feedback and strengthening quality control increase the efficiency of product introduction to the market. The adoption of foreign best practices allows enterprises to digitally transform and implement innovations on a large scale. As a result, integrated approaches to innovation management become an important factor in the long-term sustainable development of enterprises and strengthening their positions in international markets.

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THE SIGNIFICANCE OF GEOGRAPHICAL LOCATION IN THE DEVELOPMENT OF GASTRITIS

Annotation: *Geographical location plays a crucial role in the development of gastritis. Environmental and climatic conditions, dietary habits of the population, the quality and microbiological composition of drinking water, as well as the prevalence of infectious agents, particularly Helicobacter pylori, vary across different regions. These factors significantly influence the incidence, clinical manifestations, morphological forms, and severity of gastritis. For instance, in some regions, the frequent consumption of spicy and fatty foods contributes to a higher prevalence of gastritis, while in other areas, poor drinking water quality and inadequate sanitary conditions play a major role. Socio-economic conditions, access to healthcare, and the availability of preventive programs are also essential determinants in the progression of the disease. A comprehensive understanding of regional characteristics helps to identify specific risk factors and develop individualized strategies for prevention and treatment. Such an approach not only reduces the burden of gastritis but also improves patients' quality of life. Therefore, considering geographic differences in both research and practice is highly relevant and necessary for effective public health interventions and the advancement of gastroenterology.*

Keywords: *gastritis, geographical location, environmental factors, dietary habits, Helicobacter pylori, drinking water quality, prevention, treatment.*

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GASTRITLARNING RIVOJLANISHIDA GEOGRAFIK JOYLASHUVNI AXAMIYATI

Annotatsiya: *Gastritlarning rivojlanishida geografik joylashuv alohida ahamiyat kasb etadi. Turli hududlarda ekologik sharoit, iqlimiy omillar, aholining ovqatlanish odatlari, ichimlik suvi sifati va mikrobiologik tarkibi, shuningdek, infeksion agentlar, xususan Helicobacter pylori tarqalishi turlicha bo'lishi mumkin. Bu omillar gastritning uchrash chastotasi, klinik belgilari, morfologik shakllari hamda kechish og'irligiga sezilarli ta'sir ko'rsatadi. Masalan, ayrim mintaqalarda*

achchiq va yog‘li taomlarni ko‘p iste’mol qilish odati gastritning yuqori tarqalishiga olib keladi, boshqa hududlarda esa past sifatli ichimlik suvi yoki gigiyena sharoitlarining yomonligi muhim rol o‘ynaydi. Bundan tashqari, ijtimoiy-iqtisodiy omillar, tibbiy xizmat sifati va profilaktik dasturlarning mavjudligi ham kasallik rivojlanishida muhim ahamiyat kasb etadi. Shu bois, geografik xususiyatlarni chuqur o‘rganish, mintaqaviy risk omillarini aniqlash va ularni kamaytirishga qaratilgan individual profilaktika hamda davolash strategiyalarini ishlab chiqish dolzarb masala hisoblanadi. Bu yondashuv nafaqat gastrit tarqalishini kamaytirishga, balki bemorlarning hayot sifatini yaxshilashga ham xizmat qiladi.

Kalit so‘zlar: *gastrit, geografik joylashuv, ekologik omillar, ovqatlanish odatlari, Helicobacter pylori, ichimlik suvi sifati, profilaktika, davolash.*

Introduction

Gastritis is an inflammatory condition of the gastric mucosa and remains one of the most common gastrointestinal disorders worldwide. In recent decades, its prevalence has been increasing, posing a significant challenge for modern healthcare systems. The development of gastritis is influenced by multiple factors, including dietary habits, environmental conditions, infectious agents such as *Helicobacter pylori*, psychological stress, and genetic predisposition. At the same time, geographical location has a direct impact on the prevalence, clinical manifestations, and severity of gastritis. Differences in climate, drinking water quality, sanitation, and socio-economic conditions contribute to region-specific risk profiles. Therefore, considering geographical characteristics in the study, prevention, and treatment of gastritis is of great scientific and practical importance.

Literature Review and Methodology

In recent years, numerous studies have investigated the factors contributing to the onset and progression of gastritis. Particular emphasis has been placed on the role of *Helicobacter pylori* infection, dietary habits, drinking water quality, and climatic conditions. According to the World Health Organization and leading gastroenterology centers, the prevalence of gastritis varies considerably across regions. Research indicates that in Central Asia, Southeast Asia, and African countries, poor drinking water quality and inadequate sanitation play a major role, whereas in developed countries, dietary imbalances and psychosocial stress are predominant risk factors.

This study is based on a systematic review of the literature aimed at identifying the impact of geographical location on the development of gastritis. Sources were collected from PubMed, Scopus, and Google Scholar databases. The review included publications from 2010 to 2025, consisting mainly of clinical observations, epidemiological studies, and meta-analyses. Data were processed using methods of comparison, synthesis, and critical evaluation, which provided the basis for drawing scientific conclusions.

Results

The literature review revealed that the prevalence of gastritis varies significantly across different geographical regions. In Asian and African countries, the disease is more common, primarily due to poor drinking water quality, inadequate sanitation, and the high prevalence of *Helicobacter pylori* infection. In developed countries, gastritis is more often associated with unhealthy dietary habits, frequent consumption of fast food, alcohol intake, and smoking. Climatic conditions were also found to be important: chronic forms of gastritis are more common in colder regions, while acute inflammatory cases are more frequently reported in hot climates. Furthermore, populations with lower socio-economic status tend to experience more severe disease outcomes. These findings highlight the importance of considering geographical factors in the study, prevention, and management of gastritis.

Discussion

The findings demonstrate that although gastritis is a multifactorial disease, geographical location plays a crucial role in determining its prevalence and clinical course. Factors such as drinking water quality, climate, dietary composition, and sanitation levels significantly influence the occurrence and severity of the condition. In regions with lower socio-economic status, gastritis is more frequent and tends to have a more severe course, while in developed countries, dietary patterns and stress are the dominant contributors. These observations emphasize the importance of tailoring preventive and therapeutic strategies to regional characteristics. Moreover, the widespread prevalence of *Helicobacter pylori* infection remains a major global concern. Therefore, interventions aimed at improving drinking water quality, promoting healthy lifestyles, and implementing large-scale screening programs may substantially reduce the burden of gastritis worldwide.

Conclusion

Geographical location is an important determinant in the development of gastritis. The literature review indicates that environmental conditions, drinking water quality, climatic factors, dietary habits, and the prevalence of *Helicobacter pylori* vary widely across regions, significantly influencing the frequency and severity of the disease. In low-income countries, poor sanitation and unsafe water are the primary drivers of high prevalence, whereas in developed nations, diet and stress play a more prominent role. These findings highlight the necessity of developing region-specific preventive and therapeutic strategies. A geographically oriented approach may not only reduce the incidence of gastritis but also contribute to improving the overall health and lifestyle of the population.

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BROKKOLI- SOG'LIQ MANBAI VA UZOQ UMR GAROVI

Annotatsiya. *Ushbu maqolada brokkoli (Brassica oleracea var. italica) sabzavotining kelib chiqishi, morfologik xususiyatlari, tarqalish areali, oziqaviy va biologik ahamiyati yoritilgan. Brokkolining qadimgi Rimdan boshlab tarixi, uning Yevropa va Osiyo mamlakatlarida keng tarqalishi, shuningdek, O'zbekiston sharoitida yetishtirish istiqbollari tahlil qilingan. Maqolada brokkolining kimyoviy tarkibi, oqsil, uglevod, vitamin va mineral moddalarga boyligi, parhezbopligi, shuningdek, tibbiy va biologik ahamiyati haqida ma'lumotlar keltiriladi.*

Kalit so'zlar: *brokkoli, karamdoshlar oilasi, sabzavot ekini, oziqaviy qiymat, vitaminlar, mineral moddalar, parhez mahsulot, sog'lom ovqatlanish, foydali xususiyatlar.*

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BROCCOLI — A SOURCE OF HEALTH AND A GUARANTEE OF LONGEVITY

Abstract. *This article discusses the origin, morphological characteristics, distribution area, nutritional and biological importance of* ***broccoli (Brassica oleracea var. italica)****. The paper describes the historical development of broccoli from Ancient Rome, its spread across Europe and Asia, and the prospects for its cultivation in Uzbekistan. The chemical composition of broccoli — its richness in proteins, carbohydrates, vitamins, and minerals — is analyzed, along with its dietary and medicinal properties.*

Keywords: *broccoli, Brassicaceae family, vegetable crop, nutritional value, vitamins, minerals, dietary product, healthy nutrition, beneficial properties.*

Brokkoli – karamdoshlar oilasiga mansub, bir yillik o‘simlik, gulkaramning o‘zgargan turi hisoblanadi. Janubiy Italiya brokkolini vatani bo‘lib, qadimgi Rimda uni 2 ming yil oldin ham yetishtirilgan. Bu ekin Italiyadan Vizantiyaga, keyinchalik esa boshqa Yevropa davlatlariga keng tarqalgan. AQSHda karamning bu turi 1925 yildan beri ekib kelinadi va bugungi kunda maydoni gulkaramnikidan ham ko‘payib ketgan. Hozirgi vaqtda brokkoli yetishtirish Yaponiya, Italiya, Germaniya, Angliya, Fransiya, Kanada, Shvetsiya, Polsha, Rossiya, Ukraina va boshqa mamlakatlarda sezilarli darajada ko‘paygan. Mamlakatimizda brokkoli noan’anaviy, kam tarqalgan sabzavot ekinlariga kiradi. Uni ayrim havaskor sabzavotkorlar cheklangan miqdorda yetishtirib supermarket hamda bozorlarda sotmoqdalar. **Brokkoli – qadimiy zamonlardan iste’mol qilib kelinayotgan sabzavot hisoblaniladi.** Bu mahsulotning yovvoyi turi bo’lmagan: olimlarning aniqlashlaricha, karamning bu turi eramizdan oldingi V-VI asrlarda aniqlangan. Eramizdan oldingi I asrda qadimiy rim olimi Piliniy brokkoliga «xudo siylagan o’simlik» deya ta’rif bergan.

Qadimiy rimda bu sabzavot juda sevilib iste’mol qilinishiga qaramay, dunyoning boshqa nuqtalarida bu mahsulotning mavjudligi haqida hech kimda tasavvur ham bo’lmagan. 2 ming yil o’tib, Rimdan so’ng brokkoli haqida Qadimiy Gretsiyaliklar xabardor bo’lishgan. So’ng Vizantiyada (hozirgi Turkiya), undan keyin esa butun dunyoda tarqala boshlagan. **«Brokkoli»** atamasi faqat Rimda mashhur bo’lgan. Uni faqat Germaniyadan tashqari barcha mamlakatlarda «italyancha sarsabil» deb atashgan. Germaniyada esa uni «braun kopf» – qo’ng’ir bosh deb atashgan. O’sha paytdan beri bu karamning **200 dan ortiq turi** aniqlangan. Turining ko’pligiga qaramay, Rossiyada bu sabzavotning faqatgina 6 ta navi yetishtiriladi. Yaqinda olimlar uning yangi «Beneforte» degan navini yaratishdi. Bu karamda foydali, saraton xastaligini oldini oluvchi moddalar 3 hissa ko’p hisoblanadi.

Brokkoli karamini boshchalari va yosh poyalari yangiligicha va qayta ishlangan holda ishlatiladi. Ularni yosh shoxchalari qaynatilib, qovurilgan holda sho‘rvalarga solinganda juda mazali bo‘ladi. Turli taomlarga ishlatishdan oldin brokollini yo‘g‘on poyalari olib tashlanib, sho‘r suvda qaynatib olinadi. Uning yosh bargi va o‘zagi turli taomlar tayyorlashda foydalaniladi. Brokkolini yangi, yosh barglari mazasi ismaloq, bargli karamlar mazasiga tenglashtiriladi.

Brokkolidan ko‘plab taomlar tayyorlash mumkin. Jumladan, brokkoli solingan qo‘ziqorinli salat, o‘simlik yog‘i solinib tayyorlangan brokkoli salati va boshqalar. Uning mahsuloti boshqa karamlarga nisbatan tez hazm bo‘lishi bilan ajralib turadi. U yengil o‘zlashtiriladigan oqsilga boy (3,2–4,5%) bo‘lib, miqdoriga ko‘ra kartoshka, shirin jo‘xori hamda ismaloqdan ustun turadi. Undagi oqsil tarkibida antiskleritik modda va metionini (4mg/100 g) bo‘lishi organizmda xolesterinni ko‘payib ketishiga to‘sqinlik qiladi. Oqsili tarkibidagi noyob aminokislotalar mol go‘shtidagi lizin, izoleysindan, triftafon miqdori esa tuxumdagi oqsil tarkibidan kuchlidir.

Brokkoli karamida ko‘plab uglevodlar bo‘lib, uning poyalari qandga boy. Jami shakar miqdori 1,5–3,8 foizni tashkil etib, uning umumiy miqdorini 5–10 foizini saxaroza, 0,4–0,5 foizini kraxmal, 0,7–1,2 foizini kletchatka tashkil etadi.

Shuningdek brokkoli karami o‘zida ko‘plab mineral moddalarni mujassam etadi: 100 g quruq massasida kaliy – 490, kalsiy – 105, fosfor – 82 mg bo‘lishi, uning minerallarga boyligini ko‘rsatadi. Brokkoli gul to‘plamlarini tarkibida natriy tuzlari – 13,1, magniy – 31, yod – 12, temir – 1,3 mg, (100 g) miqdorda bo‘ladi.

Brokkoli tarkibida vitaminlar, pektin va yumshoq kletchatkani, xolin hamda metionin moddalarini, shuningdek, mineral tuzlar va boshqa biologik faol moddalari mutanosibligi turli yoshdagi insonlar uchun juda muhim parxez mahsulot ekanligidan dalolat beradi. Uning mahsulotidan nurlanish kasalliklarini davolashda samarali foydalanish mumkin.

Karamning bu turi boshchalari tarkibida yodning biologik shakllari mavjud bo‘lib, u qalqonsimon bezga bu elementni radioaktiv izotoplarini tushishiga to‘sqinlik qiladi. Shakllangan, iste’mol uchun tayyor karam boshchalaridagi changlar tibbiyotda qimmatli davolash mahsuloti sifatida ishlatiladi.

Brokkoli yosh bolalar, homilador ayollar hamda aterosklerozga moyil bo‘lgan keksalar uchun juda foydalidir.

Oziq-ovqatda brokkolini mustaqil iste’mol qilinishi erta qarish oldini oladi. Brokkoli karamini kelib chiqishi, morfologik belgilari va tashqi muhit omillariga bo‘lgan munosabati gulkaramga o‘xshashligi mamlakatimizda uni yetishtirish istiqbolli ekanligini ko‘rsatadi. Ekinni serhosil, mahalliy iqlim sharoitlariga moslashgan nav va duragaylarini tanlash va ularni yetishtirish texnologiyasi asosiy elementlarini ishlab chiqish sabzavot turlarini yanada ko‘paytirish imkonini beradi.

Brokkoli – karamning juda foydali va mazali turi bo’lib, bu sabzavot bir yoshgacha bo’lgan bolalarga qo’shimcha ovqat sifatida ham beriladi va «21-asr mahsuloti» deya ataladi. Yorqin rangdagi bu ajoyib sabzavot to’g’risida sizlarga 9 ta dalillarni keltirib o’tamiz.

5. Brokkoli **nisbiy kaloriyali mahsulot** hisoblanadi. Bunday mahsulotlarni hazm qilish jarayonida organizm mahsulotdagi mavjud kaloriyadan ham ko’proq kaloriya sarflaydi. Bu sabzavotning kaloriyasi 100gr mahsulotda 34 kKal ni tashkil qiladi.

6.Shuning uchun ham **brokkoli ozishni xohlovchi** insonlarga tavsiya qilinadi. Ko’pchilik parhez tutuvchilar, asosiy ovqatlari qatoriga brokkolini ham qo’shib iste’mol qiladi. Oxirgi vaqtlarda brokkoli karami Amerikada juda ommalashib ketgan: bir yilda 76 000 tonnagacha karam iste’mol qilinadi!

7. Bundan tashqari brokkoli inson organizmi uchun zarur bo’lgan ko’pgina **foydali moddalarni** saqlaydi. Uni superfud deb ham atashadi: brokkolida ko’p miqdordagi antioksidantlar, A, E и C, PP va B guruhi vitaminlari, mineral moddalar, oqsillar va uglevodlarni saqlaydi.

8. Aytgancha, **brokkolidagi mavjud oqsillar**, hayvonlardagi oqsillar bilan taqqoslaniladi. To’yimliligi borasida ular teng bo’lib, hazm qilish borasida esa ustun turishadi.

9. Brokkoli o’zidagi foydali xususiyatlarini yo’qotmasligi uchun ham uni **to’g’ri tayyorlash** kerak: yaxshisi uni bu’g’da pishirish, nomiga qovurib yoki duxovkada pishirib, xomroq holida iste’mol qilish kerak. Brokkolini juda лщэз pishirib yuborish yaramaydi: u biroz xom pishirilsa ham foydali ham mazalidir.

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COMPARATIVE CHARACTERISTICS OF MICROELEMENT STATUS IN ADOLESCENT GIRLS

Abstract. *The article presents data on the study of the microelement status of the blood in girls aged 11 to 17 years, depending on the phase of the menstrual cycle. A comparative characterization of the microelemental blood picture in girls and women of fertile age is provided. The results indicate that the level of ME in the blood of practically healthy girls fluctuates regularly, both in terms of age and the days of the menstrual cycle.*

Keywords: *microelements, adolescent girls, menstrual cycle, luteal phase.*

It is well known that during adolescence, the body actively grows, body weight increases, and the skeletal and muscular systems, as well as the nervous and endocrine systems, are formed, requiring more nutrients than at any other age. Microelements (ME) are important components of the human body, their role and significance are difficult to overestimate. They form the basis of comfortable life and the functioning of various processes in the body [2, 8, 12].

ME are chemical elements that are present in our body in very small quantities. These are the components of an ancient and complex physiological system that exist regularly in the evolution of a living organism and participate in the regulation of all vital functions, at all stages of their development [1, 4, 6]. The leading role in the study of microelements belongs to academician V. I. Vernadsky. He scientifically substantiated the impossibility of animal and plant life without microelements. These issues were further developed in the works of A. P. Vinogradov, A. I. Venchikov, A. O. Voynar, V. V. Kovalsky, G. A. Babenko, L. R. Nozdryukhina, and other scientists [3, 5,11].

Bioelements are part of 182 enzymes out of 660 known, participate in immunogenesis, are an integral part of hormones, contribute to the detoxification of toxic substances, regulate oxidation-reduction reactions, affect growth, development and reproduction, blood formation, vitamin metabolism, osmotic pressure, and the colloidal state of cellular proteins. The main sources of microelements are plant-based products that absorb elements from the soil and water [7, 9,10].

Purpose of the study

To study the microelement status of blood in "practically healthy" girls aged 11 to 17 years depending on the phase of the menstrual cycle.

To exclude the influence of existing extragenital diseases (EGD) on ME status, we tried to identify girls with minimal EGD and infectious pathology. It should be noted that during the study of patients, there were no exacerbations of chronic diseases.

Material and methods

The study was conducted on 27 girls aged 12 to 16 years, recognized as practically "practically" healthy. The control group consisted of 20 women of fertile age, who were also considered "practically" healthy. The study of ME blood composition was carried out at the Republican Center for Forensic Examination.

To determine ME, blood serum, erythrocyte samples were burned in concentrated nitric acid, aliquot was taken and diluted with 1% nitric acid to working concentrations, and precipitated by centrifugation. The microelement composition of the samples prepared by the method described above was determined on the AT 7500 a (Agilent 7500 a. inductively coupled Plasma Mass Spectrometer, Japan, 2021) device: gas-carrier argon, power 1310 W, integration time 0.1 s. The ME content in biological media is expressed in mcg%. Essential MEs - chromium, manganese, iron, cobalt, copper, zinc, selenium, molybdenum, iodine - were determined. Toxic - beryllium, aluminum, cadmium, mercury, lead. Blood sampling from patients was carried out in the morning hours, with simultaneous examination of the general blood count and hormones.

A comprehensive study of ME concentration in blood serum and erythrocytes during the follicular (7th day), ovulatory (14th day), and luteal (21st day) phases of the ovarian cycle was conducted. The study was conducted in all patients during the follicular (7-day), ovulatory (14-day), and luteal (21-day) phases of the ovarian cycle.

Results and their discussion.

The study results showed that the content of trace elements in the blood of conditionally healthy girls has its own characteristic features compared to similar ME indicators of women of fertile age (Table. 1.).

Table 1.

Comparative analysis of the microelement composition of blood in conditionally healthy girls and women of fertile age

ME	Adolescent Girls		Fertile-age women	
	Blood serum	Erythrocytes	Blood serum	Erythrocytes
Essential microelements				
Cr	56,7±2,4	66,2±4,8	71,8±5,3**	84,8±6,5***
Mn	11,2±0,9	23,4±2,1	17,4±1,1*	32,4±2,1**
Fe	136,4±9,3	48,3±3,1	142,4±9,8	74,6±5,6***
Co	5,3±0,4	17,3±1,3	8,4±0,72**	26,3±1,8***
Cu	154,8±12,4	120±8,6	152,6±11,3	164,7±12,4**
Zn	121±8,9	623±36,2	154,6±12,7*	942±63,4***
Se	14,1±0,63	18,6±0,9	8,1±0,62*	24,4±1,8**
Mo	1,2±0,09	1,1±0,08	1,3±0,09	2,1±0,1**
I	7,6±0,6	22,8±1,7	14,8±1,1***	37,4±2,4**
Ni	7,8±0,43	16,3±1,2	10,6±0,9*	22,3±2,1**
Toxic microelements				
Be	0,53±0,02	0,2±0,08	0,76±0,04*	0,36±0,02***
Al	253±24,6	268±33,1	448±28,3***	434±31,6***
Cd	23,6±1,9	26,7±3,1	30,6±2,4**	31,9±2,6**
Hg	0,31±0,08	0,22±0,02	0,47±0,02**	0,4±0,024***
Pb	30,6±2,8	23,1±1,8	42,6±3,1**	38,3±2,9***

Note: * - P <0.05; ** - P < 0.01 compared to the indicators of women of fertile age.

As can be seen from Table 1, a significant decrease in the concentration of essential MEs such as manganese, iron, cobalt, copper, zinc, molybdenum, and iodine (P<0.05 - 0.01) is observed. At the same time, the greatest decrease in the level of essential ME is observed in erythrocytes (P<0.001). This outcome of the obtained results is likely related to the age characteristics of the examined groups (Figure 1). Thus, correlation analysis revealed a close direct correlation between blood serum zinc concentration and estradiol levels in the girls' group (r=0.58). Moreover, the concentration of toxic ME also has a significantly reduced level in the group of conditionally healthy girls and in comparison with women of fertile age, both in blood serum and in erythrocytes (P<0.05 - 0.001). This outcome indicates the possibility of gradual accumulation of toxic ME in the human body.

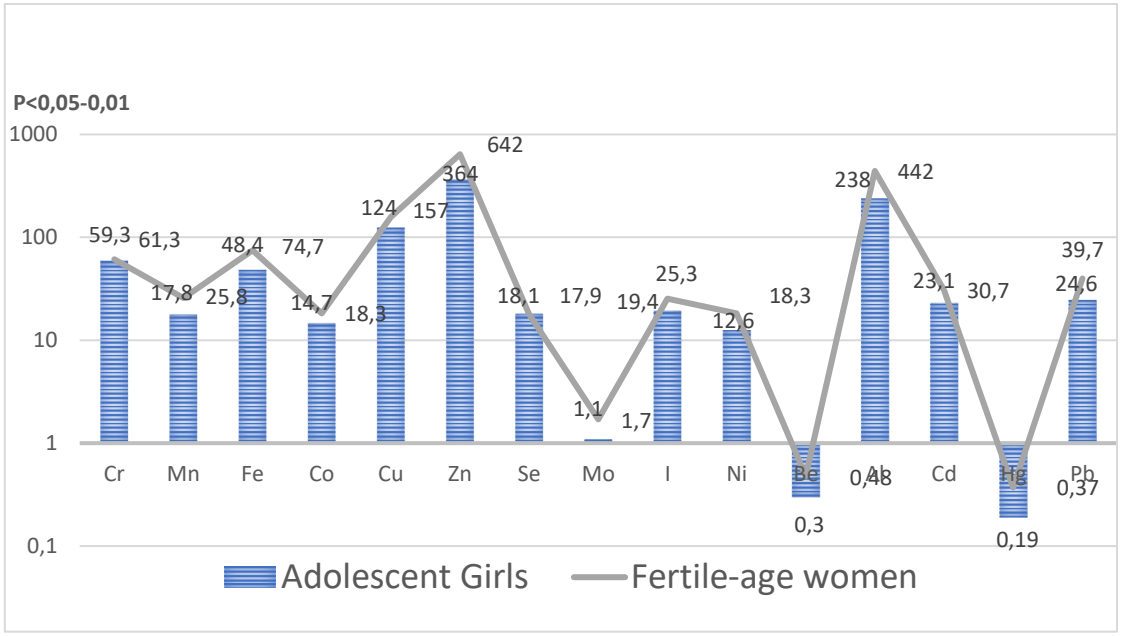


Figure 1. Comparative analysis of the content of trace elements in the blood of conditionally healthy girls and women of fertile age, mcg%

Studies have shown that significant changes in the ME status of the blood in girls are observed depending on the day of the menstrual cycle. The level of many essential ME increases on the 14th day of the menstrual cycle, which begins to decrease on the 21st day of the menstrual cycle, reaching a maximum decrease by the 1st-3rd days of the cycle.

Table 2

Dynamics of blood microelement composition in healthy girls depending on the day of the menstrual cycle

ME	Menstrual cycle days							
	1-3 days		7 th day		14 th day		21 th day	
	Blood serum	Erythrocytes	Blood serum	Erythrocytes	Blood serum	Erythrocytes	Blood serum	Erythrocytes
Essential microelements								
Cr	56,7±2,4	66,2±4,8	58,1±3,6	65,3±4,5	71,7±6,3**	67,2±4,1	60,3±3,9*	65,6±5,1
Mn	11,2±0,9	24,3±2,1	13,3±0,9	24,1±2,1	16,8±1,3*	25,3±1,9*	12,6±1,3	23,4±1,1*
Fe	136,4±9,3	48,3±3,1	128,6±11,3	51,6±4,8	138±11,6	55,3±4,1**	127,3±19,6	52,3±4,2*
Co	5,3±0,4	17,3±1,3	5,8±0,31	18,4±1,2	6,2±0,6	19,3±1,2*	6,0±0,56	17,2±1,8
Cu	154,8±12,4	120±8,6	121±9,6*	128,3±11,4	109±8,6***	131,4±12,1*	113,6±10,6**	128±10,3*
Zn	121±8,9	623±36,2	127,4±11,3	646±48,3	144,8±9,8**	778±54,6***	136,3±11,8	726,3±53,1**
Se	14,1±0,63	18,6±0,9	15,2±1,3	19,1±1,3	14,6±1,6	23,6±1,9*	12,3±0,9	17,6±1,1
Mo	1,2±0,09	1,1±0,08	1,1±0,08	1,3±0,09	0,9±0,008*	1,1±008	1,3±0,07	1,1±0,08
I	7,6±0,6	22,8±1,7	7,8±0,5	24,6±1,8	9,6±0,7**	28,6±2,1	8,3±0,6*	22,7±2,0
Ni	7,8±0,43	16,3±1,2	7,6±0,51	17,6±1,3	7,6±0,3	17,9±1,1*	7,3±0,3	17,1±1,3
Toxic microelements								
Be	0,53±0,02	0,2±0,08	0,51±0,032	0,22±0,09	0,5±0,05	0,24±0,018	0,49±0,04	0,25±0,019*
Al	253±24,6	268±33,1	268±18,3	236±18,6*	251±19,6	230±20,8**	273±26,3*	254±22,4
Cd	23,6±1,9	26,7±3,1	25,3±2,1	24,8±2,2	22,2±2,6*	24,1±1,9*	24,6±1,8	27,3±2,2
Hg	0,31±0,08	0,22±0,02	0,33±0,07	0,18±0,02	0,3±002	0,17±0,02*	0,3±0,02	0,19±0,01
Pb	30,6±2,8	23,1±1,8	28,6±2,0	24,6±1,9	26,8±1,8*	22,1±2,1*	29,6±2,2	23,8±2,1

According to the results of our studies, the iron content in the blood of girls was significantly lower compared to the indicators of women of fertile age ($P<0.01$). This was especially noticeable on days 1-3 of the menstrual cycle, both in blood serum (136.4±9.3 mcg%) and in erythrocytes (48.3±3.1 mcg%). However, starting from the 7th day of the menstrual cycle, the concentration of iron in the blood begins to increase, respectively: 128.6±11.3 and 51.6±4.8 mcg% ($P>0.05$), reaching its maximum by the 14th day of the menstrual cycle: 138.0±11.6 and 55.3±4.1 mcg% ($P<0.05$). Then, starting from the 21st day of the cycle, the iron level begins to

decrease (P>0.05). According to the study of iron concentration, this pattern was characteristic of both blood serum (127.3±19.6μg%) and erythrocytes (52.3±4.2μg%).

According to the correlation matrix data, there is a negative correlation between the level of iron in erythrocytes and the amount of cobalt (r=0.41; P<0.05). The detected low negative correlation between iron levels and cobalt concentration apparently indicates a certain antagonism of these MEs.

According to the results of our studies, the level of iodine in the erythrocytes of girls was on average 2.7 times higher compared to the blood serum indicators and fluctuated regularly depending on the day of the menstrual cycle (in blood serum 7.6±0.6 mcg%; and in erythrocytes 22.8±1.7 mcg%;P<0.05). K On days 1-3 of the menstrual cycle, there is a physiological deficiency of iodine in the blood as a whole. However, starting from the 7th day of the cycle, the blood iodine level begins to rise, reaching its maximum during the days of ovulation (blood serum 9.6±0.7 mcg% and erythrocytes 28.6±2.1 mcg%). And in the luteal phase of the ovarian cycle, the iodine concentration reaches its initial level (respectively: 8.3±0.6 and 22.7±2.0). At the same time, we did not reveal the peculiarities of fluctuations in the level of iodine in blood serum or erythrocytes. A positive correlation is observed between iodine and selenium (r=0.48; P<0.05) and copper (r=0.54; P>0.05), which indicates the important role of these MEs in the activity of the thyroid gland. Consequently, the participation of these ME in iodine metabolism is quite evident.

The concentration of manganese in the blood, according to our research, accumulates mainly in erythrocytes. In erythrocytes, the concentration of manganese remained relatively unchanged, while in blood serum, its level changes significantly depending on the day of the menstrual cycle. Thus, at the beginning of the menstrual cycle (1-3 days), the concentration of manganese in blood serum is 11.2±0.9 mcg%, which begins to increase from the 7th day of the cycle (13.3±0.9 mcg%). By the 14th day of the menstrual cycle, the manganese level reaches its maximum values (16.8±1.3 mcg%), then decreases towards the end of the cycle (12.6±1.3 mcg%). The same trend persists in erythrocytes, respectively: 24.3±2.1 mcg%, 24.1±2.1 mcg%, 25.3±5.9 mcg% and 23.4±1.1 mcg% (P<0.05). A positive correlation was noted between manganese concentration and copper levels (r=0.46; P<0.01), and cobalt (r=0.34; P<0.05), which likely indicates synergism of these ME.

According to our research results, girls' blood copper content accumulates mainly in plasma. In our observations, the plasma concentration of copper varies significantly depending on the day of the menstrual cycle. This was especially noticeable on days 1-3 of the menstrual cycle in blood serum (154.8 ±12.4 mcg%). However, starting from the 7th day of the cycle, the concentration of copper in the blood begins to decrease, respectively: 121.0±9.6;109.0±8.6 mcg% and 113.6±10.6 (P>0.05). Thus, at the beginning of the menstrual cycle (1-3 days), the concentration of copper in blood erythrocytes is 120.0±8.6 mcg%, which begins to increase from the 7th day of the cycle (128.3±11.4 mcg%). By the 14th day of the menstrual cycle,

the copper level reaches its maximum values (131.4±12.1µg%), then there is a decrease by the end of the cycle (128.0±10.3µg%).

The results of our studies show that the zinc content in the blood of girls is significantly lower compared to the indicators of women of fertile age (P<0.01). This was especially noticeable on days 1-3 of the menstrual cycle, both in blood erythrocytes (623.0±36.2 mcg%) and in plasma (121.0±8.9 mcg%). However, starting from the 7th day of the menstrual cycle, the concentration of zinc in the blood begins to increase, respectively: 646.0±48.3 and 127.4±11.4 mcg% (P>0.05), reaching its maximum by the 14th day of the menstrual cycle at 778.0±54.6 and 144.8±9.8 mcg% (P<0.05). Thus, at the beginning of the menstrual cycle (1-3 days), the concentration of copper in blood erythrocytes is 120.0±8.6 mcg%, which begins to increase from the 7th day of the cycle (128.3±11.4 mcg%). By the 14th day of the menstrual cycle, the copper level reaches its maximum values (131.4±12.1µg%), then there is a decrease by the end of the cycle (128.0±10.3µg%).

The results of our studies show that the zinc content in the blood of girls is significantly lower compared to the indicators of women of fertile age (P<0.01). This was especially noticeable on days 1-3 of the menstrual cycle, both in blood erythrocytes (623.0±36.2 mcg%) and in plasma (121.0±8.9 mcg%). However, starting from the 7th day of the menstrual cycle, the concentration of zinc in the blood begins to increase, respectively: 646.0±48.3 and 127.4±11.4 mcg% (P>0.05), reaching its maximum by the 14th day of the menstrual cycle at 778.0±54.6 and 144.8±9.8 mcg% (P<0.05). And in the corpus luteum phase, the selenium concentration reaches its initial level (respectively: 12.3±0.9 and 17.6±1.1). At the same time, we did not reveal the peculiarities of selenium fluctuations in blood serum or erythrocytes.

According to our research results, the cobalt level in erythrocytes in girls was 2.2 times higher on average compared to blood serum indicators and fluctuated regularly depending on the day of the menstrual cycle (in blood serum 5.3±0.4 mcg%; and in erythrocytes 17.3±1.3 mcg%;P<0.05). However, starting from the 7th day of the cycle, the level of cobalt in the blood begins to rise, reaching its maximum on the days of ovulation (blood serum 6.2±0.6 mcg% and erythrocytes 19.3±1.2 mcg%). And in the lutein phase, the cobalt concentration reaches its initial level (respectively: 6.0±0.56 and 17.2±1.1). At the same time, we did not reveal the peculiarities of fluctuations in the level of cobalt in blood serum or erythrocytes. Thus, studies have shown a significantly lower concentration of a number of essential MEs in practically healthy girls compared to similar indicators in healthy women of fertile age. Depending on the days of the menstrual cycle, the level of essential ME fluctuates regularly. Thus, starting from the 6-7th day of the menstrual cycle, the concentrations of iron, zinc, copper, selenium, and others begin to increase significantly, reaching their maximum by the 14th day of the menstrual cycle (P<0.05-0.001). Then, in the second phase of the cycle, the concentration of these MEs tended to decrease significantly (P<0.05-0.01). This situation, in our opinion, indicates the participation of these vital MEs in the ovulation process, and

possibly the menstrual cycle as a whole. The concentration of toxic ME also had a significantly reduced level in the group of conditionally healthy girls and in comparison with women of fertile age, both in blood serum and in erythrocytes (P<0.05 - 0.001).

This was especially noticeable on days 1-3 of the menstrual cycle (Fig. 3.9) in the example of aluminum, both in blood serum (253.0±1.9 mcg%) and in erythrocytes (268.0±33.1 mcg%). However, starting from the 7th day of the menstrual cycle, the concentration of aluminum in the blood begins to increase, respectively: 268.0±18.3 and 236.0±18.6 mcg% (P>0.05), and by the 14th day of the menstrual cycle, this indicator decreases to 251.0±19.6 and 230.0±20.8 mcg% (P<0.05). Then, starting from the 21st day of the cycle, the aluminum level gradually increases (P>0.05). This pattern was characteristic of both blood serum (273.0±26.3 mcg%) and erythrocytes (254.0±22.4 mcg%). According to the results of our studies, the amount of lead in the blood of girls (3.10-rasm) was significantly lower compared to the indicators of women of fertile age (P<0.01). On days 1-3 of the menstrual cycle, both in blood serum (30.6±2.8 mcg%) and in erythrocytes (23.1±1.8 mcg%). However, starting from the 7th day of the menstrual cycle, the concentration of lead in the blood begins to decrease, respectively: 28.6±2.0 and 24.6±1.9 mcg% (P>0.05), by the 14th day of the menstrual cycle, respectively. 26.8±1.8 and 22.1±2.1 mcg% (P<0.05). Then, starting from the 21st day of the cycle, the level of lead begins to increase (P>0.05). This pattern was characteristic of both blood serum (29.6±2.2μg%) and erythrocytes (23.8± 2.0μg%).

Thus, the concentration of toxic ME in the blood of practically healthy girls was significantly reduced compared to the same indicators of women of fertile age. This situation likely indicates the possibility of gradual accumulation of toxic ME in the human body.

Summarizing the results of studying the blood status of ME in practically healthy girls aged 11-17 and women of fertile age, it can be concluded that the level of ME in the blood of practically healthy girls fluctuates regularly, both in terms of age and the days of the menstrual cycle. This circumstance indicates the undoubted role of these vital ME in the human body, namely in the process of ovulation and the menstrual cycle as a whole.

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QISHLOQ JOYLARIDA KAMBAG‘ALLIKNI KAMAYTIRISHDA DAVLATNING XIZMAT KO‘RSATISH SOHASIGA BO‘LGAN TA’SIRI

Annotatsiya: *Ushbu maqolada qishloq joylarida kambag‘allikni qisqartirishda davlat boshqaruv organlarining xizmat ko‘rsatish sohasini samarali tashkil etishdagi ba’zi muammolari hamda ularning yechimlari bo‘yicha muallifning fikrlari keltirilgan. Bundan tashqari, kambag‘allikni qisqartirish bo‘yicha ham taklif va tavsiyalar keltirilib o‘tilgan.*

Kalit so‘zlar: *Kambag‘allikni kamaytirish, davlat xizmatlari, ijtimoiy dasturlar, ta’lim va kasb-hunarga tayyorlash, sog‘liqni saqlash xizmatlari, kichik biznesni qo‘llab-quvvatlash, xizmat ko‘rsatish sohasidagi innovatsiyalar, mahalliy boshqaruv, ijtimoiy himoya.*

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THE IMPACT OF THE STATE ON THE SERVICE SECTOR IN REDUCING POVERTY IN RURAL AREAS

Abstract: *This article presents the author's views on some of the problems of effective organization of public administration bodies in the field of service delivery in reducing poverty in rural areas and their solutions. In addition, proposals and recommendations are presented for poverty reduction.*

Keywords: *Poverty reduction, public services, social programs, education and vocational training, health services, small business support, service innovation, local governance, social protection*

Kirish:

O‘zbekiston Respublikasida mustaqillikdan so‘ng qishloq joylarida aholi bandligini ta’minlash va kambag‘allikni qisqartirish davlat siyosatining ustuvor yo‘nalishlaridan biri sifatida ko‘rilib kelinmoqda. Shu maqsadlarda xizmat ko‘rsatish sohasini rivojlantirish orqali kambag‘allikni qisqartirishga erishish asosiy yo‘nalishlardan biri bo‘lib kelmoqda. Chunki mehnat bilan ta’minlangan aholi o‘z daromadlarini oshirib, farovon hayot kechiradi. O‘zbekistonda qishloq joylarida aholi bandligini ta’minlash va kambag‘allikni qisqartirish borasida qabul qilingan dasturlar va strategiyalar davlat siyosatining muhim tarkibiy qismlaridan biri

hisoblanadi. So‘nggi yillarda xizmat ko‘rsatish sohasida iqtisodiy islohotlar amalga oshirilib, yangi ish o‘rinlari yaratishga qaratilgan chora-tadbirlar kuchaytirilgan. Buning natijasida, aholi bandligi darajasi oshib, kambag‘allik darajasi asta-sekin kamayib bormoqda. Ushbu jarayonni muvaffaqiyatli amalga oshirishda qishloq joylarida davlat xizmatlari, sog‘liqni saqlash xizmatlari, kichik biznesni qo‘llab-quvvatlash va ta’lim tizimining yaxshilanishi muhim rol o‘ynaydi.

Mamlakatimizda barcha sohalarda bo‘lgani kabi kambag‘allikni qisqartirish yo‘nalishida ham yaqin kelajak uchun ulkan rejalar qo‘yildi. Bunga birgina misol tariqasida “O‘zbekiston-2030” strategiyasida respublikamiz hududida 2026-yilga qadar kambag‘allikni 2022-yilga nisbatan 2 barobarga, 2030-yilgacha esa keskin qisqartirish, kambag‘allikka tushish xavfi mavjud 4,5 million aholi daromadini oshirish, ijtimoiy sheriklik asosida 500 ming malakali mutaxassis tayyorlash, 2030-yilga qadar iqtisodiyot hajmini 2 barobar oshirish va “daromadi o‘rtachadan yuqori bo‘lgan davlatlar” qatoriga kirish, yalpi ichki mahsulot hajmini 160 milliard dollarga va aholi jon boshiga daromadlarni 4 ming dollarga yetkazish kabi nihoyatda muhim marralarga erishish maqsad qilib olinganligini keltirish mumkin.[1] Bundan tashqari Respublikamiz qishloqlarida 2017-yildan beri kam ta’minlangan, kambag‘al, ijtimoiy himoyaga muhtoj fuqarolarni qo‘llab-quvvatlash maqsadida 20 dan ortiq Prezident farmon va qarorlari, 30 dan ortiq Vazirlar Mahkamasi qarorlari qabul qilindi. Olib borilayotgan islohotlarning natijadorligini tahlil qilish maqsadida Prezident boshchiligida bevosita mavzusi kambag‘allikni qisqartirish bo‘lgan 20 dan ortiq yig‘ilishlar, videoselektorlar o‘tkazildi. Shuningdek, kambag‘allikni qisqartirish bo‘yicha xorijiy davlatlarning ilg‘or tajribasini o‘rganish, soha ekspertlari o‘rtasida muammoni muhoma qilish maqsadida respublikamizda hukumat darajasida 2 ta xalqaro forum hamda 1 ta “Ko‘p o‘lchovli kambag‘allik bo‘yicha global muloqot” nomli xalqaro konferensiya o‘tkazildi.[2]

Adabiyotlar tahlili:

Yurtimizda qishloq joylarida kambag‘allikni qisqartirish bo‘yicha amalga oshirilayotgan islohotlarga hissa qo‘shish maqsadida bir qancha mahalliy olimlarimiz tomonidan mavzu yuzasidan ilmiy tadqiqot ishlari amalga oshirilgan. Mahalliy tadqiqotlar orasida O‘zbekiston olimlari, jumladan, X. Abdukarimov va Sh. Bo‘riyev kabi iqtisodchi olimlarning ishlarini qayd etish mumkin. Ularning tadqiqotlarida kambag‘allikni qisqartirish bo‘yicha davlat siyosati, iqtisodiy islohotlar va ijtimoiy dasturlar samaradorligi chuqur tahlil qilingan. Xususan, kambag‘allikka qarshi kurashda mahalliy tadbirkorlikni rivojlantirish va investitsiyalar jalb etishning ahamiyati alohida ta’kidlangan. Professor Abbos Tuykulov esa qishloq xo‘jaligini isloh qilish mamlakatning kambag‘allikni qisqartirish strategiyasida ham muhim o‘rin tutadi, ayniqsa aholining salmoqli qismi qishloq joylarda istiqomat qiladi deb ta’kidlaydi. Olim yerdan foydalanish siyosati, suv xo‘jaligi, qishloq xo‘jaligi mahsulotlaridan foydalanish borasidagi

[1] O‘zbekiston Respublikasi Prezidentining 2023-yil 11-sentabrdagi “O‘zbekiston - 2030” strategiyasi to‘g‘risidagi PF-158-son Farmoni

[2] https://herald.kokanduni.uz/index.php/public_html/article/download/1029/796/1572

islohotlar mahsuldorlikni oshirish va qishloqlar turmush farovonligini oshirishga xizmat qilishi, boshqaruv organlari tomonidan qo‘llab-quvvatlanadigan kooperativlar, kengaytma xizmatlari va qiymat zanjirini rivojlantirish kichik fermerlarni yirik bozorlarga integratsiya qilishda muhim ahamiyatga ega deb aytadi.[3] Ko‘rish mumkinki, bu olimlarning tadqiqotlarida qishloq joylarida kambag‘allikni qisqartirish bo‘yicha davlat siyosati, iqtisodiy islohotlar, ijtimoiy dasturlar va turli xil xizmat ko‘rsatish sohalari samaradorligi chuqur tahlil qilingan. Xususan, kambag‘allikka qarshi kurashda mahalliy tadbirkorlikni rivojlantirish va investitsiyalar jalb etishning ahamiyati alohida ta’kidlangan.

Xorijiy tadqiqotlar orasida P. Collier, J. Sachs, va A. Sen kabi olimlarning ishlari muhim o‘rin tutadi. P. Collierning "The Bottom Billion" asarida kambag‘allik chuqurlashishining sabablari va uning oldini olish yo‘llari tahlil qilingan. J. Sachs esa o‘zining "The End of Poverty" kitobida rivojlanayotgan davlatlar uchun iqtisodiy strategiyalarni ilgari suradi. A. Sen esa kambag‘allikni inson taraqqiyotiga ta’sir etuvchi omil sifatida ko‘rib chiqib, iqtisodiy imkoniyatlar va ta’limga kirish huquqining ahamiyatini ta’kidlaydi.

Kambag‘allik – bu nafaqat iqtisodiy, balki ijtimoiy muammo ham bo‘lib, u jamiyatning har bir qatlamiga ta’sir ko‘rsatadi. Qishloq joylarida kambag‘allikni kamaytirishda davlat xizmatlarining roli ayniqsa, sezilarli. Buning sababi, davlat xizmatlari orqali aholi turmush sharoitlarini yaxshilash, ish o‘rinlarini yaratish va ijtimoiy himoyani ta’minlash mumkin. Davlat xizmatlari aholi farovonligiga muhim ta’sir ko‘rsatuvchi ta’lim va kasb-hunarga tayyorlash sohasida muhim ahamiyatga ega. Chunki davlat tomonidan tashkil etiladigan qo‘shimcha ta’lim va kasb-hunarga o‘qitish dasturlari nafaqat yoshlarni, balki o‘rta yoshlilarni ham o‘zlashtirish imkonini beradi. Bu esa ularning iqtisodiy salohiyatini oshiradi va kam bo‘lsa ham munosib daromad olishlariga yordam beradi. Kambag‘allikni qisqartirishda yana bir muhim omillardan hisoblangan qishloq joylarida sog‘liqni saqlash xizmatlari kambag‘allikni kamaytirishda muhim rol o‘ynaydi. Chunki odamlar sog‘lom bo‘lsa, rivojlanishlari uchun ko‘proq imkoniyatlarga ega bo‘ladi. Davlat sog‘liqni saqlash tizimini yaxshilash orqali aholining umumiy farovonligini oshirishi mumkin. Sog‘lom avlod uchun kerak bo‘lgan tibbiy yordam va profilaktika xizmatlari, shuningdek, epidemiyalarning oldini olish choralari kambag‘allik bilan kurashishda ahamiyatli hisoblanadi.

O‘zbekistonning qishloq joylarida kambag‘allikni kamaytirish yo‘lida amalga oshirilayotgan islohotlarda xizmat ko‘rsatish sohasining roli tobora ortib bormoqda. Ushbu tahlil doirasida davlat tomonidan ko‘rsatilayotgan qo‘llab-quvvatlash choralari, jumladan moliyaviy, institutsional va infratuzilmaviy yordam shakllari, hamda ularning qishloq aholisining hayot darajasiga ta’siri o‘rganildi.

Davlat tomonidan xizmat ko‘rsatish sohasini rivojlantirish uchun ajratilayotgan subsidiya va imtiyozli kreditlar qishloq aholisi uchun yangi ish o‘rinlarini yaratishda muhim omil bo‘lib xizmat qilmoqda. Misol uchun, so‘nggi yillarda kichik tadbirkorlik va oilaviy biznesni rivojlantirish uchun ajratilgan

[3] https://openscience.uz/index.php/sciedu/article/view/7652/7025

mablag‘lar evaziga go‘zallik salonlari, texnik xizmat ko‘rsatish ustaxonalari, xizmat ko‘rsatish markazlari kabi infratuzilmalar barpo etildi. Bu esa bevosita aholi bandligini oshirishga xizmat qildi.

Davlat tomonidan tashkil etilgan "Ayollar daftari", "Temir daftar", "Yoshlar daftari" kabi ijtimoiy dasturlar orqali ehtiyojmand qatlam vakillari xizmat ko‘rsatish sohasida o‘z tadbirkorligini yo‘lga qo‘yish imkoniyatiga ega bo‘ldi. Bu kabi mexanizmlar yordamida qishloq ayollari va yoshlari o‘z faoliyatini boshlash bilan nafaqat o‘zini, balki atrofidagi insonlarni ham ish bilan ta’minlashga erishmoqda.

Tahlil natijalari shuni ko‘rsatmoqdaki, qishloq joylarida xizmat ko‘rsatish sohasida band bo‘lgan aholi daromad manbalarini diversifikatsiya qilish imkoniyatiga ega bo‘lmoqda. Ayniqsa, mavsumiy dehqonchilik daromadlariga qaramlikni kamaytirish, aholini yil davomida barqaror daromad bilan ta’minlash imkoniyati kuchaymoqda. Shu bilan birga, xizmat ko‘rsatish faoliyatining mahalliy bozor talablariga moslashuvi aholi ehtiyojlarini mahalliy darajada qondirishga xizmat qilmoqda. Internet tarmog‘ining kengayishi, onlayn xizmat ko‘rsatish imkoniyatlarining oshishi qishloq joylarda masofaviy xizmat ko‘rsatish, elektron savdo, onlayn konsultatsiyalar kabi yangi faoliyat yo‘nalishlarini paydo bo‘lishiga zamin yaratmoqda. Bu esa ayniqsa yoshlar orasida ish bilan ta’minlanishning muhim manbasiga aylanmoqda.

Xulosa:

Yakuniy natijalar shuni ko‘rsatadiki, davlatning xizmat ko‘rsatish sohasiga ko‘rsatgan qo‘llab-quvvatlovchi siyosati qishloq joylarida kambag‘allik darajasini sezilarli darajada kamaytirishga xizmat qiladi. Ammo bu boradagi ijobiy natijalarning barqarorligini ta’minlash uchun xizmat ko‘rsatish sifatini oshirish, kadrlar salohiyatini mustahkamlash, tadbirkorlikni yuritish uchun qulay muhit yaratishda tizimli ishlash talab etiladi. Bundan tashqari, mahalliy boshqaruv organlari va fuqarolik jamiyati institutlari ham qishloq joylarida xizmat sohasini rivojlantirishda faol ishtirok etishi zarur.

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XX-ASR 90-YILLARIDA MARKAZIY OSIYO XALQLARI TARIXIGA MUNOSABATLARNING TARIXIY-QIYOSIY TAXLILLARINING BA’ZI JIHATLARI

Annotatsiya: *XX-asr 90-yillarida Markaziy Osiyo xalqlari tarixiga munosabatlarning tarixiy-qiyosiy taxlillari borasida bir qancha ilmiy-tadqiqot ishlari olib borilmoqda. Markaziy Osiyoda millatlararo munosabatlar alohida ahamiyat kasb etadi va ko‘plab munozaralarga sabab bo‘lmoqda. Tadqiqot doirasida ko‘p millatli mintaqa etnosiyosatining muhim jihatlari haqida fikr-mulohazalar haqida ma’lumotlar beriladi.*

Kalit so‘zlar: *Markaziy Osiyo, tarix, millat, elat, millatlararo munosabatlar, titul millat, o‘troq, ko‘chmanchi, milliy siyosat.*

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SOME ASPECTS OF THE HISTORICAL-COMPARATIVE ANALYSIS OF THE RELATIONS TO THE HISTORY OF THE PEOPLES OF CENTRAL ASIA IN THE 90S OF THE 20TH CENTURY

Abstract: *In the 90s of the 20th century, a number of scientific and research works are being carried out on the historical and comparative analysis of the relations to the history of the peoples of Central Asia. In Central Asia, inter-ethnic relations are of particular importance and cause many discussions. Within the framework of the study, information is given about opinions about the important aspects of the ethnopolitics of the multi-ethnic region.*

Key words: *Central Asia, history, nation, people, inter-ethnic relations, title nation, settler, nomad, national policy.*

Jahon mintaqashunoslik va madaniy antropologiya yo‘nalishlarida turli mintaqalarni, xususan, Evrosiyo mintaqasining muayyan bir qismi bo‘lmish Markaziy Osiyoni har tomonlama o‘rganish dolzarb masalalardan biriga aylandi. Ayniqsa, bu hududni ijtimoiy-iqtisodiy rivojlantirish muammolari bugungi kunda katta e’tibor qaratilayotgan sohalardan biridir.

Bir tomondan dunyo xalqlari orasida ijtimoiy-siyosiy va iqtisodiy-madaniy jihatdan o‘zaro yaqinlashuv, ikkkinchi tomondan esa dunyoning yirik siyosiy kuchlari orasida hududiy ustunlikka da’vo qilish kabi bir-biriga qarama-qarshi yondashuvlar tobora kuchayib borayotgan bugungi kunda Markaziy Osiyo respublikalarida shakllanayotgan muhit mintaqashunoslik maktablari, geosiyosiy tahlilchilar e’tiborini tortmoqda. Mintaqa xalqlarining jahon xalqlari integratsiya bo‘lishi aynan shu jarayonlarning qanday kechishi va kelajagini qanday tartibda belgilab olishlariga bog‘liq. Umumjamiyat dunyoqarashini belgilash va uni jahon tarixi bilan uyg‘unlashtirish esa tarixiy voqeliklarga obektiv yondashuvni talab qiladi.

Markaziy Osiyo respublikalari orasida O‘zbekiston tarixchilar jamoasi mintaqa xalqlarining umumiy tarixini yozish, mintaqada kechgan tarixiy voqeliklarni yoritishda noxolislikka yo‘l qo‘ymaslik, qaysi millat qadimiy va tubjoy aholi, qaysisi esa kelgindi, kim o‘troq, kim esa ko‘chmanchi kabi biryoqlama yondashuvlarning oldini olish payti etib kelganini ilgari surib, bu masalada amaliy ishlarni boshlab yuborganliklari diqqatga sazovordir. Ayniqsa, respublikaning etakchi tarixchi, manbashunos va arxeolog olimlari bu kabi masalalarda ayrim qo‘shni respublikalarda bildirilayotgan noxolis yondashuvlarga allaqachon o‘z munosabatlarini bildirib ulgurishdi. YA’ni olimlarimiz bu kabi tortishuvlarning oxiri yo‘qligi, tarixni biryoqlama yoritish birlashishga emas, parokandalikka olib kelishini his qilgan holda Markaziy Osiyo xalqlari umumiy tarixini yozish payti kelganiga e’tibor berishlari tanlab olinayotgan mavzuning dolzarbligini yana bir karra isbotlab turibdi. Ushbu tadqiqot mavzusiga aloqador bo‘lgan ilmiy adabiyotlarni quyidagi ikki guruhga bo‘lib o‘rganish mumkin: 1) mustaqillik yillarida Markaziy Osiyo respublikalarida yaratilgan ishlar. 2) Xorijda nashr etilgan asarlar. SHuningdek, mintaqa xalqlari tarixini yoritishdagi yondashuvlar “pozitiv” va “negativ” xususiyati bilan ham ajralib turadi.

Birinchi guruhga kiruvchi adabiyotlar O‘zbekiston Respublikasining mustaqil taraqqiyoti davrida yaratilgan ilmiy tadqiqot ishlaridir. Istiqlol yillarida o‘zbekistonlik E. Rtveladze, A. Asqarov, A. Sagdullaev, SH. Kamoliddin, O‘. Mavlonov, B. Eshov, A. Xo‘jaev, A. Otaxo‘jaev, A. Malikov, G‘. Boboyorov, B. G‘oyibov, A. Kubatin kabi tarixchi, qadimshunos va elshunos olimlarning tadqiqotlarida bu masalaga u yoki bu darajada to‘xtalib o‘tilgan [1]. Ushbu tadqiqotchilar o‘rganilayotgan mavzuga to‘g‘ridan-to‘g‘ri to‘xtalmagan bo‘lsalarda, bir qator o‘rinlarda mintaqa xalqlari tarixining qadimgi va ilk o‘rta asrlar davri ijtimoiy-siyosiy va etnomadaniy jarayonlariga e’tibor qaratganlar.

Markaziy Osiyoning boshqa respublikalarida ham bu masalaga turlicha yondashilgan bo‘lib, Qozog‘iston, Qirg‘iziston va Tojikistonda nisbatan keng

ko‘lamli, Turkmanistonda esa birmuncha kam sonli izlanishlarning amalga oshirilganiga guvoh bo‘lish mumkin. Ular orasida tojikistonlik M. Isomatov, qozog‘istonlik K.Baypakov, A.Kamalovlar mintaqa xalqlarining qadimgi va ilk o‘rta asrlar davri tarixi, turk-sug‘d aloqalari kabi masalalarga ancha keng to‘xtalib o‘tishgan [2] .

Markaziy Osiyo xalqlari tarixining nazariy masalalari bo‘yicha Rossiya, Turkiya, Buyuk Britaniya, Fransiya, AQSH va boshqa xorijiy mamlakatlarda nashr etilgan tadqiqotlarda qisqacha to‘xtalib o‘tilgan. Ular orasida tarixchi va jamiyatshunos olimlar E. Ollvort, J. An Gross, A. Xaugen, A. Xalid, X. Komatsu, S. Abashinlarning [3] ishlari alohida ajralib turadi. Ushbu mualliflarning tadqiqotlari mazkur masalaga obektiv yondashilganligi, mahalliy tarixchilar orasidagi bahs-munozaralarga o‘z munosabatlarini bildirib o‘tganliklari bilan ahamiyatlidir. Mintaqashunos ushbu izlanuvchilar mintaqa xalqlari tarixining asosan yaqin o‘tmishini yoritgan.

Mintaqaning qadim va o‘rta asrlar tarixi bo‘yicha ham ko‘plab ilmiy izlanishlar olib borgan xorij tadqiqotchilari orasida yaponiyalik Y. Markvart, R. Fray, YO. YUtaka, ingliz N. Sims-Vilyams, fransuz F. Grene, E. de la Vessyer, rus P. Lurye, amerikalik A. Naymark va boshqalarning izlanishlari mintaqa xalqlari tarixining islomdan oldingi tarixini yoritishda o‘ziga xos o‘rin tutadi [4]. Ular orasida F. Grene va E. de la Vesyerlar ilk o‘rta asrlarda Sug‘d, xususan, Panch va unga qo‘shni hukmdorliklarda xoqonlik boshqaruvi masalasini ancha keng yoritganliklari diqqatga sazovordir. SHuningdek, N. Sims-Vilyams va YO. YUtaka sug‘diycha hujjatlarning tilshunoslik tomonlarini o‘rganar ekan ayrim o‘rinlarda turkiy va sug‘diy unvonlar, boshqaruv tizimi kabi masalalarga ham e’tibor qaratishgan [5] . Sug‘diy yozuvli manbalarda uchraydigan kishi ismlari bo‘yicha izlanishlar olib borgan P. Lurye esa ko‘plab turkiy unvonlarni ko‘rsatib bergan. Ushbu tadqiqotchilarning izlanishlari ham tanlab olinayotgan mavzuga bevosita emas, bilvosita aloqador bo‘lib, mintaqa tarixining muayyan bir davrlarini qamrab olgan.

YUqoridagi mualliflarning tadqiqot va asarlarida Markaziy Osiyoda mintaqa xalqlari tarixining yoritilishi masalasiga to‘xtab o‘tilgan bo‘lsa-da, bu borada umumlashtiruvchi maxsus tadqiqot amalga oshirilmagan. Bu esa tanlab olingan mavzuning dolzarbligini belgilaydigan omillardan hisoblanadi.

YUqoridagilardan kelib chiqib, olib borilayotgan tadqiqotning ilmiy yangiligi borasida quyidagilardan iboratligi belgilab olindi:

Markaziy Osiyoda tarixini yoritishda sinfiy yondashuvdan voz kechilgan holda ilmiy yangiliklar va yutuqlar qo‘lga kiritilgani, shu bilan birga, tarixiy voqeliklarga regional (mintaqa ko‘lamida) emas, izolatsiyalangan holda yoritish kabi biryoqlama yondashuvlar kelib chiqqani aniqlangan;

- mintaqa xalqlari tarixi bo‘yicha amalga oshirilgan tadqiqotlarning sezilarli bir qismida umumiy tarix tushunchasidan ko‘ra ko‘proq mahalliychilikka urg‘u berilgani – ayrimlarida mifologiya bilan real voqeliklar aralashtirib yuborilgani, o‘zlari ega bo‘lib turgan etnonimlarni “muqaddaslashtirish”, mintaqadagi boshqa

etnoslarga nisbatan bepisand yondashib, “yaqinda paydo bo‘lgan”iga urg‘u berish kabi hollar uchragani dalili;

- mintaqaning O‘zbekiston va Tojikiston respublikalarida o‘troqlik, Qozog‘iston, Qirg‘iziston kabi respublikalarida esa nomadizm masalasiga katta urg‘u berilishi, avtoxtonlik va etnik tarix masalasida farqli yondashuvlarning salbiy oqibatlari ko‘rsatib berilgan;

- keyingi yillarda mintaqa xalqlari tarixini yoritishda obektiv yondashuvlarning kuchayayotgani, Markaziy Osiyo respublikalarining ilg‘or fikrli tadqiqotchilari masalaga “yagona makon”, “yagona tarix”, “umumiy tarix – umumiy kelajak” tamoyillari asosida yondashilayotgani yagona mintaqaviy o‘zlik yaratishga intilgan tadqiqotlar ko‘payayotgani misolida isbotlangan.

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G'O'ZA HOSILDORLIGINI OSHIRISHDA KO'CHAT QALINLIGI VA CHILPISH TEXNIKASINING AHAMIYATI

Annotatsiya. *Ushbu maqolada ingichka tolali g'o'za navining hosildorlik ko'rsatkichlari o'rganilgan. G'ozaning hosildorlik koeffitsienti, hosil berish koeffitsienti va hosildorligi ko'rib chiqilgan.*

Kalit so'zlar: *O'sishi, rivojlanish, g'oza o'simligi, ko'chat qalinligi, hosildorlik ko'rsatkichlari, hosildorlik koeffitsienti.*

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THE IMPORTANCE OF PLANT DENSITY AND PINCHING TECHNIQUE IN INCREASING COTTON PRODUCTIVITY

Abstract. *This article examines the yield indices of fine-fiber cotton varieties. The productivity coefficient, yield coefficient, and cotton yield are considered.*

Keywords. *Growth, development, cotton plant, shoot thickness, yield indices, yield coefficient.*

Ma'lumotlariga ko'ra, paxta butun dunyoda daromad va kasb manbai hisoblanib, 100 ta davlatda 32 million gektar maydonda yetishtiriladi. O'tgan 60 yil davomida ekin maydoni o'zgarmasada, hosildorlik oshib borgan. 80 ga yaqin davlatda paxta yetishtirilib, jahon ekin maydonlarining atigi 2,5% ni tashkil qilgan. 2017-yil avgustidan 2018-yilning iyuliga qadar global paxta yetishtirish qiymati taxminan 50 milliard AQSh dollarini tashkil etgan[10].

N. Mahmudov tomonidan Andijon viloyati sharoitida "Sulton" va "O'zPITI-201" g'o'za navlarining hosil to'plash jarayonlariga ko'chat qalinliklarini ta'siri o'rganilganda, 90x12-1 ekish tizimida "Sulton" navi gektariga 95 ming tup, "O'zPITI-201" navi 110 ming tup/ga bo'lganda yuqori natijalar olingan.

I. Bo'riev, B. Tillabekovlar tomonidan Qashqadaryo viloyatining tipik bo'z tuproqlari sharoitida g'o'zaning o'rta tolali Namangan-77, Buxoro-6, S-6530 va Mehr navlari paxta tolasining texnologik xususiyatlariga ko'chat qalinliklarini ta'siri o'rganilganda, ko'chat qalinligi 90 ming tup/ga dan 120 ming tup/ga gacha o'zgarishi bilan navlarni paxta tolasining texnologik xususiyatlariga ijobiy ta'sir etgani va tolani chiqishi biroz pasayganligi kuzatilgan. Shuningdek, I. Bo'riev [3]

Namangan-77, Buxoro-6, S-6530 va Mehr navlaridan yuqori paxta hosili (36,8; 38,2; 37,4 va 38 s/ga) hamda sifatli tola olish uchun ko'chat qalinligi 120 ming tup/ga bo'lishini tavsiya etgan.

S. Rahmonqulov va boshqalar tomonidan olib borilgan tajribada tuproq namligi ChDNS ning 65-70-65% da sug'orilgan, ko'chat qalinligi 90-100 ming tup/ga bo'lgan variantlarda ko'chat qalinligi 120-130 ming tup/ga saqlangan variantlarga nisbatan paxta hosili 4,9-6,5 s/ga yuqori bo'lgan[6].

S. Boltaev va boshqalarning tadqiqotlarida "ST-1651" g'o'za navini sug'orish tizimi 0-2-0 da, ma'danli o'g'itlar me'yori N-230; R-160; K-115 kg/ga qo'llanilganda hosildorlik ko'chat qalinligi gektariga 80-90 ming tup bo'lganda 27,9 s/ga, gektariga 110-120 ming tup qoldirilganda esa 31,7 s/ga ni tashkil qilgan[7,4,8].

Qashqadaryo viloyati sharoitida T. Rajabov tomonidan olib borilgan tajribada "Buxoro-102" g'o'za navi turli sho'rlangan tuproqlarda parvarishlanganda ko'chat qalinligi o'rtacha sho'rlangan tuproqlarda 85,0-85,7 ming tup\ga; kuchsiz sho'rlanganda 81,3-82,8 ming tup/ga; o'rtacha sho'rlanganda esa 74,3-75,8 ming tup/ga bo'lib, amal davri oxirida sho'rlanishlar bo'yicha 1,2; 2,1 va 2,2 foizga kamayganligi kuzatilgan

I. Vasilchenkoning fikricha 108-F navi uchun 70 sm qator oralig'ida maqbul ko'chat qalinligi 100-120 ming tup/ga bo'lib, ko'chat sonining bu me'yordan oshishi o'simlikning rivojlanishiga salbiy ta'sir ko'rsatadi.

R. H. Peebles, G. T. Den Harton va boshqalarning tadqiqotlarida, AQSh ning sug'oriladigan maydonlarida paxta hosildorligi 100 sm qator oralig'ida uya orasi 5-15 sm bo'lganda uya orasi 30-41 sm bo'lganga nisbatan yuqori bo'lishi kuzatilgan.

Surxondaryo viloyatining taqir o'tloqi tuproqlari sharoitida 2018-2020 yillarda o'tkazilgan tajriba ma'lumotlariga ko'ra, o'rta tolali g'o'zaning ko'chat qalinligi nazariy ko'chat soni 90-100 ming tup/ga bo'lganda o'rtacha 95,7-96,0 ming tup/gani; 110-120 ming tup/ga bo'lganda o'rtacha 116,5-117,1 ming tup/gani; ingichka tolali g'o'zaning nazariy ko'chat soni 120-130 ming tup/ga bo'lganda o'rtacha 124,5-124,8 ming tup/gani; 140-150 ming tup/ga bo'lganda o'rtacha 146,7-146,9 ming tup/gani tashkil etdi. Variantlar bo'yicha ko'chat qalinligi bir-biridan sezilarli farq qilmadi.

G'o'zani yagona qilishdan boshlab paxta terimigacha bo'lgan davr mobaynida noqulay ob-havo sharoiti, zararkunanda va kasalliklarning ta'sirida hamda kultivatsiya va chopiq o'tkazish, egat olish vaqtida o'simlikning shikastlanishi natijasida g'o'za tuplari 3,5-5,5 ming tupgacha nobud bo'lishi aniqlangan. Amal davri oxirida olingan ma'lumotlarga ko'ra, o'rta tolali g'o'zaning ko'chat qalinligi o'rtacha 92,3-92,5 va 111,1-111,6 ming tup/gani, ingichka tolali g'o'zaning ko'chat qalinligi o'rtacha 120,6-120,9 va 141,6-141,9 ming tup/gani tashkil etib, amal davri boshiga nisbatan gektariga 3,5-5,5 ming tupgacha kamayganligi kuzatildi. Amal davri oxiri ko'chat soni ko'proq bo'lgan variantlarda ko'chatlarning nobud bo'lishi biroz ko'proq bo'ldi.

Amal davri oxirida ko’chatlarni nobud bo’lishiga ko’chat qalinligini ta’siri kuzatilib, ko’chat soni oshib borishi bilan ko’chatni nobud bo’lishi ham 1,7-2,0 ming tupgacha oshib borishi kuzatildi. Ya’ni, o’rta tolali g’o’za navida nazariy ko’chat soni 90-100 ming tup/ga bo’lganda amal davri oxirida ko’chatlarni nobud bo’lishi gektariga 3,5-3,7 ming tup bo’lsa, nazariy ko’chat soni 110-120 ming tup/ga bo’lganda nobud bo’lgan ko’chatlar 5,3-5,5 ming tup/ga bo’lganligi kuzatildi.

Ingichka tolali g’o’za navida ham amal davri oxirida nobud bo’lgan ko’chat soni 3,9-5,2 ming tup/ga bo’lib, “Surxon-103” g’o’za navi nazariy ko’chat soni gektariga 120-130 ming tup bo’lganda nobud bo’lgan ko’chatlar soni 3,9-4,0 ming tup/ga bo’lgan holda ko’chat qalinligi gektariga 10-20 ming tupga oshirilishi bilan nobud bo’lgan ko’chatlar soni ham 1,0-1,3 ming tup/ga oshib 5,0-5,2 ming tup/ga ni tashkil etdi.

Demak, Surxondaryo viloyatining taqir o’tloqi tuproqlari sharoitida o’rta va ingichka tolali g’o’za navlari maqbul ko’chat qalinligida parvarishlanganda, g’o’zaning o’sish va rivojlanishi normal me’yorda bo’lishi, hashorat va kasalliklarga chidamliligi oshishi hisobiga amal davri oxirida ko’chatlarning nobud bo’lishi kamroq bo’lib mo’l paxta hosili olinadi.

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G'O'ZANING BIOMETRIK KO'RSATKICHLARI

Annotatsiya. *Ushbu maqolada ingichka tolali g'o'za yetishtirish bo'yicha olib borilayotgan ilmiy tadqiqotlari natijalari keltirilgan. Istiqbolli navlarning biometrik va xosildirlik ko'rsatkichlari o'zaro taqqoslangan*

Kalit so'zlar: *g'o'za navlari, biometrik ko'rsatkichlar, xosildirlik ko'rsatkichlari, entojean, 1000 dona chigit vazni*

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BIOMETRIC INDICATORS OF COTTON

Abstract. *This article presents the results of scientific research on the cultivation of fine fiber cotton. Biometric and fertility indicators of promising varieties were compared.*

Keywords. *Cotton varieties, biometric indicators, productivity indicators, entogene, 1000 seed weight*

So'nggi yillarda O'zbekiston Respublikasi hududida ekish uchun tavsiya etilgan qishloq xo'jalik ekinlari Davlat reestriga G. hirsutum L turiga mansub o'rta tolali g'o'za navlari bilan birgalikda G. barbadense L turiga mansub ingichka tolali g'o'za navlari ham kiritilmoqda. Xususan, Vazirlar Mahkamasining 2020 yil 30 yanvardagi 47-sonli qaroriga binoan ingichka tolali g'o'zaning "istiqbolli nav" sifatida ekib kelinayotgan navlarini ularning ishlab chiqarishdagi ko'rsatkichlaridan kelib chiqqan holda O'zbekiston Respublikasi hududida ekish uchun tavsiya qilingan qishloq xo'jaligi ekinlarining davlat reestriga kiritish belgilangan bo'lib, Qishloq xo'jalik ekinlari navlarini sinash markazining 27.12.2019 yildagi 41-sonli qarori bilan Surxon-14, Surxon-16, Surxon-103 navlari Surxondaryo viloyati bo'yicha Davlat reestriga kiritildi.

Bu esa o'z navbatida ingichka tolali navlar orasida ham raqobatning kuchayishiga, pirovard natijada esa hosildorlik, tola sifati, zararkunandalarga bardoshlilik singari qimmatli xo'jalik belgilarini o'zida mujassamlantirgan g'o'za navlari yaratilishiga asos bo'ladi.

G'o'zaning bosh poyasi va monopodial shoxining o'sishini to'xtatish maqsadida o'sish nuqtasini yulib tashlash chilpish nomi bilan yuritilib, yuqori

hosildorlikka erishishda o'ta muhim agrotexnik tadbirlardan biri hisoblanadi. Mazkur tadbir o'z muddatida va sifatli amalga oshirilganda hosil elementlarini to'kilishining oldi olinishi, to'liq ko'saklarning ko'proq shakllanishi va erta pishib yetilishi, paxta hosilining gektariga 3-4 sentnerga ortishi va tola sifatining yuqori bo'lishiga olib keladi. Ko'p yillik ilmiy tadqiqotlar asosida, O'zbekistonda 1939 yildan boshlab hukumatning maxsus qarori bilan chilpish g'o'za agrotexnikasida bajarilishi lozim bo'lgan agrotadbir sifatida kiritilgan.

Chilpish o'z vaktida, to'g'ri va sifatli o'tkazilganda hosil elementlari kam to'kiladi, g'o'zaning o'sishi va rivojlanishi 7-8 kundan10 kungacha tezlashadi, 3-4 dona ko'prok ko'sak hosil bo'ladi, bitta ko'sak paxtasining vazni 0,3-0,5 g ortadi, hosildorlik 3-5 sentnerdan 8 sentnergacha oshadi, paxtani 1-2 terimda to'liq terib olish bilan birga tola sifati 25-30 foizga yaxshilanadi, chigit vazni xam ortadi, moydorligi 1-2 foizga oshadi, ko'sak qurti bilan zararlanishi 50-60 foizga kamayadi [6,8,9].

Ma'lumotlariga ko'ra, Respublikamizda Sojean, Entojean preparatlari g'o'za vegetatsiyasi (shonalash, gullash, hosil tugish) davrida uch marta 15+45+90 g/ga me'yorda ishlov berilganda yoki g'o'zada 12-13 hosil shoxi to'planganda 100-110 g/ga me'yorda, Dalpiks1,0-1,5 l/ga, Piks 1,5-2,0 l/ga me'yorlarda g'o'zani sug'orishdan 5-7 kun avval yoki keyin sepilganda qo'lda chilpishga hojat qolmaydi.

G'o'za butun vegetatsiya davomida ko'plab hosil elementlarini to'plashi va gektaridan 150-200 s gacha hosil olish mumkin. Lekin, turli tabiiy va antropogen sabablarga ko'ra hosil elementlarini to'liq saqlab qolishning imkoniyati yo'q. F. Teshaev va boshqalar tomonidan hosil elementlarining to'kilishiga ko'chat qalinligi va chilpishni ta'siri o'rganilganda, O'zPITI-202 g'o'za navida 100-110 ming tup/ga qoldirilgan fonda, eng kam hosil elementlari to'kilgan variant 13-14 hosil shoxlarida chilpish o'tkazilganda olinib bu 6,6% ni, chilpilmagan variantga nisbatan esa 7,1% ga kamroq to'kilgani aniqlangan.

Chilpishning kechiktirilishi, sifatsiz va e'tiborsizlik bilan chala o'tkazilishi yoki o'tkazmaslik oqibatida paxta hosili 20-25% kamayib, pishib yetilishi 10-15 kungacha kechikib, ko'saklari kichrayib, vazni ham kamayadi, g'o'za serbarg bo'lib, barglar ko'payib hashoratlarni o'ziga ko'proq jalb etadi.

Paxtachilikda mahsulot hajmini ko'paytirish, sifatini yaxshilash ko'p jihatdan suv va mineral o'g'itlar bilan o'z vaqtida ta'minlash, g'o'zani hosilga o'tkazish maqsadida maqbul muddatlarda chilpish o'tkazishga bog'liq. Sh. Raxmonov tajribasida g'o'zani 14-15 hosil shoxida chilpish o'tkazilganda ko'saklar soni 11,1-12,2 donagacha bo'lib, yuqori natijalarga erishilgan.

Parvarishlanayotgan g'o'za navlariga defoliantlarni qo'llashda g'o'zada chilpish o'tkazish muddatlari va usullariga bog'liq holda ishlab chiqish muhim masala hisoblanadi. X. Abduraxmonov va boshqalar tavsiyasiga ko'ra, g'o'za 13-14 hosil shoxlaganda kimyoviy chilpish o'tkazilganda defoliantlar samaradorligi optimal darajada bo'ladi.

X. Egamov va boshqalarni ta'kidlashicha, "Andijon-35" navini chilpish muayyan maydondagi g'o'zaning ko'chat qalinligini hisobga olib o'tkazish kerak.

Ko’chat qalinligi gektar hisobiga 80-90 ming tup bo’lganda bir tup o’simlikla 14-15 dona hosil shoxi, 90-100 ming tup bo’lganda 13-14 dona hosil shoxi, 100-120 ming tup bo’lganda esa 12-13 dona hosil shoxi paydo bo’lganda chilpish o’tkazish ma’qul bo’lib, g’o’zaning ushbu navi ilmiy tavsiyalarga rioya qilingan holda parvarishlansa gektaridan 40-45 sentner sifatli paxta hosili yetishtirish mumkin.

Bir ko‘sakdagi paxta vazniga boshqa omillar qatori ko‘chat qalinligini ta’siri aniqlanib, o‘rta tolali “Buxoro-102” g‘o‘za navi gektariga 90-100 ming tup joylashtirilganda bir ko‘sakdagi paxta vazni 1-terimda 5,0-5,9 g ga teng bo‘lgan bo‘lsa, ko‘chat qalinligi 10-20 ming tup/ga ga oshirilganda 4,5-5,5 g bo‘lib, 0,4-0,5 g gacha kamayganligi kuzatildi.

Bir ko‘sakdagi paxta vazniga ko‘chat qalinligi bilan bir qatorda chilpish usullarini ham ta’siri kuzatilganda, “Buxoro-102” g‘o‘za navi gektariga 90-100 ming tup qo‘chat qalinligida turli chilpish usullarida parvarishlanganda, yuqori ko‘rsatkich Entojean preparati bilan kimyoviy chilpish o‘tkazilgan variantda 5,9 g ga teng bo‘lib chilpish o‘tkazilmagan nazorat variantdan 0,9 g hamda qo‘lda chilpish o‘tkazilgan variantdan 0,5 g gacha ko‘p bo‘ldi

Ingichka tolali “Surxon-103” g‘o‘za navi 120-130 ming tup/ga bo‘lganda bir ko‘sakdagi paxta vazni 3,2-3,6 hamda 140-150 ming tup/ga da 2,8-3,2 g bo‘lib, ko‘chat soni oshishi bilan 0,3-0,4 g gacha kamayib borgan. “Surxon-103” g‘o‘za navi gektariga 120-130 ming tup ko‘chat fonida turli chilpish usullarida parvarishlanganda yuqori natija Entojean qo‘llanilgan variantda (3,6 g) kuzatilgan.

O‘rta tolali “Buxoro-102” g‘o‘za navida 1000 dona chigit vazni 3 yilda o‘rtacha 118,7-122,4 g bo‘lib, gektariga 90-100 ming tup ko‘chat bo‘lganda 120,6-122,4 g, 110-120 ming tup/ga ko‘chat qalinligida 118,7-120,5 g bo‘lib, ko‘chat soni gektariga 10-20 ming tup/ga ga oshirilganda 1000 dona chigit vazni 1,9 g gacha kamaygan.

Ingichka tolali “Surxon-103” g‘o‘za navining 1000 dona chigit vazni 3 yilda o‘rtacha 124,6-120,6 g bo‘lib, o‘rta tolali “Buxoro-102” navi 1000 dona chigit vaznidan 2,0-2,7 g gacha ko‘p bo‘ldi. Bu navda ham ko‘chat soni oshishi bilan 1000 dona chigit vazni kamayib borishi kuzatilgan. Ingichka tolali “Surxon-103” navi gektariga 120-130 ming tup bo‘lganda, 1000 dona chigit vazni 122,6-124,6 g bo‘lib, chilpish o‘tkazilmagan variantda 1000 dona chigit vazni 122,6 g, qo‘lda chilpish o‘tkazilganda 123,4 g va Entojean qo‘llanganda nazorat variantiga nisbatan 2,0 ga ko‘p bo‘lib, 124,6 g ni tashkil etgan.

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SHAHARLAR ATMOSFERA HAVOSI IFLOSLANISHINI O‘RAGNISHNING AHAMIYATI

Annotatsiya. *Ushbu maqola Urganch shahri atmosfera havosi ifloslanishini kartografik tahlil qilishni o‘rganishga qaratilgan markazlar, institutlar va tadqiqotlarning qisqacha sharxiga asoslangan.*

Kalit so‘zlar: *Havo ifloslanishi, xalqaro markazlar, $PM_{2.5}$, PM_{10}, CO, NO_2, SO_2.*

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THE IMPORTANCE OF STUDYING AIR POLLUTION IN URBAN AREAS

Abstract. *This article is based on a brief review of centers, institutes, and studies aimed at studying the cartographic analysis of atmospheric air pollution in the city of Urgench.*

Keywords: *Air pollution, international centers, $PM_{2.5}$, PM_{10} ,CO, NO_2, SO_2.*

Shaharlar atmosfera havosining ifloslanishi dunyo miqyosida jiddiy ekologik xavf darajasiga yetib ulgurgan. Respublikamiz poytaxti Toshkent shahrining oxirgi oylarda dunyoning atmosfera havosi eng ifloslangan shaharlar reytingida yetakchilik qilishi ushbu mavzuning dolzarbligini ko‘rsatadi. Ushbu masala bo‘yicha dunyoda ko‘plab ilmiy tadqiqot institutlari va markazlari bir qancha tadqiqotlar olib bormoqdalar.

Jumladan, Atrof-muhit fanlari tadqiqotlari kooperativ instituti (CIRES, AQSh)[4], Norvegiya atmosfera havosi tadqiqotlari instituti (NILU, Norvegiya)[5],

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Hindiston tropik meteorologiya instituti (IITM, Hindiston)[6], Maks Plank kimyo instituti (MPI, Germaniya)[7], Atmosfera tadqiqotlari kooperativ instituti (CIRA, AQSh)[8], Respublika atmosfera havosini muhofaza qilish ilmiy tadqiqot markazi (RCA, Qozog‘iston)[9], Cape Grim bazaviy atmosfera havo ifloslanishi stantsiyasi (CGBAPS, Avstraliya)[10] va hakozalar.

Respublikamizda ham bunday ilmiy-tadqiqot markazlari mavjud. Masalan, O‘zbekiston Respublikasi Fanlar akademiyasining Atmosfera havosini muhofaza qilish instituti[11], O‘zbekiston Respublikasi Ekologiya, atrof-muhitni muhofaza qilish va iqlim o‘zgarishi davlat qo‘mitasi[12], Gidrometeorologiya ilmiy tadqiqot instituti[13] shular jumlasidandir.

Yuqoridagilar bilan bir vaqtda sharlar atmosfera havosining ifloslanishi ko‘plab olimlar va izlanuvchilar tomonidan o‘rganilmoqda: Yang va boshqa (2011) olimlarning tadqiqotlarida Xitoyning turli shaharlari atmosfera havosi ifloslanishi kartografik tahlil qilingan. Olingan natijaga ko‘ra $PM_{2.5}$ tarkibi shaharlar va geografik mintaqalar bo‘yicha juda katta farq qilgan. Shimoliy va g‘arbiy Xitoydagi shaharlarda konsentratsiyalar juda yuqori (>100 μg/m³), butun tarkibda organik moddalar, karbon, cho‘kindi moddalari va sulfat-nitrat-ammoniy guruhlari katta ulushni egallaganligi ham aniqlangan. Ushbu natijalarni olishga jamoat transport vositalariga qo‘yilgan maxsus moslamalardan keng foydalanilgan.

Kazem Naddafi va boshqalar (2012) o‘zlarining maqolasida Tehron atmosfera havosi ifloslanishini PM_{10}, SO_2, NO_2 va O_3 bo‘yicha tahlillar olib borishgan. Izlanishlar natijasi Tehron atmosfera havosi ifloslanishi shahar aholisi o‘limi, yurak va nafas olish kasalliklari bo‘yicha eng katta ta’sirga ega bo‘lgan va 8,700,000 kishidan iborat aholida bir yil ichida taxminan 2,194 kishi o‘lim sodir bo‘lganligini kuzatilgan. Ushbu natijalarni olishda dala tadqiqoti namunalari, statistik ma’lumotlardan foydalanilgan.

Zhen Cheng va boshqalar (2016) 45 ta global megashaharlarni atmosfera havosi ifloslanishini o‘rganishgan. Tadqiqot natijasida atmosfera havosi ifloslanishi holati kuz va qish oylarida ortishi kuzatilgan. Unda ifloslantiruvchi changlar tarkibida sulfat, nitrat, ammoniy kabi organik moddalar katta ulushi aniqlangan. Ushbu natijalar turli tadqiqot guruhlari tomonidan o‘lchangan dala tadqiqot namunalariga tayanib amalga oshirilgan.

Mehrnoosh Abtahi va boshqalarning(2018) tadqiqotlarida Tehron havosidagi uchuvchi organik birikmalar, jumladan benzol, toluol, etilbenzol va oksilenlar toifasiga kiruvchi ayrim ifloslantiruvchi moddalarning konsentratsiyasi tizimli tahlil

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va meta-tahlil yondashuvi yordamida baholangan. Tadqiqotda Atrof-muhitni muhofaza qilish agentligi (EPA) tomonidan tavsiya etilgan usullardan foydalangan. Tahlillar shuni ko‘rsatganki, Tehron havo tarkibidagi ifloslantiruvchi moddalar uzoq muddatli nafas yo‘l kasalliklarini keltirib chiqargan va ushbu moddalarning chiqishini kamaytirish, transport va sanoat manbalarini nazorat qilishga oid tavsiyalari berilgan. Ushbu natijalarni olishda statistik ma’lumotlar, havo sifatini o‘lchovchi turli sensorlardan olingan namunalardan foydalanilgan.

Sasan Faridi va boshqalar (2018), o‘zlarining maqolasida Eron shahridagi 2006-2015-yillarda atmosfera havosi ifloslanishini $PM_{2.5}$ va O_3 darajalari bo‘yicha tadqiqot olib borganlar. Tadqiqot natijalari ko‘proq yurak ishemik kasalligi, insult, o‘pka saratoni, quyi nafas yo‘llari infektsiyalari kabi kasalliklarga olib kelgan, O_3 esa nafas olish kasalliklari kuzatilgan o‘lim holatining kichik, lekin sezilarli qismini tashkil etgan. Ushbu tadqiqot natijalari 21ta tartibga soluvchi monitoring tarmog‘i stantsiyalarida o‘lchangan $PM_{2.5}$ va O_3 kontsentratsiyasi ma'lumotlaridan olingan.

Reza Bayat va boshqalar (2019) o‘zlarining izlanishlarida havo ifloslanishining aholiga ta’sirini o‘rganganlar. Unda 2017-yilida $PM_{2.5}$ ifloslanishi sababli 25 yoshdan katta aholida taxminan 7,146 o‘lim holati kuzatilganligi aniqlangan. Umumiy iqtisodiy zarar ko‘lami esa yuz millionlab dollarga yetgan. Mualliflar ushbu natijalarni olishda havo sifatini tekshiruvchi stansiyalar ma’lumotlaridan keng foydalanganlar.

Fatemeh Yousefian va boshqalar (2020) o‘zlarining tadqiqotlarida Tehronda 2012–2017-yillarda atmosfera havosi ifloslanishini shamol tezligi, NO_2 va CO kontsentratsiyasi jihatidan tadqiqotlar olib borishgan. Ushbu tadqiqotda atmosfera havosi ifloslanishini shamol tezligi, NO_2 va CO larning o‘zaro aloqadorligi va inson salomatligiga ta’siri o‘rganilgan. Buning uchun gidrometrologik stansiyalardan olingan namunalardan foydalanilgan.

John P. Wilson va boshqalar (2020) o‘z tadqiqot ishlarida 33 ta megashaharlardan atmosfera havosini ifloslantiruvchi zarralar diametri ekotizimga va inson salomatligiga ta’sirini o‘rganishgan. Natijada atmosfera havosini ifloslantiruvchi zarralarning o‘lchami kasalliklarning turiga bog‘liq bo‘lishi aniqlangan. Ushbu natijalar dala tadqiqoti namunalari asosida ishlab chiqilgan.

Singh va boshqa olimlar (2020) 2014-2019-yillarda Hindistonning beshta megashahrlarida $PM_{2.5}$ darajasi bo‘yicha tadqiqotlar o‘tkazishgan. Tadqiqotlar Dehli eng iflos shahar sifatida aniqlangan. Kuzatilgan yillarda 200 kundan ortiq vaqt davomida belgilangan normadan ko‘p ifloslanish kuzatilgan. Qishda ifloslanish yuqori, yomg‘irli va musson davrida pasaygan. Tadqiqot natijalari sun’iy yo‘ldosh ma’lumotlarii asosida o‘rganilgan.

Javad Torkashvand va boshqalar (2021) o‘zlaring maqolasida Tehron atmosfera havosidagi ifloslantiruvchi zarrachalarni o‘rganganlar. Tadqiqot natijalariga ko‘ra atmosfera havosini ifloslantiruvchi zarralar miqdori yuqori darajaga yetgan va shuningdek, iqlim va shamol yo‘nalishlari ham atmosfera havosi ifloslanishida katta ta’sirga ega bo‘lgan. Ushbu natijalar dala tadqiqoti namunalari, stansiyalardagi sensor ma’lumotlari asosida tahlil qilingan.

Sarkar Khan va boshqalar (2021) o‘zlarining izlanishlarida Bangladesh shahrining karantin davrida atmosfera havosi ifloslanish darajasini o‘rganishgan. Natijada ushbu davrida ifloslanish darajasi kamaygan, lekin karantin tugagach, darajalar qayta oshgan. Bu natijalar inson harakati va transport faoliyati to‘xtashi natijasida atmosfera havosini tozalashda qisqa muddatli, ammo sezilarli ta’sir ko‘rsatishini ko‘rsatgan. Ushbu natijalar dala tadqiqot natijalari asosida olingan.

Lili Zhang va boshqa tadqiqotchilar (2022) o‘zlarining izlanishlarida 33 ta megashaharda uzoq muddatli atmosfera havosi ifloslanishini tahlil qilishgan. Kuzatuvlarga ko‘ra $PM_{2.5}$ ga chalinish yurak va nafas olish kasalliklari bilan bog‘liq o‘limlar sonining sezilarli darajada oshirgan. Ushbu natijalar 2000-2019-yillarda olingan sun’iy yo‘ldosh ma’lumotlaridan foydalanilgan.

Zhuofan Li va boshqalarning (2022) tadqiqotlarida Xitoyning 6 ta katta shaharlaridan 2017-2020-yillarda atmosfera havosi ifloslanishi bo‘yicha izlanishlar olib borilgan. Natijada $PM_{2.5}$ darajasi ~30% ga kamayishi kuzatilgan. Meteorologik sharoitlar (harorat, shamol, bosim, namlik) ifloslanish darajasiga katta ta’sir ko‘rsatgan va antropogen omillarning ham sezilarli ta’siri kuzatilgan. Bu natijalar statistik ma’lumotlar va o‘lchash namunalari asosida olingan.

Haijun Zhou va boshqalarning (2022) tadqiqot ishlarida Shimoliy Xitoydagi atmosfera havosi tarkibi organik moddalar, chang, sulfat va nitratlar holati bo‘yicha o‘rganganlar. Natijalar COVID-19 karantini paytida zararli moddalar konsentratsiyasi kamaygan, ammo tabiiy chang manbalari havo ifloslanishiga katta ta’sir ko‘rsatgan. Ushbu natijalar dala o‘lchash namunalari asosida olingan.

Zhan va boshqalarning (2023) o‘z izlanishlarini Xitoyning tog‘li va urbanizatsiyalashgan hududlarida olib borilganlar va natijada relef va iqlim sharoitlari, shuningdek antropogen emissiyalar (yo‘l transporti, sanoat, biomassa) havoning ifloslanishini kuchaytirganligi, yurak-nafas kasalliklari oshishi kuzatilgan. Na’munalar dala tadqiqoti namunalari va tajriba stansiyalari orqali olingan.

Ranjbar va boshqalar (2024) o‘zlarining maqolasida Eronning 3ta eng ifloslangan viloyatida $PM_{2.5}$ va PM_{10} kontsentratsiyasining fazoviy vaqtincha taqsimoti va aholi salomatligi uchun xavfini baholashgan. Tehron viloyatida atmosfera havosi ifloslanishi $PM_{2.5}$ va PM_{10} darajalari qish faslida maksimal darajada bo‘lgan, bahor oldidan pasaygan va aholi sog‘ligiga salbiy ta’sirlari sezilarli darajada bo‘lgan. Ushbu natijalar kuzatuv stansiyalaridan olingan ma’lumotlar asosida ishlab chiqilgan.

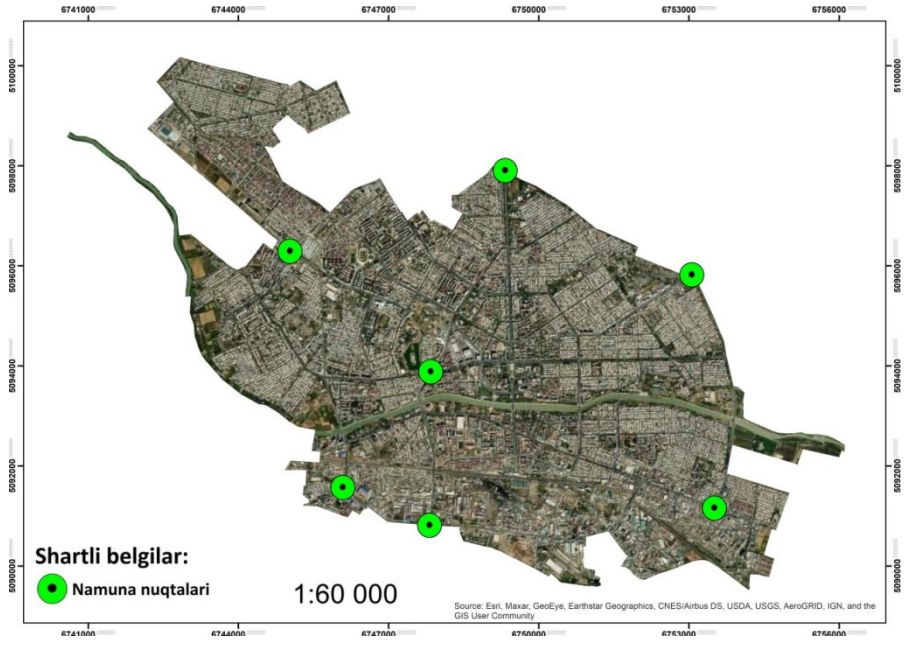
Zahra Nasiri va boshqalarning (2025) tadqiqotlarida Tehronning 2023-2024-yillarda atrof-muhitining fazoviy o‘zgaruvchanligi va sog‘liqqa ta'sirini baholash yuzasidan tahlillar olib borganlar. Shaharning turli qismlarida (shimoliy, markaziy, janubiy) $PM_{2.5}$ darajasi sezilarli farq qilgan, janub va markaziy hududlarda ko‘proq ifloslanish kuzatilgan. Ushbu natijalar statistik ma’lumotlar, turli joylarga o‘rnatilgan sensorlardan olingan.

Yuan va boshqalarning (2025) tadqiqotlarida Xitoy shaharlarining 2017-2022- yillardagi atmosfera havosi ifloslanishi tadqiq qilganlar. Ushu tadqiqot

ishida $PM_{2.5}$ konsentratsiyasi ~46.1 µg/m³ dan ~30.6 µg/m³ gacha pasayganligi o‘rganilgan va asosan izlanishlar dala tadqiqotlari natijalariga tayanilgan.

Respublikamizda ham shu kabi tadqiqotlarni olib borishga zarurat katta. Ayniqsa chang-tuzli kunlar ko‘p va Orol dengizining qurigan qismlariga yaqin hududlar dastlabki tadqiqot obyekti bo‘lishi zarur. Ushu ishda cho‘llar bilan o‘rgalgan, viloyat markazi bo‘lgan, aholi hududning boshqa joylarga nisbatan zich bo‘gan ma’muriy markazi – Urganch shahri tanlangan. Buning boshqa sabablari sifatida transport qatnovi va nisbatan ishlab chiqarish korxonalarining ko‘pligi, aholi salomatligida kasalliklarning ortganligini kabilar ham mvjud. Ayrim tadqiqotchilarning (Matchanov va boshq., 2025) izlanishlariga ko‘ra ushbu hududda qurg‘oqchilik tez-tez sodir bo‘layotgani keltirilgan va uning qurg‘oqchik holati baholangan. Bu ham tuproq namligi va o‘simlik qoplamining kamayishi orqali chang-tuzlarning ko’ratilishiga sababchi bo‘lmoqda.

Urganch shahrining geografik joylashuvi, iqlimi, Orol dengiziga yaqinligi, transport qatnovining ko‘pligi, zavod fabrikalarning zichligi shu bilan birgalikda shaharga kirib keladigan chang-tuz bo‘ronlarining katta ulushi uni tadqiqot obyekti sifatida tanlashga asos bo‘ladi. Namuna olish joylarini tanlashda shamol yo‘nalishi va boshqa bir qancha omillar hisobga olindi. Namuna olish nuqtalari 7 ta bo‘lib, ularning 4 tasi shaharning chekka nuqtalari, 3 tasi shahar diaganali bo‘yicha tanlandi (1-rasm).



1-rasm. Namuna olish nuqtalarining joylashuvi sxemasi.

Yuqoridagilardan xulosa qilsak, o‘rganilgan tadqiqotlarning asosiy qismi Xitoy va Eron davlatlariga tegishli ekanligi diqqatni tortadi. Buning asosiy sababi ushdu davlatlardagi jadal iqtisodiy rivojlanish natijalari bo‘lishi mumkin.

Dala tadqiqotlari asosida Urganch shahrining karbonat angidrid, temperatura, namlik, chang birikmalari va yonuvchi gazlar bo‘yicha atmosfera havosi tarkibidan

rejali tazda na’munalar olish zarur. Shu bilan birga olingan natijalar Sentinel-5, MODIS sun’iy yo‘ldosh ma’lumotlari bilan qiyosiy o‘rganish va tahlil qilish ishlari olib borish maqsadga muvofiq. Bu aholi salomatligi va geotizim ekologik xavfsizligini ta’minlashga oid chora-tadbirlarni ishlab chiqishga xizmat qiladi.

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REGIONAL MORPHOMETRIC STANDARDS OF THE RABBIT PITUITARY GLAND: IMPLICATIONS FOR ENDOCRINE FUNCTION ASSESSMENT

Abstract: *This study presents a statistical analysis of the morphofunctional characteristics of the pituitary gland in non-breed male sheep raised in the Fergana Valley. The composite morphofunctional index of basophilic adenocytes, the relative mass of the adenohypophysis, and their stereometric proportion were examined. The findings provide a foundation for standardizing pituitary morphometric parameters and may serve as reference values in evaluating the effects of pharmacological agents.*

Keywords: *pituitary gland, adenohypophysis, morphometry, basophils, Fergana Valley*

Introduction

The morphofunctional characteristics of the pituitary gland are central to the regulation of the endocrine system, particularly through the activity of basophilic cells in the adenohypophysis, which synthesize tropic hormones influencing the thyroid gland, adrenal cortex, and gonads. Atherosclerosis is a major challenge in modern medicine [1, 2], and the search for plant-based hypolipidemic agents is considered a highly relevant and emerging trend [3, 4]. Despite the widespread use of intact animals as controls in pharmacological studies involving triterpene glycosides and other bioactive compounds [5, 6, 7], the detailed morphology of their pituitary glands has often been overlooked.

This gap underscores the importance of establishing regional morphometric standards for the pituitary gland as an independent subject of study. Environmental and geographic factors are known to influence the structure and function of endocrine organs. In this context, the examination of non-breed male rabbits raised

in the Fergana Valley offers a unique opportunity to refine reference values for morphofunctional indicators and to support future comparative, pharmacological, and pathomorphological research [8].

Previous foundational works in medical morphometry have emphasized the value of quantitative histological analysis in understanding glandular function. Moreover, recent studies have demonstrated the utility of morphometric methods in assessing the thyroid gland and pituitary morphology under experimental conditions [9, 10]. These insights provide a methodological framework for the current investigation.

The objective of this study is to quantitatively assess the morphofunctional parameters of the pituitary gland in intact male rabbits raised in the conditions of the Fergana Valley. Specifically, the analysis focuses on the composite morphofunctional index (CMI) of basophilic adenocytes, the relative mass of the adenohypophysis, the stereometric proportion of basophilic cells, and the stereometric proportion of stromal tissue. These findings are considered a region-specific characteristic of the pituitary gland and serve as a reference framework for future comparative, pharmacological, and pathomorphological studies.

Materials and Methods

Study Subjects: The study was conducted on 20 non-breed male rabbits aged 3–4 months, raised under the environmental conditions of the Fergana Valley. This population was selected to obtain region-specific morphometric data of the pituitary gland.

Methodology: Following humane euthanasia in accordance with bioethical standards, the pituitary glands were extracted. The tissues were fixed in 10% neutral formalin, processed using standard histological techniques, and stained with hematoxylin and eosin for microscopic evaluation.

Morphometric Parameters Assessed [11, 12, 13]:

1. Composite Morphofunctional Index (CMI) of basophilic adenocytes
2. Relative mass of the adenohypophysis (expressed as a percentage of the rabbit's body mass)
3. Stereometric proportion of basophils (percentage of the mass within the basophilic zone of the adenohypophysis)
4. Stereometric proportion of stromal tissue (percentage of the mass within the basophilic zone of the adenohypophysis)

Statistical Analysis

Data analysis was performed using StatTech v. 4.8.7 (developed by StatTech LLC, Russia, 2025). Quantitative variables were tested for normality using the Shapiro–Wilk test. For variables not following a normal distribution, the direction and strength of correlation between two quantitative indicators were assessed using Spearman's rank correlation coefficient. Predictive models describing the dependence of quantitative variables on influencing factors were constructed using linear regression analysis. Differences were considered statistically significant at $p < 0.05$.

Results

An analysis of the composite morphofunctional index (CMI) of basophilic pituitary cells under normal conditions was conducted. The results showed that the median value of this indicator was 1.28 points, with an interquartile range (Q_1–Q_3) of 1.07 to 1.57 points. The data are illustrated in Figure 1.

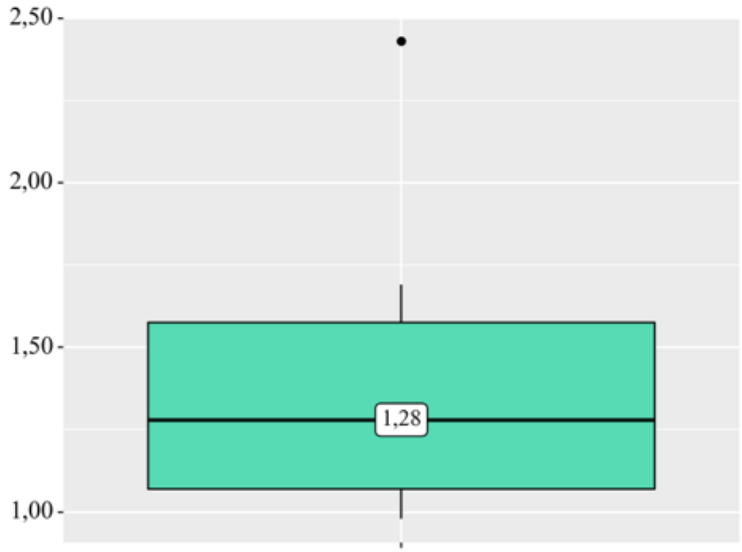


Figure 1. The CMI value of basophilic pituitary cells in rabbits under normal conditions.

The stereometric proportion of basophils is one of the key indicators of the morphofunctional status of the pituitary gland. The median value was 1.18%, with a range from 0.97% to 1.67%, and an interquartile interval (Q_1–Q_3) of 1.00% to 1.31%. The data are illustrated in Figure 2.

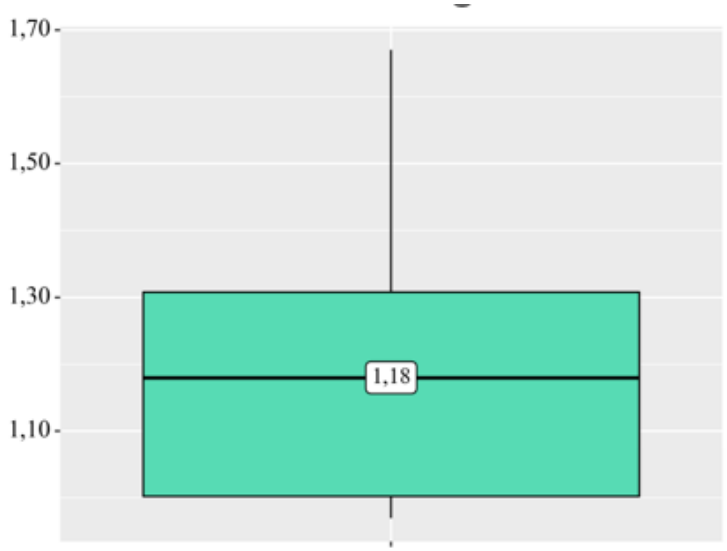


Figure 2. Stereometric proportion of pituitary basophils under normal conditions.

The median value of the relative mass of the adenohypophysis (RM-AH) was 6.14 mg/kg. The lower quartile (Q_1) was 5.83 mg/kg, and the upper quartile (Q_3) was 6.86 mg/kg. The results of our correlation analysis examining the relationship between the composite morphofunctional index (CMI) and the relative mass of the adenohypophysis are presented in Figure 3.

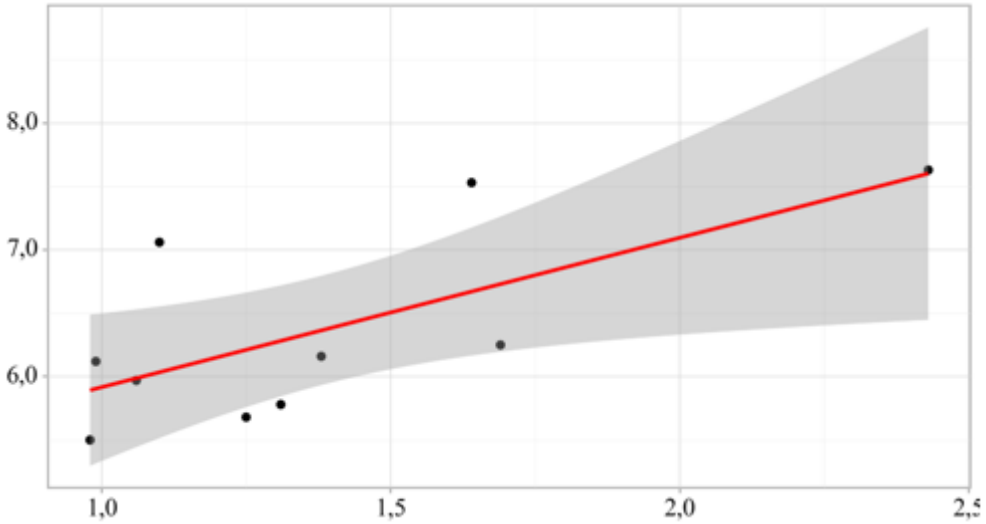


Figure 3. Regression graph illustrating the relationship between the relative mass of the adenohypophysis and the composite morphofunctional index (CMI).

A statistically significant direct correlation was established between the relative mass of the adenohypophysis and the composite morphofunctional index (CMI). The observed relationship is described by the linear regression equation: $Y_{(\text{Relative mass of AH})} = 1.179 \times X_{(\text{CMI})} + 4.738$. An increase of 1 point in the CMI is associated with an expected rise of 1.179 mg/kg in the relative mass of the adenohypophysis. The resulting model accounts for 46.9% of the observed variance in the relative mass of the adenohypophysis.

The composite morphofunctional index (CMI) of basophilic adenocytes is influenced by their quantitative presence within the zone of basophil predominance. Accordingly, a correlation analysis was performed to examine the relationship between CMI and the stereometric (SM) proportion of basophils under normal conditions. The results are presented in Figure 4. A strong direct correlation was identified between the SM proportion of basophils and the CMI. The observed relationship is described by the linear regression equation: $Y_{(\text{SM proportion of basophils})} = 0.487 \times X_{(\text{CMI})} + 0.515$. An increase of 1 point in the CMI is associated with an expected rise of 0.487% in the SM proportion of basophils. The resulting model explains 97.7% of the observed variance in the SM proportion of basophils.

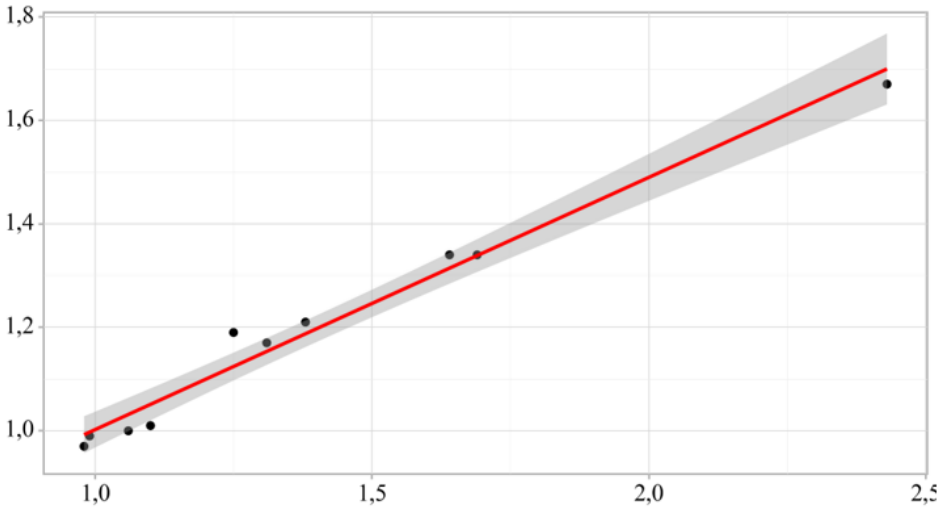


Figure 4. Regression graph illustrating the relationship between the stereometric proportion of basophils and the composite morphofunctional index (CMI).

Discussion

The obtained data demonstrate stable morphometric parameters of the pituitary gland in intact non-breed male rabbits raised under natural conditions in the Fergana Valley. This stability reflects the physiological maturity of the studied animals, the absence of pathological deviations, and the maintenance of homeostatic balance. The consistency of pituitary morphometry confirms the biological homogeneity of the examined population and may serve as a reference standard for future comparative investigations.

The composite morphofunctional index (CMI) of basophilic adenocytes has proven to be a reliable indicator of pituitary hormonal activity. The strong correlation between CMI and key morphometric parameters confirms its prognostic value. This supports the consideration of CMI as a sensitive marker of the functional state of the pituitary gland under normal conditions and in response to various influences.

Particular attention should be given to the close relationship identified between CMI and the stereometric proportion of basophils. The pairwise linear regression analysis revealed that this relationship is described by the equation: $Y_{(SM\ proportion\ of\ basophils)} = 0{,}487 \times X_{(CMI)} + 0{,}515$.

This indicates that an increase of 1 point in the composite morphofunctional index (CMI) is associated with a rise of 0.487% in the stereometric proportion of basophils. The model explains 97.7% of the observed variance, reflecting a high degree of predictability and a strong functional relationship between the structural and morphofunctional parameters of the pituitary gland.

A direct correlation was also established between CMI and the relative mass of the adenohypophysis. The observed relationship is described by the equation: $Y_{(Relative\ mass\ of\ AH)} = 1{,}179 \times X_{(CMI)} + 4{,}738$.

An increase of 1 point in CMI corresponds to an expected increase of 1.179 mg/kg in the relative mass of the adenohypophysis. Although the model accounts

for 46.9% of the observed variance, this value still indicates a meaningful association between the functional activity of the pituitary gland and its mass, particularly under physiological conditions.

The stereometric proportion of basophils reflects the spatial organization of the adenohypophysis and can be utilized to assess structural changes induced by pharmacological agents. This is particularly relevant in the study of triterpene glycosides, which, as demonstrated in several previous investigations, exert a pronounced effect on pituitary tissue. Thus, stereometric parameters may serve as a morphological substrate for analyzing adaptive and reactive processes within the endocrine system.

It is important to emphasize that the data obtained represent the territorial-edge morphology of the pituitary gland, characteristic of animals raised under the environmental conditions of the Fergana Valley. This makes the findings especially valuable for the development of regional biomedical models, the establishment of veterinary standards, and the implementation of comparative studies in endocrinology, morphology, and pharmacology.

The morphometric evaluation of the rabbit pituitary gland presented in this study provides a foundational reference for assessing endocrine function in experimental models. Our findings demonstrate a strong correlation between the composite morphofunctional index (CMI) and both the stereometric proportion of basophils and the relative mass of the adenohypophysis, reinforcing the concept that regional and environmental factors significantly influence endocrine morphology.

This aligns with earlier observations that endocrine organs, including the thyroid and pituitary glands, exhibit morphofunctional variability depending on geographic and ecological conditions. For instance, Don et al. emphasized the importance of regional standards when evaluating thyroid morphology under experimental conditions. Similarly, Strukov and Kaktursky highlighted the diagnostic value of morphometry in pathological anatomy, particularly for endocrine tissues.

The high explanatory power of our regression models—especially the 97.7% variance explained in the stereometric proportion of basophils—supports the use of morphometric parameters as reliable indicators of glandular activity. This is consistent with the principles outlined by Avtandilov in his seminal work on medical morphometry and further supported by Chumachenko’s concept of composite morphofunctional indicators.

Moreover, the relevance of our findings extends to pharmacological research. Several studies have explored the effects of bioactive compounds such as triterpenoid saponins and sesquiterpene lactones on cardiovascular and endocrine health. However, many of these investigations, including those by Syrov et al. and Matchanov et al., utilized intact animals without detailed analysis of pituitary morphology. This underscores the necessity of establishing baseline morphometric standards, as provided in the present study.

The therapeutic potential of plant-derived compounds like those from *Artemisia juncea* has also been discussed in the context of drug development. Yet, as noted by Don et al., the morphofunctional status of endocrine organs must be carefully assessed to understand the full impact of such interventions.

In light of global health trends and demographic shifts, particularly in regions like Uzbekistan, the need for localized biomedical standards becomes increasingly important. Our data contribute to this effort by offering region-specific morphometric benchmarks for the rabbit pituitary gland, which may serve as a model for broader endocrine research.

Discussion

The morphometric evaluation of the rabbit pituitary gland presented in this study provides a foundational reference for assessing endocrine function in experimental models. Our findings demonstrate a strong correlation between the composite morphofunctional index (CMI) and both the stereometric proportion of basophils and the relative mass of the adenohypophysis, reinforcing the concept that regional and environmental factors significantly influence endocrine morphology.

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The therapeutic potential of plant-derived compounds like those from Artemisia juncea has also been discussed in the context of drug development. Yet, as noted by Don et al., the morphofunctional status of endocrine organs must be carefully assessed to understand the full impact of such interventions [14].

In light of global health trends and demographic shifts, particularly in regions like Uzbekistan, the need for localized biomedical standards becomes increasingly important. Our data contribute to this effort by offering region-specific

morphometric benchmarks for the rabbit pituitary gland, which may serve as a model for broader endocrine research.

The obtained data demonstrate stable morphometric parameters of the pituitary gland in intact non-breed male rabbits raised under natural conditions in the Fergana Valley. This stability reflects the physiological maturity of the studied animals, the absence of pathological deviations, and the maintenance of homeostatic balance. The consistency of pituitary morphometry confirms the biological homogeneity of the examined population and may serve as a reference standard for future comparative investigations.

The composite morphofunctional index (CMI) of basophilic adenocytes has proven to be a reliable indicator of pituitary hormonal activity. The strong correlation between CMI and key morphometric parameters confirms its prognostic value. This supports the consideration of CMI as a sensitive marker of the functional state of the pituitary gland under normal conditions and in response to various influences.

Particular attention should be given to the close relationship identified between CMI and the stereometric proportion of basophils. The pairwise linear regression analysis revealed that this relationship is described by the equation: $Y_{(}$SM proportion of basophils$_{)} = 0.487 \times X_{(}CMI_{)} + 0.515$.

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It is important to emphasize that the data obtained represent the territorial-edge morphology of the pituitary gland, characteristic of animals raised under the environmental conditions of the Fergana Valley. This makes the findings especially valuable for the development of regional biomedical models, the establishment of

veterinary standards, and the implementation of comparative studies in endocrinology, morphology, and pharmacology.

Conclusion

This study establishes foundational morphometric parameters of the pituitary gland in intact non-breed male rabbits raised under natural conditions in the Fergana Valley. The results reflect a physiologically stable endocrine profile and provide region-specific reference values that can be employed as control benchmarks in future experimental and clinical investigations. These include studies assessing the impact of pharmacological agents, environmental factors, and pathomorphological alterations on pituitary structure and function.

The statistical robustness of the findings confirms their scientific reliability, while the conformity of data distribution to the normal law supports their use as reference standards for evaluating the functional state of the pituitary gland under physiological conditions. Moreover, the regional relevance of the data enhances their applicability in the development of biomedical models, veterinary guidelines, and comparative endocrine research.

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TUPROQ-YER RESURSLARIDAN FOYDALANISH VA ULARNI MUHOFAZA QILISH (SIRDARYO VILOYATI MISODLIDA)

Annotatsiya: *Sirdaryo viloyatining hududi asosan nishabligi kichik, oqimsiz va ulkan botiq ekanligi bilan ajralib turadi. Sirdaryo suvining qadimdan ushbu botiqqa singishi bilan birga, Mirzacho‘l vohasi o‘zlashtirilgandan so‘ng o‘tgan 55-60 yil davomida noto‘g‘ri irrigatsion tizimning qo‘llanilishi tufayli sizot suvlari sathining keskin ko‘tarilishi holati yuzaga kelgan. Jazirama issiqda sizot suvlarining tuproqni yuza qatlami orqali bug‘lanib sho‘rlanish darajasi ortib borishi va shu kabi boshqa omillar tufayli bugungi kunda katta-katta ekin maydonlari foydalanishga yaroqsiz holga kelib qolgan. Bu holat viloyat agrolandshaftlarida ekologik muvozanatni saqlash, sho‘rlanish tufayli degradatsiyaga uchragan maydonlarni qayta tiklash texnologiyalarini yaratishni taqozo etadi.*

Kalit so‘zlar: *Tuproq-yer resurslari, gumus, mikroelementlar, yer kodeksi, dehqonchilik, agrotexnik tadbirlar, o‘rmon-meliorativ tadbirlar.*

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USE AND PROTECTION OF SOIL AND LAND RESOURCES (ON THE EXAMPLE OF SIRDARYO REGION)

Annotation: *The territory of Syrdarya region is characterized by a large, shallow, and impassable depression. Along with the long-standing infiltration of Syrdarya water into this depression, the use of an improper irrigation system over the past 55-60 years after the development of the Mirzachul oasis has led to a sharp increase in the level of groundwater. Due to the evaporation of groundwater through*

the surface layer of the soil in the scorching heat and the increase in salinity, large areas of cultivated land have become unusable today. This situation requires the creation of technologies for maintaining ecological balance in the agro-landscapes of the region and restoring areas degraded due to salinity.

Keywords: *Soil resources, humus, microelements, land code, agriculture, agrotechnical measures, forest-reclamation measures.*

Kirish.

Quruqlikning tabiiy-tarixiy jarayonlarda o‘zgargan yuza, g‘ovak, unumdor qatlami tuproq deyiladi. Tuproq tabiatning muhim tarkibiy qismi sifatida, tog‘ jinslari, iqlim, o‘simlik va hayvonot, relyef, vaqt, inson faoliyati kabi omillarning o‘zaro murakkab ta’sirlashuvi natijasida vujudga keladi. Tuproq hosil bo‘lishi o‘ta murakkab va uzoq davom etadigan jarayon hisoblanadi. O‘rta hisobda 1,5-2 sm qalinlikdagi tuproq qatlami hosil bo‘lishi uchun 100 yil vaqt zarur bo‘ladi. Tuproqlarning ortacha qalinligi 18-20 sm ni tashkil etadi. Bazi hududlarda bir necha millimetrlardan 1,45-2,0 metrgacha yetishi ham mumkin. Tuproq tarkibidagi gumus, yani chirindi miqdori uning muhim tarkibiy qismi bolib, qariyb barcha xususiyatlarini belgilab beradi. Gumus tuproq hosil bolishi jarayonida o‘simlik va boshqa organizmlarning qoldiqlarini murakkab qayta o‘zgarishi oqibatida hosil bo‘ladi. U tuproqning turli tashqi fizik, kimyoviy va biologik ta’sirlarga bo‘lgan barqarorligini ta‘minlaydi.

Tuproqning o‘simlik va organizmlarni optimal yashash sharoitlari bilan ta‘minlay olish xususiyati tuproq unumdorligi deyiladi. Tuproqlarning tabiat va inson hayotidagi ahamiyati aynan shu xususiyat bilan bog‘liqdir. Unumdorlik tuproqning fizik, kimyoviy, agronomik, biologik xossalari va ekologik holati bilan uzviy bog‘liq bo‘lgan integral xususiyat hisoblanadi. Shuning uchun tuproq unumdorligini belgilovchi omil xossalarning soni bir necha o‘ntaga yetadi. Bular qatoriga tuproqdagi gumus miqdori va sifati, namlik miqdori va holati, ozuqa moddalaming turi, miqdori va o‘zlashuvchanligi, tuproq havosi, harorati, zichligi, g‘ovakligi, turli moddalar bilan ifioslanganligi, mikrobiologik holati kabi xossalarni kiritish mumkin.

Mavzuga oid adabiyotlar tahlili.

Tuproqlarining genezisi, tipi, tadrijiy o‘zgarishi N.A. Dimo (1916), M.A. Pankov (1974), A.A. Rafiqov (1976), B.B. Axunova (2006) hamda O‘zYergeodezkadastr qo‘mitasi huzuridagi Tuproqshunoslik va agrokimyo ITDI ning ko‘plab olimlari tomonidan yetarli darajada o‘rganilgan.

O‘zbekiston Respublikasi Prezidentining 2015-yil 29 dekabrdagi “2016-2020 yillar davomida qishloq xo‘jaligini rivojlantirish va isloh qilish bo‘yicha chora-tadbirlar to‘g‘risidagi ZY-2460-son Qarorida belgilangan vazifalarni amalga oshirish mazmuni ushbu maqolada ko‘rilgan.

Tadqiqot metodologiyasi.

Tadqiqot ishining mazmunidan kelib chiqqan holda ekspeditsion, tizimli-tahlil, qiyoslash, matematik, statistik, tayanch eksperimental tadqiqot, Geoekologiya-kimyoviy laboratoriya tahlili kabi bir qator usullardan foydalanildi.

Tahlil va natijalar.

Sirdaryo viloyatida ham tuproqlarning geografik tarqalishi relyef shakllari, geologik va litologik tuzilishi bilan uzviy bog‘liq. Bu yerda tuproq tiplari va ularni xillarining tabaqalanishi tog‘ oldi prolyuvial-allyuvial tekisliklarda, berk botiqlarda, daryoning terrassalarida yaxshi ifodalangan.

Viloyat hududining katta qismi o‘tloqi-allyuvial, bo‘z-o‘tloq, och tusli bo‘z, oddiy bo‘z va to‘q tusli bo‘z tuproqlar bilan qoplangan. O‘tloqi-allyuvial tuproq viloyat sug‘oriladigan zonalarining turli qismlarida 102,8 ming gektarni tashkil etadi. U o‘ziga xos xususiyatga ega bo‘lib, hosil bo‘lishi yotqiziqlarga va gidrogeologik sharoitlarga bog‘liq. Bu tuproq hosildor hisoblanadi. Kuchli sho‘rlanmagan sizot suvlari sathi yer yuzasiga yakin joylashgan bo‘lib, chuqurligi 1-2 metrni, ba’zi joylarda 0,5-1 metrni tashkil etadi.

Viloyatda 175,3 ming gektardan ortiq yerda bo‘z-o‘tloqi tuproqlar tarqalgan bo‘lib, asosan, qadimdan o‘zlashtirilgan zonadadir. Bu tuproq kam madaniylashtirilgan (o‘zlashtirilgan) va kuchli sho‘rlanmagan. Chirindi va azot, fosfor, kaliy tuzlari bilan o‘rtacha ta’minlangan hisoblanadi.

Och bo‘z tuproq keng tarqalgan bo‘lib, mexanik tarkibi bo‘yicha kuchli farqlanadi. Och tusli bo‘z tuproq 97,3 ming gektarga ega bo‘lib, yirik zarrali o‘rtacha gillashgandir. Tuproq tarkibida yirik chang fraksiya (0,2-0,02 mm) 44-51 %, mayda chang fraksiya 30-40 % va loyli fraksiya 15-20 % ni tashkil etadi. Bu tuproq o‘zlashtirish asosi bo‘yicha sho‘rhok yer hisoblanadi va tarkibida karbonat (S032-) ko‘pdir (6-7% dan yuqori). Chirindisi 0,7-0,9 % gacha bo‘lib, kuchli minerallashgandir.

Oddiy bo‘z tuproqlar tog‘ oldi zonalarining quyi qismida keng tarqalgan bo‘lib, 117,9 ming gektar maydonni egallaydi. Agrokimyoviy tarkibi buyicha eroziyaga chidamli. Chirindi tarkibiga ko‘ra yuvilmaydigan va kam yuviluvchi, fosfor va kaliy tuzlari bilan kam ta’minlangan. Bu tuproqlar tarqalgan yerlarda asosan lalmi ekinlar ekiladi.

To‘q tusli bo‘z tuproq 9,4 ming gektarni egallab, asosan Xovos tumanining tog‘li va tog‘ oldi qismida tarqalgan. Bu tuproq suv eroziyasiga kuchli berilgan bo‘lib, hosildor qatlami yuvilganligi uchun, g‘alla ekinlaridan yuqori hosil olib bo‘lmaydi, shuning uchun bu yerlar asosan chorva mollari uchun yaylov sifatida foydalaniladi.

Hozirgi kunda avtomorf rejimda shakllangan tuproqlar yarimgidromorf va gidromorf tipga aylandi va asosiy maydonlarni turli darajada sho‘rlangan tuproqlar egalladi. Bu esa, o‘z navbatida sug‘oriladigan yerlar mahsuldorligini oshirishni ta’minlaydigan hamda agrolandshaftlarda ekologik muvozanatni saqlash va sho‘r bosgan, kuchli degradatsiyaga uchragan maydonlarni kamaytirib, ulardagi jarayonlarni optimallashtirish kabi muammolarni oldinga suradi.

Demak, geosistemalarda suv-tuz almashinuvi muvozanatining buzilishini oldini olishning birdan-bir yo‘li bo‘lgan tabiiy geografik va tabiiy meliorativ jarayonlarni tadqiq etishda sistemali-strukturaviy, ya’ni kompleks usullarni qo‘llash maqsadga muvofiq.

Sirdaryoning o‘rta oqimida joylashgan viloyat hududida olib borilgan tadqiqotlar natijalari shuni ko‘rsatadiki, geosistemalarda antropogen ta’sir, ya’ni daryo oqimining sun’iy va energetik rejimga o‘tishiga mos ravishda ekologik zo‘riqish yuzaga kelgan. Bu holat oxirgi 15-20 yilda sug‘oriladigan yerlarning meliorativ holatiga salbiy ta’sir etmoqda.

Yer resurslaridan foydalanish jarayonida vujudga kelgan muammolar dunyo miqyosidagi keng maydonlarga ta’sir qiladigan asosiy ekologik muammolardan biri bu tuproqning degradatsiyasi hisoblanadi. Tuproqlarning degradatsiyasi turli shakllarda vujudga kelib, ularning unumdorligi yomonlashuviga, hosildorligining sifat va miqdor jihatdan pasayishiga hamda ekosistema bilan bog‘liq muammolarni shakllanishiga olib kelmoqda. Tuproqlar degradatsiyasi – bu jarayonlar yig‘indisi bo‘lib, ular tuproqlarning funktsiyasini o‘zgarishiga, xossalarining miqdor va sifat ko‘rsatkichlarining yomonlashishga va unumdorlikning pasayishiga olib keladi, ya’ni tabiiy va antropogen omillar ta’sirida elementlarning ekologik tizimda tuproqlarning turg‘un xossalarining buzilishi, xo‘jalik nuqtai nazardan bahosining tushishi va samaradorlikning pasayishidir.

Xulosa va takliflar.

Sirdaryo вилоятида sho‘rlangan tuproqlar unumdorligini oshirish o‘simlik ildizi tarqalgan qatlamda zararli tuzlar miqdorining maqbul darajaga kamaytirish zarur. Bunga erishish uchun quyidagi tadbirlarni amalga oshirish kerak:

a) gidrotexnik tadbirlar – maxsus qurilgan zovurlar yordamida yer osti suvlari sathini maqbul chuqurlikda boshqarish. Zovurlar tuzilishi bo‘yicha yotiq va tik tipda bo‘lib, ularning chuqurligi, oralaridagi masofa tuproq qatlamining mexanik tarkibiga, hududning geologik, gidrogeologik sharoitlari va boshqalariga bog‘liq bo‘ladi. Yer osti suvlari sathini zovurlar yordamida boshqarish hisobiga tuproq qatlamidagi tuzlarning ildiz tarqalgan qatlamiga ko‘tarilishi keskin kamayadi1. Sirdaryo viloyatining hududi asosan nishabligi kichik, oqimsiz va ulkan botiq ekanligi bilan ajralib turadi. Sirdaryo suvining qadimdan ushbu botiqqa singishi bilan birga, Mirzacho‘l vohasi o‘zlashtirilgandan so‘ng o‘tgan 55-60 yil davomida noto‘g‘ri irrigatsion tizimning qo‘llanilishi tufayli sizot suvlari sathining keskin ko‘tarilishi holati yuzaga kelgan. Jazirama issiqda sizot suvlarining tuproqni yuza qatlami orqali bug‘lanib sho‘rlanish darajasi ortib borishi va shu kabi boshqa omillar tufayli bugungi kunda katta-katta ekin maydonlari foydalanishga yaroqsiz holga kelib qolgan.

b) agromeliorativ tadbirlar kuzda yoki erta bahorda amalga oshiriladigan sho‘r yuvish. Sho‘r yuvishdan oldin dalalar shudgor qilinadi, maydoni 0,02-0,03 ga teng bo‘lgan pollarga ajratiladi va suv bostiriladi. Suv tuproq qatlamidan shimilib o‘tganda uning tarkibidagi tuzlarni yuvib pastki qatlamga olib tushadi va yer osti suvlari tarkibida zovurlarga yig‘iladi va daladan tashqariga chiqarib tashlanadi.

c) biologik tadbirlar – sho‘rlangan yoki sho‘rlanishga moyil bo‘lgan dalalarda (o‘rtacha va kam sho‘rlangan) 2-3 yil davomida ko‘p yillik o‘tlar (beda, sudan o‘ti va boshqalar) ekiladi. Dalaning ustki o‘simlik bilan qoplangan tuprog‘ida bug‘lanish keskin kamayadi va ustki qatlamda tuz yig‘ilmaydi. Sho‘rlangan yerlarda shirinmiya (solodka) o‘simligi yetishtirilganda ham tuzlar tuproqning ustki qatlamida yig‘ilishi sezilarli darajada kamayadi.

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ASSIMETRIK SHIFRLASH ALGORITMLARI

Annotatsiya: *Kriptografiya zamonaviy axborot xavfsizligida muhim rol o'ynaydi va texnologiyalar rivoji bilan birga takomillashib boradi. Ushbu ilmiy maqolada assimetrik shifrlash algoritmlari ya'ni Assimetrik shifrlash (RSA, ECC) – ochiq va yopiq kalitdan foydalanish haqida fikr va mulohazalar keltirilgan.*

Kalit so'zlar: *Kriptografiya, shifrlash, elektron tizim, axborot, assimetrik shifrlash, xavfsizlik.*

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ASYMMETRIC ENCRYPTION ALGORITHMS

Abstract: *Cryptography plays an important role in modern information security and is improving along with the development of technologies. This scientific article presents ideas and considerations about asymmetric encryption algorithms, i.e. Asymmetric encryption (RSA, ECC) - the use of public and private keys.*

Keywords: *Cryptography, encryption, electronic system, information, asymmetric encryption, security.*

Shifrlash mashhur so'zga aylandi. Biz har doim shifrlash oraqali bizni tinglash va kuzatuvdan qanday himoya qilishini eshitamiz. Ko'pgina Internet foydalanuvchilari ulanishni himoya qilish uchun shifrlangan ilovalar, elektron pochta, tezkor xabarlar yoki VPN-lardan foydalanadilar. Shu bilan birga, hukumatlarning shifrlangan xizmatlar haqida o'z g'oyalari bor – ular favqulodda vaziyatlarda turli akkauntlarga to'liq kirishni va shuning uchun ular qonun orqali shifrlangan xizmatlarga orqa eshiklarni taqdim qilishni talab qilmoqdalar. Tabiiyki, ushbu yangi qonunlar ommaviy axborot vositalarining katta e'tiborini tortmoqda va shifrlashni diqqat markaziga qo'ymoqda.

Kriptografiya – bu ma'lumotlarni shifrlash va himoya qilish usullarini o'rganadigan fan sohasi bo'lib, uning asosiy maqsadi axborot xavfsizligini ta'minlashdir. U tarixan maxfiy yozishmalarni shifrlash usullaridan boshlab, bugungi kunda zamonaviy kompyuter tarmoqlari va elektron tizimlarda axborotni himoya qilish uchun ishlatiladigan murakkab algoritmlargacha rivojlangan. Kriptografiya simmetrik va assimetrik shifrlash usullariga bo'linadi. Simmetrik

shifrlashda bir xil kalitdan foydalangan holda ma’lumotlar shifrlanadi va qayta ochiladi. Assimetrik shifrlashda esa ochiq va yopiq kalit juftligi ishlatiladi, bu esa xavfsizlikni oshirishga imkon beradi.

Hozirgi kunda RSA, AES, ECC kabi kriptografik algoritmlar keng qo‘llaniladi. Shuningdek, kriptografiya elektron imzo, blokcheyn, tarmoq xavfsizligi va maxfiy aloqa sohalarida muhim ahamiyatga ega. Uning amaliy qo‘llanilishi bank tizimlarida, internet xavfsizligida va davlat axborot tizimlarida keng tarqalgan. Kriptografiyaning rivojlanishi kiberxavfsizlikni mustahkamlashga xizmat qiladi va axborotning maxfiyligi, yaxlitligi hamda autentifikatsiyasini ta’minlashda asosiy vositalardan biri hisoblanadi.

Asimmetrik shifrlash tizimlarida ma'lumotlarni shifrlash va de-shifrlash uchun ikki kalitdan foydalaniladi: ochiq kalit (public key) va yopiq kalit (private key). Ochiq kalit ma’lumotni shifrlash uchun ishlatiladi va uni himoyalanmagan kanallar orqali bemalol uzatish mumkin. Yopiq kalit esa faqat shifrlangan ma’lumotni ochish (deshifrovka qilish) uchun ishlatiladi.

Ochiq va yopiq kalitlar juda katta sonlar bo‘lib, ular o‘zaro maxsus matematik bog‘liqlikka ega, biroq shunday tarzda tuzilganki, birini bilgan holda ikkinchisini aniqlash juda mushkul (amaliy jihatdan deyarli imkonsiz). Ochiq kalit ommaviy tarqatiladi, yopiq kalit esa foydalanuvchiga xavfiy tarzda saqlanadi. Bu tizimlarda ochiq kalit ma'lumotlarni shifrlash uchun ishlatiladi, va shifrlangan ma'lumotni de-shifrlash uchun foydalanuvchining yopiq kaliti kerak bo'ladi. Asimmetrik shifrlash tizimlari ma'lumotlarni xavfsiz tarzda almashish imkonini beradi va autentifikatsiya, kalit almashish, va tizimlararo aloqalar jarayonlarini osonlashtirish imkonini beradi. Bu tizimlarning kamchiliklari murakkablik, bajarish tezligi, kalitlar boshqarish, kalitlarning o'tkazilishi, va matn uzunligi bo'lishi mumkin. Standartlarni tanlashda standartning afzalliklarini va kamchiliklarini qarshilashish kerak, va foydalanuvchilar o'zlariga mos standartni tanlashadi. Assimetrik shifrlash algoritmlari ikkita kalitdan foydalanadi: — shifrlash kaliti yoki umumiy, va — shifrni ochish kaliti yoki sir. Ochiq kalit sirdan hisoblanadi:. Asimmetrik shifrlash algoritmlari bir tomonlama funksiyalardan foydalanishga asoslangan. Ta'rifga ko'ra, funktsiya bir yo'nalishli, agar: barcha mumkin bo'lgan variantlar uchun hisoblash oson va eng mumkin bo'lgan qiymatlar uchun bunday qiymatni hisoblash juda qiyin.

Asimmetrik shifrlashning ishlash prinsipi

Ochiq kalitdan foydalangan holda ikki subyekt (A va B) o‘rtasida ma’lumot uzatish sxemasi quyidagicha ishlaydi:

Subyekt A ochiq (publik) va yopiq (shaxsiy) kalitlardan iborat juftlikni yaratadi.

Subyekt A ochiq kalitni subyekt B ga uzatadi. Bu uzatish himoyalanmagan kanallar orqali amalga oshirilishi mumkin.

Subyekt B A dan olgan ochiq kalit yordamida ma’lumotlar paketini shifrlaydi va uni subyekt A ga yuboradi. Bu uzatish ham himoyalanmagan kanallar orqali bo‘lishi mumkin.

Subyekt A B yuborgan shifrlangan ma’lumotni faqat o‘zida mavjud bo‘lgan yopiq (sirli) kalit yordamida ochadi (deshifrlaydi).

Bunday sxemada himoyalanmagan kanallar orqali uzatilayotgan ma’lumotlarni ushlab qolish (perexvat) foydasiz, chunki asl ma’lumotni faqatgina yopiq kalit yordamida tiklash mumkin. Bu yopiq kalit esa faqat qabul qiluvchiga ma’lum bo‘ladi va uzatilmaydi.

Asimmetrik algoritmlarning qo‘llanilishi

Asimmetrik shifrlash — bu simmetrik usuldagi asosiy muammoni hal qiluvchi texnologiya. Simmetrik shifrlashda ma’lumotni kodlash va uni ochishda bir xil kalit ishlatiladi. Agar bu kalit himoyalanmagan kanallar orqali uzatilsa, uni ushlab qolish mumkin bo‘ladi, bu esa shifrlangan ma’lumotlarga ruxsatsiz kirish xavfini tug‘diradi.

Boshqa tomondan, asimmetrik algoritmlar sezilarli darajada sekinroq ishlaydi. Shuning uchun ko‘plab zamonaviy kriptotizimlarda simmetrik va asimmetrik shifrlash birgalikda qo‘llaniladi.

Misol:

SSL va TLS kabi protokollar asimmetrik algoritmlardan aloqa o‘rnatish (handshake) bosqichida foydalanadi. Bu bosqichda simmetrik shifrlovchi kalitni xavfsiz tarzda uzatish uchun asimmetrik algoritm ishlatiladi. Shundan so‘ng, ma’lumotlar almashinuvi simmetrik kalit yordamida amalga oshiriladi.

Bundan tashqari, elektron raqamli imzolar yaratishda ham asimmetrik algoritmlar qo‘llaniladi. Imzo yopiq kalit yordamida yaratiladi, ochiq kalit yordamida esa tekshiriladi. Bu — ma’lumot muallifligini va yaxlitligini tasdiqlashga xizmat qiladi.

Mashhur asimmetrik shifrlash algoritmlari:

1. **RSA** (Rivest, Shamir va Adleman familiyalari nomidan): Katta sonlarni faktorizatsiya qilishdagi hisoblash murakkabligiga asoslangan. SSL/TLS protokollarida, PGP, S/MIME standartlarida qo‘llaniladi. mMa’lumotlarni shifrlash va raqamli imzo yaratishda ishlatiladi.

2. **DSA** (Digital Signature Algorithm — "raqamli imzo algoritmi"): Diskret logarifm masalasining murakkabligiga asoslangan. Raqamli imzolar yaratish uchun qo‘llaniladi. DSS (Digital Signature Standard) tarkibiga kiradi.

3. **El-Gamal algoritmi**: Diskret logarifm muammosiga asoslangan. DSA asosida yaratilgan, shuningdek, eski GOST 34.10–94 standartida ham qo‘llanilgan. Shifrlash va raqamli imzo yaratishda ishlatiladi.

4. **ECDSA** (Elliptic Curve Digital Signature Algorithm): Elliptik egri chiziqlar nuqtalari ustida diskret logarifm muammosiga asoslangan. Raqamli imzolar yaratishda, xususan Ripple kriptovalyutasidagi tranzaksiyalarni tasdiqlashda ishlatiladi.

Asimmetrik shifrlashning ishonchliligi

Nazariy jihatdan, asimmetrik shifrlashning yopiq (privat) kalitini ochiq (publik) kalit asosida topish mumkin, chunki algoritmning ishlash prinsipi hamma uchun ochiq. Biroq, amaliyotda bu juda katta vaqt va resurs talab qiladi, shuning

uchun bunday shifrlash usullari ishonchli deb hisoblanadi. Masalan, RSA algoritmi asosida 768 bitli kalit bilan shifrlangan ma’lumotni oddiy 2.2 GHz chastotali AMD Opteron protsessorli kompyuterda ochish uchun 2000 yil vaqt ketgan bo‘lardi.

Shifrlash ishonchliligi quyidagilarga bog‘liq:

- Kalit uzunligiga;
- Algoritm asosida yotgan matematik muammoning murakkabligiga;
- Mavjud texnologiyalar darajasiga.

Xulosa qilib aytganda kriptografik shifrlash usullari ma’lumot xavfsizligini ta’minlash uchun muhim. Assimetrik shifrlash esa xavfsizroq, lekin resurs talab qiladi. Zamonaviy xavfsizlik tizimlarida AES, RSA va ECC kabi algoritmlar keng qo‘llaniladi. Shu bilan birga, kvant shifrlash kelajakda yanada ishonchli texnologiya bo‘lishi mumkin.

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QISHLOQ XO‘JALIGI TARMOQLARIDA SAMARADORLIKNI OSHIRISHDA IQTISODIY VA TSHKILIY MUNOSABATLARNI TAKOMILLASHTIRISH

Annotatsiya. *Ushbu maqolada agrar sektorning samaradorligini oshirishda iqtisodiy va tashkiliy-munosabatlar tizimining ahamiyati tahlil qilinadi. Xususan, dehqon va fermer xo‘jaliklari, kooperativlar, agroklasterlar kabi tashkilot shakllari o‘rtasidagi hamkorlik, moliyaviy aloqalar, resurslarni taqsimlash, bozor mexanizmlari va davlat tomonidan qo‘llab-quvvatlash siyosati o‘rganiladi. Ilmiy adabiyotlar, statistik ma’lumotlar va empirik tajribalar asosida tahlil yuritilib, iqtisodiy munosabatlarni takomillashtirish orqali fermerlarning rentabellik va samaradorligini oshirish bo‘yicha takliflar ishlab chiqiladi.*

Kalit so‘zlar: *qishloq xo‘jaligi, samaradorlik, iqtisodiy munosabatlar, tashkiliy munosabatlar, kooperativlar, agroklaster, moliyaviy qo‘llab-quvvatlash, bozor mexanizmlari*

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AGRICULTURAL SECTORS: IMPROVING EFFICIENCY THROUGH REFINEMENT OF ECONOMIC AND ORGANIZATIONAL RELATIONS

Annotation. *This article analyzes the importance of the system of economic and organizational relations in increasing the efficiency of the agricultural sector. In particular, cooperation among farm producers, cooperatives, agro-clusters and other organizational forms, financial relations, resource allocation, market mechanisms, and state support policies are examined. Based on scientific literature, statistical data, and empirical experience, the study proposes recommendations to enhance farmers’ profitability and efficiency through improvement of economic relations.*

Keywords: *agriculture, efficiency, economic relations, organizational relations, cooperatives, agro-clusters, financial support, market mechanisms.*

Kirish.

Keyingi yillarda O‘zbekiston iqtisodiyotida jadal, sifat jihatidan yangi tarkibiy va bozor islohotlari amalga oshirildi, mamlakatni ijtimoiy-iqtisodiy rivojlantirishning ustuvor yo‘nalishlari tubdan qayta ko‘rib chiqildi, iqtisodiy

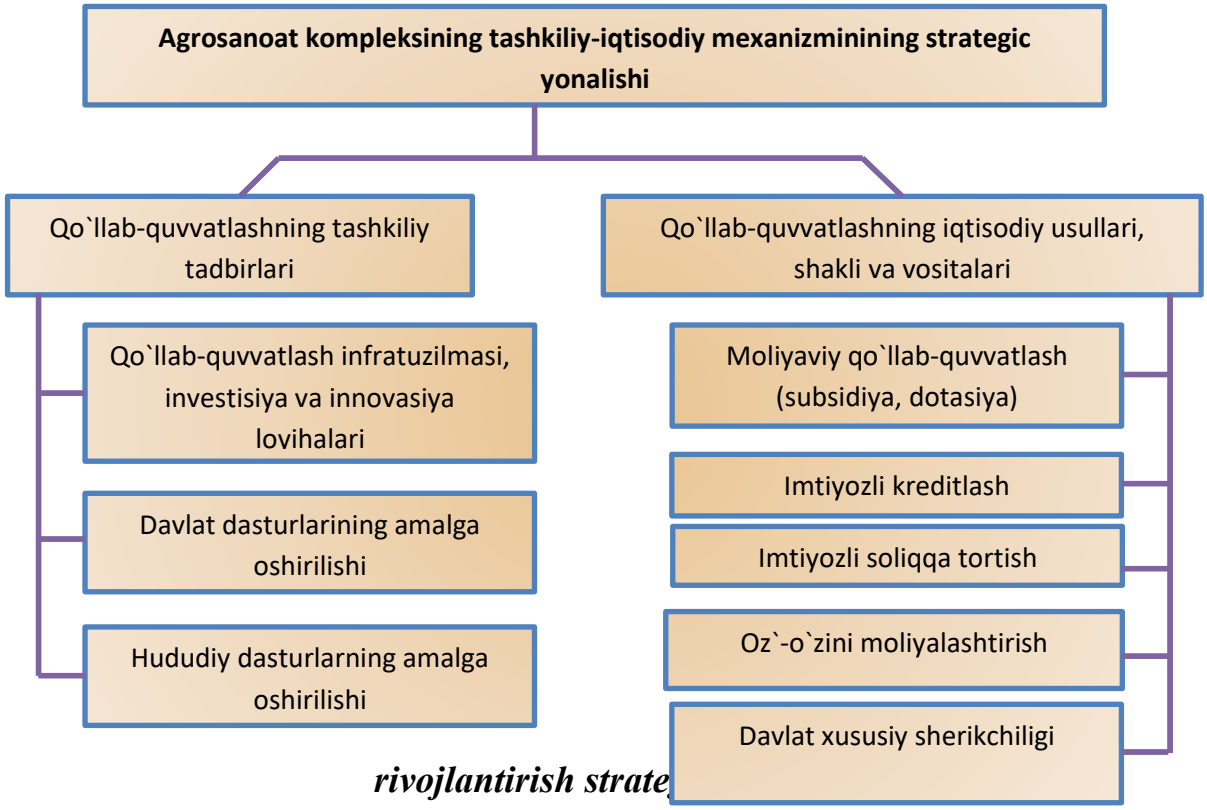
o‘sishning yangi, amaliy omillari joriy etilmoqda. Iqtisodiyotni tartibga solishning eski, eskirgan institutlari va vositalari iqtisodiyotga ta’sir ko‘rsatishning yangi innovatsion va samarali shakllari va usullariga o‘z o‘rnini bo‘shatib bermoqda.

Tadqiqot metodologiyasi.

Ushbu tadqiqotda iqtisodiy va tashkiliy munosabatlar samaradorlikka ta’sirini aniqlash uchun adabiyotlar tahlili, statistik ma’lumotlar va so‘rov-intervyular usullaridan foydalanilgan. Birinchidan, mahalliy va xorijiy ilmiy maqolalar, hukumat va tashkilotlar hisobotlari o‘rganilib, mavjud yondashuvlar va amaliyotlar tahlil qilingan.

Tahlil va natijalar.

Bugun har bir sohada innovatsiya va izlanishlar yangi yutuqlarga erishish, sog‘lom raqobat muhitini yaratishda muhim omil bo‘lmoqda. Xususan, mamlakatimizda qishloq xo‘jaligi sohasini isloh qilish, qishloq xo‘jaligida zamonaviy usullardan oqilona foydalanish ijobiy samaralar bermoqda. Keyingi yillarda jahon amaliyotida sinovdan o‘tgan va iqtisodiyotni rivojlantirishda katta ahamiyatga ega bo‘lgan bozor munosabatlari va amaliy tajribani izchil joriy etishga katta e’tibor qaratilmoqda. Ulardan biri klaster tizimi bo‘lib, endilikda bu tizimning iqtisodiyotimizning paxtachilik, to‘qimachilik va yengil sanoati sohasida faoliyatini yo‘lga qo‘yish masalasi ustuvor vazifa sifatida belgilangan. Agrosanoat majmuasi iqtisodiy faoliyatning turli tomonlarini birlashtirgan yirik tarmoqlararo va ko‘p funksiyali tizimdir. Biroq agrosanoat majmuasida sodir bo‘layotgan jarayonlarni to‘liq anglash, bu jarayonlarni tashkil etish va boshqarishni to‘liq asoslash uchun agrosanoat majmuasining tuzilishini to‘liq tushunish muhim ahamiyatga ega.



rivojlantirish strate

Agrosanoat majmuasi ushbu tizimning barcha elementlari, shuningdek, ular o‘rtasidagi o‘zaro aloqalar muammosiz amalga oshirilgandagina va ishlab chiqaruvchilarga ular uchun maqbul daromad keltirsagina samarali ishlashi mumkin. Ammo bugungi kunda mamlakatimiz agrosanoat majmuasiga xos muammolar uning salohiyati va investitsiya jozibadorligini sezilarli darajada pasaytirmoqda. Agrosanoat kompleksining tashkiliy-ishlab chiqarishda bir qator muammolar mavjuddir. Birinchidan, kadrlar masalasi - bugungi kunda AKM korxonalari malakali mutaxassislarga har qachongidan ham katta ehtiyoj sezmoqda, bu birinchi navbatda ta'lim tizimining bugungi kun talablaridan orqada qolishi, ish haqi va qishloq joylarda aholining turmush darajasining pastligi kabi omillar bilan bog'liq. Ikkinchidan, markazdan uzoqda joylashgan hududlarda agrosanoat majmuasini qo‘llab-quvvatlash bo‘yicha davlat tomonidan amalga oshirilayotgan chora-tadbirlarni amalga oshirishda qiyinchilikllar mavjuddir. Uchinchidan, oziq-ovqat sanoati va qishloq xo'jaligi mashinasozligining yetarli darajada rivojlanmaganligi, ASMning yetarli darajada moddiy-texnik ta'minlanmaganligi va boshqalar. Hozirgi vaqtda iqtisodiyotning agrar sektoridagi iqtisodiy munosabatlarning rivojlanishini belgilovchi asosiy omillardan biri ilmiy-texnikaviy taraqqiyot bo‘lib, bu qishloq xo‘jaligi ishlab chiqarishining yuqori va barqaror o‘sish sur’atlarini oshirish imkonini beradi. Bu sanoatning uzluksiz rivojlanishini, O`zbekistonda ishlab chiqarilgan mahsulotlarning raqobatbardoshligini sifat jihatidan o'zgartirishni, ishlab chiqarish va xo'jalik faoliyati samaradorligini oshirishni, yuqori texnologiyali, resurslarni tejaydigan va aqlli qishloq xo'jaligi texnikasidan foydalanish asosida ishlab chiqarish jarayonlarini texnik modernizatsiya qilish talablarini belgilaydi

So‘nggi yillarda qishloq xo‘jaligi iqtisodiyotida jadal, sifat jihatidan yangi tarkibiy va bozor islohotlari amalga oshirildi, mamlakatimizni ijtimoiy-iqtisodiy rivojlantirishning ustuvor yo‘nalishlari tubdan qayta ko‘rib chiqildi, iqtisodiy o‘sishning yangi, amaliy omillari joriy etilmoqda.

Xulosa.

Maqolada iqtisodiy va tashkiliy munosabatlarning agrar sektor samaradorligiga ta’siri tahlil qilindi. Tadqiqot natijalari shuni ko‘rsatdiki, sektorning hosildorligi va rentabelligi ko‘p jihatdan kooperativlar, agroklasterlar va tashkilotlar o‘rtasidagi samarali hamkorlik, moliyaviy aloqalar, resurs taqsimoti va bozor mexanizmlarining darajasiga bog‘liq. Iqtisodiy munosabatlardagi noaniqliklar, shaffof bo‘lmagan shartnomalar va moliyalashtirishdagi cheklovlar fermerlarning imkoniyatlarini cheklaydi. Shu bilan birga, tashkiliy jihatdan zaif institutlar va qo‘llab-quvvatlash mexanizmlarining kamligi soha rivojiga to‘sqinlik qiladi. Agar davlat siyosati institutlarning rolini mustahkamlasa, kooperativlar va klaster strukturalarini rag‘batlantirsa hamda bozor va moliyaviy mexanizmlarni takomillashtirsa, agrar sektorning samaradorligini sezilarli darajada oshirish mumkin bo‘ladi. Ushbu xulosalar asosida qishloq xo‘jaligida yangi tashkilot shakllarini rivojlantirish, shaffof kontrakt aloqalari, kredit va moliyalashtirish

siyosatini yangilash va tashkilotlararo hamkorlikni kuchaytirish bo‘yicha amaliy tavsiyalar berilgan

Foydalanilgan adabiyotlar

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PHYSIOLOGICAL AND BIOCHEMICAL CHARACTERISTICS OF SOYBEAN VARIETIES UNDER DIFFERENT ENVIRONMENTAL

Annotation. *In this article given results of bioecological and morphological features klof the perspective varieties of soybean in the conditions of Surkhandarya region. Certain photosynthetic index (maintenances of pigments, productivity of photosynthesis) of different sorts of soy.*

Key words: *sorts of soy, photosynthesis, pigment, productivity of photosynthesis.*

Introduction

Photosynthesis is the global natural source of renewable energy on earth, ensuring the full functioning of all the organs of a green plant. Therefore, it serves as a key factor in the production process of agricultural crops, resulting in the formation of up to 95% of the organic matter in the crop. [1,2]. Photosynthesis, which is the main process of plant nutrition, depends on the biological properties of plants, as well as complex external factors: sunlight, air temperature, the amount of carbon dioxide in it, soil moisture and the level of mineral nutrition (3).

Any change in environmental conditions primarily affects the intensity and direction of photosynthesis processes. This ultimately leads to changes in plant growth, development and productivity. The growth and productivity of plants in different climates and soil conditions depends on the adaptation of various physiological processes, especially photosynthesis, to environmental conditions.

Therefore, the main indicators of photosynthesis in the leaves of plants of different shade varieties in the specific soil and climatic conditions of Surkhandarya region - leaf level, net productivity of photosynthesis and the amount of plastid pigments were studied.

Object and methods of research.

The A.A. Nichiporovich method (based on the formula of Kidda, VestaiBriggsa) [5] was used to determine the net productivity of photosynthesis in plants. It is now common to use chlorophyll counters to determine chlorophyll or leaf greenness. For this reason, we also used the chlorophyll meter ZYS-4N (Hangzhou quality lab scientific instrument co., Ltd., China) in our study to determine the amount of chlorophyll.

Research results and its discussion.

Based on the above data, we studied the photosynthetic properties of soybean varieties by their phases of development.

Pure productivity of photosynthesis

The net productivity of photosynthesis is the amount of dry matter in grams accumulated per 1 m2 of leaf surface in 1 day. The value of this indicator for different crops is between 1-20 g / m2 per day.

The growth of plant productivity is ensured by two main processes of their vital activity - photosynthesis and growth balance. Growth processes that reflect general functional and metabolic changes in plants are closely related to their accumulation of biomass and dry matter from the air.

The photosynthetic activity of plants is closely related to the size of the assimilating surface of the leaf apparatus and its function. Therefore, it is very important to know what the activity of the leaves is and whether it depends on various influences. These indicators are the photosynthetic potential of crops and the net productivity of photosynthesis

The amount of plastid pigments in the leaves of soybean varieties.

Accurate assessment of photosynthetic pigments of leaves is an important element in controlling plant stress and fertilizer application and in managing overall plant productivity, especially in agricultural systems where yields are directly related to plant condition. The photosynthetic pigments of the leaves are the main variables characterizing the photosynthetic reaction and gross primary production in the biosphere, pigments play a central role in light harvesting, protection of photosystems and other growth functions [5-6].

The amount of leaf chlorophyll provides a key indicator of photosynthesis ability and is a very important factor for plant productivity along with measurements such as leaf area index. Therefore, the amount of plastid pigments in the leaves of soybean varieties grown in field experiments was studied. The results obtained are presented in Table 2.

Table 2

The amount of plastid pigments in the leaves of soybean varieties

(Chlorophyll index using ZYS-4N chlorophyll meter for soybean varieties, 2020-2021)

Shade varieties	Development cycles	Indicator of plastid pigments
Нафис	Trueleaf	40,84
	Flowering	43,32
	leg formation	38,37
Тўмарис ман-60	Trueleaf	43,81
	Flowering	46,51
	leg formation	41,14
Устоз ММ-60	Trueleaf	39,61
	Flowering	40,98
	leg formation	37,28
Вилона	Trueleaf	43,52
	Flowering	48,26
	leg formation	42,75

Studies have shown that the amount of chlorophyll in the leaves of Vestochka and Tomaris man-60 varieties of soybeans is higher than in other varieties. It was also observed that the amount of chlorophyll changed during the growing season of the soybean plant, i.e., it was highest during the flowering period, followed by a decrease in the amount.

Thus, it was found that the amount of plastid pigments in the leaves of the studied soybean varieties varies during the growing season depending on the biological characteristics of the varieties. Large amounts of plastid pigments to some extent express the intensity of photosynthetic processes in the plant, providing their growth, development rates and weight of the crop.

Chlorophyll counter readings can be affected by many factors other than nitrogen alone. It has been found that anything that can change the color of plants (e.g., diseases, nutrient deficiencies) can affect chlorophyll meter readings.

CONCLUSION

Studies have shown that the net productivity of photosynthesis in plants and the amount of plastid pigments in the leaves depend on the biological characteristics of soybean varieties and growing conditions.

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G'O'ZA O'SIMLIGINING O'SISH VA RIVOJLANISHI

Annotatsiya. *Ushbu maqolada ingichka tolali g'o'za navining o'sishi va rivojlanishiga tashqi muhit omillarining ta'siri ko'rib chiqilgan.*

Kalit so'zlar: *O'sishi, rivojlanish, entojean, chigit ekish, g'oza o'simligi, ko'chat qalinligi*

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GROWTH AND DEVELOPMENT OF THE COTTON PLANT

Abstract. *This article examines the influence of external environmental factors on the growth and development of fine fiber cotton.*

Keywords. *Agrotechnical measures, herbivorous bugs, seed planting, cotton, seedling thickness.*

O'zbekiston paxta yetishtirish bo'yicha dunyodagi yetakchi mamlakatlardan biri bo'lib, mamlakatimizda asosan ikki tur, o'rta tolali (Gossipium hirsutum) va ingichka tolali (Gossipium barbadense) g'o'za navlari yetishtiriladi. Ingichka tolali g'o'za navlari tola sifatining yuqori ekanligi bilan alohida xarakterlanadi. Biroq, ushbu turga mansub g'o'za navlari issiq iqlimga moslashgan bo'lib, O'zbekistonning faqatgina janubiy mintaqalarida yetishtirishning imkoni mavjud. Shuningdek, hosildorligi va tolasining chiqimi ham o'rta tolali g'o'za navlarinikiga nisbatan birmuncha past hisoblanadi. Dunyo paxta tolasi ulushining 95 foizdan yuqori qismini yetkazib beruvchi o'rta tolali g'o'za navlari o'zining hosildorligi, tola chiqimining yuqoriligi bilan boshqa tur g'o'za navlaridan ajralib turadi. Lekin, o'rta tolalilarda tola sifati ingichka tolaga nisbatan kalta, dag'alroq va mustahkamligi past bo'ladi[2].

Dunyoda ishlab chiqarilgan tolaning **9,41 mln** tonnasi eksport qilinsa, uning 38,2 foizi yoki **3,592 mln** tonnasi AQSh tomonidan eksport qilingan va paxta eksporti bo'yicha dunyoda birinchi o'rinni egallagan. Shuningdek AQShda ishlab chiqarilgan tolaning 82 foizi eksport qilinadi [1] .

Bugungi kunda dunyoning 84 ta mamlakatida 200 millionga yaqin aholi 32-33 million gektar yerga chigit ekib paxta yetishtirish va qayta ishlash bilan shug'ullanadi.O'zbekiston paxta yetishtirish bo'yicha dunyoda Xitoy, Hindiston,

AQSh, Pokiston va Braziliyadan keyin 6-o'rinda turadi. Avvallari paxta tolasini eksport qilish bo'yicha O'zbekiston AQSh va Hindistondan keyin uchinchi o'rinda turgan bo'lsa, keyingi yillarda paxtani o'zimizda qayta ishlash sanoati rivojlanayotgani sayin 6 o'ringa o'tdi [2,6].

Hozirgi kunda jahon paxta sanoatida tola sifatiga bo'lgan talab ortib bormoqda. Bu esa har bir g'o'za navlarining ko'chat qalinligi, sug'orish va oziqlantirish tartiblarini har bir mintaqa sharoitiga mos tadbiq qilish dolzarb vazifa hisoblanadi.

A. Haydarov "Andijon-37" g'o'za navini suv va resurs tejovchi texnologiyaning muhim elementi hisoblangan 60x15-1 ekish tizimida plyonka ostiga chigit ekish bilan birga egatlarga shoffof plenka to'shab sug'orishda ko'chat qalinligini 95-100 ming tup/ga bo'lishi lozimligini tavsiya etgan[3].

X. Tursunov esa Andijon viloyatining och tusli bo'z tuproqlari sharoitida yangi "Andijon-37" g'o'za navidan yuqori va sifatli hosil olish uchun pushtaga chigitni yakka qator usulida ekilganda maqbul ko'chat qalinligini gektariga 113-114 ming tup, qo'shqator usulida ekilganda esa 144-145 ming tup qilib belgilashni tavsiya etgan[4] .

S.X. Yo'ldoshevni ko'rsatishicha, ko'chat soni gektariga 114 ming tup bo'lganda yaxshi natijalar olingan bo'lib, ko'chat soni 171 ming/ga teng bo'lganda esa o'simliklar zich joylashgani va yotib qolgani natijasida hosildorlik kamaygan. Olingan ma'lumotlarga tayanib, sizot suvlari chuqur joylashgan tipik bo'z tuproqlarda o'rta tolali g'o'zalarning ko'chat soni 120-130 ming/ga bo'lishi kerak deb hisoblaganlar.

Olib borilgan tajriba natijalariga ko'ra, iyun oyining boshida olingan fenologik kuzatuvlarda variantlar o'rtasida sezilarli farq kuzatilmadi. O'simlik bo'yi ko'chat soni ortishi bilan 2-3 sm ga yuqori bo'lganligi kuzatildi. G'o'zada chilpish tadbiri o'tkazilganidan so'ng olingan natijalarda variantlar o'rtasida farqlar kuzatildi. Sentyabr oyida olingan fenologik kuzatuv natijalariga ko'ra, g'o'zaning o'rta tolali "Buxoro-102" navining bo'yi variantlar bo'yicha gektariga 90-100 ming tup ko'chat qalinligida 93,0-105,2 sm bo'lsa, 110-120 ming tup/ga esa 95,0-109,0 sm bo'lib ko'chat soni ortishi bilan 2,0-4,0 sm; chilpish o'tkazilmaganda esa 10,0-15,0 sm gacha yuqori bo'lishi kuzatildi.

G'o'zada ko'chat soni ortishi bilan bir tup o'simlikda hosil shoxlari 1,5-2,0 dona; hosil elementlari 1,3-1,7 dona; ko'saklar soni 1,3-2,2 dona va shu jumladan ochilgani 1,2-1,8 donagacha kamayganligi kuzatilgan bo'lsa, kimyoviy va qo'lda chilpish o'tkazilganda chilpish o'tkazilmagan variantga nisbatan hosil shoxi 0,8-1,3 dona; hosil elementlari 2,7-4,3 dona; ko'sak soni 2,5-4 dona va shu jumladan ochilgani 2,6-3,2 donagacha ko'p bo'lishi kuzatildi. Chilpish tadbiri qo'lda o'tkazilganiga nisbatan kimyoviy yo'l bilan o'tkazilganda hosil shoxi va elementlari, ko'saklar soni 2,0-2,5 donaga yuqori bo'ldi (3.2.1 – jadvalga qarang). G'o'zaning ingichka tolali "Surxon-103" navida ham yuqoridagi qonuniyat kuzatilib, olingan natijalar o'rta tolali g'o'za navidan biroz yuqoriroq chiqdi. Ya'ni, sentyabr oyi holatida o'simlik bo'yi variantlar bo'yicha gektariga 120-130 ming tup

ko’chat qalinligida 95,0-110,2 sm bo’lsa, 140-150 ming tup/ga esa 100,6-115,0 sm bo’lib ko’chat soni ortishi bilan 5,0-6,0 sm; chilpish o’tkazilmaganda esa 11,0-15,0 sm gacha yuqori bo’lishi kuzatildi.

“Surxon-103” navida ko’chat soni gektariga 120-130 ming tupdan 140-150 ming tupgacha ortib borishi bilan bir tup o’simlikda hosil bo’g’inlari 1,0-2,0 dona; hosil elementlari 1,4-1,7 dona; ko’saklar soni 1,5-3,5 dona va shu jumladan ochilgani 2,0-3,0 donagacha kamayganligi kuzatilgan bo’lsa, kimyoviy va qo’lda chilpish o’tkazilganda chilpish o’tkazilmagan variantga nisbatan hosil bo’g’ini 0,3-1,6 dona; hosil elementlari 0,6-2,1 dona; ko’sak soni 2,7-4,5 dona va shu jumladan ochilgani 2,3-3,0 donagacha ko’p bo’lishi kuzatildi. Chilpish tadbiri qo’lda o’tkazilganiga nisbatan kimyoviy yo’l bilan o’tkazilganda hosil bo’g’ini va elementlari, ko’saklar soni 2,3-2,7 donaga yuqori bo’ldi.

Ma’lumki, Qandalalar g’o’za bargi va hosil elementlarini shirasini so’rib, ularni nobud bo’lishiga olib keladi. G’o’za qandala bilan zararlanganda barglari chirtak bo’lib teshilib qoladi, zararlangan hosil elementlari-shona, gul va ko’saklari esa to’kilib qoladi. Iyul oyida o’tkazilgan fenologik kuzatuvlarda hosil bo’lgan hosil elementlari bilan birgalikda to’kilgan hosil elementlari ham hisoblandi. Olingan natijalarga ko’ra, o’rta tolali “Buxoro-102” g’o’za navida 20,4-26,6 donagacha hosil elementlari hosil bo’lgan bo’lsa 5-9 dona hosil elementlari nobud bo’lib to’kilgan. Ingichka tolali “Surxon-103” g’o’za navida ham to’kilgan hosil elementlari hisoblanib, mos ravishda 6-8 dona ekanligi kuzatildi.

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EFFECT OF STRESS DURING EXAMS TO MOTIVATE STUDENTS TO STUDY

Abstract. *This article examines in detail the impact of stress on students' learning motivation during the examination phase. Empirical results showed that stress during the examination stage negatively impacts students' learning process. To prevent these phenomena, it is recommended to increase the psychological support of students, develop stress management skills, and create a favorable environment in the education system. The Research Fund will assist in developing measures aimed at improving the quality of psychological services in educational institutions, effectively organizing the examination process, and supporting the personal and academic development of students.*

Key words: *stress, exam, motivation to study, student.*

Introduction.

The susceptibility of the education system to change in modern Uzbekistan is due to the asocial demand of society. Today, there is a need to revise curricula, as society needs creative, purposeful, and responsible individuals [1-3]. This need requires the introduction of new methods and techniques in the field of education. During the modernization of curricula, it is important to develop creative thinking, critical analysis, adaptation to teamwork, and lifelong learning skills [5,7,12]. The focus should also be on values that contribute to the comprehensive development of the individual, issues of national upbringing, culture, and civic responsibility [2,4,6-12].

The purpose of studying at the university is to increase cognitive activity, awaken motivation for studying, strive for self-development, and teach the effective use of acquired knowledge in practice. The main goal of the university is to form a student as a full-fledged individual. The sensitivity of this period provides great opportunities for the student's self-development. In addition, it is necessary to

consider the factors influencing the change in student motivation: the educational center's relationship with students, age-related, personal, individual-typological characteristics, the teacher's subjective characteristics, and the specifics of communication with students.

Materials and methods.

For an empirical study of the impact of students' stress during exams on learning motivation, we took the following points of view as a basis:

• research methods should correspond to the specifics, nature of the research object. Only in this case will they ensure the reliability, objectivity of the obtained results;

• since each research method has its own specific significance, a complex of methods, techniques, and means must be applied that ensure the comprehensive study of the phenomenon.

Requirements for all types of psychological methods:

• Scientific nature of methods, validity of their application, including justification of the need to determine them and the possibility of their application in various studies;

• Validity of methods; • Standardization of instructions and test material;

• the possibility of practical application of methods, determined by the simplicity of conducting the test, as well as the speed of its implementation

Criteria specific to different questionnaires:

• adaptation of the questionnaire to domestic socio-cultural conditions, if it was developed abroad;

• availability of scales for evaluating the results obtained during the research;

• publication in sociological literature as an indicator of the methodology's sufficiently wide distribution.

Methodology and procedure for conducting experimental research: the author's questionnaire was used; "Dembo-Rubinstein Methodology," A.A. Reannig's "Success Motivation and Fear of Failure" methodology, Ch.D. Spielberg and L. Khanin's "Determining the Level of Reactive and Personal Anxiety" methodology.

The study was conducted among students of the city of Andijan in the first examination session of 2024. 70 1st-4th year students participated in the study. Of these, 18 are 1st-year students, 9 are 2nd-year students, 12 are 3rd-year students, and 31 are 4th-year students.

Results and discussion.

During the implementation of the expert assessment method, a survey was conducted among students studying in other specialties with the specialty of psychologist. The reason for conducting a survey among them was to determine which stage of learning is complex, what are the problems of basic learning. The questionnaire included questions relevant to students, and the test was administered anonymously.

Table 1

Level of student stress during the exam and its impact

Questions	Factors	%
Exam for you	Formation	23,3
	Stress	43,3
	Result	33,3
How anxiety affects you	Health deteriorates	16,6
	My mood is falling.	26,6
	My self-esteem is declining	56,6
How quickly do you get out of stress?	Immediately	20
	Some time	50
	Several days	30
The most intense period of study for you during your student years	At the beginning of the academic year	36,6
	At the end of the academic year	16,6
	At the exam stage	46,6

70 students participated in the survey. The questionnaire was taken to determine the importance of the exam for the student's life, the main reasons for their stress and anxiety, and the main motivating force of learning motivation. The questionnaire was taken from 1st-4th year students. The age of the surveyed students was 17-23 years. During the survey, we achieved the following results.

Based on the results of the survey, it was established that for the vast majority of students, the exam has an association with the word stress. During the survey, it was revealed that the main focus of students is not health, not mood, but a decrease in their self-esteem due to lack of self-confidence. When asked which period of study is the most intense for you during your student period, the vast majority of students answer that the examination period, no matter what the period of study, is of great importance.

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Analyzing the survey results, it was established that the exam is a stressful situation for students, that in the case of anxiety, self-esteem often decreases, that much time is spent on overcoming stress, that the most intensive period of study during the student period is only the examination period. Due to these results, we decided to delve deeper into the test conducted during the student survey. This means that the examination period is of great importance for students.

The purpose of the determining study is to determine the impact of stress during the exam on the learning motivation of university students and how learning during the current academic year affects students' learning motivation.

The selection of research groups was not random, it depended on the following factors. The research results showed us that first-year and third- and fourth-year students are clearly at different stages of learning motivation. First, we see that if first-year students already understand the content of education, then for the fourth year, education has lost its relevance. We see that more attention is paid to labor activity than to educational activity. Third-year students, in most cases, focused on learning activities.

It is no coincidence that students study at different faculties. The purpose of the study was to determine whether there is a difference in learning motivation between students in humanities and natural sciences. However, such a classification had no significance. Since there is no significant difference between them, the age differences of the students were taken into account. 70% of first-year students were 17 years old, 19% were 18 years old, 11% were 20 years old, and 27% of third-year students were 19 years old. Although gender and age differences were taken into account, we did not study them in detail.

As a result, the examination period reduces the student's emotional, functional state. Despite individual differences, we found that the exam has an impact on learning motivation. It has been established that this is to start with a minor need and gain access to a normal life by getting rid of inconveniences.

Learning motivation is changing. Exam affects the development of learning motivation, but it was found that 30% of them have a higher level of forgetting than they have a greater memory when they discover that their motivation is fading during the exam.

Orientation changes during the exam. In most cases, they forget 50% despite being so prepared during the exam. That is, no matter how good the preparation for this exam is, the forgetting rate is low. But as a result of this research, preparation for the exam begins.

The justification for choosing the methodology of Ch.D. Spielberg and L. Khanin "Determining the Level of Reactive and Personal Anxiety" is the study of the manifestations of situational or reactive and personal anxiety in students.

Additionally, the methodology is borrowed due to its validity and widespread use in many studies. In the methodology, anxiety is defined as a specified reaction to stress.

Ch. D. Spielberg points to anxiety in his theory as follows:

1. Anxiety in a state where a person experiences discomfort when they are under pressure. Subjective anxiety is caused by the emotional pressure of the individual.

2.Fear of an anxious personality disorder due to serious causes of anxiety or intense anxiety. This depends on how long the anxiety, which is the main factor in these conditions, lasts.

3. Individuals with a high level of anxiety often assess a complex problem as an unsuccessful or intense burden on themselves.

4. A person's anxious state can even be reflected in the defense system in their actions. The type of attempt to escape from failure, which always occurs in uncomfortable situations in a constantly recurring personality, even becomes a normal defense mechanism of the personality.

The study also considered the level of anxiety among students. According to the results, the upper level of anxiety is 45%, and the lower level of anxiety is 55%.

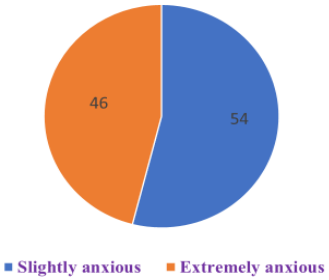


Figure 1. Level of students' anxiety, (%))

As a result of the research, we divided the anxiety into two groups. Situational or reactive-anxious and personal anxiety. It was found that students' personal anxiety is high. This is explained by the fact that the level of situational anxiety was 19.94%, and the level of personal anxiety - 56.57% we can see. The highest level of situational or reactive anxiety among students is 30%, the average level is 64%, and the lowest level is 6%.

When measuring the level of situational or reactive anxiety, it was established that two students participating in the study had a low level, 30 students had an average level, and 18 students had a high level.

When measuring the level of personal anxiety, it was revealed that one of the students who participated in the study had a low level, 21 students had an average level, and 28 students had a high level.

A study of students revealed that the level of personal anxiety is significantly higher than the level of situational or reactive anxiety. This means that students are more concerned about the difficulties that arise in the person, that is, in themselves, in a given situation than about how this situation will develop.

According to the results of the conducted approach to students, the number of highly rated people was 28. And if the number of students with adequate self-esteem is 15, the number of students with low self-esteem is 7. The number of highly assessed students was 6 students from among the 1st-year students. The number of students with adequate self-esteem was 4, and students with low self-esteem - 3 students; of the 2nd-year students, 2 students. If the number of students with adequate self-esteem is 1, then the number of students with low self-esteem is 1 student; of the 3rd-year students, 3 students. While the number of students with adequate self-esteem is 2, the number of students with low self-esteem is 2 students;

of the 4th-year students, 17 are students. While the number of students with adequate self-esteem is 8, the number of students with low self-esteem is 1 student.

In the course of the study, to identify openly explicit and implicit motives of students, we devoted research to the motives of students' learning activities by A. Renand and V. A. Yakunin. The main reason we choose a letter is that through a survey, we can determine the reason for the motivation to read16. In that it is one of the most frequently used methods in studying learning activities. There are two variants of the methodology: the first determines 5 main motives, and the next determines the level of motives. We obtained a methodology for determining 5.

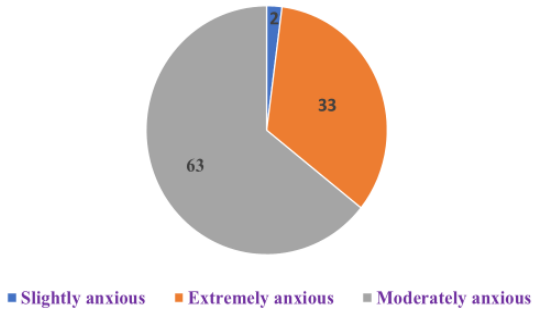


Figure 2. Level of anxiety disorders in students depending on the situation, (%)

We used this methodology to determine students' explicit motivation, taking into account that it also allows us to determine the degree to which they feel a social need.

The methodology allowed us to determine the multifaceted nature of the number of motives and establish that their level of expression varies among different students. The main reason for choosing the first version of the method is its speed, accuracy of results, and ease of comparison with other methods. The method allows you to determine the degree of success and avoid failures.

Individuals striving for success place high demands on competition, recognition, and leadership. Such people are often perceived as confident, determined, and proactive.

Successful individuals - competition, self-recognition, high hopes for achieving leadership qualities. Such students are often perceived as confident, purposeful, and proactive.

Individuals striving to escape from failure are indicators of a type of negative motive. At the same time, a person's active activity, on the contrary, depends on their actions aimed at escaping failure. The passivity of his actions is due to his expectation of a negative result, his understanding that he is not strong enough for himself. From the moment of starting any work, the thought of achieving success completely disappears from the thought that a person thinks about failures and avoids those failures. Individuals with failures-oriented motives, in many cases, are clearly distinguished by high levels of anxiety and low self-confidence.

According to the definition of the methodology of success motivation and failure fear, conducted with the aim of determining student motivation, it was found that there is no failure fear, there are two students who avoid failure, there are twenty-one students whose motivation is not fully determined, there are twenty-seven students who have a motivation orientation. By determining the level of success motivation and failure fear in 1st-year students, the level of failure fear was not revealed. At the level of fleeing from failure, 1 student, 1 student with a not fully determined motivation, 11 students with a motivation orientation were identified; the level of fear of failure in determining the level of success and fear of failure in 2nd-year students did not manifest itself at all.

At the level of avoiding real failure, not a single student was identified, motivation was not fully determined in 2 students, motivational orientation was revealed in 3 students; when determining the level of success motivation and fear of failure in 3rd-year students, the level of fear of failure in students was not reflected at all.

At the level of fleeing from failure, 1 student, 3 students with not fully determined motivation, 3 students with motivation orientation were identified; the level of fear of failure in determining the level of success and fear of failure in 4th-year students did not manifest itself at all. At the level of escape from the lack of a real path, 15 students without motivation and 10 students with motivation were identified.

When determining the level of success motivation and fear of failure in students as a whole, the level of orientation towards failure motivation in students was not reflected at all. We see that the number of students with a failure motivation orientation is lower than the number of students with an unclear motivational pole, while the number of students with a success orientation and achievement motivation is higher.

According to the results of the study of student learning activity motivation using the A. Rean and V.A. Yakunin methodology, failure motivation was not observed in students as a whole. Furthermore, students with an emphasis on failure motivation were not identified. However, achievement motivation was identified in 25 students, 22 students with an emphasis on achievement motivation, and 3 students with an unclear motivational pole.

Conclusion.

The study was conducted among students of the city of Andijan in the first examination session of 2024. 50 1st-4th year students participated in the study. Of these, 13 are 1st-year students, 4 are 2nd-year students, 7 are 3rd-year students, and 26 are 4th-year students.

1. Based on the results of the analysis of literary sources, it was stated that the factors influencing the stressful nature of students influence the stressful situation and its behavior. The most interesting factors, in our opinion, are personal level and neuroticism, self-esteem, locus of control, problematic and emotionally determined copen, achievement motivation. We have consulted many ethics experts about

exams and stress, as these are the most important stages in specialist training. He also theorizes about the differences in self-esteem and motivation. analyses were conducted.

2. The results of the experiment showed that a special questionnaire was conducted, as a result of which three students were the most significant, during the questionnaire, special methods were chosen using answers to questions. The choice that participated in this study is characterized by several high indicators of panic prevailing in the area of high achievement and readiness for risk. It was established that through the motivation to avoid failures, a motivation for success emerges. The remaining measurable characteristics meet the regulatory requirements. It has been established that the low need for self-development and self-sufficiency decreases when selecting students whose learning motivation is being studied.

3. As a result of comparing the three groups of subjects, important points for further analysis were identified: students studying in the humanities and natural sciences have no difference in their field of study. Furthermore, it was found that first-year psychologists are most prepared for the greatest risk, while 3rd-year psychologists have the lowest level of personal anxiety. In the motivational sphere, there are no significant differences between groups. As a result of the methodology. Renan and V. A. Yakunin established that achievement motivation is high.

4. Based on the results obtained during the observational experiment and the students' participation in the selection process, it was determined that the different responsibilities and opportunities in each course also have an impact on students' self-esteem. As a result of applying the Ch.D. Spielberg and L. Khanin methodology, a low level of anxiety, including a moderate level of situational anxiety and a high level of personal anxiety, was revealed. It has been established that most students have a high level of self-esteem.

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TURIZM IMKONIYATLARIDAN SAMARALI FOYDALANISHDA KARTOGRAFIK TADQIQ QILISHNING ILMIY NAZARIY MASALALARI

Annotatsiya *Ushbu maqolada Turizm imkoniyatlarini oshirishda kartografik tadqiq qilishning ilmiy nazariy asoslari hamda o‘ziga xos jihatlari tahlil qilingan. Turizm imkoniyatlarining hududiy jihatlari Respublikamiz hamda Xorazm viloyati misolida qisqacha tadqiq qilingan.*

Kalit so‘zlar: *turizm, tur operatorlar, turistik xaritalar, turizm atlaslari, mavsumiy turizm, madaniy turizm, sport turzimi, davolash va dam olish turizmi, ta'lim turizmi agroturizm.*

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SCIENTIFIC AND THEORETICAL ISSUES OF CARTOGRAPHIC RESEARCH IN THE EFFECTIVE USE OF TOURISM OPPORTUNITIES

Annotation*: Scientific and theoretical foundations of cartographic research in increasing tourism opportunities Abstract This article analyzes the scientific theoretical foundations and specific aspects of cartographic research in increasing tourism opportunities. The territorial aspects of tourism opportunities are briefly studied on the example of our Republic and the Khorezm region.*

Keywords: *tourism, tour operators, tourist maps, tourism atlases, seasonal tourism, cultural tourism, sports tourism, medical and recreational tourism, educational tourism, agrotourism.*

Kirish.

Bugungi kunda jahon miqyosida turizm va unga bog‘liq xizmat ko‘rsatish sohalarini rivojlantirishga mamlakatlar tomonidan keng e'tibor berilmoqda. Turli xil va rang barang usullar yodamida sohani rivojlantirish va bu orqali yanada ko‘proq turistlar oqimini jalb qilish dolzarb masalalardan biriga aylangan. Albatta, sohani rivojlantirish va salmoqli yutuqlarga erishishda marketing hamda shu bilan birga targ‘ibot va tashviqot ishlarining amaliy ahamiyati juda kattadir.

Turizm rivojlangan mamlakatlarda tur operatorlar tashrif buyuruvchilar oqimini ko‘paytirish maqsadida bepul xizmatlar (xususan gitlar, turistik xaritalar,

muzeylarga tashriflar, estalik sovg‘alari), turli xil festivallar, kornavallarni tashkil qiladilar. Bularning barchasi aniq oldindan rejalashtirilgan loyihalar asosida amalga oshiriladi.

Ushbu jarayonda hududning turistik va rekreatsion salohiyati, hududiy tafovutlari, imkoniyatlari, tursitik marshrutlari haqida ma'lumot beruvchi turistik yo‘l ko‘rsatkichlar, xarita va joy planlarning ahamiyatini alohida ta'kidlash joiz.

Adabiyotlar sharhi:

Xorijiy mamlakatlarda turizmni rivojlantirish xususiyatlarini tadqiq qilish bo‘yicha V.Senin, V.S.Bogolyubov, A.P.Durovich, M.V.Efremova, V.A.Kvartalnov, S.B.Julidov kabi olimlar shug‘ullanishgan hamda ilmiy izlanishlar olib borganlar. O‘zbekistonda turizmini rivojlantirish masalalari va mintaqaviy xususiyatlari yuzasidan respublika olimlaridan M.Q.Pardayev, I.S.Tuxliyev, G‘.H.Qudratov, Eshtayev, O.Xomidov, B.Turayev, D.Usmanova, N.Ibadullayev, R.Amriddinova, Safarov va M.Alimova kabi olimlar izlanishlar olib borganlar.

Tadqiqot metodologiyasi:

Xashimov Sh.J tomonidan Madaniy turizmni rivojlantirishda O‘zbekistonda madaniy turizmining rivojlanishi va uning mamlakat xalqaro imidji yuksalishiga ko‘rsatgan ta’siri masalalari tahlil qilingan. Kurbanova M tomonidan diniy turizm, ziyorat va turizmning kelib chiqish tarixi ilmiy asoslanib, tushunchalarining mohiyati nazariy jihatdan yoritib berilgan, xorijiy olimlar tomonidan berilgan ta`riflar tahlil qilingan. M.Roman, E.Tog‘aymurodov tomonidan Samarqand viloyati fermer xo‘jaliklari misolida agroturizmni rivojlantirish imkoniyatlari statistik tahlil, logistik regressiya metodlaridan foydalangan holda tadqiq qilingan. Azamova S.A tomonidan O‘zbekiston ekologik muhitining ekologik globallashuv jarayoni asosida o‘zgarayotgani, ekologik munosabatlarning tarixiy tajribalar natijasida meyoriy rivojlanganligi, milliy ekologik qarashlar, tasavvur va bilimlar jahon ekologik madaniyati rivojiga ta’sir etganligi va ularga adekvatligi falsafiy asoslab berilgan.

Tahlil va natijalar:

Turistik xaritalar turizm maqsadlari uchun mo‘ljallangan geografik xaritalardir. Turizm atlaslari, xaritalari va sxemalari keng istemolchilar doirasiga mo‘ljallangan ommaviy kartografik mahsulotlar bo‘lib, ularni yaratish zamonaviy kartografiyadagi eng qiziqarli va istiqbolli yo‘nalishlardan biridir.

Tashrif buyurgan turistlar hududning mazkur kartografik qo‘llanmalar yordamida mustaqil marshrutlarni tashkil qilishda, operativ qarorlar qabul qilishda, transport imkoniyatlaridan optimal foydalanishda, diqqatga sazovor joylarni tez va oson aniqlashda, sarf xarajatlarni qisqartirishda hamda hudud to‘g‘irisida yanada kengroq qo‘shimcha ma'lumotlarni olishda foydalanadilar. Ayni vaqtda, yo‘l ko‘rsatkichlar, xarita va joy planlarni sayohlarga diqqatga sazovor joylar haqida ma'lumot va boshqa foydali materiallar berilishda yaqindan yordam beradi.

Turistik xaritalarning ijtimoiy-iqtisodiy kartografiya tizimidagi o‘rni juda katta. Ular har doim aholi va joylashuv, xizmat ko‘rsatish, transport xaritalari, shuningdek, relef, landshaft, iqlim va daryo tarmog‘ini aks ettiruvchi fizik xaritalar

bilan chambarchas bog‘liq bo‘lgan. Ko‘plab ijtimoiy-iqtisodiy kartografiya yo‘nalishlarining yutuqlariga tayanib, turizm statistikasi va bir qator tabiiy va gumanitar fanlarning bilimlaridan foydalanib, XXI asr boshlariga kelib turizm xaritalari kartografiyada mustaqil va juda talabgor bo‘limga aylandi.

Shu bilan birga turistik xaritalarga quyidagi talablar qo‘yiladi:

- Kartalarning aniqligi, ifodasi va yaxshi o‘qilishi uchun alohida e'tibor;
- Rangi, yorqinligi va grafikasi bo‘yicha badiiy dizaynni puxta ishlab chiqish;
- Kartaning o‘zidan ko‘proq joy egallaydigan katta jizohlardan foydalanish;
- Rasmlar, fotosuratlar, ko‘rsatmalar, matnlar va turli ma'lumotnomalar mavjudligi;
- Foydalanish qulayligi (format, kompozitsiya, buklash).

O‘z navbatida turizm xaritalari bir qancha turlarga bo‘linadi va ularning har biri o‘ziga xos imkoniyatlar hamda afzalliklar bilan ajralib turadi.

Hududiy qamroviga ko‘ra

1. Shahar turizm xaritalari: Ma'lum bir shahar yoki uning atrofidagi diqqatga sazovor joylar uchun mo‘ljallangan (masalan, Dubay, London, Istanbul turistik xaritalari). Ushbu xaritalar yirik turistik shaharlarda juda muhim manba sanaladi.

2. Mintaqaviy turistik xaritalari: Katta mintaqa yoki bir nechta shaharlarni qamrab oladi (masalan, Markaziy Osiyo, Janubiy Sharqiy Osiyo va G‘arbiy Yevropa mintaqalari uchun xaritalar). Masalan, Beniluks hududiga tashrif buyurgan turistlar uchun bunday xaritalar ekskursiyani juda qulay tashkil qilish imkonini beradi.

3. Mamlakat turizm xaritalari: Butun mamlakat bo‘ylab sayohat qilishda foydalanish uchun mo‘ljallangan (masalan, Gretsiya Turkiya yoki Italiya turizm xaritalari).

Turizm sohalari bo’yicha turlari

1. Mavsumiy turizm xaritalari: Ma'lum bir mavsum yoki mavzu (masalan, bahorgi tog‘ va cho‘l hududlariga sayr, qishki sport, yozgi plyaj, umra yoki haj ziyorati) uchun mo‘ljallangan xaritalar.

2. Madaniy turizm xaritalari: Hududlarning tarixiy, madaniy, arxitektura obektlari tasvirlangan va ular bilan tanishishni ko‘zda tutadigan xaritalar. Masalan Qadimgi Rim shahri, Afina, Parij, Xiva Samarqand va boshqalar.

3. Sport turzimi xaritalari: Tog‘, piyoda, suv, chang‘i, ot, motosikl, speleologiya va velosiped turizmi. Bugungi kunda jahon miqyosida turli xil sport musobaqalarining tashkil qilinishi bilan bog‘liq turizm yo‘nalishlari juda yaxshi rivojlangan. Masalan, tennis musobaqalari (Australian open, US open, Angliya Premer ligasi va boshqalar)

4. Davolash va dam olish turizmi yoki tibbiyot turizmi xaritalari: Sanatoriy-kurort (statsionar) va ekspeditsion (piyoda, suv, ot, velosiped). Odatda ushbu xaritalarda dam olish va davolanish uchun qulay obektlar hamda resurslar tasvirlanadi. Masalan, Gavayi orollari, Bagam orollari, Alp tog‘lari, Chimyon tog‘lari, Miraki va boshqalar.

5. Agroturizm xaritalari: Qishloq xo‘jaligining noyob o‘ziga xos yutuqlari va mahsulotlari bilan tanishish imkoniyatini beruvchi xaritalarda hududning ixtisoslashuv sohalari hamda aso-siy markazlari ko‘rsatilib tavsiyaviy marshrutlar ham beriladi.

6.Tadqiqot yoki ilmiy turizm xaritalari: Me'moriy yodgorliklar, tarixiy va madaniy diqqatga sazovor joylar yoki har bir ilmiy tadqiqot yo‘nalishiga mos boshqa obektlar tasvirlanadi. Masalan savannalar va ularning bio xilma-xilligini tasvirlovchi turistik xaritalar.

7. Ta'lim turizmi xaritalari: Hududlar bo‘yicha ta'lim markazlari, universitetlar, kollejlar, til maktablari, seminarlar, biznes treninglar va boshqalar haqida ma'lumot beradi.

8. Ekologik turizm xaritalari: Tabiatni saqlash, milliy parklar va qo‘riqxonalar va ularning hududiy xususiyatlari haqida ma'lumotlar beradi. Masalan Quyi Amudaryo noyob to‘qay landshaftlari xaritalari asosida ekologik turizm marshrutlarini shakllantirish mumkin.

8.Etnik (etnografik) va ziyorat (diniy) turizm xaritalari: Tarixiy-me'moriy muzeylar, etnografik qishloqlar, qadimiy urf odatlar, marosimlar haqida ma'lumotlar beradi. Masalan, shvedlar madaniy qadriyatlari, hindlar bayramlari, zardushtiylik dini marosimlari va boshqalar.

Albatta turizmning tashkiliy shakli, turistik imkoniyatni baholash, turistik rayonlashtirish kabi mazmundagi xaritalarni ham kiritish mumkin. Hozirgi kunda kartografiyaning boshqa sohalari kabi turizm xaritalarini tuzishda zamonaviy axborot texnologiyalariga asoslangan animatsion hamda veb va xaritalar tuzilmoqdaki ulardan foydlanish imkoniyatlari yanada kengayib bormoqda.

Xulosa o‘rnida shuni takidlash keraki turizm xaritalarni tuzish jarayoni ma'lumotlar bazasini shakllantirish; geodezik, kartografik manbalarni to‘plash, geografik asosni shaklantirish, statistik manbalarni shakllantirish xarita dasturini tayyorlash va uni nashr qilish kabi boshqichlardan iborat.

Respublikamizda turizm xaritalarini tuzish va foydalanish turizm rivojlangan mamlakatlarga nisbatan sustroq rivojlangan. Ammo respublikada juda katta turistik imkoniyatni targ‘ibot tashviqot qilishda hamda uni hududiy tashkil etishda turistik xaritalarga juda katta ehtiyoj mavjud. Xususan turizm resurlariga boy bo‘lgan Quyi Amudaryo minaqasi misolida turli xil mavzudagi turistik xaritalar va atlaslarni tuzish asosida hududning turistik imkoniyatlarini ko`rsatshimiz mumkin.

Xorazm viloyati misolida madaniy arxeologik (madaniy meros obektlari xaritalari), agroturizm (sholi etishtirish, qovun va bog‘ va uzum yetishtirishning o‘ziga xos usullari) gostronomik turizm xaritalari (hududga xos bo‘lgan taomlar: tuxum barak, ijjon, durvadik patir, baliq taomlari) ekologik turizm (noyob to‘qay landshaftiga ega qo‘riqxonalar, ko‘llar landshaftlari) kabilarni xaritalashtirish asosida turizmning mazkur sohalari rivojlanishiga turtki berish mumkin.

Turizm bozorining rivojlanishi juda ko‘plagan sohalarga ehtiyoj borligi sezilib qolmoqda, shu jumladan kartografik mahsulotlarga (geografik xarita va atlaslar) ham talab oshib bormoqda. Kelayotgan sayyohlar mamlakatimizni tabiiy

sharoiti, ijtimoiy va iqtisodiy imkoniyatlari bilan yaqindan tanishishlari hamda ularga yo‘l ko‘rsatkich bo‘lib xizmat qiladi. Shu maqsadda respublikamiz va alohida mintaqalarni tizimli turistik xaritalarini yaratish orqali turislar oqimini ya'nada ko‘payishiga xissa qo‘shilgan bo‘lar edi.

Foydalanilgan adabiyotlar ro‘yxati

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YUKSAK SUV O‘SIMLIKLAR: BIOLOGIK XUSUSIYATLARI VA EKOLOGIK AHAMIYATI

ANNOTATSIYA: *Ushbu maqolada yuksak suv o‘simliklarining morfologik va fiziologik xususiyatlari, ularning ekologik muhitdagi o‘rni hamda tabiiy ekotizimlar va inson faoliyati uchun ahamiyati tahlil qilinadi. Shuningdek, suv o‘simliklarining turkumlanishi, fotosintez jarayonidagi roli va suv havzalarida ekologik muvozanatni saqlashdagi vazifalari ko‘rib chiqiladi.*

Kalit so‘zlar: *yuksak suv o‘simliklar, gidrofitlar, ekologik muvozanat, fotosintez, bioxilma-xillik.*

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FRESHWATER PLANTS: BIOLOGICAL FEATURES AND ECOLOGICAL SIGNIFICANCE

Abstract: *This article will analyze the morphological and physiological features of higher aquatic plants, their role in the ecological environment, as well as their importance for natural ecosystems and human activities. He also examines the categorization of aquatic plants, their role in photosynthesis, and their functions in maintaining ecological balance in water bodies.*

Keywords: *high-water plants, hydrophytes, ecological balance, photosynthesis, biodiversity.*

Kirish

Suv ekotizimlari biosferaning ajralmas qismi hisoblanadi va unda turli xil organizmlar, jumladan, o‘simliklar muhim ekologik vazifani bajaradi. Suvda o‘suvchi yuksak o‘simliklar (gidrofitlar) o‘zining morfologik va fiziologik moslanish xususiyatlari bilan boshqa quruqlik o‘simliklaridan farq qiladi. Ular fotosintez, kislorod ishlab chiqarish, organik moddalarning aylanishi va suv havzalarining tabiiy tozalanishida beqiyos ahamiyatga ega [1].Tabiiy botqoqliklar o‘ziga xos gidrologik, tuproq, o‘simlik va biologik xususiyatlarga ega bo‘lgan, quruqlik va suv muhitlari o‘rtasida joylashgan ekotizimlardir. Ular suv resurslarini himoya qilish, iqlimni tartibga solish, turli yashash muhitlarini ta’minlash va bioxilma-xillikni saqlashda almashtirib bo‘lmaydigan ekologik vazifani bajaradi. Ammo, dunyo miqyosida botqoqlik maydonlarining kamayishi va yashash

joylarining keskin parchalanishi ularning ekotizim funksiyalarini yo‘qotishiga hamda bioxilma-xillikning qisqarishiga olib kelmoqda. O‘tgan asr davomida inson faoliyati va iqlim o‘zgarishi ta’sirida botqoqliklarning qariyb 70 foizi yo‘qolgan. Ayniqsa, shahar botqoqliklari shahar ekotizimining muhim tarkibiy qismi bo‘lsa-da, ular inson faoliyati ta’siriga ko‘proq sezgir hisoblanadi. Suv havzalarida fitoplankton moddalar va energiya oqimining asosi bo‘lib, botqoqlik ekotizimlarining barqarorligi va yaxlitligini ta’minlashda muhim rol o‘ynaydi. Suv o‘simliklari suv muhitini o‘zgartirish orqali fitoplanktonning o‘sishi va jamoa tuzilishiga ta’sir ko‘rsatishi, shu bilan birga resurslarni o‘zlashtirish va ulardan foydalanish jarayoniga ta’sir qilishi mumkin. Shu sababli, suv o‘simliklari qoplamining fitoplankton xilma-xilligi va funksiyalariga, jumladan, resurslardan foydalanish samaradorligiga (RUE) ta’sirini o‘rganish shahar botqoqliklarini saqlash va ularning xizmatlarini optimallashtirishda muhim ahamiyat kasb etadi.

Suv o‘simliklari ortiqcha oziq moddalarning suv havzasidan so‘rilishi orqali suvni tozalash xususiyatiga ega. Masalan, suv osti o‘simliklarining ildiz, poya va barglari ko‘p miqdorda azot va fosfor birikmalarini o‘zlashtiradi, bu esa ichki yuklanishni kamaytirib, suvdagi azot va fosfor miqdorini pasaytiradi hamda suvning evtrofikatsiya darajasini pasaytirishga yordam beradi. Qamish (Phragmites australis) va qiyoq (Cyperus alternifolius) kabi suv ustida o‘suvchi o‘simliklar suvdagi ifloslantiruvchi moddalarni yanada samarali o‘zlashtirish qobiliyatiga ega, chunki ularning oziq moddalarni uzoq muddat saqlash imkonini beradigan qo‘llab-quvvatlovchi to‘qimalari ko‘proq rivojlangan. Suv o‘simliklari fitoplankton o‘sishini nazorat qilishda muhim ahamiyatga ega bo‘lib, ular bilan oziq modda va yorug‘lik uchun raqobatlashadi. Azot va fosfor fitoplankton fotosintezi, moddalar almashinuvi va ko‘payishi uchun zarur bo‘lgan asosiy resurslardir. Shu sababli, suv ekotizimlarida o‘simliklar qoplami katta bo‘lganda ular erkin mineral oziq moddalarning miqdorini kamaytirib, fitoplankton o‘sishini cheklaydi. Bundan tashqari, katta barg yuzasiga ega bo‘lgan suzuvchi o‘simliklar yorug‘likni to‘sib qo‘yib, fitoplankton fotosintezi va o‘sishini ham susaytiradi.

Ekotizimlarning dinamikasini va ularning ekologik o‘zgarishlarga javobini tushunish muhim ahamiyatga ega. Ekotizimdagi turlar va funksional guruhlarning kamayishi resurslarni (oziq modda, suv, yorug‘lik, o‘lja) o‘zlashtirish va ularni biomassaga aylantirish samaradorligini pasaytiradi. Resurslardan foydalanish samaradorligi (RUE) ekotizim funksiyalarini baholashda muhim ko‘rsatkich bo‘lib, tabiiy chuchuk suv ekotizimlarida fitoplankton jamoalarining xilma-xilligi sababli yuqoriroq bo‘ladi. RUE birlik resursning birlik biomassaga aylanish samaradorligini anglatib, ekotizimning cheklangan resurslardan foydalanish va ularni qayta ishlash qobiliyatini ko‘rsatadi. Fitoplankton RUE ko‘pincha biomassaning (quruq og‘irlik, yangi og‘irlik yoki xlorofill konsentratsiyasi) umumiy azot (TN) yoki umumiy fosfor (TP) kabi cheklovchi resurslarga nisbati sifatida aniqlanadi. Bu yondashuv tadqiqotlarda turli joylarda oziq moddalar konsentratsiyasi farqlarining ta’sirini kamaytiradi. Shu bois, RUE suv ekotizimlarida fitoplankton xilma-xilligi va mahsuldorligi o‘rtasidagi bog‘liqlikni

o‘rganishda keng qo‘llaniladi. Tadqiqotlar shuni ko‘rsatadiki, yuqori xilma-xillikka ega ekotizimlarda turlar o‘zaro funksional to‘ldiruvchanlik tufayli resurslardan samaraliroq foydalanadi. Funksional xilma-xillik organizmlarning resurslardan qanday foydalanishini belgilovchi xususiyatlar doirasini ifodalaydi va resurslardan foydalanish samaradorligida muhim rol o‘ynaydi. Funksional xilma-xilligi yuqori bo‘lgan jamoalarda resurslarni bo‘lishish imkoniyati kengroq bo‘lib, bu RUE darajasini oshirishi mumkin. Bu esa bioxilma-xillik va ekotizim funksiyalari o‘rtasidagi munosabatni chuqurroq tushunishga yordam beradi.

Tabiiy suv ekotizimlaridan farqli o‘laroq, shahar botqoqliklari urbanizatsiya, qurilish va ifloslanish kabi inson faoliyatidan ko‘proq zarar ko‘radi. Natijada, suvni tozalash, bioxilma-xillikni saqlash kabi muhim xizmatlar sezilarli darajada susayadi. Shu bilan birga, shahar botqoqliklari ijtimoiy vazifalarni ham bajaradi, jumladan, madaniy va dam olish xizmatlarini taqdim etadi. Shuning uchun ularning ekologik funksiyalari va muhofaza ehtiyojlari tabiiy suv ekotizimlaridan keskin farq qilishi mumkin. Oldingi tadqiqotlarda ko‘proq daryo va ko‘l ekotizimlarida fitoplankton xilma-xilligining RUEga ta’siri o‘rganilgan bo‘lsa, shahar botqoqliklarida suv o‘simliklarining RUEga ta’siri deyarli o‘rganilmagan. Shahar hududlarida inson faoliyati, masalan, navigatsion qazish ishlari, ko‘pincha suv o‘simliklarining ilmiy asoslanmagan tarzda yo‘q qilinishiga olib keladi. Bu esa suvni tozalash, bioxilma-xillikni qo‘llab-quvvatlash va ekotizim funksiyalarini ta’minlash kabi muhim xizmatlarni izdan chiqaradi. Shu bois, shahar botqoqliklarida suv o‘simliklari qoplamini oqilona saqlab qolish ularni muhofaza qilishda hal qiluvchi ahamiyatga ega. Xususan, Jinan shahrining tez urbanizatsiyalashuvi fonida shahar botqoqliklarining ekologiyasi va muhofazasini o‘rganish tobora dolzarb bo‘lib bormoqda. Ushbu tadqiqotda suv o‘simliklari qoplamining fitoplankton xilma-xilligi (tur boyligi va funksional boylik) hamda RUE bilan bog‘liqligi 10 ta shahar botqoqligida joylashgan 78 ta kuzatuv nuqtasidan olingan ma’lumotlar asosida o‘rganildi. Tadqiqotda quyidagi farazlar ilgari surildi: (1) suv o‘simliklari qoplamining ortishi suv sifatini ortiqcha oziq moddalarni so‘rib olish orqali yaxshilaydi; (2) suv sifatining yaxshilanishi fitoplankton jamoa tuzilishiga ijobiy ta’sir qilib, bioxilma-xillikni oshiradi; (3) fitoplankton xilma-xilligining oshishi fitoplankton RUE ko‘rsatkichini sezilarli darajada kuchaytiradi.

Siyanobakteriyalarning bir qismida gaz vakuolalari mavjud. Ushbu tuzilmalar mavjudligi sababli organizmlar suvning yuqori qatlamlarida saqlanib qolishi mumkin, bu fotosintez faolligini oshiradi. Ma'lum bo'lgan barcha siyanobakteriyalar (Glocobacter bundan mustasno) yaxshi rivojlangan tirakoid tizimiga ega. Tilakoid membranalar quyidagi funktsiyalarni bajaradi: fotosintetik apparatni lokalizatsiyasi; nafas olish va (yoki) gidrogenaza fermentlarini lokalizatsiya qilish; hujayraning markaziy qismini ajratish; hujayralardagi moddalarni tashish qulayligiga ta'sir qilish; hujayraning bo'linishi paytida yadro moddalarining tarqalishida ba'zi rol o'ynashi mumkin. Masalan, o'sish uchun qulay sharoitda hujayralarda fikobilin birikmalarining vakili - fikosiyanin mavjud. Biroq,

muhitdagi azot miqdori kamayishni boshlaganda, taxminan 30-50% fikosiyanin yo'qoladi. Bunday holda, suv o'tlari o'sishining maksimal darajasi o'zgarmaydi. Hujayra madaniyati muhitda azot yo'qligini sezmaydigan davrning davomiyligi ochlikdan oldin hujayradagi fikosiyanin tarkibiga bog'liq ekanligi aniqlandi. Qoida tariqasida ro'za tutish paytida fikosiyanin miqdorining pasayishi proteolitik faollikning oshishi bilan birga keladi.

Ba'zi ko'k-yashil suv o'tlari molekulyar azotni organik shakllarda tuzatishi mumkin. Bu juda muhimdir, chunki organik azot o'simliklar va hayvonlarda aminokislotalar va oqsillarni hosil qilish uchun juda muhimdir. Yuqori hosil olish uchun bog'langan azot tuproqqa kiritiladi. Azotni tuzatish qobiliyati tufayli ko'k-yashil suv o'tlari ko'pincha cho'llarda, vulqon jinslarida, mercan riflarida va hatto qutbli mintaqalarda rivojlanadigan birinchi tirik organizmlardir. Azot fiksatsiyasi tufayli ko'k-yashil suv o'tlari biologik o'g'it sifatida ishlatilishi mumkin.

Dunyo bo'ylab ilmiy-tadqiqot muassasalari laboratoriyalarida Spirulinani mikroalga intensiv ravishda o'rganish ishlari olib borilmoqda. Ushbu tadqiqotlar, qoida tariqasida, ob'ektlardan beri davlatlarning harbiy idoralari homiyligida amalga oshirildi o'rganish strategik qiziqish uyg'otdi. Ko'p yillar davomida spirulina Rossiyada kosmonavtika kabi ustuvor yo'nalishdagi yopiq tadqiqot ob'ekti bo'lib kelgan, ammo shu paytgacha ushbu mavzu bo'yicha olib borilgan ishlarning aksariyati maxfiy xarakterga ega va ular arxivlarda "Top" kodi ostida saqlanadi. Adabiy manbalarda spirulinaning rivojlanishi va undan odamlar tomonidan foydalanishning juda qiziqarli tarixi tasvirlangan. 1940 yilda frantsuz tadqiqotchisi Dancerd Massakori qishlog'ida (Chad Respublikasi) bozorda yashil yassi non sotib oldi. Mahalliy lahjada "di-he" deb nomlangan. Dihe - quritilgan suv o'tlari, uni mahalliy aholi Chad ko'li yaqinidagi kichik suv havzalari va ko'llar yuzasidan yig'ishgan. Quyosh ostida qumli qirg'oqlarda quritilganidan so'ng, katta quruq plitalar kichik bo'laklarga bo'linib, bozorda sotildi. Uyga qaytgach, Dancerd bu to'shak Spirulina Platensis mikroalgasidan iborat ekanligini aniqladi. Spirulina kelib chiqishi bo'yicha Yerdagi eng qadimiy hayot shakllariga tegishli. U asrlar davomida ajoyib ovqatlanish komponenti sifatida tanilgan. Azteklar va boshqa qadimgi tsivilizatsiyalar spirulinani parhezning asosiy elementi deb hisoblashgan, uni "kelajak ovqat" deb hisoblashgan RT Olmstedt, A. Decken, 1973.

Ushbu nazariyani dunyodagi taniqli okeanolog Jak Iv Kustoning "Spirulina - hayot algasi" (1993) nomli asari qo'llab-quvvatlaydi, unda spirulinaning dunyoning ko'plab mamlakatlarida oziq-ovqat manbai ekanligi ta'kidlangan.

Xulosa

Ushbu tadqiqot natijalari shuni ko‘rsatadiki, suv o‘simliklari qoplami botqoqlik ekotizimlarining suv sifatiga, fitoplankton xilma-xilligiga hamda ularning funksional guruhlar bo‘yicha tarkibiga sezilarli ta’sir ko‘rsatadi. Namuna olish va laboratoriya tahlillari asosida aniqlanishicha, suv o‘simliklari ortiqcha azot va fosforni o‘zlashtirib, suvning evrofikatsiya darajasini pasaytiradi, shuningdek, fitoplankton populyatsiyasi va biomassasini tartibga soladi. Bundan tashqari,

o‘simliklarning yorug‘lik va ozuqa uchun raqobati fitoplanktonning turli guruhlarga bo‘linishida ham muhim omil bo‘lib xizmat qiladi.

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QULJUQTOV TIZMASI O‘SIMLIKLARI VA ULARNING GEOGRAFIK JIHATLARI XUSUSIDA

Annotatsiya: *Mazkur maqolada Qizilqum cho‘lida joylashgan Quljuqtov tizmasining o‘simlik qoplami va ularning geografik xususiyatlari yoritilgan. Hududning iqlimi, relyefi, tuproq va gidrologik omillarining o‘simliklar xilma-xilligi va tarqalishiga qanday ta’sir qilishi ilmiy asosda ko‘rib chiqilgan. Ushbu tadqiqot ishi Quljuqtov florasini chuqur ilmiy o‘rganish va muhofaza qilish, barqaror foydalanish bo‘yicha ilmiy asos yaratishga xizmat qiladi.*

Kalit so‘zlar: *Quljuqtov, Qizil kitob, flora, saksovul, kovrak, shirach, baliqko‘z.*

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ON THE PLANTS OF THE KULJUKTAU RANGE AND THEIR GEOGRAPHICAL ASPECTS

Annotation: *This article highlights the vegetation cover of the Kuljuktau Range located in the Kyzylkum Desert and its geographical features. The influence of climatic, relief, soil, and hydrological factors on the diversity and distribution of plants is examined on a scientific basis. This research contributes to establishing a scientific foundation for the in-depth study, conservation, and sustainable use of the Kuljuktau flora.*

Keywords: *Kuljuktau, Red Book, flora, haloxylon, ferula, eremurus ammophilus, climacoptera.*

Qizilqum choʻli bagʻrida joylashgan qoldiq va past togʻ hisoblangan Quljuqtov tizmasi Buxoro viloyatining shimolida, Navoiy viloyatining janubida, yaʻni chegara qismida joylashgan boʻlib uning eng baland nuqtasi (785 metr) uning gʻarbiy qismida joylashgan. Bu tizma oʻzining tabiiy sharoiti, tabiiy resurslari jumladan, oʻsimlik olami (flora), hayvonot dunyosi (fauna) bilan ajralib turadi.

Tabiatning muhim tarkibiy qismlaridan biri boʻlgan oʻsimliklar qoplami geografik landshaftlarning shakllanishida alohida oʻrin tutadi. Har bir hududning iqlim sharoiti, relyef tuzilishi, tuproq tarkibi va gidrologik omillari oʻsimliklarning xilma-xilligi hamda tarqalish qonuniyatlarini belgilab beradi. Shu bilan birgalikda oʻsimliklar muhim tabiiy geografik omil sifatida yer yuzasida suv oqimiga, bugʻlanishiga, tuproqda nam saqlashga, shamol kuchiga va yoʻnalishiga, hayvonlarning hayotiga ham katta taʻsir qiladi.

Quljuqtov tizmasining oʻsimlik qoplami ilmiy jihatdan oʻrganish bilan Poretskiy A.S., Popov N.V., Larin I.V., Drobov V.P., Zokirov Q.Z., Korovin E.P., Granitov I.I., Melnikova R.D., Xolmatov X.X., Xudoyberdiyev R.X. kabi olimlar shugʻullangan. Jumladan, Qizilqumning tabiiy sharoiti, oʻsimlik qoplami va ularning ekologik xususiyatlarini oʻrganishga bagʻishlangan qator asarlar mavjud. Mazkur asarlar tizma hududida bir necha yillar avval oʻsgan va hozirda mavjud boʻlgan oʻsimliklar turlarini solishtirish imkonini beradi [1].

Quljuqtov tizmasi va unga yondosh hududlarda ayni paytda saksovul (oq, qora), shuvoq, eremurs, yulgʻun, iloq, yaltirbosh, ravoch, shirach, selin, cherkez, dereza (oq jangal), yantoq, isiriq, Qizil kitobga kiritilgan oʻsimliklar ham mavjud boʻlib: momiq zoʻrcha, qoldiqtogʻ astragali, ninasimon oqtikan, yuraksimon torol, binafsharang astragal, korolkov shirachi, Turkiston eulofiyasi, Qizilqum kovragi, sarxush bozulbang, vvedenskiy bozulbang va hokazolar uchraydi [5].

Hududda eng koʻp uchraydigan ayrim oʻsimlik turlarining xususiyatlari haqida quyida toʻxtalib oʻtamiz.

Saksovul (*Haloxylon*) qum-sahro, choʻl oʻsimligidir (1-rasm). Uning oʻsish areali choʻllar va yarimchoʻllar chegarasi bilan bogʻliq. Markaziy Osiyoda turkum vakillaridan 3 tur tarqalgan. Qora yoki shoʻrxok saksovul (Haloxylon aphyllum (Minkv) Iljin) asosan taqir choʻllarda, shoʻrlangan qumli va boʻz tuproqlarda oʻsadi. Tuproqlarni himoyalash, qumlarni toʻxtatish, choʻl yaylovlarni saqlash kabi choʻldagi muhim vazifalarni bajaradi. Tuproqqa talabchan emas, kuchli shoʻrlangan yerlarda ham oʻsadi [3].



1-rasm. Saksovul (*Haloxylon*)

Kovrak (*Ferula*) turkumidan respublikamizda besh turi mavjud. Bular orasida eng keng tarqalgani ferula diversivittitadir (2-rasm). Respublikamizning Toshkent, Jizzax, Navoiy, Buxoro viloyati Quljuqtov tizmasi va unga tutash hududlarda hamda Qoraqalpog‘iston respublikasining qumli cho‘llarida, adirlar, tog‘lar va tog‘oldi yalanliklarida, soz tuproqli yerlarda o‘sadi. Kovrak yelim-smolasi xalq tabobatida o‘pka sili, o‘lat, zaxm, ko‘k yo‘tal, tish og‘rig‘i, asab va boshqa kasalliklarni davolash uchun hamda quvvat beruvchi, balg‘am ko‘chiruvchi, tinchlantiruvchi vosita sifatida ishlatiladigan va ko‘pgina davlatlar farmakologiyasiga kiritilgan [2].



2-rasm. Kovrak (*Ferula*)

Shirach (*Eremurus ammophilus)* ko‘p yillik o‘simlik. Qizilqum, Qizilqumning qoya-tog‘li qismlarida, qumli cho‘llarda shuningdek Quljuqtov past tog‘larida o‘sadi. Foydalanilishi: Bezak, dorivor, bo‘yoq olinadigan va yem-xashak sifatida ishlatiladi [4].



3-rasm. Shirach (*Eremurus ammophilus)*

Baliqko‘z *(Climacoptera)* bir yillik o‘simlik bo‘lib O‘zbekiston bo‘yicha 9 dan ortiq turi mavjud. Turlar asosan Qizilqum, Qizilqum qoya-tog‘li hududlarida jumladan Quljuqtov past tog‘larida, Quyi-Zarafshon, Qarshi-Qarnabcho‘llarida keng tarqalgan bo‘lib sho‘rxok joylarda o‘sadi. Ayrim turlaridan yem-xashak maqsadida foydalaniladi ba‘zi turlari esa umuman foydalanishga yaroqsiz [4].



4-rasm. Baliqko‘z *(Climacoptera)*

Xulosa qilib aytganda, Quljuqtov tizmasi florasining o‘rganilishi nafaqat tabiiy-geografik, balki ekologik, xo‘jalik va landshaft nuqtai nazaridan ham katta ahamiyatga ega bo‘lib, kelgusida bu hududning biologik resurslarni saqlash va ularni barqaror foydalanish masalalarida ilmiy asos vazifasini bajaradi.

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ELEKTRON TA’LIM: YANGI PEDAGOGIK TEXNOLOGIYALARINI QO‘LLASHNING ZAMONAVIY MODELLARI

Annotatsiya: *Ushbu maqolada elektron ta’limning mazmun-mohiyati, uning imkoniyatlari hamda yangi pedagogik texnologiyalarni qo‘llashning zamonaviy modellari ilmiy tahlil qilingan. Blended learning (aralash ta’lim), flipped classroom (ag‘darilgan sinf), gamifikatsiya, adaptive learning (moslashuvchan ta’lim) va project-based learning (loyihaviy ta’lim) kabi modellarning o‘ziga xos jihatlari yoritilgan. Shuningdek, elektron ta’limning o‘quvchilar bilim samaradorligiga, raqamli kompetensiyalarini shakllantirishga va ta’lim jarayonida teng imkoniyatlarni ta’minlashga qo‘shadigan ijobiy ta’siri ko‘rsatib berilgan. Tadqiqot natijalari elektron ta’lim tizimini rivojlantirishda yangi pedagogik yondashuvlar muhimligini asoslaydi.*

Kalit so‘zlar: *elektron ta’lim, pedagogik texnologiyalar, blended learning, flipped classroom, gamifikatsiya, adaptive learning, innovatsion model.*

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E-LEARNING: MODERN MODELS OF USING NEW PEDAGOGICAL TECHNOLOGIES

Abstract: *This article scientifically analyzes the essence of e-learning, its capabilities, and modern models of using new pedagogical technologies. The specific features of such models as blended learning, flipped classroom, gamification, adaptive learning, and project-based learning are highlighted. The positive impact of e-learning on students' learning efficiency, the formation of digital competencies, and ensuring equal opportunities in the educational process is also shown. The results of the study substantiate the importance of new pedagogical approaches in the development of the e-learning system.*

Keywords: *e-learning, pedagogical technologies, blended learning, flipped classroom, gamification, adaptive learning, innovative model.*

Kirish

Globallashuv, raqamli iqtisodiyot va zamonaviy axborot-kommunikatsiya texnologiyalarining jadal rivojlanishi ta’lim tizimida ham tub o‘zgarishlarga sabab bo‘lmoqda. Bugungi kunda elektron ta’lim (e-learning) nafaqat an’anaviy ta’limni qo‘shimcha shaklda to‘ldiribgina qolmay, balki mustaqil pedagogik tizim sifatida shakllanmoqda. Shu bois yangi pedagogik texnologiyalarni elektron ta’lim muhitida qo‘llash, ularni samarali modellashtirish va amaliyotga tadbiq etish masalasi dolzarb hisoblanadi.

Elektron ta'lim (e-learning) zamonaviy davrda jadal rivojlanmoqda va uning istiqbollari juda yorqin. 2025-yilda bu soha texnologik innovatsiyalar, shaxsiy ta'lim yondashuvlari va global tendensiyalar bilan shakllanmoqda. Quyida asosiy istiqbollar va tendensiyalarni ko'rib taxlil qilishimiz mumkin.

Elektron ta'limning eng muhim istiqbollaridan biri bu o'quv jarayonini har bir o'quvchining ehtiyojlariga moslashtirish. Sun'iy intellekt (AI) va ma'lumotlar tahlili yordamida o'quv dasturlari individual darajada moslashtiriladi, bu esa samaradorlikni oshiradi.

Immersiv texnologiyalar (VR/AR) Virtual va kengaytirilgan haqiqat (VR/AR) orqali ta'lim interaktiv va qiziqarli bo'ladi. Bu texnologiyalar gamifikatsiya (o'yin elementlari) bilan birgalikda o'quvchilarning motivatsiyasini oshiradi. Masalan, tibbiyot yoki muhandislik sohasida virtual simulyatsiyalar real tajribani ta'minlaydi.

Umuman olganda, elektron ta'limning istiqbollari ta'limni demokratlashtirish va innovatsiyalarga asoslangan bo'lib, 2025-2030 yillarda AI, VR va shaxsiy yondashuvlar hukmronlik qiladi. Ushbu tendensiyalar ta'limni yanada qulay, samarali va inklyuziv qiladi.

Elektron ta’lim — bu o‘quv jarayonini raqamli texnologiyalar orqali tashkil etish bo‘lib, unda masofaviy o‘qitish, onlayn kurslar, interaktiv platformalar va mobil ilovalar keng qo‘llanadi.

Zamonaviy ta’limda elektron ta’limning afzalliklari:

— **Moslashuvchanlik** - o‘quvchilar istalgan joy va vaqtda bilim olishlari mumkin;

— **Individual yondashuv** - o‘quv dasturlari shaxsiy ehtiyoj va qiziqishlarga moslashtiriladi;

— **Interaktivlik** - multimedia vositalari, test va virtual laboratoriyalar orqali faol ishtirokni ta’minlaydi;

— **Monitoring va tahlil** - o‘quvchilarning natijalari avtomatik qayd etilib, pedagogik jarayon tahlil qilinadi.

Yangi pedagogik texnologiyalar va ularning zamonaviy modellari

Bugungi raqamli davrda ta’lim jarayoni o‘quvchining bilim olishdagi faoliyatini kuchaytirishga, mustaqil fikrlashini rivojlantirishga va o‘zlashtirish darajasini oshirishga qaratilgan bo‘lishi zarur. Bu texnologiyalar o‘quv jarayonini faqat bilim berish emas, balki **faollik, ijodkorlik, tahlil qilish, muloqot va hamkorlik** kabi ko‘nikmalarni shakllantirishga xizmat qiladi.

Elektron ta’limni samarali tashkil etishda bir qator innovatsion pedagogik texnologiyalar qo‘llanilmoqda:

1. **Blended learning (aralash ta’lim) modeli**

— An’anaviy auditoriya mashg‘ulotlari bilan onlayn ta’limni uyg‘unlashtirish orqali yuqori natija beradi.

— Masalan, nazariy bilimlar onlayn berilib, amaliy mashg‘ulotlar auditoriyada o‘tkaziladi.

2. **Flipped classroom (ag‘darilgan sinf) modeli**

— Talabalar darslik va videomateriallarni mustaqil onlayn o‘zlashtiradi, auditoriya mashg‘ulotlarida esa muhokama va amaliy topshiriqlar bajariladi.

— Bu model o‘quvchini faol ishtirokchi sifatida shakllantiradi.

3. **Gamifikatsiya asosidagi model**

— O‘quv jarayoniga o‘yin elementlari (ballar, reyting, badge va motivatsion topshiriqlar) kiritilib, talabalar faolligi oshiriladi.

— Elektron platformalar orqali o‘quvchilarni rag‘batlantirish imkoniyati kengayadi.

4. **Adaptive learning (moslashuvchan ta’lim) modeli**

— Sun’iy intellekt va tahliliy tizimlar yordamida har bir o‘quvchining bilim darajasi aniqlanadi va unga mos individual ta’lim yo‘li taklif qilinadi.

5. **Project-based learning (loyihaviy ta’lim) modeli**

— Talabalar virtual hamkorlik muhiti orqali jamoaviy loyihalarni ishlab chiqishadi.

— Bu metod kreativlik va mustaqil fikrlashni rivojlantiradi.

Xulosa o‘rnida shuni aytish mumkinki, elektron ta’lim (e-learning) 2025-yilda jadal rivojlanib, sun’iy intellekt (AI), virtual va kengaytirilgan haqiqat (VR/AR), shaxsiy ta’lim va mikro-o’quv kabi innovatsiyalar orqali ta’lim sohasini tubdan o’zgartirmoqda. AI asosidagi shaxsiy yondashuvlar o’quvchilarning individual ehtiyojlariga mos dasturlarni taklif qiladi, VR/AR esa interaktiv va immersiv tajriba yaratadi. Gibrid ta’lim modellari onlayn va oflayn usullarni muvozanatlashtirib, ta’limning qulayligini oshiradi. Global bozor 2026-yilgacha yillik 9,1% o’sishni kutyapti, ammo raqamli bo’linish, ma’lumotlar xavfsizligi va o’qituvchilarning moslashuvi kabi qiyinchiliklar mavjud. Elektron ta’limning kelajagi inklyuzivlik, samaradorlik va texnologik innovatsiyalarga asoslanadi, bu esa ta’limni demokratlashtirishda muhim rol o‘ynaydi.

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IMPROVING THE THEORETICAL AND METHODOLOGICAL FOUNDATIONS OF LABOR NORMALIZATION IN BUDGET ORGANIZATIONS

Abstract. *This scientific article provides a comprehensive analysis of the existing theoretical-methodological foundations and practical aspects of labor normalization in budget organizations. During the research, the contradictions between the classic and modern paradigms of labor organization were studied. An integrative-sectoral classification of labor normalization methods that takes into account the sectoral characteristics of budget organizations is proposed. The scientific novelty and practical significance of this classification are substantiated, and recommendations for its application in improving budget planning, staff optimization, and employee performance appraisal systems are achieved.*

Keywords: *labor normalization, budget organization, scientific management, new public management, labor norm, staff classification, efficiency, human capital, staff unit.*

Introduction.

The main goal of the large-scale reforms being implemented in the modern public administration system is to increase the well-being of the population by using limited resources with maximum efficiency. In this process, increasing the efficiency of organizations financed from the state budget is an important strategic task. Labor normalization in budget organizations is not only a means of optimizing costs, but also a key tool for rational management of human resources, fair distribution of employees' workload, and increasing their labor productivity. The relevance of the topic is determined by several important aspects. From a socio-economic point of view, scientifically based labor norms, on the one hand, strengthen budget discipline, and on the other hand, serve to create a transparent and fair remuneration system for employees and increase their motivation to work. From a scientific-methodological point of view, the existing normative-legal documents are mainly aimed at regulating the process and do not fully reflect the specific features of the activities of budget organizations in various fields such as education, health, and culture, as well as modern management principles focused on results. This, in turn, necessitates in-depth scientific research to improve the theoretical foundations of labor normalization.

The problem of labor normalization has a long history, and its scientific foundations are closely related to Frederick Winslow Taylor's theory of "scientific management." Taylor proposed breaking down labor processes into small elements, measuring the time spent on each movement through timekeeping (chronometrage), and on this basis, developing the "one best way." His approach revolutionized industrial production and made it possible to dramatically increase labor productivity. In the field of public administration, Luther Gulick's POSDCORB principles (planning, organizing, staffing, directing, coordinating, reporting, budgeting) served as a theoretical foundation for systematizing and regulating administrative processes. However, by the end of the 20th century, it became clear that classical approaches were ineffective for the public sector, and the concept of "New Public Management" (NPM) emerged. This concept introduced the efficiency criteria of the private sector into the public sector, in particular, the principles of result-orientation, performance appraisal, and competition. This brought to the agenda the need to consider not only the time spent but also the quality and final result of the work performed in labor normalization. Among local scientists, Academician Kalandar Khodjaevich Abdurakhmonov, in his research, paid special attention to the concept of "human capital," substantiating the need to view an employee not as a factor of production, but as the most valuable asset that needs to be developed. This approach requires taking into account the employee's qualifications, creative potential, and development opportunities in the normalization process.

An analysis of existing literature and normative-legal documents shows that today there is a serious theoretical problem and a methodological gap in the field of labor normalization in budget organizations. The essence of the problem is that the current normative-legal base, in its methodological foundation, relies more on classical "scientific management," that is, it emphasizes measuring and standardizing the process. However, the priority directions of state policy require a focus on efficiency and quality, which corresponds to the theories of "New Public Management" and "human capital." There is a theoretical and practical inconsistency between these two approaches. The scientific gap is that while the labor normalization of auxiliary staff is clearly defined, a single scientifically based methodology for normalizing the activities of primary (production) staff, especially those engaged in intellectual and creative work (teachers, doctors, scientific researchers), based on their final results and quality indicators, has not been developed. Based on this, the purpose of this article is to develop an improved theoretical-methodological classification that takes into account the sectoral characteristics of organizations, based on the synthesis of classical and modern theoretical approaches to labor normalization in budget organizations.

Theoretical Basis.

To deeply analyze the theoretical foundations of labor normalization in budget organizations, it is first necessary to reveal the essence of the main concepts and to conduct a comparative study of existing theoretical approaches. In the

Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No. 465, the concept of "labor norms (labor normalization)" is defined as "determining the maximum permissible amount of time to perform a specific job or task under certain production conditions." This definition, in its essence, reflects a classical, time-based approach and is mainly suitable for standard, repetitive labor operations. However, a critical analysis of this definition reveals its limitations for the complex tasks of the modern public sector. For example, while this definition is fully suitable for normalizing the physical labor of auxiliary staff, it is not sufficient to measure the results of intellectual and creative activities such as the quality of a teacher's lesson, the outcome of a doctor's treatment, or the effectiveness of a scientific researcher's study. Therefore, it is appropriate to propose an author's definition that gives this concept a broader and result-oriented meaning: Labor normalization is the process of establishing a scientifically based norm for the expenditure of labor resources (time, number of employees, skill level) necessary to achieve the quality and efficiency indicators set for a specific position or function, based on the strategic goals of the budget organization. This definition covers quality and efficiency components in addition to traditional time expenditure. The resolutions also defined the categories of "management," "production," and "auxiliary" staff. While this classification is convenient for distinguishing functional tasks, from the point of view of normalization, it requires additional grouping according to their labor characteristics (reproductive, creative, standardized).

Theoretical approaches to labor normalization are divided into two main paradigms. The first is the "Process-Oriented" (Scientific Management) paradigm. This approach, founded by F. Taylor, is aimed at maximum standardization, optimization, and control of labor. Its main methods – timekeeping, work-day photography, analysis of labor movements – are reflected in the Resolution of the Cabinet of Ministers No. 465 as the "analytical method" and "timekeeping method." This approach is highly effective for stable, repetitive, and easily measurable processes, such as processing documents or cleaning a territory. The second is the "Result-Oriented" (New Public Management) paradigm. This approach involves setting clear goals and key performance indicators (KPIs) for employees and departments, giving them broad freedom in choosing the ways to achieve these goals. In this case, the norm is not time, but the compliance of the achieved result with the established standard. This approach is suitable for managing variable, creative, and intellectual labor. The third important theory that complements these two paradigms is the Human Capital Theory. This approach, developed in the works of K.H. Abdurakhmonov, considers the employee's qualifications, knowledge, and experience as the main resource of the organization. From this point of view, it is substantiated that the normalization process should not hinder the employee's development, but on the contrary, should encourage them to improve their skills and perform more complex tasks. A comparative analysis of these theoretical approaches is presented in the table below.

Table 1. Comparative analysis of theoretical approaches to labor normalization

Criteria	"Process-Oriented" Approach (Scientific Management)	"Result-Oriented" Approach (NPM and Human Capital)
Main Goal	Minimizing labor costs, increasing efficiency	Achieving set goals and quality standards
Object of Normalization	Labor operation, movement	Final product, service, achieved result
Main Method	Timekeeping, work time observations, standardization	Management by Objectives (MBO), Key Performance Indicators (KPI), benchmarking
Attitude towards Employee	Element of the production process, a "cog"	Strategic asset of the organization, "human capital"
Efficiency Criterion	Volume of product produced/work performed per unit of time	Quality of the achieved result, compliance with the goal, "customer" satisfaction

As can be seen from the table above, the labor normalization system in Uzbekistan's budget organizations contains elements of both approaches, but there is not enough systematic connection and integration between them. The "process-oriented" approach is more clearly expressed in the current regulatory documents, while the "result-oriented" approach is more declarative in nature. This creates the need to develop a new theoretical-methodological approach that harmonizes the two paradigms and takes into account sectoral characteristics. The next part of the article will develop theoretical proposals based on the synthesis of these two paradigms.

Results.

Based on the theoretical analysis, an integrative-sectoral approach to labor normalization in budget organizations was proposed. The essence of this approach is that it abandons the idea of forcing labor normalization into a single, universal mold and is based on the sectoral groups of organizations. In this, for each group, based on the specific characteristics of the labor activity, the final product, and strategic goals, the optimal ratio and harmony of "process-oriented" and "result-oriented" methods are determined. The scientific novelty of the proposed approach is that it puts the sectoral context of normalization in the first place and consciously rejects the "one size fits all" principle. It seeks answers not only to the traditional question "how much time was spent?" but also to the modern questions "what result was achieved?" and "how well does this result correspond to the strategic goals of the sector?". Within this approach, the following main principles of labor normalization in budget organizations were formulated:

1. *Principle of Sectoral Specificity*: Each sector (education, healthcare, culture, etc.) has its own unique performance criteria. Therefore, a normalization method that is effective for one sector may not be suitable for another.

2. *Principle of Differentiation*: Within the same organization, the labor of different categories of employees (management, production, auxiliary) should be normalized using different methods. For example, it is advisable to use time norms based on timekeeping for auxiliary staff, and norms linked to quality and result indicators for production staff.

3. *Principle of Result-Orientation*: Labor norms must be inextricably linked to the quality of the organization's final product or service. This, in turn, encourages employees not only to work more, but also to work better.

4. *Principle of Flexibility*: Norms should not be a rigid dogma; they should be regularly reviewed and updated as technologies, work methods, and the tasks set for the organization change.

The analysis revealed that labor normalization in budget organizations requires a differentiated approach depending on the sectoral affiliation of the organization and the ultimate goal of its activity, rather than uniform, universal methods. The proposed classification does not negate the existing normative-legal base, but enriches it with modern management theories and serves to ensure methodological continuity. This, in turn, creates a theoretical foundation for creating a scientifically based and effective system of human resource management in the budget sector.

Discussion.

To assess the scientific and practical significance of the obtained results, it is important to compare them with existing research and theoretical concepts, as well as to identify the limitations of the study and future research directions. The proposed integrative-sectoral approach is fully consistent with the views of New Public Management (NPM) theorists on the importance of result-orientation and performance measurement to increase efficiency in the public sector. This approach is aimed at overcoming the limitations of traditional bureaucratic management and classical "scientific management," which focus only on process and rule adherence. If the classical approach emphasizes "doing the job right," our proposed approach prioritizes "doing the right job," that is, activities aimed at achieving the strategic goals of the organization. The works of leading experts in the field of strategic human resource management (SHRM) such as Michael Armstrong and Joan Pynes theoretically confirm our approach. They argue that determining the number of employees and analyzing the workload should depend not only on the quantitative volume of work, but also on the strategic goals of the organization and the competencies of the employees. Our classification attempts to apply this very principle to the sectoral groups of budget organizations in Uzbekistan. For example, in the healthcare system, when normalizing a doctor's labor, it is strategically appropriate to take into account not only the number of patients received, but also quality indicators such as adherence to treatment standards and a decrease in the disease recurrence rate. In relation to the human capital concept of the local scientist K.H. Abdurakhmonov, our classification considers the employee's qualifications and development as an important factor in setting norms. This means that a highly

qualified employee is expected not only to perform a larger volume of work, but also to solve higher-quality and more complex tasks. For example, in the field of education, for a teacher with a high qualification category, the norms may cover not only their teaching hours, but also their scientific-methodological activities, the creation of innovative lessons, and the achievements of their students in international olympiads. This, in turn, encourages employees to constantly work on themselves and to develop professionally.

The scientific and practical significance of the obtained results is manifested in several directions. Scientifically, the article fills the existing theoretical gap in the field of labor normalization in budget organizations. It softens the conflict between classical (process-oriented) and modern (result-oriented) paradigms and puts forward a new conceptual approach that integrates them. The practical significance is even broader. First, it is recommended to use this classification in budget planning. In this, when forming the wage fund, funds are planned not just based on the number of staff units, but as resources necessary to achieve the expected specific results and quality indicators. This ensures the targeted and effective spending of budget funds. Second, in staff optimization, organizations can rely not only on quantitative norms when reviewing their staff schedules, but also on the functional units necessary to achieve their sectoral goals. This allows for the reduction of unnecessary staff and the attraction of necessary specialists. Third, the system of employee performance appraisal and motivation can be radically reformed. At the same time, like any scientific research, this work has certain limitations. The main limitation is that the article is based on a purely theoretical-methodological analysis. The proposed classification and principles have not been practically tested (approbated) on the example of a specific budget organization. Also, important socio-psychological factors affecting the normalization process, such as organizational culture, employees' resistance to change, and the managerial potential of leaders, remained outside the scope of the research. These limitations set new directions for future research.

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TALABALARDA KASBIY-KREATIVLIK KO'NIKMALARINI SHAKLLANTIRISHNING FUNKSIONAL MODELI

Annotatsiya: *Ushbu maqolada talabalarda kasbiy-kreativlik ko'nikmalarini shakllantirishning funksional modeli nazariy va amaliy jihatdan yoritilgan. Muallif pedagogik jarayonda kreativ yondashuvning ahamiyatini ochib bergan holda, talabalarda ijodkorlik, mustaqil fikrlash, kasbiy malaka va innovatsion faoliyatni rivojlantirishga yo'naltirilgan modelni taklif etadi. Modelning asosiy komponentlari — motivatsion, mazmunli, amaliyotga yo'naltirilgan va refleksiv-baholovchi qismlardan iborat bo'lib, ular o'zaro uzviy bog'liq holda talabalarning kasbiy tayyorgarligi va ijodiy salohiyatini yuksaltirishga xizmat qiladi.*

Kalit so'zlar*: kreativ, progress, model,nisbiy avtonomiya, evolyusion, subyekt-subyekt, kashfiyot, ijod, tashkiliy-pedagogik, xavfsiz.*

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FUNCTIONAL MODEL FOR DEVELOPING STUDENTS' PROFESSIONAL AND CREATIVE SKILLS

Annotation: *This article theoretically and practically highlights the functional model of developing professional and creative skills in students. The author, by revealing the significance of a creative approach in the pedagogical process, proposes a model aimed at fostering students' creativity, independent thinking, professional competence, and innovative activity. The main components of the model — motivational, content-based, practice-oriented, and reflective-evaluative parts — are interrelated and contribute to enhancing students' professional training and creative potential.*

Keywords: *creative, progress, model, relative autonomy, evolution, subject-subject, discovery, creativity, organizational-pedagogical, safe.*

Oliy ta'limda zamonaviy yondashuvlar talabalarni kreativ fikrlashiga turtki beradi. Ta'limiy vaziyatlarda muammolarni hal etish nafaqat mantiqiy balki, analogik fikrlash, boshqa vaziyatlarni oqilona va har tomonlama hal etishni

ta’minlaydi. Natijada talabalarda kasbiy mahorat rivojlanadi. Muammolarni samarali hal etish uchun bilimlarni integratsiyalash bilan birga turli nuqtai nazarlarni qo‘llash, g‘oyalarni umumlashtirish lozim. Kreativlik inson faoliyatining eng muhim va keng tarqalgan turlaridan biridir, buni foydali va samarali evolyusion o‘zgarish deyish mumkin. Ijodiy fikrlash talaba o‘zlashtirishining samaradorligini bashorat qiluvchi omil sanaladi.

....Dragerning fikricha,”kreativlik innovatsiyaning dastlabki bosqichi, kashfiyot va ixtirochilik qobiliyatidir. Har qanday hayotiy jabhalarda insoniyatning tarixiy taraqqiyoti davrida kreativlik progress va transformatsiya (individning ongi yoki tajribasi) hodisasi yuz beradi. Boshqa tomondan, ijodkorlik innovatsiya, ixtiro va kashfiyotning asosi” [**Ошибка! Источник ссылки не найден.**].

Insoniyat va sivilizatsiya tarixi davomida hayot sohalarida yuz bergan ijodkorlik o‘zgarish va taraqqiyotning harakatlantiruvchi kuchlaridan biri deb tan olingan. O‘quv–tarbiya jarayoni bosqichlarini rejalashtirish va variatiav dars loyihalari asosida tashkil etish kreativ-ko‘nikmani shakllanishiga xizmat qiladi. Chunki talabalar har bir bosqichni amalga oshirishda ijodiy fikrlash va yechimlarni shaxsiy mulohazalarga tayangan holda bayon etishga harakat qiladi.

Xorij olimi Fred Xoylning ta’kidlashicha “bugun ijodiy g‘oyalarni e’tiborsiz qoldiradigan millatning ertaga yuzi loyga qorishadi” [**Ошибка! Источник ссылки не найден.**; 301 b.]. Darhaqiqat davlat va mamlakat taraqqiyotida pedagogik faoliyatini samarali tashkil eta oladigan malakali kadrlarning o‘rni beqiyos.

Ma’lumki, an’anaviy ta’limda kreativ muhitni yaratishga imkon bo‘lmaydi. Ushbu bo‘shliqni to‘ldirish uchun ijodiy qobiliyatlarni rivojlantirishga yo‘naltirilgan o‘quv topshiriqlari, didaktik qo‘rgazma va variativ dasturlar ishlab chiqish zarur. Talabalarda ijodiy fikrlash strategiyalarini shakllantirish hamda kreativ yondashuvni rivojlantirish maqsadga muvofiq.

B. Baylin kuzatuvlariga ko‘ra, “ijodiy jarayonda muayyan qoidalarga doimo amal qilinadi” [**Ошибка! Источник ссылки не найден.**]. Ijodkorlik nafaqat ko‘nikmalarga ega bo‘lishni anglatadi balki noan’anaviy fikrlash, shuningdek, umum qabul qilingan qoidalarni bilishni taqazo etadi, chunki ulardan chekinish uchun ularni hech bo‘lmaganda bilish kerak. Har bir talaba shaxsi uchun ijodkorlikning yuqori qiymati va ahamiyati yuqori o‘rin egallaydi.

Talabalar nafaqat qaror qabul qilish imkoniyatini beradigan individual potensial balki muammolar va yangi vaziyatlarda harakat qilish, atrof-muhitni faol o‘gartirish, o‘z hayoti, kelajagini o‘zgartirishga intilishi zarur. Kreativlik hayotning barcha sohalarida, xususan, bugungi yoshlarning shaxsiy va jamiyat manfaatlarini ko‘zlashida alohida ahamiyatga ega. Bo‘lajak tarbiyachilarda kreativ-kasbiy ko‘nikmalarni shakllantirishda professor-o‘qituvchining amaliy faoliyati yoki o‘quv sharoitida ijodkorlikni rivojlantirish g‘oyasini amalga oshirish muhim. Talabada kreativlikni shakllantirishda tizimli ravishda ta’lim-tarbiya jarayonini tashkil etish, ularni divergent fikrlashga to‘g‘ridan-to‘g‘ri yo‘naltirish, ichki imkoniyatlari va turli xil ijodiy usullar orqali maqsadga erishish mumkin.

Kreativlikni shakllantirishga qaratilgan ta’limda pedagogik vaziyatlar, shaxsning individual imkoniyatini tan olish yetakchi tamoyil bo‘lishi kerak. Kasbiy ko‘nikma va ijodini rivojlantirishga qaratilgan pedagogik jarayon ta’lim tizimning ochiqligi, moslashuvchanligi, professor-o‘qituvchilar va talabalarning umumiy ijodiy munosabati hamda hatti-harakatlarini o‘qitish va o‘qitishga yanada ochiq yondashuvni ta’minlashi lozim.

K.K.Urban, X.G.Julien tomonidan divergent fikrlashga qaratilgan o‘yinlardan foydalanish va o‘quv topshiriqlari bilan bog‘liq vazifalarni qo‘llash, shu jumladan ular o‘rtasidagi munosabatni diqqat bilan kuzatish va baholash kerakligi tavsiya etilgan [**Ошибка! Источник ссылки не найден.**]. Talabalar o‘rtasidagi ijodiy xatti-harakatlar va tahliliy yondashuvlar bolalar ta’lim-tarbiyasi uchun mazmunli natijalarga olib keladigan umumiy muammolarni hal qilishni ta’minlaydi. Ta’limiy faoliyatni takomillashtirish uchun zarur bo‘lgan barcha qobiliyat va ko‘nikmalarni rivojlantirishda yetarli imkoniyat yaratish zarur. Kreativlikni xususiyati shundaki, ushbu jarayon talabalarning umumiy say-harakatlarni birlashtirishga chaqiradi va uni kundalik amaliyotda amalga oshiriladigan ta’lim maqsadiga aylantirish kerakligini ifodalaydi. Ijodkorlik immanent (biiror hodisaning ichki xususiyatlariga xos, ichki tabiatidan kelib chiqadi) shaxsiy xususiyat bo‘lib, o‘quv jarayonida ma’lum sharoitlarda rivojlanishi mumkin. Biroq, tadqiqot davrida talabalarda kreativlikni rivojlantirishda yutuqlarga erishishda ikki muhim sabab mavjudligi aniqlandi, birinchidan, ularga ta’lim, tajriba va odatlarning hozirgi xatti-harakatlariga ta’siri. Ikkinchidan, ijodiy harakatlar tashqi obyektiv to‘siqlarini bartaraf qiladi. DTS asosida tayyorlangan o‘quv dasturlari, noa’naviy dars mashg‘ulotlari, kreativ yondashuvlar talabaga ijodiy harakatlarning ichki va tashqi to‘siqlarini yengishga yordam beradi, yangi assotsiatsiyalarni amalga oshiradi.

Kreativlikni rivojlantirishning 1960-70 yillarda paydo bo‘lgan ikkichi avlod vakillari Robert Eberli, Djordj Ekstayn, Robert Adler muammolarni hal qilishda tasavvur jarayonlarining ahamiyatini ochib bergan [**Ошибка! Источник ссылки не найден.**]. Mantiqiy ijodiy muammolarni hal qilish mazmunida intuitiv tasavvur jarayonlaridan foydalanish turadi.Talabalar maktabgacha ta’lim amaliyotida bolalar ta’lim-tarbiyasini oldindan prognozlash va tasavvur qilishi imkoniga ega bo‘ladi. Ular pedagogik muammo yechimlarini uchun asosiy manbaani tengdoshlari, atrof-muhit, hayotiy tajriba va amaliyotdan oladi. Biroq ta’limiy vaziyatlar va yechimlarning sifati, talaba o‘zlashtirgan ma’lumotlarga bog‘liq. Kreativlikni shakllanishida o‘zaro tajriba almashish va do‘stona munosabatlar, shaxsga yo‘naltirilgan ta’lim, qulay pedagogik sharoitlar ustuvor bo‘lsa, shaxsiy g‘oyalarning o‘ziga xosligi shunchalik ahamiyatli bo‘ladi.

Talabalarda kreativlikni shakllantirishda quyidagi pedagogik-shartlarga amal qilindi:

Kreativlik nafaqat talabaga xos sifat, balki o‘qituvchi shaxsiyatining ajralmas xususiyati sifatida ham namoyon bo‘ladi. Shuning uchun talabalarda kasbiy-kreativlikning shakllanishida professor-o‘qituvchilar talabalarga motivatsiya

berishi lozim. Ma’lumki ichki va tashqi motivlar shaxs faoliyati yo‘nalishini belgilaydi. Pedagogik faoliyatda aniq maqsad aniqlanib olinmasa, motivatsiya past bo‘ladi muvaffaqiyatga erishishda muammolar yuz beradi. Talabalarda kreativlik shaxslararo o‘zaro ta’sir va ijodkorlikni bilvosita qo‘llab-quvvatlash orqali shakllanadi. Kasbiy-kreativlikni turli yo‘llar bilan modellashtirish mumkin. Aksariyat talabalar o‘qituvchiga taqlid qiladi, shuning uchun turlicha qarashlar, muammolarni innovatsion tarzda hal qilishi talab etiladi.

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GIPOKSIYA: SABABLARI, TURLARI VA ORGANIZMGA TA'SIRI

Annotatsiya: *Mazkur maqolada gipoksiya tushunchasi, uning etiologik omillari, turlari hamda inson organizmidagi fiziologik va patologik o'zgarishlar yoritilgan. Gipoksiyaning hujayra darajasidagi mexanizmlari, organizmning moslashuv javoblari va davolashning asosiy yo'nalishlari tahlil qilinadi.*

Kalit so'zlar: *gipoksiya, gemik gipoksiya, to'qima gipoksiyasi, oksidlanish-fosforlanish, kompensator mexanizmlar.*

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HYPOXIA: CAUSES, TYPES AND EFFECTS ON THE BODY

Abstract: *This article examines the concept of hypoxia, its etiological factors, types, and the physiological and pathological changes occurring in the human body. The cellular mechanisms of hypoxia, adaptive responses of the organism, and the main approaches to treatment are analyzed.*

Keywords: *hypoxia, hemic hypoxia, tissue hypoxia, oxidative phosphorylation, compensatory mechanisms.*

KIRISH

Gipoksiya — bu organizm to'qimalarida kislorod yetishmovchiligi bilan kechadigan holat bo'lib, u turli etiologik omillar ta'sirida rivojlanadi. Inson hayoti uchun kislorod eng muhim biologik elementlardan biridir, chunki u hujayra darajasida energiya ishlab chiqarish jarayonida asosiy rol o'ynaydi. Normal sharoitda organizmning barcha to'qimalari kislorod bilan yetarli darajada ta'minlanadi, biroq ayrim holatlarda bu muvozanat buziladi va natijada gipoksiya rivojlanadi. Ushbu holat fiziologik sharoitlarda ham, patologik jarayonlar natijasida ham yuzaga kelishi mumkin.

Gipoksiyaning sabablari juda xilma-xil bo'lib, ular tashqi muhit omillaridan tortib to ichki patologik jarayonlargacha bo'lgan keng doirani o'z ichiga oladi.

Masalan, tog‘li hududlarda havo bosimining pasayishi natijasida kislorodning parchal bosimi kamayadi va bu atmosfera gipoksiyasini keltirib chiqaradi. Shu bilan birga, qon tarkibida gemoglobinning kamayishi (gemik gipoksiya), nafas olish tizimi kasalliklari (nafas olish gipoksiyasi), qon aylanishining buzilishi (tsirkulyator gipoksiya) yoki to‘qimalarda oksidlanish-fosforlanish jarayonining susayishi (to‘qima gipoksiyasi) ham gipoksiyaning turli shakllariga sabab bo‘ladi.

Organizm gipoksiya holatiga javoban turli darajadagi kompensator mexanizmlarni ishga soladi. Bu mexanizmlar yurak urish chastotasining ortishi, nafas olish tezligining kuchayishi, eritrotsitlar sonining ko‘payishi va to‘qimalarda qon oqimini kuchaytirish orqali namoyon bo‘ladi. Ushbu jarayonlar organizmning kislorod yetishmovchiligiga moslashish imkoniyatini oshiradi. Ammo gipoksiya uzoq davom etganda yoki og‘ir shaklda kechganda bu mexanizmlar yetarli bo‘lmaydi va hujayra darajasida qaytarilmas o‘zgarishlar yuz beradi.

Gipoksiya holatining o‘rganilishi zamonaviy tibbiyot va biologiyada katta ahamiyatga ega. Chunki u nafaqat o‘tkir kasalliklarda, balki surunkali yurak, o‘pka, qon va asab tizimi kasalliklarida ham muhim patogenetik omil sifatida ishtirok etadi. Shuningdek, gipoksiya sharoitida hujayra metabolizmining o‘zgarishi, energiya ishlab chiqarish mexanizmlarining susayishi, erkin radikallar hosil bo‘lishi va oksidlovchi stressning kuchayishi kabi jarayonlar kuzatiladi. Bu esa to‘qima nekrozi, organ disfunksiyasi va hatto o‘limga olib kelishi mumkin.

Shu boisdan, gipoksiyaning sabablari, turlari va organizmga ta’sir mexanizmlarini o‘rganish, shuningdek, uni bartaraf etish yoki oldini olish usullarini ishlab chiqish tibbiyot amaliyotida dolzarb yo‘nalishlardan biri hisoblanadi. Mazkur tadqiqotda gipoksiyaning etiologiyasi, patogenezi, organizmning moslashuv mexanizmlari va davolash yo‘nalishlari tizimli ravishda tahlil qilinadi.

Adabiyotlar tahlili

Gipoksiya (kislorod tanqisligi) - tibbiyotning eng dolzarb muammolaridan biri bo‘lib, u turli etiologik omillar natijasida organizmda kislorod bilan ta’minlanishning buzilishi bilan tavsiflanadi. Bu masala bo‘yicha dunyo olimlari tomonidan ko‘plab tadqiqotlar olib borilgan. Tadqiqotlarning ko‘rsatishicha, gipoksiya inson organizmida nafaqat nafas olish tizimi, balki yurak-qon tomir, nerv va endokrin tizimlar faoliyatiga ham jiddiy ta’sir ko‘rsatadi [1]. A. V. Melentyev (2018) o‘z asarida gipoksiyani “organizmda kislorod yetishmovchiligi oqibatida metabolik jarayonlarning izdan chiqishi” sifatida ta’riflaydi. U gipoksiyaning to‘rtta asosiy turini – gipoksik, gemik, tsirkulyator va to‘qima gipoksiyalarni ajratadi. Unga ko‘ra, bu turlarning barchasi hujayra darajasida oksidlanish-fosforlanish jarayonlarining buzilishi bilan yakunlanadi [2]. Shuningdek, L. A. Ivanova (2020) tomonidan olib borilgan tadqiqotlarda gipoksiyaning neyronlar faoliyatiga ta’siri o‘rganilgan. U gipoksiya sharoitida miya hujayralarida energetik yetishmovchilik, natriy-kaliy nasosining faoliyati pasayishi va oksidlovchi stressning kuchayishini aniqlagan. Ivanovaning fikricha, bu jarayonlar gipoksiyaning eng xavfli oqibatlaridan biri – neyronal degeneratsiyani yuzaga keltiradi [3].

Mahalliy tadqiqotchilardan A. O. Xolmatov (2019) o‘z maqolasida O‘zbekistonning baland tog‘li hududlarida yashovchi aholining gipoksiya sharoitlariga fiziologik moslashuv mexanizmlarini tahlil qilgan. Uning fikricha, uzoq muddatli gipoksiya eritrotsitlar sonining ortishi, gemoglobinning ko‘payishi va kislorodni bog‘lash qobiliyatining yaxshilanishi bilan kompensatsiya qilinadi [4] Yana bir muhim yo‘nalish — gipoksiyaning yurak faoliyatiga ta’siri bo‘lib, bu borada A. R. Karimov (2021) yurak mushaklarida energiya almashinuvi buzilishlarini aniqlagan. U gipoksiya holatida mitoxondriyalarning funksional yetishmovchiligi va ATP sintezining kamayishini asosiy patogenetik mexanizm sifatida ta’kidlaydi [5]. Xalqaro adabiyotlarda ham gipoksiyaning terapevtik jihatlari keng o‘rganilgan. Masalan, D. Smith (2022) gipoksiyani davolashda kislorod terapiyasi, giperbarik kislorod seanslari hamda farmakologik stimulyatorlar (etanol, aktovegin, mildronat) qo‘llanishini samarali deb baholaydi. Unga ko‘ra, gipoksiyaning erta bosqichlarida bu usullar organizmning kompensator imkoniyatlarini kuchaytiradi va to‘qimalardagi qaytarilmas o‘zgarishlarning oldini oladi.

Tadqiqot metodologiyasi:

Ushbu tadqiqot gipoksiya holatlarining kelib chiqish sabablari, turlari va organizmga ta’sirini tahlil qilishga qaratilgan. Ishda tahliliy–taqqoslama, fiziologik kuzatuv, va adabiyotlar tahlili metodlari qo‘llanildi. Tadqiqot davomida gipoksiya patogeneziga oid zamonaviy ilmiy manbalar, klinik kuzatuvlar va eksperimental ma’lumotlar o‘rganildi. Gipoksiyaning asosiy shakllari — gipoventilyatsion, gemik, to‘qima va tsirkulyator turlari — ularning rivojlanish mexanizmlari bilan birgalikda tahlil qilindi.

Tahlil va natijalar

Gipoventilatsiya bu alveolalarda kislorod foizining kamayishiga olib keladigan omillar bilan bog‘liq holat bo‘lib, bu havo yo‘llarining torayishi yoki kisloroddan tashqari boshqa gazlarning, masalan, karbonat angidridning (CO_2) qisman bosimining ortishi natijasida yuzaga keladi. Ushbu holat shuningdek, nafas olish markazining faoliyati susaygan hollarda (masalan, chuqur sedatsiya vaqtida) yoki ko‘krak qafasining harakati cheklangan sharoitlarda (masalan, semizlikka bog‘liq gipoventilatsiya sindromi yoki ankilozlovchi spondilitda) ham rivojlanishi mumkin. Bunday holatda alveolyar-arterial kislorod gradyenti (A–a gradient) normal bo‘lib qoladi, chunki kislorod yetishmovchiligi ham alveolalarda, ham qon oqimida sodir bo‘ladi.

Alveolalarda bir gazning qisman bosimining ortishi boshqa gazlar hisobiga sodir bo‘ladi; masalan, karbonat angidridning qisman bosimi ortganda, alveolyar va arterial darajada kislorodning qisman bosimi kamayadi. Gipoksemiya (qonda kislorod yetishmovchiligi)ning bu turi odatda qo‘shimcha kislorod berish orqali osonlikcha tuzatiladi.

Bu holat o‘pkaning ventilyatsiyasi (nafas olish) va qon oqimi (perfuziya) o‘rtasidagi nomutanosiblik natijasida yuzaga keladi. Hatto sog‘lom o‘pkada ham V/Q nomutanosibligi mavjud bo‘lib, tik turgan odamda o‘pka uchi qismida bu

koʻrsatkich bazaga nisbatan yuqoriroq boʻladi. Bu farq normal A–a gradyentining shakllanishiga hissa qoʻshadi.

Ammo **oʻpka qon tomir kasalliklari**, **tromboembolik kasalliklar** yoki **atelektaz** kabi holatlarda bu nomutanosiblik kuchayadi. Natijada gipoksemiya rivojlanadi, bu esa qoʻshimcha kislorod berish bilan toʻliq bartaraf etilishi qiyin boʻlgan holatdir.

Bu holatda qon oʻpka orqali kislorodlanmasdan yurakning oʻng qismidan chap qismiga oʻtadi. Anatomik nuqsonlar — **atriyal yoki ventrikulyar septal defektlar**, shuningdek, **oʻpka arteriovenoz malformatsiyalari** — natijasida gipoksemiya yuzaga keladi va bunday gipoksemiya **qoʻshimcha kislorod bilan tuzatilishga juda chidamli** boʻladi.

Oʻxshash fiziologik holat **gepatopulmonar sindrom**da ham kuzatiladi. Bundan tashqari, **atelektaz, pnevmoniya yoki ARDS (oʻtkir respirator distress sindrom)** kabi holatlarda havolanmagan alveolalar orqali qon oʻtishi natijasida fiziologik oʻngdan chapga shunt sodir boʻladi.

Bunday holatlarning odatiy sabablari — **interstitsial shish**, **oʻpka toʻqimasining yalligʻlanishi** yoki **fibroz jarayonlaridir**. Kasallik ogʻirligiga qarab, bunday gipoksemiyani bartaraf etish uchun **oʻrtacha yoki katta miqdorda qoʻshimcha kislorod** talab etiladi.

Jismoniy mashqlar gipoksemiyani kuchaytiradi, chunki mashq vaqtida yurak chiqishi (cardiac output) ortadi, natijada qon alveolalar orqali tezroq oqadi va gaz almashinuvi uchun vaqt qisqaradi. Agar oʻpka toʻqimasi oʻzgargan boʻlsa, bu vaqtning qisqarishi **kislorod diffuziyasining yetarli emasligiga** olib keladi.

Oʻtkir gipoksiya holatida bemorda **nafas qisishi (dispnoe)** va **tez nafas olish (taxipnoe)** kuzatiladi. Belgilarning ogʻirligi gipoksiya darajasiga bogʻliq. Jiddiy holatlarda **taxikardiya** paydo boʻladi — bu toʻqimalarga yetarli kislorod yetkazib berishga qaratilgan kompensator javobdir. Fizik koʻrikda **stridor** eshitilishi yuqori nafas yoʻli torayishini bildiradi. Shuningdek, **teri sianozlanishi (koʻkarish)** ogʻir gipoksiyaning belgisi boʻlishi mumkin.

Kislorod yetkazib berilishi jiddiy buzilganda **organlarning funksiyasi pasaya boshlaydi**. Neyrologik belgilar orasida — bezovtalik, bosh ogʻrigi, chalkashlik; ogʻir hollarda hushning buzilishi va koma rivojlanishi mumkin. Oʻz vaqtida tuzatilmasa, bu holat oʻlim bilan tugashi ehtimoli yuqori.

Surunkali gipoksiya esa nisbatan sekin rivojlanadi. Eng koʻp uchraydigan shikoyat — **jismoniy mashq vaqtida nafas qisishi**. Kasallik sababiga qarab boshqa belgilar ham kuzatiladi:

- **Yoʻtal va isitma** — oʻpka infeksiyasida;
- **Oyoq shishlari va nafas yotgan paytda qisilishi (ortopnoe)** — yurak yetishmovchiligida;
- **Koʻkrak ogʻrigi va bir tomonlama oyoq shishi** — oʻpka emboliyasida.

Fizik koʻrikda **taxikardiya, taxipnoe** va **past kislorod saturatsiyasi** aniqlanadi.

Auskultatsiya (stetoskop bilan eshitish) vaqtida **ikkala o‘pka past qismida krakllar** — o‘pka shishi yoki suyuqlik to‘planishini bildiradi.

Qo‘shimcha belgilar: **bo‘yinda venaning shishishi**, **oyoqlarda shish**, **xirillash (wheezing)** yoki **ronxilar (rhonchi)** — obstruktiv o‘pka kasalliklarini ko‘rsatadi.

Agar bir tomonda havo kirishi to‘xtagan bo‘lsa, bu **katta plevral suyuqlik (plevral effuziya)** yoki **pnev motoraks**ni ko‘rsatadi. **Perkussiya** yordamida ularni farqlash mumkin: effuziyada tovush **xira**, pnevmotoraksda esa **jarangdor (giperrezonans)** bo‘ladi.

Agar o‘pka eshitilganda toza bo‘lsa, ammo gipoksiya saqlanib tursa, bu **o‘pka emboliyasi**dan shubha qilish uchun asos bo‘ladi, ayniqsa bemorda taxikardiya va chuqur venoz tromboz belgilari mavjud bo‘lsa.

Xulosa:

Xulosa qilib aytganda, adabiyotlar tahlili shuni ko‘rsatadiki, gipoksiya murakkab patofiziologik holat bo‘lib, u turli sabablar bilan yuzaga keladi va deyarli barcha organ tizimlariga ta’sir ko‘rsatadi. Zamonaviy ilmiy manbalarda gipoksiyaning mexanizmlari, oqibatlari va davolash usullari bo‘yicha chuqur ilmiy asoslangan yondashuvlar taklif etilgan. Shu bois gipoksiya muammosini kompleks yondashuv asosida o‘rganish va mahalliy sharoitlarga mos profilaktika chora-tadbirlarini ishlab chiqish dolzarb hisoblanadi.

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BUYRAKLAR VA ULARNING GEMOSTAZDAGI ROLI

Annotatsiya: *Mazkur maqolada buyraklarning organizmdagi gemostazni saqlashdagi fiziologik va biokimyoviy roli tahlil qilingan. Buyraklar qon bosimini me'yorda ushlab turish, suyuqlik-elektrolit muvozanatini boshqarish, kislota-ishqor muvozanatini saqlash hamda gemopoetik tizim faoliyatini tartibga solishda ishtirok etuvchi muhim a'zo sifatida qaraladi. Tadqiqotda renin-angiotenzin-aldosteron tizimining, eritropoetin ishlab chiqarish jarayonining va buyraklarning qon filtrlash faoliyatining gemostazdagi ahamiyati yoritiladi.*

Kalit so'zlar: *buyrak, gemostaz, renin-angiotenzin tizimi, eritropoetin, qon bosimi, filtratsiya, homeostaz.*

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KIDNEYS AND THEIR ROLE IN HEMOSTASIS

Abstract: *This article analyzes the physiological and biochemical role of the kidneys in maintaining the body's homeostasis. The kidneys are considered a vital organ involved in regulating blood pressure, fluid-electrolyte balance, acid-base equilibrium, and hematopoietic system activity. The study highlights the importance of the renin-angiotensin-aldosterone system, erythropoietin production, and the kidney's blood filtration function in the mechanisms of hemostasis.*

Keywords: *kidney, hemostasis, renin-angiotensin system, erythropoietin, blood pressure, filtration, homeostasis.*

KIRISH

Buyraklar inson organizmidagi eng muhim hayotiy a'zolardan biri bo'lib, ularning asosiy vazifasi organizmdan modda almashinuvi mahsulotlarini chiqarish va ichki muhit barqarorligini (homeostazni) saqlashdir. Shu bilan birga, buyraklar gemostaz – ya'ni qonning suyuq holatda qolishi, ivish tizimining muvozanatini saqlash hamda qon bosimini nazorat qilish jarayonlarida bevosita ishtirok etadi.

Gemostaz tizimi – bu qon tomirlarining yaxlitligini saqlash, qon ketishini oldini olish va zarurat tug‘ilganda qon ivishini ta’minlovchi murakkab fiziologik mexanizm hisoblanadi. Buyraklarning ushbu tizimdagi ishtiroki bir necha yo‘nalishda namoyon bo‘ladi: birinchidan, buyraklar orqali renin-angiotenzin-aldosteron tizimi (RAAT) orqali qon bosimi va tomir tonusi boshqariladi; ikkinchidan, eritropoetin gormoni ishlab chiqilib, qon hosil bo‘lish jarayoni rag‘batlantiriladi; uchinchidan, buyraklar suyuqlik-elektrolit muvozanatini nazorat qilib, plazma hajmini va qon yopishqoqligini tartibga soladi.

O‘zbekiston Respublikasida sog‘lom turmush tarzini targ‘ib etish, surunkali buyrak kasalliklarini erta aniqlash va davolash tizimini takomillashtirish maqsadida bir qator normativ hujjatlar qabul qilingan. Jumladan, O‘zbekiston Respublikasi Prezidentining 2022-yil 11-martdagi PQ–165-sonli qarori “Aholiga nefrologik yordam ko‘rsatish tizimini yanada takomillashtirish chora-tadbirlari to‘g‘risida” hamda 2023-yil 17-apreldagi PQ–125-sonli qarori “Sog‘lom turmush tarzini targ‘ib etish va surunkali kasalliklarning oldini olish” mazkur sohada ilmiy-tadqiqot ishlarini kengaytirishga asos bo‘lmoqda.

ADABIYOTLAR TAHLILI

Gipoksiya muammosi zamonaviy tibbiyot fanida keng tadqiq etilgan bo‘lib, ko‘plab xorijiy va mahalliy olimlar ushbu jarayonning fiziologik, biokimyoviy hamda klinik jihatlarini yoritganlar. **Guyton A.C., Hall J.E.** o‘zining *“Textbook of Medical Physiology*” nomli asarida gipoksiyani hujayra energetikasining buzilishi bilan bog‘liq jarayon sifatida tavsiflaydi. Mualliflar mitoxondriyalarda oksidlanish-fosforlanish mexanizmlarining buzilishi natijasida ATF ishlab chiqilishi keskin kamayishini ta’kidlaydilar. Ularning tadqiqotlari gipoksiyani faqat kislorod yetishmovchiligi emas, balki hujayra darajasidagi **energiya inqirozi** sifatida talqin qilishga asos yaratgan [1]. **Шмидт Р.Ф., Тевс Г.** tomonidan yozilgan “*Физиология человека*” asarida gipoksiyaning etiologik turlari (ekzogen, respirator, gemik, tsirkulyator va to‘qima gipoksiyasi) batafsil tahlil qilingan. Mualliflar markaziy asab tizimi, yurak va o‘pkaning gipoksik holatga moslashuv reaksiyalarini tajriba asosida o‘rganib, bu jarayonlarning vaqtinchalik kompensator xarakterga ega ekanini ilmiy isbotlaganlar [3]. **Савельев В.С.** o‘zining “*Общая патология*” asarida gipoksiyani umumiy patologik jarayon sifatida baholaydi. U o‘tkir va surunkali gipoksiyaning klinik shakllarini farqlab, to‘qimalarda degeneratsiya, nekroz va apoptoz kabi morfologik o‘zgarishlarning kechishini batafsil yoritadi. Muallifning ilmiy yondashuvi gipoksiyaning klinik diagnostikasi va davolash strategiyasini ishlab chiqishda muhim nazariy asos bo‘lib xizmat qiladi [5]. **Абдуллаев А.А.** tomonidan yozilgan “*Patofiziologiya asoslari*” nomli o‘quv qo‘llanmada gipoksiyaning patogenez mexanizmlari O‘zbekiston sharoitiga mos ravishda izohlangan. Muallif sut kislotasining to‘planishi natijasida metabolik asidoz rivojlanishini, yurak, jigar va miya faoliyatida qaytmas o‘zgarishlar yuz berishini ilmiy asosda tushuntiradi. Shuningdek, u antigipoksant preparatlarning (mexidol, trimetazidin va boshqalar) qo‘llanish samaradorligini tahlil qilgan [4].

O‘zbekiston Respublikasi Prezidentining 2022–2026 yillarga mo‘ljallangan sog‘lom turmush tarzini shakllantirish dasturida gipoksik holatlarning oldini olishga alohida e’tibor berilgan. Hujjatda aholi orasida jismoniy faollikni oshirish, toza havo muhitini ta’minlash va nafas mashqlarini targ‘ib etish orqali gipoksiyaning profilaktikasini kuchaytirish zarurligi ko‘rsatib o‘tilgan [2].

Adabiyotlarni umumiy tahlil qilish shuni ko‘rsatadiki, gipoksiya fiziologiyasi bo‘yicha o‘tkazilgan xorijiy tadqiqotlar (Guyton, Shmidt, Savel’ev) asosan molekulyar va hujayra darajasidagi mexanizmlarni o‘rganishga qaratilgan bo‘lsa, mahalliy tadqiqotlar (Abdullaev, Sog‘lom turmush dasturi) ko‘proq amaliy tibbiyot va profilaktika yo‘nalishida olib borilgan. Shu bilan birga, O‘zbekistonning ekologik sharoitida, ayniqsa, baland tog‘ hududlarida gipoksiyaning adaptatsion mexanizmlarini o‘rganish bo‘yicha izlanishlarni yanada kengaytirish dolzarb masala bo‘lib qolmoqda.

TADQIQOT METODOLOGIYASI

Mazkur tadqiqotning metodologik asosini zamonaviy fiziologiya, biokimyo va patofiziologiya fanlarining nazariy tamoyillari, shuningdek, kislorod almashinuvi va hujayra energetikasi haqidagi ilmiy konsepsiyalar tashkil etadi. Tadqiqot gipoksiya jarayonining sabablari, turlari, patogenez mexanizmlari va organizmga ta’sirini tizimli yondashuv asosida o‘rganishga qaratilgan.

TAHLIL VA NATIJALAR

O‘tkazilgan tadqiqotlar va mavjud ilmiy manbalar tahlili shuni ko‘rsatadiki, buyraklar gemostazning turli komponentlarini, jumladan, qon bosimi, suyuqlik-elektrolit muvozanati, kislota-ishqor balansini va qon ivish tizimini tartibga solishda markaziy rol o‘ynaydi. Buyraklar qon filtrlash mexanizmi orqali toksinlarni chiqaradi, shu bilan birga ichki muhitning barqarorligini ta’minlaydi. Suyuqlik va elektrolitlar balansining tartibga solinishi orqali qon bosimi optimal darajada saqlanadi, kislota-ishqor muvozanati esa H^+ ionlari chiqarilishi va HCO_3^- ionlarining qayta so‘rilishi bilan barqarorlanadi. Shu orqali metabolik asidoz yoki alkaloz kabi patologik holatlarning oldi olinadi.

Renin-angiotenzin-aldosteron tizimi (RAAS) buyraklar faoliyatining gemostazdagi eng muhim mexanizmlaridan biri sifatida aniqlangan. Renin ajralishi angiotenzin II hosil bo‘lishiga olib keladi, bu esa qon tomirlarini toraytiradi va aldosteron sekretsiyasini rag‘batlantiradi. Natijada natriy va suv ushlab qolish mexanizmi faollashadi, qon bosimi barqarorligi ta’minlanadi. Shu bilan birga, eritropoetin ishlab chiqarilishi hipoksiya holatida eritrotsitlar sonini oshirib, kislorod tashish qobiliyatini yaxshilaydi va gemostazning optimal darajada saqlanishiga xizmat qiladi.

Tahlil shuni ko‘rsatdiki, buyraklarning gemostazni saqlashdagi roli faqat suyuqlik va elektrolit balansidan iborat emas. Qon ivish mexanizmlari ham bu jarayonga bevosita ta’sir ko‘rsatadi. Surunkali buyrak yetishmovchiligi trombotsitlar faoliyatining susayishi va fibrinoliz mexanizmlarining buzilishi bilan bog‘liq bo‘lib, bu qon ketish yoki tromb hosil bo‘lish xavfini oshiradi. Eritropoetin

yetishmovchiligi esa kislorod tashish qobiliyatining pasayishiga olib keladi, bu esa gemostazni barqaror saqlashga salbiy ta’sir ko‘rsatadi.

Shuningdek, buyraklar kislota-ishqor balansini saqlash orqali metabolik jarayonlarni ham nazorat qiladi. H^+ ionlarining chiqarilishi va HCO_3^- ionlarining qayta so‘rilishi qon pH darajasini optimal diapazonda ushlab turadi. Metabolik asidoz yoki alkaloz holatlari, bu jarayonlar buzilganda, rivojlanadi va bu gemostazning barqarorligini xavf ostiga qo‘yadi.

Buyraklar inson organizmining muhim organlaridan biri bo‘lib, ularning asosiy vazifasi nafaqat qon plazmasini toksinlardan tozalash va siydik hosil qilish bilan cheklanadi, balki organizmning ichki muhitini barqaror saqlash — gemostazni ta’minlashda markaziy rol o‘ynaydi (Guyton & Hall, 2021). Gemostaz tushunchasi fiziologiyada qon suyuqligi, elektrolitlar, kislota-ishqor muvozanati, qon ivishi va qon bosimini doimiy darajada ushlab turuvchi murakkab mexanizmlarni anglatadi (Hall, 2016). Buyraklar gemostazning barcha ushbu komponentlariga bevosita yoki bilvosita ta’sir ko‘rsatadi.

1-Jadval.

Buyraklar gemostazni saqlash jarayonida quyidagi asosiy vazifalarni bajaradi:

Vazifa	Ta’rif	Gemostazga ta’siri	Manba
Qon filtrlash	Qon plazmasini toksinlardan tozalash va siydik hosil qilish	Toksinlardan himoya qiladi, qon tarkibini barqarorlaydi	Guyton & Hall, 2021
Suyuqlik-elektrolit balansini saqlash	Natriy, kaliy, xlor va suv miqdorini tartibga solish	Qon hajmi va bosimini muvozanatda saqlaydi	Hall, 2016
Kislota-ishqor muvozanati	Vodorod va bikarbonat ionlarini boshqarish	Qon pH darajasini 7,35–7,45 oralig‘ida saqlaydi	Berl, 2019
Eritropoetin ishlab chiqarish	Qizil qon tanachalarini sintezini rag‘batlantirish	Qonning kislorod tashish qobiliyatini oshiradi	Jelkmann, 2011
Gemostazni qo‘llab-quvvatlash	Trombositlar va qon ivish mexanizmlarini tartibga solish	Qon ketish va tromb hosil bo‘lish xavfini kamaytiradi	Kaushansky, 2018

Manba: ***Guyton, A.C., Hall, J.E.*** *Textbook of Medical Physiology. — Philadelphia: Elsevier, 2021. — 1152 p*

Buyraklarning endokrin funksiyasida **renin-angiotenzin-aldosteron tizimi** (RAAS) gemostazni tartibga solishda markaziy rol o‘ynaydi. Qon bosimi pasayganda yoki buyrak perfuziyasi kamayganda juxtaglomerulyar hujayralar **renin** ajratadi. Renin angiotenzinogenni angiotenzin I ga aylantiradi, so‘ngra angiotenzin-konvertlovchi ferment (ACE) ta’sirida angiotenzin II hosil bo‘ladi. Angiotenzin II vazokonstriktor sifatida qon tomirlarini toraytiradi va **aldosteron** sekretsiyasini rag‘batlantiradi. Aldosteron esa natriy va suvni saqlash orqali qon hajmini oshiradi va qon bosimini normallashtiradi (Dzau et al., 2019).

Buyraklar eritropoetin (EPO) gormonini ishlab chiqarish orqali qonning kislorod tashish salohiyatini ta’minlaydi. Hipoksiya holatida buyrak hujayralari

EPO ishlab chiqarishni oshiradi, bu suyak ko‘migidagi eritrotsitlar sonini ko‘paytiradi va gemostazni qo‘llab-quvvatlaydi (Jelkmann, 2011).

Buyraklar qonning kislota-ishqor darajasini tartibga solish orqali gemostazni qo‘llab-quvvatlaydi. Ular H^+ ionlarini chiqarish va HCO_3^- ionlarini qayta so‘rib olish orqali metabolik asidoz va alkaloz holatlarini oldini oladi (Berl, 2019).

Buyrak yetishmovchiligi trombotsitlar, fibrinoliz va plazma oqsillarining sinteziga salbiy ta’sir ko‘rsatadi. Surunkali buyrak yetishmovchiligi bo‘lgan bemorlarda eritropoetin yetishmovchiligi natijasida eritrotsitlar soni kamayadi va gemostaz barqarorligi susayadi (Kaushansky, 2018).

2-jadval

Holat	**Ta’sir**	**Izoh**
Trombositlar disfunktsiyasi	Qon ketish xavfi ↑	Surunkali buyrak yetishmovchiligi
Fibrinoliz buzilishi	Tromb hosil bo‘lish xavfi ↑	Gemostaz barqarorligi susayadi
Eritropoetin yetishmovchiligi	Eritrotsitlar soni ↓	Qon kislorod tashish qobiliyati kamayadi

Manba: ***Шмидт, Р.Ф., Тевс, Г.*** *Физиология человека. — Москва: Мир, 2019. — 856 с.*

XULOSA:

Umumiy xulosa shuki, buyraklar gemostazning barcha asosiy elementlarini birlashtiruvchi markaziy tizim sifatida faoliyat yuritadi. RAAS tizimi va eritropoetin sekretsiyasi bu jarayonlarning eng muhim mexanizmlari hisoblanadi. Shu bilan birga, suyuqlik-elektrolit balansini tartibga solish, kislota-ishqor muvozanatini saqlash va qon ivish mexanizmlarini nazorat qilish orqali buyraklar organizmning ichki muhitini optimal darajada barqaror saqlashga xizmat qiladi. Surunkali buyrak yetishmovchiligi esa bu jarayonlarni buzib, gemostazning patologik o‘zgarishlariga olib keladi.

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METABOLIZM JARAYONI VA ENERGETIK BALANS

Annotatsiya: *Mazkur maqolada metabolizm jarayonlari va organizmdagi energetik balansning nazariy va amaliy jihatlari tahlil qilinadi. Tadqiqotda hujayra va to'qima darajasida glyukoliz, oksidlovchi fosforlanish, yog' kislotalari metabolizmi va ATP sintezining roli yoritilgan. Shuningdek, energiya metabolizmi buzilishining patologik holatlarga, jumladan yurak-qon tomir kasalliklari, metabolik sindrom va saraton rivojlanishiga ta'siri ko'rib chiqilgan.*

Kalit so'zlar: *metabolizm, energiya balans, glyukoliz, oksidlovchi fosforlanish, ATP sintezi*

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METABOLIC PROCESS AND ENERGY BALANCE

Abstract : *This article analyzes metabolic processes and the energy balance in the body. The roles of glycolysis, oxidative phosphorylation, fatty acid metabolism, and ATP synthesis at the cellular and tissue levels are discussed. The study also examines the impact of energy metabolism dysregulation on pathological conditions, including cardiovascular diseases, metabolic syndrome, and cancer development.*

Keywords: *metabolism, energy balance, glycolysis, oxidative phosphorylation, ATP synthesis*

Kirish

Energiya metabolizmi, fiziologik funksiyaning poydevori sifatida, 1847-yilda fon Gelmtolts bu tushunchani birinchi marta bayon qilganidan buyon keng o'rganilgan. Vaqt o'tishi bilan, hujayralarning turli faoliyatlari uchun zarur bo'lgan energiyani ta'minlash orqali hayotning asosi bo'lgan ushbu muhim jarayonni tushunishimiz sezilarli darajada kengaydi. Energiya metabolizmi oziq moddalarni adenozin trifosfatga (ATP) aylantiradigan murakkab biokimyoviy yo'llar

majmuasini o‘z ichiga oladi; ATP hujayralarning asosiy energiya birligi hisoblanadi. Ushbu yo‘llarning puxta boshqarilishi hujayra homeostazini saqlash va organlar hamda to‘qimalarning optimal ishlashini ta’minlash uchun juda muhimdir. Energiya metabolizmining tartibsizligi turli kasalliklar, jumladan, nevrologik kasalliklar, kardiovaskulyar holatlar, metabolik sindromlar, autoimmun kasalliklar va saraton rivojlanishi bilan chambarchas bog‘liq.

Yuqorida qayd etilgan kasalliklar bilan bog‘liq normal bo‘lmagan energiya metabolizmi keng o‘rganilgan. Shu bilan birga, hujayra ichidagi energiya aylanishi mexanizmlari, energiya metabolizmi yo‘llaridagi dinamik o‘zgarishlar va turli energiya yo‘llarini boshqaruvchi signallar hali to‘liq tushunilmagan. Muhimi shundaki, genetik, atrof-muhit, jins va boshqa omillar ta’sirida turli to‘qimalar va organ tizimlarida metabolizmning geterojen boshqarilishi nisbatan kam o‘rganilgan. So‘nggi tadqiqotlar interhujayra energiya almashinuvi munosabatlariga e’tibor qaratmoqda, masalan, pankreatik duktal adenokarsinomada yog‘ga boy saraton bilan bog‘liq fibroblastlar yog‘larni saraton hujayralariga uzatib, oksidlovchi fosforlanishni oshiradi va shu bilan hujayra o‘sishini rag‘batlantiradi. Shu bilan birga, immun va noimmun hujayralar o‘rtasidagi murakkab o‘zaro ta’sirlar tufayli energiya almashinuvi mexanizmlari va boshqaruv strategiyalari bo‘yicha qo‘shimcha tadqiqotlar talab etiladi. Mitoxondriya energiya metabolizmining markaziy elementi hisoblanadi; ammo mitoxondriya dinamikasi, uning energiya metabolizmini boshqarishdagi roli va kasallik prognozini yaxshilash uchun mitoxondriya funksiyasidan foydalanish bo‘yicha bilimlarimiz hali cheklangan.

Shuning uchun, energiya metabolizmini chuqurroq tushunish va tadqiq qilish turli kasalliklarni tashxislash va davolashga hissa qo‘shishi mumkin. Texnologik yutuqlar bilan energiya metabolik jarayonlarini aniqlash ancha osonlashdi. Biroq, murakkab fiziologik va patologik mikro-muhitlarda turli hujayra turlarida geterojen energiya metabolizmini invaziv bo‘lmagan va ishonchli tarzda kuzatish imaging, mass-spektrometriya va biosensorlar yordamida amalga oshiriladi. Ko‘p omikli texnologiyalar rivojlanayotgan bo‘lsa-da, metabolomika, fazaviy transkriptomika, tasvirlash va CRISPR screening texnikalarini kasalliklarning interdisciplinar tashxisi uchun birlashtirish istiqbolli, ammo kam o‘rganilgan yo‘nalishdir. Hozirgi davolashlar asosan asosiy yo‘llarni nishonga oladi; shunga qaramay, kasallik energiya metabolizmidagi dinamik o‘zgarishlar sababli, masalan, dastlabki o‘smalar glyikolizga, ilg‘or bosqichlar esa yog‘ kislotalari oksidlanishiga tayanadi, davolash samarasi ko‘pincha yetarli emas. Ushbu davom etayotgan munozara ba’zi tadqiqotlar dietani (masalan, ketogenik dieta) energiya metabolizmini moslashtirish uchun qo‘llashni qo‘llab-quvvatlashini, boshqalari esa dorivor terapiyaning ahamiyatini ta’kidlaydi. Kelajakdagi tadqiqotlar esa nishonlangan energiya metabolizmi yo‘llarini dieta va/yoki standart terapiyalar, masalan, immunoterapiya bilan birlashtirishda davom etadi. Sog‘liq va kasallikdagi energiya metabolizmining dinamik o‘zgarishlarini chuqur tushunish erta tashxis va terapevtik metabolik biomarkerni aniqlashga yordam beradi. Metabolik yo‘llar uchun maqsadli

terapevtik dorilar bo‘yicha tadqiqotlar cheklangan. Shuning uchun, kelajakdagi tadqiqotlar aniq va barqaror metabolik biomarkerni aniqlash va ko‘p maqsadli terapevtik dorilarni ishlab chiqishga qaratilishi lozim.

Adabiyotlar tahllili

Liu et al. [1] energiya metabolizmining asosiy yo‘llari, jumladan glyukoliz, oksidlovchi fosforlanish (OXPHOS), yog‘ kislotalari va aminokislotalar metabolizmini tahlil qilgan. Tadqiqotda energiya metabolizmining individual farqlari va shaxsiylashtirilgan davolash yondashuvlarini ishlab chiqish zarurligi ta’kidlangan. Chen et al. [2] yurak energiya metabolizmining asosiy yo‘llarini, jumladan mitoxondriyal oksidlovchi fosforlanish va glukoza va yog‘ metabolizmini tahlil qilgan. Tadqiqotda metabolik yo‘llarning kasallik holatlaridagi buzilishi va davolash strategiyalari ko‘rib chiqilgan. Rosina et al. [3] ALS kasalligida energiya metabolizmining buzilishi kasallikning rivojlanishida muhim rol o‘ynashini ko‘rsatgan. Tadqiqotda energiya metabolizmini modulyatsiya qilish ALS uchun istiqbolli davolash yondashuvi sifatida taqdim etilgan. Irshad et al. [4] jigar fibrozisida energiya metabolizmining o‘zgarishlarini va bu holatning molekulyar mexanizmlarini o‘rgangan. Tadqiqotda energiya metabolizmini modulyatsiya qilish orqali jigar fibrozisini kamaytirish va davolashning yangi imkoniyatlari ko‘rib chiqilgan. Niclou et al. [5] energiya metabolizmini o‘lchashning yangi usullarini, jumladan metabolomika, fazaviy transkriptomika va CRISPR texnologiyasining integratsiyasini tahlil qilgan. Tadqiqotda ushbu usullar kasalliklarni diagnostika qilishda qo‘llash istiqbollari bilan baholangan.

TADQIQOT METODOLOGIYASI

Tadqiqot energiya metabolizmi va energetik balansni o‘rganishga qaratilgan bo‘lib, adabiyotlar tahlili, hujayra va organizm darajasidagi eksperimental metodlar hamda analitik-statistik usullarni o‘z ichiga oladi.

TAHLIL VA NATIJALAR

Energiya metabolizmi va energetik balansni o‘rganish natijalari ko‘rsatdiki, hujayra darajasida glyukoliz, oksidlovchi fosforlanish va yog‘ kislotalari metabolizmi asosiy energetik yo‘llar sifatida faoliyat yuritadi. Tadqiqotlar shuni ko‘rsatdiki, mitoxondriyal faollik va ATP sintezi metabolik barqarorlikni ta’minlashda markaziy rol o‘ynaydi.

Eksperimental tadqiqotlarda energiya metabolizmi buzilishi turli patologik holatlar bilan bog‘liqligi aniqlangan. Masalan, yurak-qon tomir kasalliklarida glyukolizning faolligi kamayadi, bu esa ATP ishlab chiqarishning pasayishiga olib keladi. Shuningdek, hujayra va to‘qimalarda yog‘ kislotalari oksidlanishining buzilishi metabolik sindrom va insulin qarshiligiga sabab bo‘lishi aniqlangan.

Metabolomika va bioenergetik tahlillar natijasida metabolik yo‘llar orasidagi murakkab o‘zaro ta’sirlar, hujayra turiga va tashqi omillarga bog‘liqligi aniqlangan. Shu bilan birga, energiya metabolizmi va mitoxondriyal funktsiyalarning nazorat mexanizmlari kasalliklarning rivojlanishi va davolash samaradorligini aniqlashda muhim indikatorlar sifatida xizmat qiladi.

Olingan natijalar shuni ko‘rsatadiki, energiya metabolizmining dinamik o‘zgarishlarini o‘rganish va ularni tartibga solish metabolik kasalliklarni erta aniqlash, shuningdek, individual terapiya yondashuvlarini ishlab chiqishda asosiy ahamiyatga ega. Shu bilan birga, metabolizmni modulyatsiya qiluvchi davolash strategiyalari, jumladan parhez va dorivor yondashuvlar, energiya balansini tiklash va organizmning umumiy funksiyalarini yaxshilashga xizmat qiladi.

Metabolizm ikki asosiy qismga bo‘linadi:

Anabolizm (sintez jarayoni)- Anabolizm organizmda yangi moddalarning sintezlanishi jarayonidir. Ushbu jarayonda oddiy moddalar murakkab biologik birikmalarga aylantiriladi. Anabolik reaktsiyalar energiya talab qiladi va quyidagi jarayonlarni o‘z ichiga oladi:

Oqsillar sintezi – hujayralar va to‘qimalar tiklanishi uchun muhim. DNK va RNK sintezi – genetik materiallarning yangilanishi va irsiyatni saqlash. Glikogen sintezi – ortiqcha glyukoza jigar va mushaklarda zaxira energiya manbai sifatida saqlanadi. Yog‘larning sintezi – yog‘ kislotalari organizmda energiya zaxirasi sifatida saqlanadi.

Katabolizm (parchalanish jarayoni)- Katabolizm – murakkab organik moddalarning oddiyroq birikmalarga parchalanishi va energiyaning ajralib chiqishi jarayonidir. Ushbu jarayon tufayli organizm o‘z ehtiyojlari uchun zarur bo‘lgan energiyani oladi. Asosiy katabolik jarayonlar quyidagilardan iborat: Glikoliz – uglevodlarning parchalanib, energiya hosil qilishi.

Lipoliz – yog‘larning parchalanib, energiya ajralishi.

Oqsillarning parchalanishi – aminokislotalar hosil bo‘lishi va energiya uchun ishlatilishi.

Hujayralar nafas olishi – kislorod ishtirokida ATP sintezi.

Metabolizmning asosiy bosqichlari

Metabolizm organizmga tushgan moddalarni qayta ishlash va energiya ishlab chiqarish bo‘yicha bir necha bosqichlardan iborat:

- Ovqat hazm qilish va oziq moddalar singishi- Oziq-ovqat tarkibidagi moddalar oshqozon-ichak tizimida hazm bo‘lib, so‘ngra qon oqimiga so‘riladi. Uglevodlar glyukozaga, yog‘lar yog‘ kislotalariga, oqsillar esa aminokislotalarga parchalanadi.
- Energiya ishlab chiqarish-- Organizm hujayralari energiya ishlab chiqarish uchun uglevodlar, yog‘lar va oqsillardan foydalanadi. Ushbu jarayon uch asosiy bosqichni o‘z ichiga oladi:
- Glikoliz – glyukozaning parchalanishi natijasida ATP va piruvat hosil bo‘ladi. >Krebs sikli – piruvat kislorod ishtirokida yanada parchalanib, qo‘shimcha energiya hosil qiladi.
- Elektron transport zanjiri – eng ko‘p miqdorda ATP ishlab chiqarish bosqichi. **Ajratish jarayoni**- Organizm ortiqcha va zararli moddalarni ajratib chiqaradi. Bunga buyraklar orqali siydik ajratish, o‘pka orqali karbonat angidrid chiqarish va teri orqali toksinlarni yo‘qotish kiradi.

Metabolizmga ta’sir qiluvchi omillar.

Metabolizm organizmning genetik xususiyatlari va tashqi omillar ta’sirida o‘zgarishi mumkin.

Ichki omillar. Genetika – har bir insonning metabolik tezligi irsiyatga bog‘liq bo‘lishi mumkin. Yosh – yosh o‘tishi bilan metabolizm sekinlashadi. Jins – erkaklarning metabolizmi odatda tezroq bo‘ladi.

Gormonal holat – qalqonsimon bez, insulin, adrenal va boshqa gormonlar metabolizmni boshqaradi.

Tashqi omillar. Ovqatlanish tartibi – muvozanatli dieta metabolizmni faollashtiradi. Jismoniy faollik – harakat va sport mashg‘ulotlari energiya sarfini oshiradi.Uyqu va stress darajasi – yetarlicha uyqu va stressni boshqarish metabolik muvozanatni saqlashga yordam beradi. Iqlim va atrof-muhit – sovuq ob-havo sharoitida organizm issiqlik ishlab chiqarish uchun ko‘proq energiya sarflaydi.

Metabolik jarayonlarning buzilishi turli kasalliklarga olib kelishi mumkin:

Gipotiroidizm – qalqonsimon bezning yetarlicha gormon ishlab chiqarmasligi tufayli metabolizm sekinlashadi. Diabet – insulin yetishmovchiligi yoki organizmning insulin ta’siriga chidamliligi natijasida glyukoza almashinuvi buziladi.

Uzoq muddatli ochlik natijasida yuzaga keladigan o‘zgarishlar

Asosiy metabolik o‘zgarishlar

Uglevod almashinuvi: Glyukozaning kamayishi natijasida organizm yog‘ va oqsillardan energiya olishga o‘tadi.

Yog‘ almashinuvi: Lipoliz kuchayadi, qonda erkin yog‘ kislotalari va keton jismlari miqdori oshadi.

Oqsil almashinuvi: Mushaklar parchalanadi, bu esa zaiflik va immunitet pasayishiga sabab bo‘ladi.

Elektrolit muvozanati buzilishi: Natriy, kaliy va magniy miqdori kamayishi yurak ritmining buzilishiga olib kelishi mumkin.

Ichki organlarga ta’siri

Miya: Glikogen zaxiralari tugagach, keton jismlaridan foydalanishga o‘tadi. Ammo bu jarayon miya faoliyatining sustlashishiga olib keladi, diqqat va kognitiv qobiliyatlarning pasayishiga sabab bo‘lishi mumkin.

Jigar: Glikogen zaxiralari kamayib, keton jismlari ishlab chiqarish kuchayadi.

Bu esa jigar hujayralarining zo‘riqishiga va organizmning umumiy metabolik holatining o‘zgarishiga olib keladi.

XULOSA.

Uzoq muddatli ochlik organizmda jiddiy metabolik o‘zgarishlarni keltirib chiqaradi. Energiya manbalari tugagach, organizm keton jismlaridan foydalanishni boshlaydi, bu esa ketoatsidoz xavfini oshiradi. Shuningdek, mushaklar zaiflashishi, immunitet pasayishi va ichki organlar faoliyatining buzilishi kuzatiladi. Bunday jarayonlarning oldini olish uchun to‘g‘ri ovqatlanish tartibini saqlash, uzoq muddatli ochlikdan qochish va organizmni muvozanatli dietaga moslashtirish muhim ahamiyat kasb etadi. Tibbiyot mutaxassislari bunday

holatlarni oldini olish uchun metabolik jarayonlarni chuqur o‘rganish va sog‘lom ovqatlanish tamoyillariga rioya qilishni tavsiya etadilar.

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GIPOTALAMUS VA GIPOFIZ BEZINING ENDOKRIN FUNKSIYASI

Annotatsiya: *Ushbu maqolada gipotalamus va gipofiz bezining inson organizmidagi endokrin funksiyalari, ularning o'zaro bog'liqligi hamda gormonlar sekresiyasini boshqarish mexanizmlari yoritilgan. Tadqiqotda gipotalamusning homeostazni saqlashdagi roli, stress, uyqu va ovqatlanish jarayonlariga ta'siri, shuningdek, gipofiz orqali periferik bezlar faoliyatini tartibga solish mexanizmlari tahlil qilinadi. Zamonaviy neyrofiziologik tadqiqotlar natijasida ushbu tuzilmalar o'rtasidagi murakkab neyroendokrin aloqalar, neyropeptidlarning ishtiroki va ularning patologik holatlarda buzilishi ilmiy asosda yoritilgan.*

Kalit so'zlar: *gipotalamus, gipofiz bezi, endokrin tizim, gormonlar, neyropeptidlar, homeostaz, stress.*

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ENDOCRINE FUNCTION OF THE HYPOTHALAMUS AND PITUITARY GLAND

Annotation: *This article explores the endocrine functions of the hypothalamus and pituitary gland, emphasizing their interconnection and regulatory mechanisms of hormone secretion. The study discusses the hypothalamus's role in maintaining homeostasis, its influence on stress, sleep, and feeding behaviors, and its regulatory control over peripheral glands via the pituitary. Based on modern neurophysiological findings, the article highlights complex neuroendocrine interactions, the involvement of neuropeptides, and the consequences of their dysregulation under pathological conditions.*

Keywords: *hypothalamus, pituitary gland, endocrine system, hormones, neuropeptides, homeostasis, stress.*

KIRISH

Gipotalamus — bu miya ichkarisida, aniqrog‘i, oraliq miya (diyensefalon)ning markaziy pastki qismida joylashgan, no‘xat kattaligidagi neyroanatomik tuzilma bo‘lib, murakkab miya tizimining muhim tarkibiy qismidir. U insonning eng ibtidoiy instinktlarini hamda murakkab fiziologik funksiyalarini boshqaruvchi “jim qo‘riqchi” sifatida faoliyat yuritadi. Aslida, gipotalamus asab va endokrin tizimlarini bog‘lab turuvchi muhim vositachi hisoblanadi va organizmning ichki muvozanatini saqlash hamda turli fiziologik jarayonlarni nazorat qilishda hal qiluvchi ahamiyatga ega.

So‘nggi o‘n yilliklarda funksional neyrobiologiya sohasidagi texnologik yutuqlar — perturbatsiyaga asoslangan funksional tahlillar, elektrofiziologik usullar, optogenetika, neyron izlanishlari va xulq-atvor o‘lchovlari kabi tadqiqot metodlari — gipotalamusning funktsional tuzilmasini chuqur o‘rganishga keng yo‘l ochdi.

Adabiyotlar tahlili

Gipotalamus va gipofiz bezining endokrin funksiyalari zamonaviy neyrofiziologiya, endokrinologiya hamda tibbiy biologiya fanlarining eng dolzarb yo‘nalishlaridan biridir. Tadqiqotlarning aksariyati ushbu ikki tuzilmaning o‘zaro integratsiyalashgan faoliyati orqali organizmning gomeostazini, ya’ni ichki muvozanatini saqlash mexanizmlarini o‘rganishga qaratilgan. Gipotalamus markaziy asab tizimi va endokrin tizim o‘rtasidagi asosiy bog‘lovchi bo‘g‘in sifatida inson organizmidagi ko‘plab fiziologik jarayonlarni – metabolizm, reproduksiya, stressga javob, uyqu va ishtaha holatini boshqaradi.

Saper va hamkorlari (2001) gipotalamusning GABAerjik neyronlari uyqu–uyg‘oqlik holatini boshqarishda hal qiluvchi ahamiyatga ega ekanligini aniqlaganlar. Ularning tadqiqotlari shuni ko‘rsatadiki, ventrolateral preoptik yadrodagi tormozlovchi neyronlar uyg‘onish tizimini susaytirib, uyquni rag‘batlantiradi [1]. Li va boshqalar (2018) esa yirtqich hayvon tahdidiga javoban gipotalamusdagi GABAerjik neyronlar tajovuzkorlik xatti-harakatlarini faollashtirishini, glutamatergik neyronlar esa qochish refleksini shakllantirishini aniqlashgan [2].

Gipotalamus faoliyatida neyropeptidlarning o‘rni ham chuqur o‘rganilgan. Koob va Volkow (2016) tomonidan olib borilgan tadqiqotlar oreksigen neyropeptidlar (galanin, oreksin, enkefalin)ning mukofot tizimini faollashtirib, spirtli ichimlik iste’molini kuchaytirishini, anoreksigen neyropeptidlar (dinorfin, CRF, melanokortinlar) esa ushbu jarayonni tormozlashini ko‘rsatgan [3]. Bu esa gipotalamusning nafaqat fiziologik, balki xulq-atvoriy jarayonlarda ham muhim rol o‘ynashini tasdiqlaydi.

Delgado va Anand (1953) gipotalamusning oziqlanish va energiya sarfi jarayonlariga ta’sirini o‘rganib, lateral gipotalamusni elektr stimulyatsiya qilish natijasida mushuklarda oziqlanish faoliyati kuchayganini aniqlaganlar [4]. Shu bilan birga, Karimi va hamkorlari (2020) gipotalamusning perifornikal qismi (PeF-LH) va ventral tegmental soha (VTA) o‘rtasidagi neyron aloqalar mukofot

tizimining muvozanatini ta’minlashini T-labirint (T-maze) tajribasi orqali tasdiqlashgan [5].

Gipotalamusning gipofiz bezi bilan o‘zaro aloqasi endokrin tizimning markaziy o‘qi — gipotalamus–gipofiz–buyrak usti (HPA) tizimi orqali amalga oshadi. Ushbu tizimning buzilishi ko‘plab endokrin va psixonevrologik kasalliklarning, jumladan, Cushing sindromi, Addison kasalligi, depressiya va surunkali stress holatlarining rivojlanishiga olib keladi. Herman va Cullinan (1997) tadqiqotlarida gipotalamusning paraventrikulyar yadrosidan ajraladigan kortikotropin-ajratib chiqaruvchi gormon (CRH) gipofiz orqali adrenokortikotrop gormon (ACTH) sintezini rag‘batlantirishi va natijada buyrak usti bezida kortizol ajralishini kuchaytirishi qayd etilgan [6].

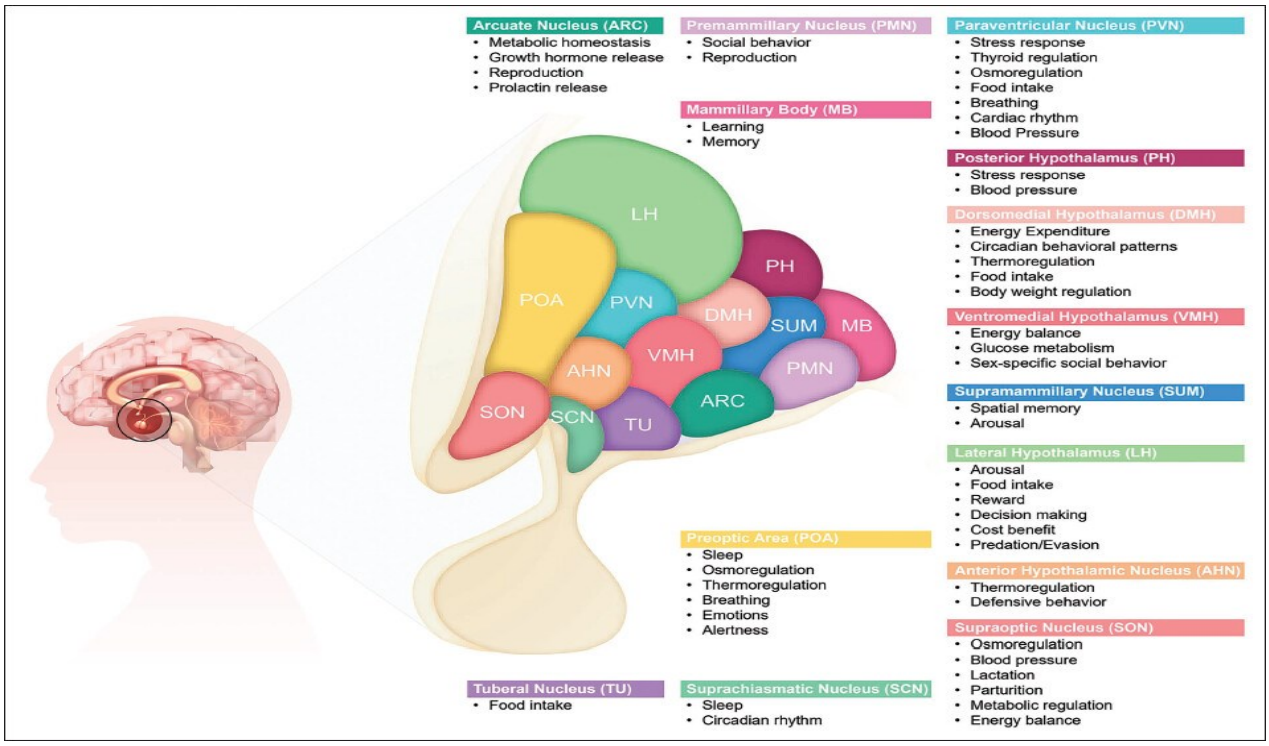
Shuningdek, gipotalamus termoregulyatsiya jarayonida ham asosiy markaz sifatida faoliyat yuritadi. Tanaka va hamkorlari (2016) kalamushlarda olib borgan fMRI tadqiqotlarida tana harorati 1°C ga oshirilganda gipotalamusning preoptik qismida neyron faolligining ortishi qayd etilgan [7]. Bu gipotalamusning issiqlikni boshqarishdagi markaziy rolini tasdiqlaydi.

Gipofiz bezi esa “asosiy endokrin orkestra rahbari” bo‘lib, oldingi bo‘lagi (adenogipofiz) orqali o‘sish gormoni, prolaktin, tireotrop, adrenokortikotrop va gonadotrop gormonlarni ajratadi. Gipotalamusdan ajraladigan “releasing” (ozod qiluvchi) yoki “inhibiting” (to‘xtatuvchi) omillar bu gormonlar sekretsiyasini boshqaradi. Guyton va Hall (2021) tibbiy fiziologiya darsligida gipofizning barcha asosiy gormonlari gipotalamusdan keladigan signal asosida siklik ravishda faoliyat yuritishini batafsil tasvirlagan [8].

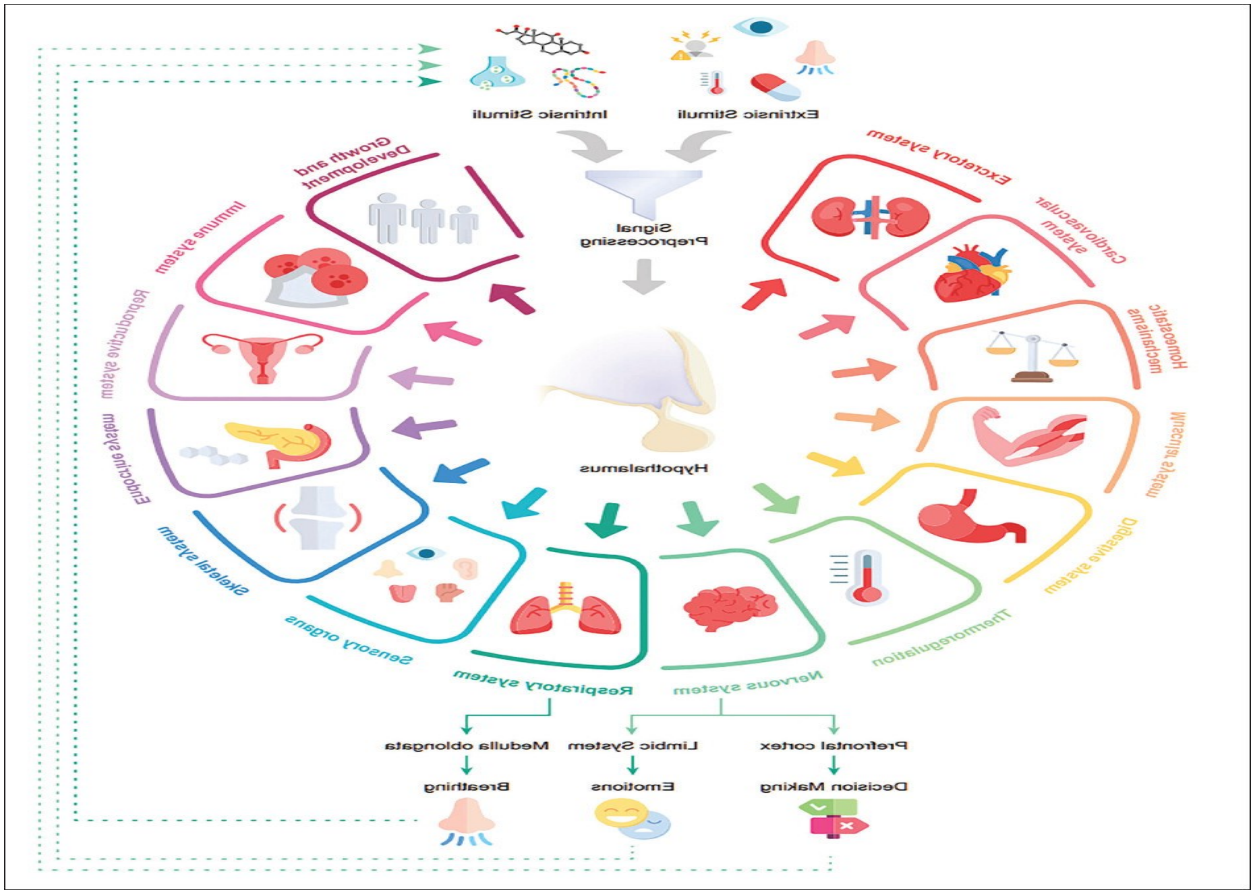
Adabiyotlar tahlili shuni ko‘rsatadiki, gipotalamus va gipofiz o‘zaro chambarchas bog‘langan neyroendokrin tizimni tashkil etib, asab tizimi va endokrin tizim o‘rtasida “markaziy aloqa nuqtasi” vazifasini bajaradi. Zamonaviy tadqiqotlar ushbu tizimni o‘rganishda optogenetika, elektrofiziologiya, magnit-rezonans tomografiya (fMRI) kabi usullardan keng foydalanmoqda. Bu esa kelajakda gipotalamus–gipofiz tizimi bilan bog‘liq kasalliklarni erta tashxislash va individual davolash imkonini beradi.

Tahlil va natijalar

Bugungi kunga kelib, gipotalamus organizmning ichki muvozanatini saqlovchi markaziy uzel sifatida e’tirof etilmoqda. U tashqi muhit va ichki tizimlardan kelayotgan signallarni integratsiyalab, insonning tajribalari, qaror qabul qilish jarayoni hamda instinktiv va murakkab xatti-harakatlar o‘rtasidagi muvozanatni shakllantiradi (1-rasm).



1-rasm. Funktsional nuqtai nazardan, gipotalamus gipofiz bezining asosiy regulyatori sifatida tanilgan bo‘lib, u orqali asab, endokrin va nafas olish tizimlari kabi ko‘plab tizimlarga bevosita ta’sir ko‘rsatadi (2-rasm).



Ushbu giperkompleks tuzilma turli endogen (ichki) va ekzogen (tashqi) omillar — genetik, ekologik hamda turmush tarziga oid ta’sirlarga sezgir hisoblanadi. Masalan, chuqur diafragmatik nafas olish kabi nafas olish mashqlari avtonom asab tizimini tartibga solish orqali gipotalamus faoliyatiga bilvosita ta’sir ko‘rsatadi va stressga nisbatan javob reaksiyalarini boshqarishda yordam beradi. Xuddi shuningdek, uyqu sikllari ham turli fiziologik jarayonlar va neyrokimyoviy signallarning o‘zgarishi orqali gipotalamus faoliyatini bilvosita tartibga soladi.

Shunday qilib, nafas olish dinamikasini boshqarish, sog‘lom uyqu ritmini yo‘lga qo‘yish va stressga qarshi javobni samarali boshqarish orqali inson organizmida gipotalamus boshqaruvidagi murakkab tizimlar o‘rtasida uyg‘unlikka erishish mumkin.

Mavjud ilmiy dalillar gipotalamus faoliyatini yanada chuqurroq o‘rganish va bu asosda innovatsion davolash usullarini ishlab chiqish imkonini bermoqda. Bu usullar insonning kognitiv qobiliyatlarini oshirish va umumiy farovonlikni yaxshilashda yangi istiqbollarni ochib beradi. Biroq hozircha gipotalamusning ushbu muhim fiziologik jarayonlar bilan bevosita sabablilik aloqasini to‘liq izohlab beruvchi tibbiy dalillar yetarli emas. Shu bois, bu bog‘liqlikni ilmiy asosda mustahkamlash uchun keng ko‘lamli, istiqbolli tadqiqotlar o‘tkazish zarur.

Farmakologik aralashuvlar gipotalamus faoliyatini to‘g‘ridan-to‘g‘ri tartibga solish imkonini bersa-da, ular ko‘plab nojo‘ya ta’sirlarga ega bo‘lishi mumkin. Shu sababli, hozirgi kunda gipotalamus faoliyatini boshqarishning invaziv bo‘lmagan, ya’ni tabiiy va xavfsiz usullarini ishlab chiqish dolzarb masalalardan biri bo‘lib qolmoqda.

Gipotalamusning funksional nazorati va uning kognitsiya, emotsiya hamda tana fiziologiyasidagi o‘rni

Ushbu tahliliy maqolada gipotalamusning funksiyalari va uning kognitiv jarayonlar, emotsional holatlar hamda organizm fiziologiyasini boshqarishdagi o‘rni keng yoritiladi. Xususan, gipotalamus faoliyatini qo‘zg‘atuvchi ichki (intrinsik) va tashqi (ekstrinsik) omillar hamda ularning o‘zaro ta’sir mexanizmlari muhokama qilinadi. Shuningdek, gipotalamus tomonidan turli fiziologik jarayonlarning funksional boshqaruvi haqidagi mavjud adabiyotlar tahlil qilinib, ushbu faoliyatni qayta aloqa mexanizmi orqali — nazoratli nafas mashqlari, sog‘lom uyqu me’yorini shakllantirish hamda stressni boshqarish usullari yordamida — qanday tartibga solish mumkinligi haqida ilmiy yondashuvlar bayon etiladi.

Gipotalamus faoliyatini tartibga soluvchi ichki omillar va neyrokimyoviy modulyatsiya

Gipotalamus — murakkab neyroanatomik tuzilma bo‘lib, uning mexanizmlarini to‘liq anglash ko‘p tomonlama tajribaviy dalillarni, jumladan, funksional yo‘qotish va funksiyani tiklash tajribalarini talab qiladi. O‘tgan asr davomida o‘tkazilgan tadqiqotlar gipotalamus faoliyatiga ta’sir qiluvchi ko‘plab ichki va tashqi stimullarni aniqladi. Ichki omillarga **neyrotransmitterlar**,

gormonlar, **sirkadiyal ritmlar**, **metabolik holat**, **genetik moyillik**, **neuropeptidlar**, **orqa aloqa mexanizmlari** va **neyron tarmoqlar** kiradi.

Masalan, **GABA**, **serotonin** va **dopamin** gipotalamus funksiyalarini tartibga solishda muhim rol o‘ynaydi. Saper va hamkasblari GABA inhibitiv neyronlarining ventrolateral preoptik yadroda ajralib chiqishi uyg‘oqlik tizimini bostirib, uyquni faollashtirishini isbotladilar [1]. Shuningdek, Li va hamkasblarining (2018) tadqiqotlariga ko‘ra, yirtqich hujumlarga duch kelgan holatlarda gipotalamusdagi GABAerjik neyronlar tajovuzkor xatti-harakatlarni faollashtiradi, aksincha, glutamatergik neyronlar qochish reflekslarini yuzaga keltiradi [2]. Dopamin va serotonin tizimlari muvozanati gipotalamusdagi **Vglut2** neyronlaridan glutamat ajralishini boshqaradi va aversiv (yoqimsiz) javoblarni shakllantirishda ishtirok etadi [3].

Gipotalamusning turli miya sohalari bilan integratsiyasi uning ko‘p funksiyali faoliyati uchun zarur. **Karimi** va hamkasblarining T-labirintdagi tajribalari lateral gipotalamusning perifornikal qismi (PeF-LH) va mukofot jarayonlari bilan bog‘liq ventral tegmental zona (VTA) o‘rtasida neyron aloqalar mavjudligini ko‘rsatdi [4]. Ayniqsa, gipotalamusdagi **oreksin (Orx)** neyronlari va VTA o‘rtasidagi o‘zaro ta’sir qaror qabul qilish va motivatsion xatti-harakatlarda muhim o‘rin tutadi [5].

Gormonal tartibga solish va gipotalamus

Gipotalamus gormonlarni boshqarish markazi sifatida harakat qilib, gipofiz beziga turli **ajraluvchi** va **to‘xtatuvchi** omillar yuboradi. Bu tizim **reproduksiya**, **stressga javob**, **o‘sish** va **metabolizm** kabi jarayonlarni nazorat qiladi. Uyqu regulyatsiyasidagi buzilishlar, xususan gipotalamo-gipofizar-adrenal (HPA) o‘qining faoliyati bilan bog‘liq holda, **adrenokortikotrop gormon (ACTH)** va **kortizol** darajasining ortishiga olib keladi. Bu esa surunkali uyqusizlik va markaziy asab tizimining yuqori qo‘zg‘aluvchanligi bilan bog‘liq [6].

Lateral gipotalamusdagi **kortikotropin-ajratib chiqaruvchi omil (CRF)** neyrotransmissiyasi kalamushlarda stress holatida yurak urish chastotasining oshishida muhim rol o‘ynaydi. Tadqiqotlarda **CRF1** retseptorlarini bloklash stressga javoban yurak urishining tezlashishini kamaytirgan, bu esa gipotalamusning yurak-qon tomir tizimini stress holatida boshqarishda ishtirokini tasdiqlaydi [7].

Gipotalamus stressga javob reaksiyalarida markaziy rol o‘ynaydi: **kortikotropin-ajratib chiqaruvchi gormon (CRH)** sekretsiyasi orqali HPA o‘qi faollashadi va natijada **glyukokortikoidlar** ajraladi. Ular turli fiziologik tizimlarni boshqarib, organizmning moslashuvchan javobini ta’minlaydi [8].

Ventrolateral preoptik yadrodagi inhibitiv neyronlar GABA orqali uyquni rag‘batlantirib, uyg‘oqlik tizimini bostiradi [1]. Chaqaloq kalamushlarda uyqu-uyg‘oqlik siklining rivojlanishini o‘rganish gipotalamusning muhim rolini ko‘rsatgan: gipotalamusning ma’lum qismlariga jarrohlik aralashuvlar uyqu holatlarini sezilarli darajada o‘zgartirgan [9].

Shuningdek, **sirkadiyal ritmlar** — 24 soatlik biologik tsikllar — gipotalamus faoliyatiga sezilarli ta’sir ko‘rsatadi. **Delgado** va **Anand** tomonidan

mushuklarda o‘tkazilgan elektr stimulyatsiya tadqiqotlari lateral gipotalamusning oziqlanish xulqini tartibga solish va sirkadiyal ritmlar bilan o‘zaro ta’sirda bo‘lishini aniqlagan[10].

Xulosa

Gipotalamus va gipofiz bezi inson organizmining endokrin tizimida markaziy boshqaruv markazi hisoblanadi. Ular o‘zaro murakkab neyroendokrin aloqalar orqali organizmda gomeostazni, ya’ni ichki muhit barqarorligini ta’minlab turadi. Gipotalamus asab tizimi va tashqi muhitdan kelayotgan axborotlarni qayta ishlab, ularni gormonal signalga aylantiradi hamda gipofiz bezining faoliyatini boshqaradi. Natijada, bu jarayon o‘sish, modda almashinuvi, reproduktiv funksiyalar, stressga moslashuv va hissiy holatlarni tartibga soladi.

Zamonaviy tadqiqotlar gipotalamo-gipofizar tizimidagi buzilishlar endokrin kasalliklar, gormonal nomutanosiblik, uyqu buzilishi va stress bilan bog‘liq kasalliklarning rivojlanishiga olib kelishini ko‘rsatmoqda. Ayniqsa, neyrotransmitterlar va neyropeptidlar ishtirokidagi murakkab mexanizmlar gipotalamusning fiziologik jarayonlarni boshqarishdagi muhim o‘rnini tasdiqlaydi.

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BURG‘ILASH QORISHMASI TARKIBIDAGI GAZ MIQDORINI ANIQLASH QURILMASINI TAKOMILLASHTIRISH

Annotatsiya. *Burg‘ilash qorishmasi tarkibidagi gaz miqdorini aniqlash qurilmasini takomillashtirish zaruriyati shundakiy qorishmasi tarkibidagi gaz miqdorini va qorishma tezligi, neft va gaz quduqlarini burg‘ilashda dala geofizik tadqiqotlarida dala ishlarini tezlashtiradi. Neft va gaz sanoati (izlov va qidiruv quduqlarida gaz, neft va suv aralashmasining hosil bo‘lishini nazarda tutadi). Burg‘ilash qorishmasi tarkibidagi gaz miqdorini aniqlash va qorishma tezligini o‘lchagichlar burg‘ilash jarayonini sekinlashtirmagan holatda xarajatlarni kamaytirish uchun mo‘ljallangan.*

Kalit so‘zlar: *Burg‘ilash, burg‘ilash aralashmasi, gaz ajratgich, degazator.*

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IMPROVEMENT OF THE DEVICE FOR DETERMINING THE GAS CONTENT IN DRILLING SOLUTION

Abstract. *The speed of separation and mixing of gas accelerates field work during field geophysical surveys when drilling oil and gas wells. Oil and gas industry (provides for the formation of gas, oil and water in a mixture at exploratory and exploratory wells). Gas separation and mixing meters are designed to slow down the drilling process and reduce costs.*

Keywords: *Drilling, drilling mud, gas separator, degasser.*

Kirish.

Hozirgi vaqtda geologik va texnologik tadqiqotlar simlarni kuzatish uchun zarur vositaga aylandi, ularsiz deyarli hech qanday quduqni burg‘ulash va kapital ta’mirlash mumkin emas. GTI ma’lumotlarining iste’molchilari Buyurtmachining geologik va texnologik xizmati va burg‘ulash kompaniyasi va burg‘ulash xizmatining barcha bo‘limlari hisoblanadi. GTI ma’lumotlari quduqlarni qurish, konlarni qidirish, o‘zlashtirish va foydalanishni loyihalashda, neft va gaz zaxiralarini hisoblashda keng qo‘llaniladi.

Muhokama.

Innovatsiyaning burg‘ilash qorishmasi tarkibidagi gaz miqdorini aniqlash qurilmasini asosiy yo‘nalishi geologiya va gefizika, texnika sohasidagi so‘nggi yutuqlar yangi xizmatlar turlarini qo‘shish orqali quduqlarni burg‘ulash xarajatlarini kamaytirishga qaratilgan:

burg‘ulash ishlarining xavfsizligini oshirish;

burg‘ulash jarayonining narxini pasaytirish;

qiyin geologik sharoitlarda mahsuldor qatlamni istiqboliyligini baholash;

GTI ning geosteyeringda (geonavigatsii) qo‘llanilishi.

2026-2027 yillarda neft va gaz sanoatida “O‘zbekgeofizika” AJ, “O‘zneftgazquduqta’mirlash” AJ, “O‘zneftgazburg‘ulash ishlari” MCHJ da amaliyotiga izlov va qidiruv quduqlarida qorishma tarkibida gaz, neft’ va suv paydo bo‘lishini oldindan bilish uchun joriy qilinadi.

“O‘zneftgazburg‘ulash ishlari” MCHJ mutaxassislari burg‘ulash nazoratini amalga oshirdi va O‘zbekistonning O‘zbekistonda uglevodorod to‘plamlari barcha neftgaz regionlarida, jumladan, Ustyurt, Buxoro-Xiva, Surxandaryo, Janubiy-G‘arbiy Xisor, Farg‘ona neftgazli viloyati mintaqasi konlarida bir nechta maydon quduqlarida geokimyoviy tadqiqotlari natijalariga ko‘ra geologik sinovlar, uglevodorodga to‘yinganligi to‘g‘risida xulosa chiqardi. Beshkent botiqligi maydonlarida tadqiqotlarning 90% dan ortig‘i yo‘nalishli va gorizontal quduqlarda amalga oshirildi.

Natijalar.

Neft va gazni qazib olish, quduqlarini burg‘ilash jarayonida olib borilgan tadqiqotlar samaradorligini oshirish uchun yangi texnik vositalarni yaratish dolzarb

masalalardan biri hisoblanadi, hozirgi vaqtda quduqlarni burg‘ilash jarayonida quduqlarni o‘rganishning asosiy usuli geologik-texnologik tadqiqotlar hisoblanadi.

Deyarli barcha neftgaz konlarida geologik-texnologik tadqiqotlar burg‘ulash jarayonida o‘zining yirik xizmatlari bilan alohida o‘rin egallaydi. GTI ma’lumotlaridan foydalanib quduqlarni qurish, razvedka qilish, mahsuldor qatlamda sinash ishlari va konlarni ta’mirlashni kuzatish uchun zarur vositaga aylandi deyarli ularsiz amalga oshirib bo‘lmaydi. Buyurtmachi burg‘ulash kompaniyasining geologik-texnolog xizmati xodimlari tomonidan barcha burg‘ulash ishlari va ekspluatatsiya qilish hamda neft-gaz zaxiralarini hisoblashda GTI axborot ma’lumotlari keng foydalaniladi[1, 3, 5,6].

Quduq burg‘ilash chog‘ida gaz-neftli qatlam ochilganda suvli gil eritmaga gazsimon va suyuq uglevodorodlarning o‘tishini o‘rganishga asoslangan. Quduqdan chiqayotgan gil eritmadan vaqti-vaqti bilan yoki uzluksiz ravishda namuna olib, uning tarkibidagi gazsimon va suyuq uglevodorodlar miqdori aniqlanadi, eritma tarkibidagi yonuvchi gazlar miqdori ma’lumotidan gaz karotaji egri chizig‘ini chizishda foydalaniladi. Bunda ordinata o‘qiga qabul qilingan masshtabda quduq chuqurligi, abstsissa o‘qiga gil eritmadagi gaz miqdori metanga nisbatan foizda qo‘yiladi.

Geologik-geofizik tadqiqotlarni o‘tkazishning ko‘plab boshqa usullari xam mavjud, lekin quduqlarni burg‘ilashda maxsus rejalashtirilgan tanaffuslar vaqtida amalga oshiriladi. Mavjud usullardan biri geoximik usuldir, bularga gaz usuli, lyuminessent-bituminologik usul, burg‘i qorishmasini nazorat qilish usullari kiradi. Gaz usulida quduqdan chiqayotgan burg‘i qorishmasi tarkibidagi uglevodorodli gazlar tarkibi va miqdori aniqlanadi. Gaz tarkibi va miqdori aniqlash uchun PG-1 degazator qurilmasi. Keng tarqalgan degazatorlardan biri bo‘lib, Galkin L.A. va Vladimirov B.P. tomonidan ishlab chiqilgan. Levit A.M. ma’lumotlariga qaraganda bu degazatorlar burg‘i qorishmasida atigi 0.02% uglevodorodlarni ajratib olar ekan.

Parmalash qorishmasidan ajralib chiquvchi gazlarni tezkor aniqlash qurilmalari haqida doimiy izlanishlar olib borilgan, bu usuldan farqli o‘laroq, burg‘ilash qorishmasi tarkibidagi gaz miqdorini aniqlash qurilmasi qorishmaning tezligini, solishtirma og‘irligi (zichligi), temperatura va bir vaqtni o‘zida qorishmani tarkibiga qo‘shilgan uglevodorod gazlarining miqdorini aniqlash imkonini beradi.

Burg‘ilash qorishmasi tarkibidagi gaz miqdorini aniqlash qurilmasi, neft va gaz quduqlarida bu ishlarni amalga oshirish uchun maxsus vaqt talab qilinmaydi. Burg‘ilash vaqtida ham, burg‘ilash to‘xtatilganda ham amalga oshiriladi. Neft va gaz quduqlarida qorishma tarkibida neft, gaz va suv paydo bo‘lishini oldindan bilish imkonini beradi.

Faqatgina neft va gaz quduqlarida emas balki qattiq foydali qazilma konlaridagi kichik chuqurlikdagi quduqlardan ham foydalanish imkoni bor. Kelgusida ko‘mir konlarining gaz miqdorini o‘rganish uchun ham ishlatish imkonini beradi (boshqa karotaj usullari bilan birgalikda foydalanish nazarda tutiladi) [7, 8, 9].

Chuqur burg‘ilash quduqlarida neft va gazni qazib olish usullari takomillashtirilgan holda qazib olishning rejali o‘sish so‘ratiga erishish mumkin. Shunday qilib, Parmalash qorishmasidan ajralib chiquvchi gazlarni tezkor aniqlash qurilmasi quduqni burg‘ilash jarayonlarini optimallashtirish, ishlab chiqarishni tashkil etish va quduqlardagi bajariladigan ishlarni jadallashtirish uchun sharoit yaratadi. Parmalash qorishmasidan ajralib chiquvchi gazlarni tezkor aniqlash qurilmasining yana bir afzalligi shundaki, solishtirma og‘irligi (zichligi), temperaturasi, bevosita qatlamlardan chiqib kelayotgan tabiiy neft va gaz ko‘rsatkichlari bilan ajratish. Ushbu tahlilni amalga oshirish uchun neft va gaz tarkibidagi birikmalar aniqlash va ularni gaz bilan (gaz va erigan gaz bilan birga suv), neft va gaz (neftgaz va suv bilan to‘yingan) va neft (neft va suv)). Ba’zi hollarda, foydali geologik va texnik sharoitlar bilan, komponentli gaz tahliliga (bundan keyin - gaz tahlil qilish) ko‘ra, neft va suv qatlamlarini ajratib olish mumkin. Parmalash qorishmasidan ajralib chiquvchi gazlarni tezkor aniqlash qurilmaning eng katta samaradorligi faqat quduq bo‘ylab tadqiqotlar o‘tkazish va axborot olish emas balki, qorishmaning aylanishi (sirkulyatsiya) to‘xtatilgandan keyin qatlam ichidagi gazlar chiqib quduqdagi burg‘ilash qorishmasiga qo‘shilib, qorishmani uglevodorodlarga boyitadi. Shuning uchun quduqda burg‘ilash ishlari to‘xtatilgandan so‘ng, qaytadan burg‘ilash qorishmasining sirkulyatsiyasi tiklanadi va burg‘ilash qorishmasi xarakatga keladi. Gaz tarkibi, miqdori aniqlanadi va gaz chiqqan chuqurlikni aniqlash maqsadida gazli qatlamlar diagrammalardagi elektr karotaj va boshqa karotaj turlari bilan taqqoslanadi[10, 7, 4].

Buning natijasida, bir qator burg‘ilash oraliqlarda kerakli ma’lumotlarning borligi bilan izohlanadi. Namunalarni (parmalash qorishmasidan ajralib chiquvchi gazlarni tezkor aniqlash qurilmasi) tadqiqot qilish natijasida yaratilgan metodlari barcha quduqlarda gaz tahlil qilish imkoniyatini istisno qilmaydi.

Neft va gaz quduqlarini burg‘ilash jarayonida quduqlarda geofizik tadqiqotlar o‘tqizish maydon bo‘yicha olib boriladigan ishlarni jadallashtiradi. Burg‘ilash jarayonini sekinlashtirmagan va ko‘p mablag‘ sarflamagan holda maydonni o‘rganish imkoniyatini beradi.

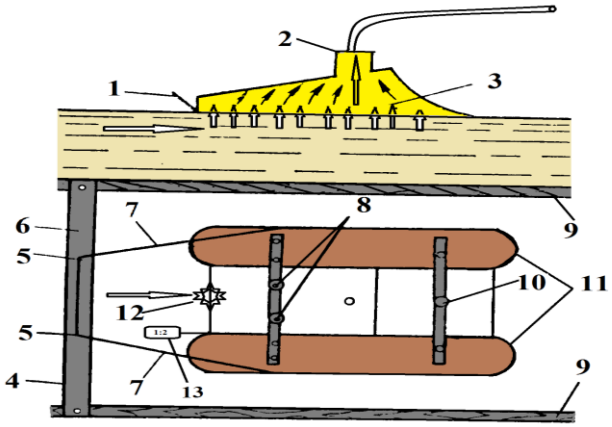
Maydonda joylashgan quduqlar kesimini va geologik tuzilishini to‘g‘ridan-to‘g‘ri o‘rganishning usullaridan biri, bu quduqlardan olinadigan kern namunalarini olish bo‘lib, bu jarayon juda ham ko‘p mehnat va mablag‘ talab qiladi. Shuning uchun quduq kesimlarini o‘rganishda kern namunalari faqat ayrim oraliqlarda olinadi. Quduqlardan kern namunalarini olish geologik-qidiruv ishlarini davomiyligini oshiradi bu hol o‘z - o‘zidan olib boriladigan ishlarni qimmatlashtiradi. Bugungi kunda yangi ochilgan maydonlarni qisqa vaqt ichida qazib chiqarishga topshirish dolzarb masala hisoblanadi [1, 2, 9].

Burg‘ilash qorishmasi tarkibidagi gaz miqdorini aniqlash qurilmasi quduqdan chiqayotgan burg‘ilash qorishmasi tarkibidagi uglevodorodli gazlarning tarkibini (tabiiy yonuvchi gazlar, metan - SN4, etan - S2N6, propan - S3N8, butan -S4N10 va boshqalar kiradi. Metan yengil uglevodorod, qolganlari esa og‘ir uglevodorodlar qatoriga kiradi S7N16.) aniqlaydi.

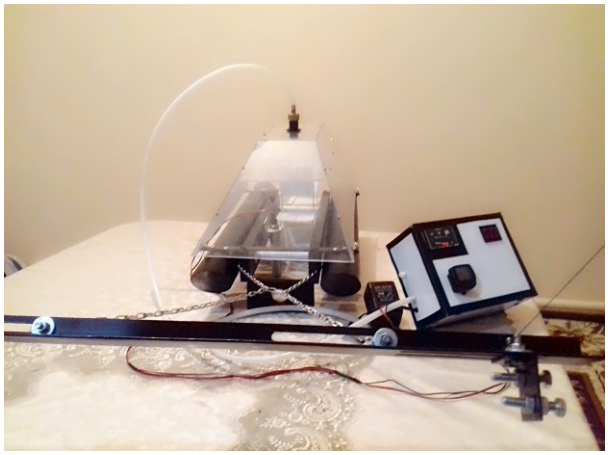
Burg‘ilash orqali mahsuldor qatlamlarni ochganda, ularning g‘ovaklari orasidagi gazlar burg‘ilash qorishmasiga qo‘shilib, u bilan birga yer ustiga ko‘tariladi. Shuning uchun neftli, gazli qatlamlarni burg‘ilab o‘tkazganimizda, burg‘ilash qorishmasi tarkibida uglevodorod gazlarini paydo bo‘lganligini kuzatiladi [1, 3, 4].

Burg‘ilash qorishmasi tarkibidagi gaz miqdorini aniqlash qurilmasining asosiy qismi, tubi ochiq kamera bo‘lib, po‘kak orqali burg‘ilash qorishmasining ustida cho‘kmay turadi.

Burg‘ilash qorishmasi tarkibidagi gaz miqdorini aniqlash qurilmasini qisqacha mazmuni



1-a rasm. Qurilmaning ichki sxema



1- b rasm. Qurilmaning tashqi ko‘rinishi

Kamera gaz-xavo yo‘liga vakuum nasosi orqali ulangan bo‘ladi. Vakuum nasosi havoni o‘ziga tortganda kamera va suyuqlik o‘rtasidagi muhitda bosim kamayadi, to‘siqga urilgan suyuqlik oqimidan gazlar ajralib chiqadi.

Bu usulni mahsuldor qatlamlar ochilgandan so‘ng, ko‘p vaqt o‘tmasdan oldin o‘tkazish maqsadga muvofiqdir, chunki bunda singish zonasining diametri unchalik katta bo‘lmaydi.

Gaz ajratuvchi va qorishmani tezligini o‘lchovchi qurilmaning umumiy samaradorligi 80 % ni tashkil etadi.

Gaz ajratuvchi va qorishmani tezligini o‘lchovchi qurilma neft va gaz quduqlarini burg‘ilash jarayonida kon geofizik tadqiqotlar o‘tkazishda maydon bo‘yicha olib boriladigan ishlarni jadallashtiradi. Gaz ajratuvchi va qorishmani tezligini o‘lchovchi qurilmasi burg‘ilash jarayonini sekinlashtirmagan va ko‘p mablag‘ sarflamagan holda amalga oshiriladi.

1-ab-rasmlarda keltirilgan gaz ajratuvchi va qorishma tezligini o‘lchovchi qurilmaning asosiy texnik va texnologik ko‘rsatkichlari quyidagilardan iborat: gaz ajratuvchi va qorishma tezligini o‘lchovchi qurilmaning o‘lchamlari 50x30 sm, asosiy qismlari quyidagilardan iborat: 1) koziryok; 2) gaz-xavo yo‘liga ulovchi shtutser; 3) burg‘i qorishmasining oqimini tekislovchi to‘siqlar; 5) degazatorni mahkamlovchi joy; 6) degazatorni mahkamlovchi taxtacha; 7) ingichka tros-

degazatorni taxtachaga mustaxkamlash uchun; 8,10) qurilma sathini suyuqlik ustida baland-pastligini o‘rnatuvchi vint; 9) jelob-ariq; 11) po‘kaklar; 12) parrak; 13) tezlikni o‘lchovchi qurilma 14) nazorat kamerasi, 15-harorat ko‘rsatuvchi moslama - Wi-Fi).

FOJ-1 innovatsiyaning ishlash prinsipi burg‘ulash qorishmasining mahsuldor qatlamlaridan gaz pufakchalarini chiqarishga va hosil bo‘lgan gaz-havo aralashmasini gaz-havo aralashmasini burg‘ilanayotgan quduq tizimining nasosi tomonidan olib tashlashga asoslangan.

Innovatsiyaning geometrik xarakteristikalari uning turli zichlikdagi burg‘ulash suyuqliklarida suzish qobiliyatini ta’minlaydi. JFO-1 korpusida gaz yig‘ish kamerasi va atmosfera o‘rtasidagi aloqa uchun teshik mavjud bo‘lib, u kameraning tashqarisidagi va ichidagi bosimni tenglashtirish uchun zarurdir. Eritmadan gaz chiqarish sharoitlarini yaxshilash uchun JFO-1 oqimga perpendikulyar bo‘lgan korpus ichiga o‘rnatilgan taroq shaklida plastinka ajratgichlari bilan jihozlangan.

Innovatsiyani FOJ-1 yupqa qatlamli zanglamaydigan po‘latdan yasalgan bo‘lib, burg‘ulash suyuqligiga botirish chuqurligini sozlash qobiliyatiga ega ikkita silindrsimon suzuvchiga o‘rnatilgan korpusni o‘z ichiga oladi.

Innovatsiyaning asosiy yo‘nalishi GTI sohasidagi so‘nggi yutuqlar yangi xizmat turlarini qo‘shish orqali quduqlarni burg‘ulash xarajatlarini kamaytirishga qaratilgan:

- burg‘ulash jarayonlari xavfsizligini takomillashtirish;
- burg‘ulash jarayoni xarajatlarini kamaytirish;
- murakkab geologik sharoitda istiqbolligini baholash;
- parmalash qorishmasidan ajralib chiquvchi gazlarni tezkor aniqlash.

Xulosa.

Burg‘ulash nazorat qiluvchi ishlab chiqarish mutaxassislari bilan hamkorlikda GTI geokimyoviy tadqiqotlar natijalari asosida muhokama qilinib, natijalari bo‘yicha xulosa chiqarish nazarda tutiladi.

Bevosita burg‘ilash jarayonida tog‘ jinslarining to‘yinishini miqdoriy jihatdan o‘lchashga imkon beruvchi asosiy qurilmalar mavjud. Lekin hali ham GTI sohasida eski usullardan foydalanib kelinmoqda (simli).

Burg‘ilash qorishmanisi ya’ni oquvchan suyuqlik tahlilini tez tadqiq qilish natijalari bilan birgalikda sifatli amalga oshirilganda xar bir quduqdagi samaradorligi 80% ga yetishi kutilmoqda. Qurilmani tizimga qo‘llash natijalari qorishma tarkibini to‘yintirgan uglevodorodlarning miqdori, o‘zaro oqim tezliklarini, haroratini, qovushqoqlikni va zichligini baholash imkonini beradi (Wi-Fi orqali kuzatish imkoni bor).

Qurilmasi ustida doimiy ravishda izlanishlar olib borilgan, bu qurilma farqli o‘laroq, yanada takomillashtirilmoqda. Gazni tahlil qilish burg‘i qorishmasi parametrlari nazorat qilish uskunalarining ishlashini vizual masofadan kuzatish imkoniyati funksiyasi qo‘shildi. Ya’ni olingan ma’lumotlarni kuzatib borish uchun yangi dasturiy ta’minot tizimlari yaratilgan. (Wi-Fi orqali kuzatish imkoni bor).

Burg‘ilash qorishmasi tarkibidagi gaz miqdorini aniqlash qurilma burg‘ilash jarayonini sekinlashtirmagan va ko‘p mablag‘ sarflamagan holda amalga oshiriladi.

Qo‘llanilish sohalari: neft’ va gaz sanoatida “O‘zneftgazquduqta’mirlash” AJ, “O‘zneftgazburg‘ulash ishlari” MCHJ va “O‘zbekgeofizika” AJ amaliyotiga izlov va qidiruv quduqlarida qorishma tarkibida gaz, neft’ va suv paydo bo‘lishini oldindan bilish uchun joriy qilinadi.

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KADASTR SOHASIDA GEOAXBOROT DASTURLARI IMKONIYATLARIDAN KENGROQ FOYDALANIB MA’LUMOTLARNI BOSHQARISH VA TAHLIL QILISH

Annitatsiya. *Maqolada zamonaviy GAT dasturlarida ko‘chmas mulk obyektlari ma’lumotlari bazalari bilan ishlash metodlari, katta hajmdagi atribut ma’lumotlarning ayrim turlarini tanlab olish to‘g‘risida ma’lumotlar hamda amaliy tavsiyalar keltirilgan.*
Kalit so’zlar: *Geoaxborot tizimlari, Geofazoviy ma’lumotlar, Ko‘chmas mulk obyektlari, Atribut ma’lumotlari, Davlat kadastrlari yagona tizimi, ArcGIS dasturi.*

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MANAGEMENT AND ANALYSIS OF DATA IN THE FIELD OF CADASTRE THROUGH WIDER USE OF GIS SOFTWARE CAPABILITIES

Abstract. *The article provides information and practical recommendations on methods for working with real estate object databases in modern GIS software, as well as on the selection of certain types of large-scale attribute data.*
Keywords: *Geographic Information Systems, Geospatial Data, Real Estate Objects, Attribute Data, Unified State Cadastre System , ArcGIS Software.*

Bugungi kunda axborot texnologiyalari har bir sohaga jadal sur’atlar bilan kirib kelmoqda. Qaysi bir jabhani olmaylik qulaylik, oshkoralik va tezkorlik bobida zamonaviy axborot texnologiyalari yangilanishlarning muhim omiliga aylandi. Shu qatorda hozirgi kunda Geoaxborot tizimlari ham jamiyatning turli sohalariga kirib bormoqda.

Geoaxborot tizimlari –asosiy vazifalari bu fazoviy-geografik ma’lumotlarini to‘plash, saqlash, boshqarish, tahlil qilish, modellashtirish va tasvirlashdan iborat bo‘lgan mutaxassis tahlilchilar boshqaruvi ostidagi umumlashgan kompyuter tizimidir.[14]

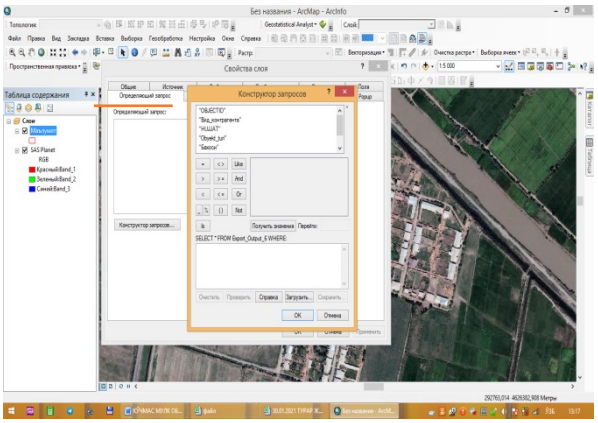
[14] Boltayev T.X., Raxmonov Q., Akbarov M.S. Geoaxborot tizimining ilmiy asoslari//Toshkent: 2015. 6 b

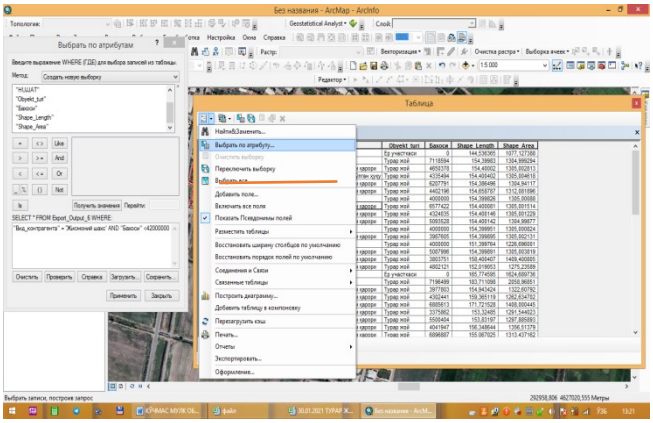
Uning rivojlanib borishi natijasida nafaqat texnik sohada balki ijtimoiy-iqtisodiy sohalarda muhim ahamiyat kasb etmoqda. Ma’lumki Geoaxborot tizimlari (GAT) geofazoviy ma’lumotlarni yig‘ish, boshqarish va tasvirlashga mo‘ljallangan kompyuter dasturi hisoblanib, u orqali mazkur ma’lumotlarni voqealar, hodisalar, faoliyat yoki undagi tafsilotlar bilan birga, ularning qayerda mavjudligi ya’ni geografik joylashuvini tasvir, jadval orqali aks ettirish imkoniyati mavjud.

Shuningdek, ko‘chmas mulk obyektlarining ma’lumotlarini boshqarish, to‘plash hamda tahlil qilishda Geoaxborot tizimlari dasturi hisoblangan ArcGis dasturining ahamiyati katta. O‘zbekiston Respublikasi “Davlat kadastrlari to‘g‘risida”gi qonunning 17-moddasida “Davlat kadastrlariga doir axborot davlat hokimiyati organlariga bepul, boshqa yuridik va jismoniy shaxslarga esa belgilangan tartibda haq evaziga taqdim etiladi” deb belgilangan. Shuni inobatga olgan holda bugungi kunda respublikamizdagi barcha turdagi ko‘chmas mulk obyektlarining ma’lumotlarini, viloyat, tuman hududida joylashgan ko‘chmas mulk obyektlarining atribut ma’lumotlarini boshqarish, tahlil qilish va ma’lum kategoriyaga ega tegishli obyektlarni tanlab olish masalalarini yechishda ArcGis dasturi imkoniyatlaridan foydalanilsa ma’lum darajada samaradorlikka erishiladi. Vaholonki, hozirgi kunda bunday ma’lumotlar bilan ishlash, statistik tahlillarni amalga oshirish uchun juda qulay dasturlar mavjud lekin har bir ma’lumot, obyekt, jarayonning aynan qaysi geografik o‘rinda ekanligi muhim hisoblanadi.

Ma’lumki “2016-2017-yillar davrida jismoniy va yuridik shaxslarga tegishli bo‘lgan ko‘chmas mulk obyektlarini yalpi xatlovdan o‘tkazish to‘g‘risida”gi O‘zbekiston Respublikasi Vazirlar Mahkamasining 2016-yil 3-avgustdagi 251-sonli qaroriga asosan yalpi hatlov o‘tkazilib respublikamizdagi yuridik va jismoniy shaxslarning ko‘chmas mulk obyektlari ma’lumotlari bazasi va ArcGis dasturida Davlat kadastrlari yagona tizimi tarkibidagi yer va bino inshootlar kadastrlari ma’lumotlar bazasi shakllantirildi. Demak, ma’lumotlar bazasining hajmi katta ekan undagi zarur ma’lumotlarni tanlab olish, boshqarish va tahlil qilishga ehtiyoj paydo bo‘lishi tabiiy.

ArcGis dasturida atribut ma’lumotlarini tanlab olish “Выбрать по атрибутам” (Atributlar bo‘yicha tanlash) yoki “Определяющий запрос” (Ta’rif so‘rovi) bo‘limlari orqali amalga oshiriladi. Bularning bir-biridan farqi shundaki “Определяющий запрос” (Ta’rif so‘rovi) bo‘limida tanlangan ma’lumotlardan boshqa ma’lumotlar ko‘rsatilmaydi. “Выбрать по атрибутам” (Atributlar bo‘yicha tanlash) bo‘limida esa boshqa obyektlar ham ko‘rsatiladi lekin tanlangan ma’lumotlar alohida qilib tasvirlanadi. ArcGis dasturida ushbu bo‘limlarga quyidagi tartibda kiriiladi. (1-rasm va 2-rasm)



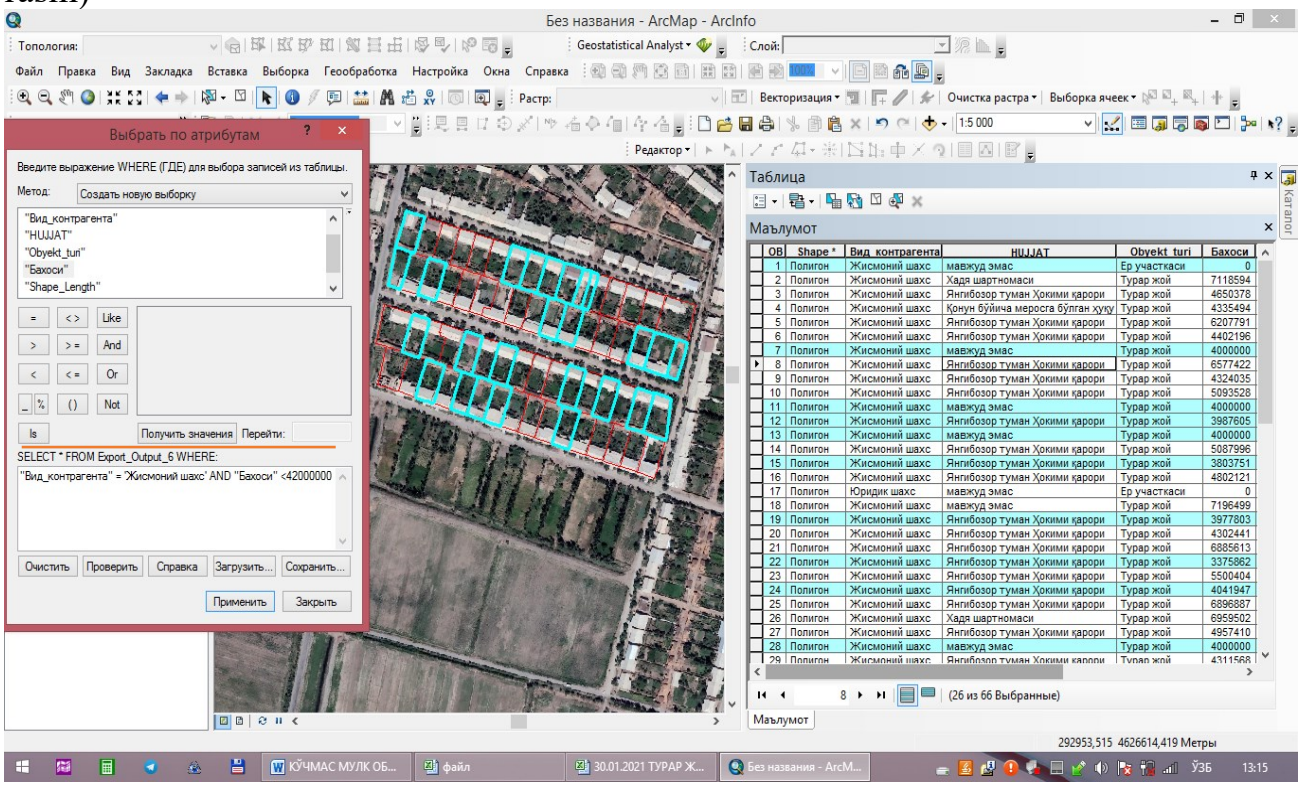


1-расм. Определяющий запрос.

2-2-расм. Выбрать по атрибутам.

(Ta’rif so‘rovi) (Atributlar bo‘yicha tanlash)

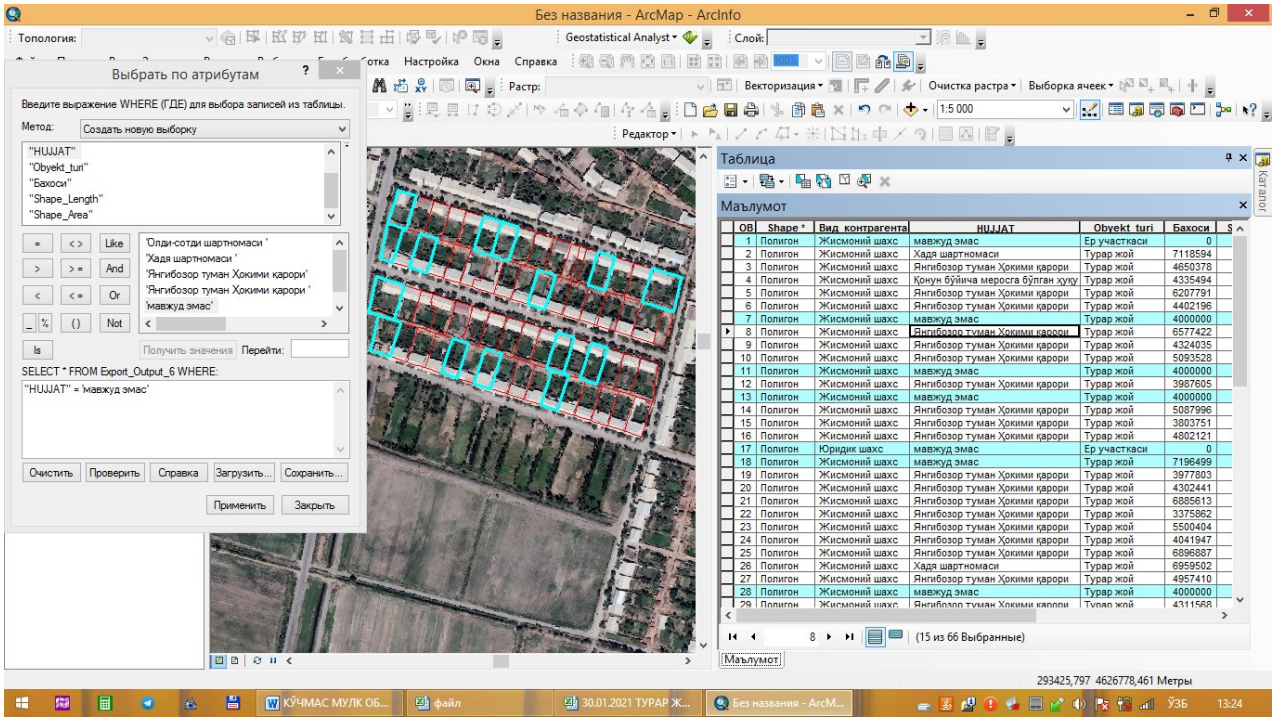
Bugungi kunda amaliyotda davlat tashkilotlari va muassasalari bilan tez-tez uchrab kelayotgan ma’lumotlar almashish jarayonlaridan misol qilishimiz mumkin. O‘zbekiston Respublikasi Soliq kodeksining 420-moddasiga asosan 42 million so‘mdan kam baholangan ko‘chmas mulk obyektlari yoki ularning aynan bitta mahalla,yuridik yoki jismoniy shaxslar, kesimda ma’lumotlarini va geografik joylashuvini olish va tahlil qilishni ArcGis dasturidan foydalanib bajarilishini keltirib o‘tamiz. Bunda ikkita yoki undan ko‘proq ustundan malumotlarni filterlash zarur bo‘ladi va “AND” buyrug‘idan foydalaniladi va quyidagi tartibda kiritiladi.(3-rasm)



3-rasm. “AND” buyrug‘idan foydalanish.

Ushbu 3-rasmda keltirilgan amallar bajarilganidan keyin jismoniy shaxslarga tegishli 42 milliondan kam baholangan obyektlarni alohida ajralgan holdagi tasviri yoki jadval shaklida ham ma’lumotlarni qabul qilish mumkin.

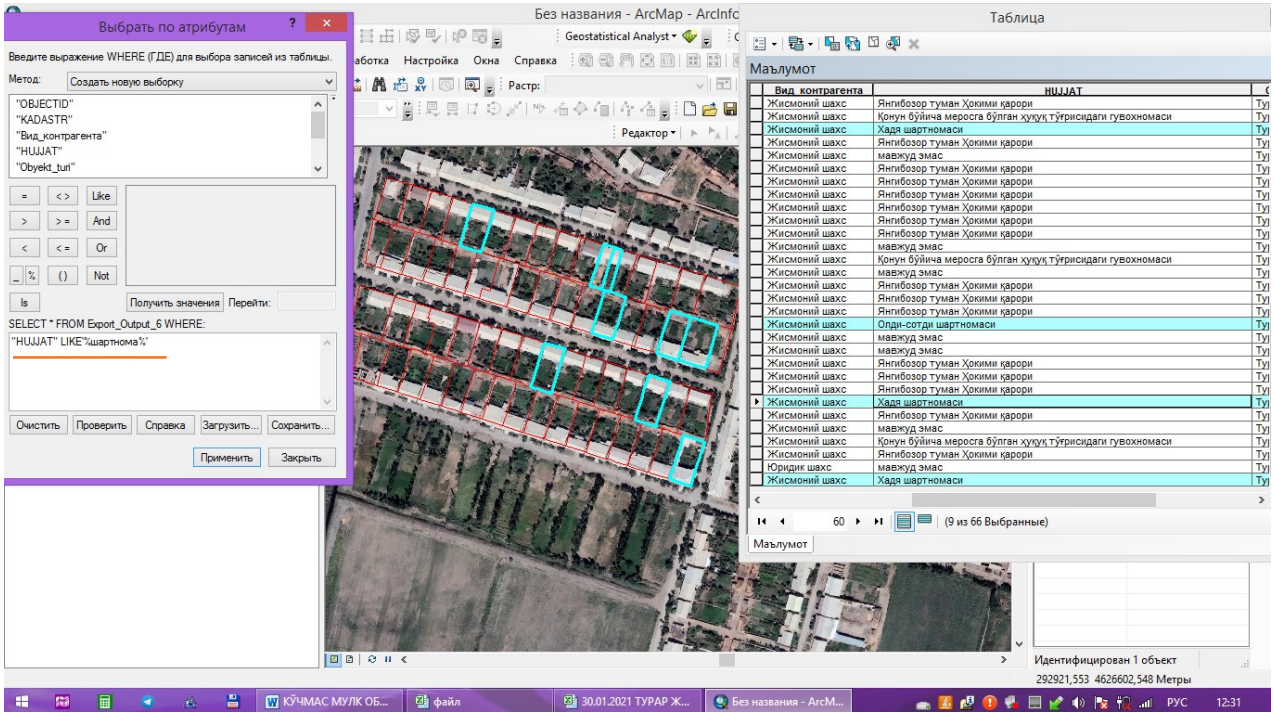
O‘zbekiston Respublikasi Ma’muriy javobgarlik to‘g‘risidagi kodeksining 68^{1}-va 160-moddasiga asosan ko‘chmas mulk obyektlariga bo‘lgan huquqlar o‘z vaqtida davlat ro‘yxatidan o‘tkazilishi lozim va ushbu ma’lumotlarni olishda to‘g‘rdan-to‘g‘ri “=” buyrug‘idan foydalanib “Получить значения” qismidan foydalanish maqsadga muvofiq hisoblanadi. Ya’ni ushbu buyruq ustundagi “mavjud emas”qismining ma’lumotlarni topadi va ushbu usul quyidagi tartibda bajariladi.(4-rasm)



4-rasm. “=” buyrug‘i orqali ma’lumotlarni tanlash.

Mazkur 4-rasmdagi ishlar bajarish orqali ko‘chmas mulk obyektlariga bo‘lgan huquqni tasdiqlovchi hujjatlar mavjud bo‘lmagan obyektlarni va ularning boshqa ma’lumotlarini alohida ajralgan tasvrini olishimiz mumkin.

Bundan tashqari Davlat ro‘yxatidan o‘tkazuvchi hodimlar uchun ma’lumotlar bazasida Notarial tartibda rasmiylashtirilgan huquqiy hujjatlarni va ularning ayrim turlarini tanlab olishda foydalanish mumkin. Bu ma’lumotlarini olishda “LIKE” buyrug‘idan foydalanish lozim. Ushbu buyruq bilan zarur malumotlar “so‘zlar” orqali aks ettiriladi. Masalan “Oldi-sotdi shartnomasi”,”Hadya shartnomasi” bularda umumiy bo‘lgan “shartnoma” so‘zi mavjud va shu so‘z qatnashgan obyekt ma’lumotlarini tanlab olish mumkin. (5-rasm)



5-rasm. “LIKE” buyrug‘idan foydalanish.

Yuqorida 5-rasmda keltirilgan tartibda amallar bajarilganidan keyin kerakli hududdagi notarial tartibda rasmiylashtirilgan huquqiy hujjatlar mavjud obyektlarni geografik joylashuvi bo‘yicha tasvirini va jadval ma’lumotlarini olish mumkin.

Shuningdek ko‘chmas mulk obyekti toifalari (turar joy, noturar joy va yer uchastkalari) , ularning parametralari va boshqa ma’lumotlarini ham yuqoridagi misollar asosida tanlab olish, tahlil qilish va boshqarish mumkin.

Xulosa.

Geoaxborot tizimlarining imkoniyatlari bugungi kunda tegishli sohalarning rivojlanishida ish samaradorligini oshirishda, ma’lumotlarni tezkor taqdim qilishda muhim omillardan biri bo‘lib kelmoqda. Xususan maqolada keltirilgan ma’lumotlarni tanlab olish, tahlil qilish va boshqarish bo‘yicha keltirilgan misollardan nafaqat ko‘chmas mulk obyektlari bo‘yicha mutaxassislar balki boshqa ishlab chiqarish sohasi mutaxassislari ham foydalagishlari mumkin. Ilmiy tadqiqod olib borayotgan mutaxassislar geograflar, gidrologlar, demograflar o‘z faoliyatlarida qo‘llashi mumkin. Masalan geogaraflar sanoat,qishloq xo‘jaligi tarmoqlari bo‘yicha yoki ishlab chiqarish ko‘rsatkichi bo‘yicha ayrim turdagi ma’lumotlarni ajratib olishlari, demograflar aholining hududlar bo‘yicha milliy tarkibi hamda shahar va qishloqlarda yashovchi aholining hududlar kesimida o‘rganishda, gidrologlar suv obyektlarini toifalari yoki suv hajmi bo‘yicha hududlar kesimida ma’lumot olishlari, kartograflar ijtimoiy-iqtisodiy kartalar tuzishda mavzuga doir obyektlarning (shifoxona, maktab, energetika obyektlari va hokazo) geografik joylashuvlarini tahlil qilishlari mumkin.

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MUSTAQIL TA’LIM YORDAMIDA TALABALARNING YOZISH KO‘NIKMALARINI RIVOJLANTIRISH METODIKASI (XORIJIY TIL VA ADABIYOTI YO‘NALISHI MISOLIDA)

Annotatsiya*: Mazkur maqolada mustaqil ta’lim yordamida talabalarning yozish ko‘nikmalarini rivojlantirish masalasi yoritilgan. Chet tili va adabiyoti yo‘nalishida o‘qiyotgan talabalarning yozma nutqni egallash darajasi ularning mustaqil fikrlash, tahlil qilish va o‘z g‘oyalarini ifodalash qobiliyatiga bevosita bog‘liqdir. Shuning uchun mustaqil ta’lim metodlarini samarali qo‘llash o‘quv jarayonida muhim ahamiyat kasb etadi. Maqolada mustaqil ta’limning nazariy asoslari, yozish kompetensiyasini shakllantirishda foydalaniladigan metodlar va ularning amaliy natijalari tahlil qilinadi. Shuningdek, yozma nutqni o‘qitishda individual yondashuv, ijodiy topshiriqlar va axborot texnologiyalaridan foydalanish orqali talabalarning mustaqil ishlash malakasini oshirish yo‘llari ko‘rsatib o‘tilgan. Tadqiqot natijalari shuni ko‘rsatadiki, mustaqil ta’limni tizimli va bosqichma-bosqich yo‘lga qo‘yish talabalarning yozma nutqini, lingvistik tafakkurini hamda o‘zini ifoda etish kompetensiyasini sezilarli darajada rivojlantiradi.*

Kalit so‘zlar: *Mustaqil ta’lim, yozish ko‘nikmalari, chet tili o‘qitish, kompetensiya, individual yondashuv, ijodiy topshiriq, o‘zini ifoda etish, ta’lim metodikasi.*

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METHODOLOGY OF DEVELOPING STUDENTS’ WRITING SKILLS THROUGH INDEPENDENT LEARNING (ON THE EXAMPLE OF FOREIGN LANGUAGE AND LITERATURE FIELD)

Abstract*: This article explores the methodology of developing students’ writing skills through independent learning, with a particular focus on the field of foreign language and literature. Writing competence plays a crucial role in shaping students’ ability to think critically, analyze, and express ideas coherently and creatively. The paper examines the theoretical foundations of independent learning, its methodological approaches, and their practical implementation in enhancing*

students' writing proficiency. Special attention is given to individualized learning strategies, creative assignments, and the use of modern information technologies that promote self-directed learning. The findings reveal that a systematic and gradual application of independent learning significantly improves students' written expression, linguistic awareness, and ability to present their own ideas effectively.

***Keywords**: Independent learning, writing skills, foreign language teaching, competence, individual approach, creative tasks, self-expression, educational methodology.*

KIRISH

Bugungi kunda oliy ta'lim tizimida talabalar kompetensiyalarini rivojlantirish, ularning mustaqil fikrlashi va ijodiy yondashuvini shakllantirish ustuvor vazifalardan biri sifatida qaralmoqda. Chet tili va adabiyoti yo‘nalishida o‘qiyotgan talabalar uchun yozish ko‘nikmasi nafaqat til o‘rganishning bir bosqichi, balki fikrni izchil, mantiqiy va grammatik jihatdan to‘g‘ri ifodalash vositasi hamdir. Yozma nutq orqali talaba nafaqat o‘z bilimini namoyish etadi, balki tahliliy fikrlash, ijodiy yondashuv va o‘zini ifoda etish qobiliyatini ham rivojlantiradi. Shu sababli yozma nutqni o‘qitishda mustaqil ta'limdan foydalanish zamonaviy metodika doirasida dolzarb yo‘nalishlardan biri hisoblanadi.

Mustaqil ta'lim – bu talabaning o‘z bilimini mustaqil ravishda chuqurlashtirishi, o‘rganish jarayonida tashabbuskorlik ko‘rsatishi va o‘z-o‘zini rivojlantirishga yo‘naltirilgan faoliyati sifatida ta'riflanadi. Bu jarayon talabaning o‘zlashtirish tezligi, intilish darajasi, psixologik xususiyatlari va til o‘rganish motivatsiyasiga tayanadi. Shaxsga yo‘naltirilgan yondashuv tamoyiliga binoan, o‘qituvchi talabalarga sharoit yaratadi, yo‘l-yo‘riq beradi, lekin o‘quv jarayonining markazida talabaning o‘zi turadi. Aynan mustaqil ta'lim talabaning bilim olish jarayoniga faol ishtirokchi sifatida kirib kelishiga imkon yaratadi.

Yozish ko‘nikmalarini rivojlantirishda mustaqil ta'limning o‘rni beqiyosdir. Chunki yozma nutqni shakllantirish uchun nafaqat grammatika va leksika bilimlarini egallash, balki matn qurish, fikrni izchil bayon etish, uslubiy aniqlikka erishish va tahrir qilish malakalarini o‘zlashtirish talab etiladi. Bularning barchasi talabaning mustaqil fikrlashi, izlanishi va amaliy mashg‘ulotlar orqali shakllanadi.

Chet tili yozma nutqini o‘qitishda mustaqil ta'limning samaradorligini oshirish uchun turli interaktiv usullar, onlayn resurslar va o‘qituvchi tomonidan tayyorlangan yo‘naltiruvchi topshiriqlardan foydalanish zarur. Masalan, esse yozish, fikrni tahlil qilish, mavzuga mos argument keltirish yoki madaniy kontekst asosida yozuv yaratish kabi mashg‘ulotlar talabalarning nafaqat til bilimlarini, balki ijodiy tafakkurini ham rivojlantiradi.

Shunday qilib, mustaqil ta'lim talabaning o‘zini anglashi, o‘z fikrini erkin ifoda etishi va o‘z ustida ishlash madaniyatini shakllantiradi. Bu jarayon yozma kompetensiyani rivojlantirishda asosiy metodik yo‘nalishlardan biri bo‘lib, ta'lim tizimining innovatsion va shaxsga yo‘naltirilgan xususiyatini kuchaytiradi. Shu sababli yozma nutqni o‘rgatishda mustaqil ta'limdan foydalanish nafaqat ta'lim

samaradorligini, balki talabaning ijodkorlik salohiyatini ham oshirishga xizmat qiladi.

METODLAR

Yozish koʻnikmalarini mustaqil ta’lim orqali rivojlantirishda qoʻllaniladigan metodlar oʻquv jarayonining maqsadi, talabalarning tayyorgarlik darajasi va ularning individual xususiyatlariga bogʻliq ravishda tanlanadi. Chet tili oʻqitishda mustaqil ta’lim metodlarini tanlashda asosiy tamoyil — talabaning faol ishtirokini, ijodkorligini va oʻzini ifoda etish qobiliyatini ta’minlashdir. Shu sababli dars jarayonida interaktiv, tadqiqotga yoʻnaltirilgan, muammoli va loyihaviy yondashuvlarga asoslangan metodlar keng qoʻllaniladi.

Eng samarali metodlardan biri bu “process approach” — yozish jarayoniga bosqichma-bosqich yondashuvdir. Bu metodda talaba dastlab gʻoya yaratadi, soʻng reja tuzadi, keyin birinchi nusxani yozadi, tahrir qiladi va yakuniy matnni taqdim etadi. Oʻqituvchi har bir bosqichda yoʻl-yoʻriq beradi, ammo talabaning mustaqil ishlashini ragʻbatlantiradi. Ushbu metod yozuv jarayonini oʻz-oʻzini rivojlantirishga qaratilgan dinamik faoliyatga aylantiradi.

Bundan tashqari, “peer review” — ya’ni talabalar oʻzaro ishlarni baholash usuli ham samarali natijalar beradi. Bu usul orqali talabalar bir-birining yozma ishlarini oʻqib, fikr bildiradi, tahrir takliflari beradi va bu orqali oʻzining ham yozish madaniyatini oshiradi. Mazkur metod talabalar orasida hamkorlik, muloqot va tahliliy fikrlash koʻnikmalarini rivojlantiradi.

Shuningdek, “project-based learning” — loyihaviy ta’lim usuli ham yozma kompetensiyani rivojlantirishda muhim oʻrin tutadi. Talabalar muayyan mavzuda mustaqil izlanish olib boradi, ma’lumotlarni tahlil qiladi va natijada yozma hisobot, maqola yoki esse shaklida oʻz ishlanmalarini taqdim etadi. Bu usul ularni akademik yozuv madaniyatiga yaqinlashtiradi hamda ilmiy uslubda fikr bildirishni oʻrgatadi.

Raqamli texnologiyalar ham mustaqil ta’lim metodlarining ajralmas qismiga aylangan. Bugungi kunda yozish koʻnikmalarini rivojlantirishda onlayn platformalar (Google Docs, Grammarly, Write&Improve, Padlet) va sun’iy intellektga asoslangan dasturlar talabalarga real vaqt rejimida fikr almashish, tahrir qilish va oʻz matnini baholash imkonini bermoqda. Bu texnologiyalar talabaning oʻz ustida ishlash jarayonini tezlashtiradi va tahliliy tafakkurni kuchaytiradi.

Shuningdek, yozma mashgʻulotlarda reflektiv yozuv usulidan foydalanish ham muhim ahamiyatga ega. Bu metod talabalarga oʻz yozuv jarayonini tahlil qilish, oʻzining kuchli va zaif tomonlarini anglash imkonini beradi. Oʻqituvchi esa bu jarayonda yoʻl-yoʻriq beruvchi, fikr almashuvchi va motivatsiya beruvchi sifatida faoliyat yuritadi.

Yuqoridagi metodlar birgalikda qoʻllanilganda, talaba yozma topshiriqlarni bajarishda nafaqat grammatik aniqlikka, balki mazmuniy chuqurlikka, mantiqiy izchillikka va ijodiy yondashuvga erishadi. Bu esa yozma kompetensiyani rivojlantirishda mustaqil ta’lim metodlarining kompleks tizimi samarali natija berishini tasdiqlaydi.

NATIJALAR

Tadqiqot jarayonida chet tili va adabiyoti yo‘nalishidagi talabalar bilan olib borilgan mustaqil ta’lim asosidagi yozuv mashg‘ulotlari ularning yozish ko‘nikmalariga ijobiy ta’sir ko‘rsatdi. Dastlabki bosqichda talabalar yozma topshiriqlarni bajarishda asosan o‘qituvchiga tayanar, fikrni mustaqil ifodalashda qiynalar, matnni strukturaviy tashkil etishda xatolarga yo‘l qo‘yar edilar. Ammo mustaqil ta’lim metodlarini joriy etish natijasida talabalar asta-sekin o‘z fikrlarini mustaqil ravishda shakllantirishni, g‘oyalarni rejalashtirishni va yozuv jarayonini tahlil asosida olib borishni o‘rgandilar.

Tajriba davomida talabalarga bir nechta bosqichli topshiriqlar berildi: birinchi bosqichda — mavzuni tahlil qilish va asosiy g‘oyani tanlash, ikkinchi bosqichda — reja tuzish va matn tuzilmasini ishlab chiqish, uchinchi bosqichda esa — yozma matnni yaratish va tahrir qilish. Har bir bosqichda o‘qituvchi yo‘naltiruvchi sifatida ishtirok etdi, ammo talabalarga mustaqil qaror qabul qilish erkinligi berildi. Ushbu yondashuv natijasida talabalarning yozma nutqi yanada izchil, grammatik jihatdan to‘g‘ri va mazmunan boy bo‘lib bordi.

Maqsad/Fokus	Asosiy g‘oyalar	Qo‘llanilgan metodlar	Texnologiyalar	Baholash/Monitoring	Kuzatilgan ta’sir	Tavsiyalar
Mustaqil ta’lim orqali yozma kompetensiyani rivojlantirishning dolzarbligi	Yozuv – izchil fikr va tahliliy-ijodiy ifoda vositasi; shaxsga yo‘naltirilgan yondashuv; talaba markazda	Yo‘naltiruvchi topshiriqlar, interaktiv yondashuvlar, esse va argumentatsion yozuv	Onlayn resurslardan foydalanish (umumiy)	Jarayoniy yondashuv va tahrir ko‘nikmalarini shakllantirish zarurati	Ijodkorlik va o‘zini ifoda etish salohiyati ortadi	Mustaqil ta’limni tizimli integratsiya qilish
Talabaning faol ishtirokini va ijodkorligini ta’minlash	Bosqichma-bosqich yozish (process approach), o‘zaro tahlil (peer review), loyihaviy ta’lim	Process approach; Peer review; Project-based learning; Reflektiv yozuv	Google Docs, Grammarly, Write&Improve, Padlet, SI asosidagi vositalar	Bosqichma-bosqich fikr-mulohoza; o‘zaro baholash; refleksiya	Mazmuniy chuqurlik, izchillik, ijodiy yondashuv kuchayadi	Metodlarni komplekslar qo‘llash, talabalarga erkinlik berish

Mustaqil ta’lim joriy etilgach yuzaga kelgan o‘zgarishlar	Mustaqil rejalashtirish va tahrir qilish ko‘nikmalari shakllandi; ijodiy/tahliliy fikr oshdi	Ko‘p bosqichli topshiriqlar; Peer review; Refleksiya	Grammarly, Google Docs (tekshiruv va tahrir)	Jarayoniy kuzatuv; o‘z-o‘zini baholash; dinamik o‘sish tahlili	Izchillik, grammatik aniqlik, motivatsiya va o‘zini baholash kuchaydi; o‘rganish uslubi shakllandi	Bosqichli topshiriqlarni davomiy qo‘llash, mustaqil qaror erkinligini kengaytirish
Metodik va psixologik jihatlarni tahlil qilish	Yozuv – ijodiy faoliyat; o‘qituvchi – yo‘naltiruvchi; demokratik o‘quv muhit	Individual topshiriqlar, peer assessment, reflektiv yozuv	Onlayn platformalar, interaktiv tahlil vositalari, SI dasturlari	Real vaqtli tahlil; o‘zaro fikr almashuv; refleksiya	Tanqidiy tafakkur, muloqot va madaniyatlararo tushuncha rivojlandi	Ishonchli va erkin fikr muhitini yaratish, individual uslublarni hisobga olish
Yondashuvning umumiy samarasi va shartlari	Talaba faol ishtirokchi; yozuv – ijodiy/analitik faoliyat; sifatli baholash muhim	Shaxsga yo‘naltirilgan topshiriqlar, muntazam refleksiya	Zamonaviy texnologik vositalar (umumiy)	Rag‘batlantiruvchi baholash, o‘sishni e’tirof etish	Grammatik aniqlik, uslubiy uyg‘unlik va mantiqiy izchillik oshadi	Doimiy metodik komponent sifatida joriy etish; ustuvor yo‘nalish sifatida keng tatbiq

Tahlil natijalari shuni ko‘rsatdiki, mustaqil ta’lim orqali yozish jarayonida qatnashgan talabalarning ijodiy fikrlash darajasi va tahliliy yondashuvi oshdi. Ular yozuv jarayonini faqat topshiriq emas, balki o‘z fikrini ifoda etish vositasi sifatida qabul qila boshladilar. Talabalar o‘z ishlariga reflektiv yondashishni o‘rgandilar, ya’ni har bir yozilgan matnni tahlil qilib, keyingi bosqichlarda xatolarini kamaytirish imkoniyatini topdilar.

O‘rganilgan ma’lumotlar shuni ko‘rsatdiki, yozuv mashg‘ulotlarida “peer review” — o‘zaro tahlil metodidan foydalanish samarali natija berdi. Talabalar bir-birining ishlarini baholash orqali tahrir qilish madaniyatini o‘zlashtirdilar, bu esa ularning tahliliy tafakkurini kuchaytirdi. Bundan tashqari, elektron vositalar —

Grammarly, Google Docs kabi platformalar yordamida yozma ishlarni tekshirish va tahrir qilish jarayoni talabalar uchun qulay muhit yaratdi.

Shuningdek, talabalarning yozish motivatsiyasi va o‘z-o‘zini baholash qobiliyati ham ancha oshdi. Ular mustaqil ish jarayonida o‘zlarining yutuqlarini kuzatish, rivojlanish dinamikasini tahlil qilish va o‘z ustida ishlashni davom ettirishga intila boshladilar. O‘quv semestri davomida yozma topshiriqlarni muntazam bajarib borish natijasida talabalarning o‘z fikrini aniq, mantiqan asosli va usluban mos tarzda ifoda etish ko‘nikmalari sezilarli darajada yaxshilandi.

Yozuv kompetensiyasini rivojlantirishda mustaqil ta’limning yana bir ijobiy natijasi shundaki, talabalar o‘zining shaxsiy o‘rganish uslubini shakllantira boshladilar. Ular qaysi sharoitda samarali ishlashlarini, qanday metodlar ularga qulay ekanini aniqlab oldilar. Natijada o‘qituvchi va talaba o‘rtasidagi muloqot jarayoni hamkorlik ruhida, ijodiy asosda davom etdi. Shu tarzda, mustaqil ta’lim nafaqat yozish kompetensiyasini rivojlantirdi, balki talabalarning o‘zini anglashi va shaxsiy o‘sishini ham qo‘llab-quvvatladi.

MUHOKAMA

Olib borilgan tadqiqotlar va tajriba darslari shuni ko‘rsatdiki, mustaqil ta’lim yozish ko‘nikmalarini rivojlantirishda o‘ziga xos metodik va psixologik afzalliklarga ega. Talabalar yozma faoliyatda faol ishtirok etgan sari, ularning til vositalaridan ongli foydalanish, mantiqiy fikr yuritish va mazmuniy tuzilmani shakllantirish darajasi oshadi. Mustaqil ta’lim jarayonida talaba o‘z fikrini shakllantirishdan tortib, uni tahlil qilish va tahrir etishgacha bo‘lgan barcha bosqichlarni mustaqil bajargani sababli, u nafaqat til bilimlarini, balki o‘quv strategiyasini ham egallaydi.

Muhokama jarayonida aniqlangan asosiy jihatlardan biri shundan iboratki, mustaqil ta’lim yozuv jarayonini o‘quv topshirig‘idan ijodiy faoliyatga aylantiradi. Talaba yozma ishni faqat baho olish vositasi sifatida emas, balki o‘z fikrini ifodalash, o‘z dunyoqarashini namoyon etish va shaxsiy tajribasini ifodalash imkoniyati sifatida ko‘ra boshlaydi. Bu esa yozma kompetensiyani rivojlantirishda ichki motivatsiyaning asosiy omiliga aylanadi.

Yana bir muhim jihat — o‘qituvchining roli o‘zgarishidir. Mustaqil ta’lim sharoitida o‘qituvchi bilim manbai emas, balki yo‘naltiruvchi, maslahat beruvchi va refleksiya jarayonining ishtirokchisi sifatida harakat qiladi. U talabalarga yo‘l ko‘rsatadi, ularning mustaqil izlanishlarini tahlil qiladi, lekin yakuniy qarorni talabaning o‘zi qabul qiladi. Bunday yondashuv ta’lim jarayonini demokratlashtiradi, talabaning mustaqilligi va javobgarligini oshiradi.

Muhokama davomida shuningdek, mustaqil ta’limni samarali tashkil etish uchun zarur shart-sharoitlar aniqlanadi. Avvalo, ta’lim muhiti o‘zaro ishonch, ijodkorlik va erkin fikrlash tamoyillariga asoslanishi lozim. O‘qituvchi talabalarning har xil o‘rganish uslublarini hisobga olib, individual topshiriqlarni shakllantirishi kerak. Bundan tashqari, zamonaviy axborot texnologiyalaridan foydalanish yozma mashg‘ulotlarni yanada samarali qiladi. Masalan, onlayn yozma platformalar, interaktiv tahlil vositalari va sun’iy intellekt asosidagi dasturlar talabalarning yozma ishlarini real vaqt rejimida tahlil qilish imkonini beradi.

Mustaqil ta’lim natijasida talabalarda reflektiv fikrlash shakllanadi — ular o‘z yozuvlarini tahlil qiladi, o‘z xatolarini aniqlaydi va tuzatish yo‘llarini topadi. Bu esa yozuv sifatining uzluksiz yaxshilanishini ta’minlaydi. Shuningdek, talabalarning o‘zaro fikr almashuvi (peer assessment) yozma faoliyatda muloqot, madaniyatlararo tushuncha va tanqidiy tafakkur ko‘nikmalarini rivojlantiradi.

Muhokama natijalari shuni ko‘rsatadiki, mustaqil ta’lim nafaqat til kompetensiyalarini, balki ijtimoiy-psixologik jihatdan ham talabalarning rivojlanishiga yordam beradi. Ular o‘z fikrini bildirishdan cho‘chimaydi, muloqotga kirishadi va o‘z bilim darajasini oshirishga intiladi. Eng muhimi, mustaqil yozuv faoliyati ularni o‘z ustida ishlaydigan, tanqidiy fikrlaydigan va ijodiy qaror qabul qila oladigan shaxs sifatida shakllantiradi. Shu jihatdan mustaqil ta’lim yozma kompetensiyani rivojlantirishda zamonaviy pedagogikaning asosiy metodik yo‘nalishlaridan biri sifatida qaraladi.

XULOSA

Mustaqil ta’lim yordamida talabalarning yozish ko‘nikmalarini rivojlantirish zamonaviy ta’lim jarayonining ajralmas tarkibiy qismiga aylandi. Olib borilgan tahlillar va tajriba natijalari shuni ko‘rsatadiki, talaba mustaqil ishlashga, fikrini mustaqil shakllantirishga va yozma jarayonni o‘z boshqaruvi ostida olib borishga o‘rgatilganida, u nafaqat yozuv ko‘nikmasini, balki shaxsiy o‘sish, ijodkorlik va analitik tafakkurni ham rivojlantiradi. Mustaqil ta’lim talabaning o‘quv jarayonidagi faolligini kuchaytiradi, uni o‘z bilimining egasiga aylantiradi va natijada ta’lim sifatini tubdan yaxshilaydi.

Yozuv kompetensiyasini rivojlantirishda mustaqil ta’limning asosiy afzalligi shundaki, bu yondashuvda talaba o‘rganish jarayonida passiv emas, balki faol ishtirokchi sifatida namoyon bo‘ladi. U o‘z yozuvini rejalashtiradi, fikrini ifodalaydi, tahlil qiladi va natijani baholaydi. Bu bosqichlar orqali talaba o‘zining til bilimini ongli ravishda qo‘llashni o‘rganadi. Natijada, yozma nutq faqat grammatik mashq emas, balki ijodiy, kommunikativ va analitik faoliyatga aylanadi.

Mustaqil ta’lim metodlarini samarali joriy etish uchun bir nechta shartlar muhim: o‘qituvchi va talaba o‘rtasida doimiy hamkorlik, shaxsga yo‘naltirilgan topshiriqlar tizimi, muntazam refleksiya jarayoni va zamonaviy texnologik vositalardan foydalanish. Shuningdek, baholash jarayoni talabaning harakatini rag‘batlantiruvchi, uning o‘sishini e’tirof etuvchi shaklda tashkil etilishi zarur.

Tajriba natijalari shuni ko‘rsatadiki, mustaqil ta’lim asosida yozuv mashg‘ulotlarini olib borish talabalarning grammatik aniqligi, uslubiy uyg‘unligi, mantiqiy izchilligi va tahliliy fikrlashini ancha oshiradi. Bu esa ularning yozma nutq kompetensiyasini rivojlantirishda muhim natija hisoblanadi. Bundan tashqari, mustaqil ta’lim jarayonida o‘z-o‘zini baholash va refleksiya talabaning shaxsiy javobgarligini kuchaytiradi, bu esa uni o‘z ustida ishlaydigan yetuk mutaxassis sifatida shakllantiradi.

Umuman olganda, mustaqil ta’lim yordamida yozish ko‘nikmalarini rivojlantirish nafaqat chet tili o‘qitish jarayonining sifatini oshiradi, balki zamonaviy ta’limning asosiy maqsadi — mustaqil fikrlaydigan, ijodkor, raqobatbardosh va o‘zini rivojlantirishga tayyor shaxsni tarbiyalashga xizmat qiladi.

Shu sababli bu yondashuvni o‘quv jarayonining doimiy metodik komponenti sifatida qo‘llash, chet tili o‘qituvchilari faoliyatida esa ustuvor yo‘nalish sifatida keng joriy etish zarurdir.

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SPORTS TERMS AND GENDER STEREOTYPES: A LANGUAGE AND SOCIETY PERSPECTIVE

Abstract. *This article explores how sports terminology reflects and reinforces gender stereotypes within linguistic and social contexts. It examines the historical and contemporary use of gendered language in sports media, commentary, and everyday discourse. By analyzing linguistic patterns and cultural implications, the study reveals the persistence of male-dominated expressions and the underrepresentation of women in sports-related communication.*

Keywords: *gender stereotypes, sports terminology, gendered language, sociolinguistics, discourse analysis, male-centered language, gender equality, inclusive language.*

Introduction.

Language plays a crucial role in shaping perceptions, identities, and societal norms. In the realm of sports, terminology not only reflects athletic performance but also conveys underlying gender ideologies. Sports have long been associated with masculinity, power, and dominance, while women's participation has often been framed through gendered stereotypes emphasizing beauty, emotion, or fragility. This linguistic imbalance contributes to unequal representation and reinforces traditional gender roles. The purpose of this study is to analyze how sports terms and expressions perpetuate gender stereotypes and to explore how inclusive language can reshape social attitudes toward gender equality in sports.

Methods.

The research adopts a qualitative linguistic analysis based on the principles of sociolinguistics and discourse analysis. A corpus of sports-related language was examined, including:

- Media reports and sports commentary from major international events (2015–2025);
- Lexical items and idiomatic expressions commonly used in English sports discourse;
- Interviews and statements from athletes and sports commentators.

The data were analyzed to identify patterns of gendered language, focusing on word choice, metaphor, and descriptive framing. Comparative analysis was also conducted between references to male and female athletes to highlight disparities.

Results.

The analysis revealed several consistent linguistic patterns:

Male-Centered Terminology:

Terms such as *"manpower," "sportsmanship," "chairman,"* and *"linesman"* remain common, reflecting the historical dominance of men in sports administration and participation. The presence of male-centered terminology in sports language is one of the most persistent indicators of gender bias in both linguistic and cultural frameworks. Words such as *"manpower," "sportsmanship," "chairman," "linesman,"* and *"fireman"* are not merely lexical items; they reflect a long-standing historical narrative in which men were the primary participants, organizers, and authorities in the field of sport. The evolution of these terms is deeply rooted in patriarchal structures, where athleticism, leadership, and competitiveness were socially defined as masculine qualities. Consequently, the language of sports developed to mirror this male-dominated reality, embedding gendered assumptions into everyday discourse.

From a **historical-linguistic perspective**, many of these terms emerged during the 19th and early 20th centuries—a period when sports institutions were largely inaccessible to women. For example, the term *"sportsmanship"* was coined to describe the moral and ethical behavior expected of a "gentleman" athlete, emphasizing honor, fairness, and bravery—traits associated with ideal masculinity. The feminine counterpart, *"sportswomanship,"* rarely gained widespread usage, suggesting that women's involvement in sport was considered exceptional or secondary. Similarly, administrative titles like *"chairman"* or *"linesman"* became standard, reinforcing the notion that authority and responsibility within sports structures were inherently male domains.

The dominance of such terminology has **sociolinguistic implications** that extend beyond semantics. Language shapes perception; therefore, using male-centered terms implicitly normalizes men as the default participants and decision-makers in sports. This phenomenon, often referred to as **linguistic androcentrism**, results in the invisibility of women within professional and recreational athletic spaces. When young athletes, both male and female, are repeatedly exposed to male-oriented language, it subtly conditions them to associate leadership, strength, and competitiveness with men, while positioning women as peripheral or supportive figures.

In modern contexts, the persistence of these terms reveals the **slow pace of linguistic change** despite social progress. Although sports organizations and media outlets increasingly adopt gender-neutral language, traditional expressions remain deeply ingrained in commentary, journalism, and institutional vocabulary. For instance, commentators still frequently use *"sportsmanship"* to describe fair play among all athletes, regardless of gender. While some may argue that the term has evolved to be gender-inclusive, its morphological structure continues to privilege the masculine root *"man."* This linguistic bias is often unintentional, yet it reflects unconscious patterns that sustain inequality at the level of discourse.

Furthermore, male-centered language also operates through **metaphorical extensions** of sports into everyday speech. Common expressions such as *"man-to-man defense," "playing hardball,"* or *"he's a real team player"* carry masculine-

coded connotations that reinforce the association between maleness and competitiveness. Even in non-sporting contexts, these metaphors evoke a worldview in which men are the active agents of strategy and power. The absence of equivalent female-centered expressions indicates not only linguistic imbalance but also the cultural marginalization of women's experiences in the development of sports idioms.

From a **gender studies perspective**, such linguistic practices contribute to the perpetuation of social hierarchies. They reaffirm the idea that men are the standard measure of athletic capability and that women must be labeled as "female athletes" to distinguish them from the unmarked male category. This asymmetry mirrors broader societal patterns in which male identity functions as the neutral or universal form, while female identity is treated as marked, exceptional, or derivative. As feminist linguists such as Deborah Cameron and Robin Lakoff have noted, language does not merely describe reality—it constructs and legitimizes it. Thus, continuing to use male-centered sports terminology sustains an implicit hierarchy that privileges men's roles and achievements.

Efforts to address this issue have gained momentum in recent years through **inclusive language reform**. Many institutions now encourage the use of gender-neutral alternatives, such as *"chairperson"* instead of *"chairman,"* *"line judge"* instead of *"linesman,"* and *"staffing"* or *"workforce"* instead of *"manpower."* These changes may appear minor, but they carry significant symbolic weight by acknowledging that women and non-binary individuals also occupy central roles in the sporting world. Media organizations, academic institutions, and sports federations are increasingly aware that equitable representation in language is a necessary step toward achieving gender equality in practice.

Discussion.

The findings demonstrate that gender stereotypes are deeply embedded in sports language. Linguistic bias reinforces the notion that physicality, competitiveness, and leadership are inherently masculine traits, marginalizing female athletes' accomplishments.

Moreover, gendered terminology affects social perceptions—young audiences exposed to biased language may internalize unequal values regarding men's and women's athletic capabilities.

Efforts to promote gender equality in sports must therefore include **linguistic reform**, such as replacing gender-specific titles (*"linesman"* → *"line judge,"* *"chairman"* → *"chairperson"*) and adopting neutral or inclusive expressions. Media organizations and educators play a crucial role in implementing such changes by promoting equitable representation and avoiding sexist language in reporting and commentary.

Conclusion.

Language reflects society's attitudes, but it can also transform them. By critically examining and reforming gendered sports terminology, society can foster inclusivity and equality in both linguistic and cultural domains. Promoting gender-sensitive communication in sports not only challenges stereotypes but also

empowers future generations to view athletic achievement beyond gender boundaries.

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LINGUOCREATIVE USE OF SPORTS TERMS: THE EXAMPLE OF ADVERTISING AND MEDIA LANGUAGE

Abstract. *This article explores the linguocreative use of sports terminology in modern advertising and media language. The study focuses on how sports-related expressions are creatively adapted beyond their original athletic contexts to evoke emotion, competitiveness, and success. Through discourse and linguistic analysis of advertisements, slogans, and journalistic texts, the paper reveals how sports terms function as powerful tools of persuasion, metaphor, and identity formation. The research concludes that the linguocreative adaptation of sports language not only enhances communicative impact but also reflects broader social values such as achievement, teamwork, and ambition in contemporary culture.*

Keywords: *sports terminology, linguocreativity, advertising language, media discourse, metaphor, communication, branding, cultural values, gender inclusivity, persuasive language*

Introduction.

Language in advertising and media plays a significant role in shaping public consciousness, cultural values, and consumer behavior. Among the most dynamic sources of linguistic creativity are **sports terms**, which have transcended the boundaries of athletic discourse to become integral elements of everyday communication. The use of sports metaphors and expressions in non-sporting contexts—such as marketing, politics, and entertainment—illustrates how deeply sport is embedded in modern cultural imagination.

The concept of **linguocreativity** refers to the innovative and imaginative manipulation of linguistic resources to produce new meanings, associations, and emotional effects. When applied to sports terminology, linguocreativity transforms words associated with competition, victory, or teamwork into versatile rhetorical devices that capture attention and inspire motivation. For instance, advertising slogans like *"Play to win"* or *"Stay in the game"* employ sports idioms to appeal to ambition and perseverance, values that resonate beyond the sports field.

The aim of this research is to analyze how sports terms are used creatively in advertising and media discourse, to identify linguistic mechanisms of metaphorical transfer, and to interpret their social and communicative significance.

The analysis revealed several dominant tendencies in the linguocreative use of sports terms in advertising and media discourse:

Metaphorical Expansion.

Sports terminology frequently undergoes **metaphorical transfer**, being applied to non-sport contexts to convey ideas of competition, endurance, or success.

Phrases such as *"game changer," "winning strategy," "take the lead,"* and *"stay ahead of the game"* are widely used in advertisements for products unrelated to sport—such as technology, finance, or fashion. These metaphors create associations between the brand and the spirit of athletic excellence, suggesting that consumers who choose the product are also "winners."

Motivational Appeal.

Sports language serves as a source of **emotional motivation** in advertising. Slogans like *"Just Do It"* (Nike) or *"Impossible is Nothing"* (Adidas) demonstrate how short, imperative expressions rooted in athletic determination can inspire a sense of empowerment and self-belief. The linguistic creativity here lies in the **semantic universality** of sports terms—the ability to transcend sports and become symbols of human willpower and perseverance.

Wordplay and Creativity.

Advertisers often employ **puns, neologisms, and playful twists** of sports vocabulary to attract consumer attention. For example, energy drink ads might use slogans like *"Fuel your inner champion"* or *"Go for the goal."* Similarly, media outlets adapt sports idioms in humorous or ironic ways, such as headlines like *"Political heavyweights in the final round"* or *"Tech giants battle it out on the digital field."* These creative adaptations demonstrate the versatility and expressiveness of sports language in capturing audience interest.

Cultural Symbolism and Identity.

Sports terminology also carries **symbolic meaning** related to cultural identity and values. Expressions such as *"team spirit," "fair play,"* or *"level playing field"* evoke ideals of equality, collaboration, and justice. In media narratives, such terms are often used metaphorically to describe social or political dynamics, reinforcing the notion that life itself is a form of competition where ethical behavior and teamwork determine success.

Gender and Inclusivity.

The study also observed a growing trend toward **gender-neutral and inclusive use** of sports metaphors in contemporary advertising. Traditional male-centered expressions like *"manpower"* or *"sportsmanship"* are increasingly being replaced with inclusive alternatives such as *"teamwork," "leadership,"* or *"fair play."* This linguistic shift reflects broader societal changes toward gender equality and the recognition of diverse forms of participation in sports and public life.

Discussion.

The linguocreative adaptation of sports terminology demonstrates the dynamic interaction between language, culture, and communication. In advertising, sports metaphors function as **cognitive shortcuts** that link familiar experiences of competition and success with the desired image of a brand or product. The appeal of such metaphors lies in their ability to condense complex emotional and cultural associations into simple, memorable phrases.
From a **linguistic perspective**, this phenomenon exemplifies how lexical items can shift domains while maintaining their expressive power. Through metaphorical and metonymic processes, sports terms acquire new connotations that enhance

persuasion and memorability. This process of **semantic recontextualization** reflects the adaptive capacity of language in response to changing communicative needs.

From a **sociocultural perspective**, the widespread use of sports terminology in non-sporting contexts reveals the central role of sport as a metaphor for life in contemporary societies. The values associated with sports—competition, fairness, determination, and teamwork—are also ideals promoted in business, education, and politics. Thus, sports language becomes a mirror of collective aspirations and social ideals.

However, linguocreativity also raises questions about the **commercialization and overuse** of sports metaphors. When such expressions are excessively employed, they risk becoming clichés, losing their original emotional force and becoming mere rhetorical ornaments. Therefore, the challenge for advertisers and media professionals lies in maintaining a balance between creativity and authenticity in the use of sports language.

Conclusion.

The linguocreative use of sports terms in advertising and media language demonstrates the power of linguistic innovation in shaping meaning and influencing audiences. Sports terminology, with its rich emotional and cultural resonance, provides an effective means of communicating ideas of achievement, strength, and unity. Through metaphorical and imaginative adaptations, sports language transcends its original domain, becoming a universal code for ambition and success.

Promoting diversity and inclusivity in sports-related expressions also contributes to more equitable and culturally sensitive communication. Ultimately, the linguocreative use of sports language not only enhances persuasive effectiveness but also reflects the evolving values and identities of modern society.

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THE ROLE OF ONLINE PROJECTS IN FORMING THE ETHICAL AND AESTHETIC VIEWS OF FUTURE LANGUAGE TEACHERS

Abstract. *The rapid integration of digital technologies into higher education has transformed the pedagogical approaches used in teacher training. Online projects, as collaborative and interactive learning tools, play a crucial role in shaping the ethical and aesthetic views of future language teachers. This article examines the significance of online projects in developing professional ethics, intercultural sensitivity, and aesthetic appreciation in pre-service teachers. Findings suggest that properly designed online projects contribute not only to linguistic competence but also to the moral and cultural development of teacher candidates.*

Keywords: *online projects, future language teachers, ethical views, aesthetic views, digital technologies, collaborative learning, intercultural sensitivity, professional ethics, aesthetic appreciation, teacher training.*

Introduction. The professional formation of future language teachers requires more than linguistic and methodological skills. Ethical responsibility and aesthetic sensitivity are integral qualities of modern educators who are expected to guide students toward culturally diverse and morally sound communication. In the context of digitalized education, online projects have emerged as effective pedagogical tools that combine collaborative learning, creative expression, and intercultural dialogue. However, their potential to foster ethical and aesthetic dimensions of teacher identity formation remains underexplored. This study aims to analyze how online projects contribute to shaping the ethical and aesthetic views of pre-service language teachers.

Methods. This study adopts a qualitative approach, focusing on a review of current pedagogical practices and case studies from teacher training programs. Data were collected through:

1. **Literature Review** – academic sources on online learning, ethics in education, and aesthetic pedagogy.
2. **Case Analysis** – examples of online collaborative projects (e.g., digital storytelling, intercultural exchange blogs, virtual art-literature discussions).
3. **Survey Data** – feedback from 60 pre-service language teachers participating in online projects in two universities.

The research analyzed how online collaborative environments influenced the participants' ethical reasoning, cultural tolerance, and aesthetic awareness.

Results and Discussion

Findings indicate that online projects significantly contribute to both ethical and aesthetic development in future language teachers:

Ethical Views Formation Participation in online group work nurtures a sense of responsibility, academic honesty, and adherence to digital ethics, including the avoidance of plagiarism and respect for intellectual property rights. Furthermore, collaborative online projects strengthen learners' sensitivity to intercultural values, encouraging tolerance, empathy, and ethical interaction within diverse learning communities.

Aesthetic Views Formation. Online projects that integrate literature, art, and multimedia provide future teachers with opportunities to foster creativity and develop an appreciation for cultural beauty. Activities such as virtual exhibitions, digital storytelling platforms, and creative writing tasks play a vital role in cultivating aesthetic taste and sensitivity. Moreover, participation in international online collaborations exposes pre-service teachers to diverse artistic traditions, thereby enriching their cultural literacy and broadening their aesthetic worldview.

Professional Identity and Teacher Competence. The ethical responsibility and aesthetic sensitivity developed through online projects are not limited to the training environment but are actively reflected in classroom practices. Future teachers who engage in digital project-based learning demonstrate enhanced creativity, deeper cultural awareness, and a stronger sense of moral responsibility. These qualities contribute to the formation of a holistic professional identity that integrates pedagogical competence with ethical and aesthetic values.

These results align with constructivist pedagogy, which emphasizes student-centered learning and holistic development. Online projects, therefore, are not only linguistic tools but also vehicles for ethical and aesthetic formation.

Conclusion. Online projects serve as powerful instruments in shaping the ethical and aesthetic views of future language teachers. They foster collaboration, responsibility, and intercultural respect while nurturing creativity and cultural appreciation. Integrating ethically and aesthetically oriented digital projects into teacher training curricula can significantly enhance professional preparation. Further research should explore the long-term impact of such projects on teachers' classroom practices and students' moral-aesthetic development.

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METHODS OF DEVELOPING THE CREATIVE ACTIVITY OF GREAT THINKERS

ABSTRACT: *This article examines methodological approaches to developing frugality among university students by integrating the socio-economic and moral views of Eastern thinkers such as Abu Rayhan Beruni, Ibn Sina, and Al-Farabi. The research addresses the growing need to enhance students' economic literacy and cultivate responsible attitudes toward resource management in line with global sustainable development goals. The study applies a mixed methodology, combining theoretical analysis of classical philosophical sources and pedagogical literature with empirical methods, including surveys, interviews, and classroom-based interventions. Findings reveal that the ideas of great thinkers provide a strong theoretical foundation for fostering economic responsibility, while interactive pedagogical strategies—such as project-based learning, group activities, and practical applications—prove highly effective in shaping students' saving behavior. The proposed methodology contributes to improving students' economic and ecological literacy, strengthening their sense of social responsibility, and motivating them toward sustainable practices. In conclusion, the integration of classical wisdom and modern pedagogy offers a comprehensive model for advancing economic education. This approach prepares students not only for personal financial responsibility but also for active participation in sustainable socio-economic development.*

Keywords: *Frugality, Economic literacy, Social responsibility, Great thinkers (Beruni, Ibn Sina, Al-Farabi), Sustainable development, Pedagogical methodology.*

Introduction

In modern society, one of the key directions of economic and social development is the efficient use of resources and the promotion of frugality. In particular, the student years are the most suitable period not only for acquiring knowledge but also for understanding economic and social responsibility. Therefore, it is highly important to develop a culture of saving among students, teach them effective management of economic resources, and prepare them to contribute to sustainable development in the future.

In fulfilling such an important task, utilizing the social and economic views of great thinkers from a historical and scientific perspective can be an effective approach. In the works of Eastern thinkers such as Abu Rayhan Biruni, Ibn Sina, Al-Farabi, and others, much attention has been paid to issues of saving and efficient

resource use. Their economic and social insights can serve as a foundation for developing frugality among students through specific methodologies.

This article develops a methodology for promoting frugal behavior among students based on the social views of great thinkers. The goal is to increase students' economic literacy, encourage them to save resources, and foster a sense of social responsibility. The proposed methodology is aimed not only at students' economic development but also at educating them in accordance with sustainable development principles and motivating them toward social engagement.

Additionally, the article explores the pedagogical foundations and practical application of this methodology. Innovations and methodological approaches that can be integrated into the educational process for enhancing frugality and improving economic education are analyzed. This process enables students to apply their economic knowledge in practice and nurtures them in the spirit of high morality and social responsibility.

Thus, the article is focused on creating both theoretical and practical foundations for promoting frugality among students and offers a pedagogical methodology for this process.

Literature Review

This section analyzes scientific and pedagogical literature related to the topic of "Methodology for Developing Frugality Activities among Students Based on the Social Views of Great Thinkers." Scientific studies on concepts such as frugality, economic education, and social responsibility are mainly focused on increasing the efficiency of economic activity and ensuring ecological sustainability. At the same time, the social views in the works of great thinkers are also essential in advancing this process.

1. Economic Education and Frugality

Frugality development is mainly achieved through economic education. Several sources highlight the significance of economic education. For example, Yunusov (2015) in his work "Economic Education and Its Role in Social Development" emphasizes the importance of spreading economic knowledge among students and instilling economic culture. He also highlights the role of economic literacy in encouraging students to manage resources efficiently and practice frugality.

Eshmatov (2018) in "Frugality and Its Role in Economic Education" emphasizes the importance of integrating frugality into economic education. According to him, explaining economic processes clearly to students and teaching them efficient resource use lays a strong foundation for future economic development. He also offers pedagogical methods for promoting frugality among students.

2. Great Thinkers and Social Views

Great thinkers have made significant contributions to scientific thought on social, economic, and moral matters. Scholars such as Abu Rayhan Biruni and Ibn Sina, who significantly influenced science and culture, included many valuable ideas about saving resources, ecological balance, and social responsibility in their

works. In Biruni's "Universal Science", issues of saving and efficient use of resources remain relevant even today. Similarly, Ibn Sina's "Canon of Medicine" contains advice on economic and effective resource use and maintaining ecological balance.

Al-Farabi's social and ethical views, especially on social responsibility and justice, are notable. In his work "The Virtuous City", he analyzes economic and social aspects of society, including the fair distribution of resources and their efficient use. These works by great thinkers are of significant academic value as pedagogical foundations for teaching students frugality.

3. Pedagogical Methodologies and Promoting Frugality Among Students

Scientific research in pedagogy supports the development of frugality among students. In "Developing Economic Education through Pedagogical Methods" (Kholboyev, 2017), effective pedagogical methods for instilling economic responsibility and a culture of frugality among students are presented. Likewise, Mansurov (2020) in "Methodology of Pedagogy and Economic Education"examines approaches for developing economic thinking and explaining economic and ecological responsibility among students.

These works emphasize that interactive methods, group work, practical sessions, and real-life examples are most effective in fostering frugality among students. Choosing appropriate pedagogical methods plays a key role in increasing students' social and economic responsibility.

4. Innovations and Methodological Approaches

Modern pedagogical research and practice highlight the need for innovative methods in economic education and promoting frugality. In *"Promoting Frugality Among Students through New Pedagogical Technologies"* (*Shamsiyev, 2019*), the author presents effective methods for enhancing students' ecological and economic sustainability using modern technologies. Internet resources, multimedia materials, and distance learning create opportunities for students to receive effective education.

From this literature review, it is clear that various scientific works emphasize improving frugality and economic literacy. These works integrate pedagogical methodologies, the economic and social views of great thinkers, and modern innovative approaches. Combining these insights is crucial for making the learning process more effective and for promoting frugality among students.

Research Methodology

The methodology of this research focuses on deeply studying the scientific approaches and analysis of the topic "Methodology for Developing Frugality Activities among Students Based on the Social Views of Great Thinkers." It aims to identify methodological approaches for fostering frugality among students, analyze theoretical foundations, and solve practical issues through empirical research.

1. Theoretical Methods

Theoretical methods are used to form the scientific foundations of the research, analyze relevant literature, and generalize academic views. The economic,

ethical, and social views of great thinkers form the theoretical basis for promoting frugality among students. These methods include:

- Analyzing the economic and social views of great thinkers.
- Studying pedagogical, economic, and social aspects of frugality.
- Developing methodological approaches based on social responsibility and economic knowledge.

Methods:

Analysis: Reviewing literature and scientific works to explore thinkers' views on frugality and pedagogical methods.

Synthesis: Integrating all academic information and theories to develop general methodological principles.

2. Practical Research Methods

Practical methods involve testing the methodology among students and implementing it in practice. These methods help identify effective approaches for developing frugality. The practical research includes:

- Experiment: Conducting experiments in student groups to measure economic and ecological literacy using various pedagogical methods.
- Surveys and Questionnaires: Collecting student opinions and attitudes toward frugality, helping to determine effective teaching strategies.
- Interviews: Conducting individual interviews with teachers, educators, and students to learn about practical methods and experiences.

Methods:

- **Experimental method:** Testing approaches for fostering frugality in educational settings.
- **Survey method:** Gathering insights from students and educators through questionnaires.
- **Focus groups:** Group discussions with students to collect feedback and experiences.

3. Pedagogical Observation and Experience Methods

These methods are used to observe students' behavior and assess pedagogical impact in practice. They help identify which teaching tools and strategies are most effective in promoting frugality.

Methods:

- **Observation:** Monitoring how students implement frugality in daily learning activities.
- **Experience exchange:** Analyzing teaching practices and identifying the most successful approaches.

4. Analytical and Statistical Method

To evaluate research outcomes, analytical and statistical methods are used. They help analyze and generalize findings from experiments and surveys.

Methods:

- Statistical analysis: Evaluating survey and experimental results with statistical tools.

•Graphical analysis: Using visual tools to represent the development of frugality and the effectiveness of methodological approaches.

5. Comparative Method

The comparative method evaluates the effectiveness of different pedagogical techniques by comparing them. This helps determine which methods are most efficient in developing frugality among students.

Methods:

•Comparing methodological approaches: Assessing differences and effectiveness of various pedagogical methods.

•Experience sharing:Testing various approaches and comparing their outcomes.

This comprehensive methodology is designed to identify the most effective strategies for developing students' frugality based on the social views of great thinkers. Through theoretical analysis, practical research, experiments, and pedagogical practices, it aims to enhance students' economic and ecological literacy.

Conclusion

This research developed a methodology for promoting frugality among students based on the social views of great thinkers. The economic and social philosophies of historical figures like Abu Rayhan Biruni, Ibn Sina, and Al-Farabi were explored as valuable sources for instilling frugality and economic responsibility in students.

Based on academic research, pedagogical methods and approaches were formulated to promote frugality among students. The study emphasized teaching economic education, ecological sustainability, and social responsibility to make students aware of the importance of saving resources. The effectiveness of these methods was confirmed through practical application and pedagogical experiments.

Furthermore, the social and moral dimensions of methodological approaches play a crucial role in developing students' sense of frugality and economic responsibility. The methodology presented in this study not only improves students' economic literacy but also prepares them to lead ecologically responsible and socially conscious lives. These findings are significant not only for improving the learning process but also for ensuring broader economic and ecological sustainability in society.

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THE MAIN FACTORS OF COMMUNICATIVE COMPETENCE IN LANGUAGE TEACHING

Abstract. *Communicative competence is one of the key concepts in modern foreign language education. It reflects not only learners' grammatical knowledge but also their ability to use language appropriately in different social and cultural contexts. This article analyzes the main factors influencing the formation of communicative competence in language teaching, emphasizing linguistic, sociolinguistic, discourse, strategic, and intercultural components. The paper also explores pedagogical methods and psychological conditions that support effective communication in language classrooms. The results highlight that communicative competence develops through interaction, authentic practice, and culturally informed pedagogy.*

Keywords: *communicative competence, language teaching, interaction, linguistic competence, intercultural communication*

1. Introduction

The concept of communicative competence has fundamentally transformed the goals and methods of language education. Traditional approaches focused mainly on grammar and vocabulary, whereas modern pedagogy prioritizes the ability to use language effectively for real communication. The term "communicative competence" was introduced by Dell Hymes (1972) to describe a speaker's ability not only to form grammatically correct sentences but also to use them appropriately in social interaction. Later, Canale and Swain (1980) expanded this framework, defining communicative competence as a combination of several interrelated components. The aim of this article is to identify and analyze the main factors that contribute to the development of communicative competence in the process of foreign language teaching.

Main part.

The analysis of scientific sources and pedagogical practice demonstrates that communicative competence consists of several essential factors:

Linguistic Competence. This refers to knowledge of grammar, vocabulary, and pronunciation. It forms the structural foundation for meaningful communication. Without linguistic accuracy, effective communication cannot occur. Linguistic competence is the fundamental component of communicative competence, representing the learner's knowledge and control of the formal aspects of a language. It includes the understanding and correct use of **grammar, vocabulary, and pronunciation**, which together form the structural basis for expressing meaning.

Grammar provides the rules for constructing sentences, ensuring that ideas are logically organized and syntactically accurate. Vocabulary gives learners the necessary words and expressions to convey thoughts, emotions, and intentions precisely. Pronunciation, in turn, affects clarity and comprehensibility, enabling effective oral communication.

Sociolinguistic Competence. This factor involves understanding social norms, cultural values, and politeness conventions. It enables learners to adapt their language to various social situations and roles. Sociolinguistic competence refers to the ability to use language appropriately in different social and cultural contexts. It involves understanding the **social norms, cultural values, and politeness conventions** that govern communication within a community. This competence enables learners to select suitable words, expressions, and tones depending on the situation, the relationship between speakers, and the level of formality required.

For example, the way a person speaks to a teacher or an employer differs from how they communicate with friends or family members. Learners with strong sociolinguistic competence can recognize these distinctions and adjust their speech accordingly. They understand when to use formal or informal language, how to express respect or familiarity, and how to interpret indirect meanings or culturally specific expressions.

Developing sociolinguistic competence is essential for achieving natural and effective communication in a foreign language. It helps learners avoid misunderstandings that may arise from cultural differences and allows them to participate confidently in authentic social interactions. Teachers can foster this competence by integrating **role-plays, cultural discussions, and real-life scenarios** into language lessons, helping students become more aware of the social dimensions of language use.

Discourse Competence.

It includes the ability to organize sentences and ideas coherently within a conversation or written text. Learners develop coherence, cohesion, and logical flow of speech through practice. Discourse competence refers to the ability to connect sentences and ideas logically to create coherent and meaningful communication, whether in spoken or written form. It goes beyond individual sentences and focuses on how learners organize language into larger, structured units such as conversations, paragraphs, and complete texts.

A person with strong discourse competence can maintain **coherence** (the logical connection of ideas) and **cohesion** (the use of linguistic devices like conjunctions, pronouns, and transition words that link ideas together). This competence allows learners to express thoughts in a clear and organized manner, making their speech or writing easier for others to follow and understand.

Developing discourse competence requires consistent practice in both speaking and writing. Activities such as storytelling, debates, presentations, and essay writing help learners structure information effectively and maintain the logical flow of communication. Teachers can support this process by providing feedback on organization, use of connectors, and the overall clarity of learners' messages.

Ultimately, discourse competence enables learners to produce language that is not only correct but also meaningful, cohesive, and contextually appropriate.

Strategic Competence.

This factor helps learners overcome communication difficulties through compensation strategies such as paraphrasing, guessing meaning, and using gestures. Strategic competence is the ability to use various techniques and strategies to overcome communication problems and ensure the successful exchange of meaning. When learners lack certain vocabulary, forget grammatical structures, or face misunderstandings, they rely on **compensation strategies** such as paraphrasing, guessing the meaning of unknown words, asking for clarification, or using gestures and facial expressions to support their message.

This competence is essential for maintaining the flow of communication, especially in real-life situations where learners may not always have perfect language knowledge. For example, a student who cannot remember a specific word might describe it in another way ("the thing you use to cut paper" instead of "scissors") or use body language to make their meaning clear.

In addition to these five core components, classroom factors—such as interactive methods, authentic materials, pair/group work, and teacher feedback—play a decisive role in shaping communicative competence.

Discussion.

The findings suggest that communicative competence develops best in learner-centered environments that encourage active participation and real-life communication. The **Communicative Language Teaching (CLT)** approach and **Task-Based Language Learning (TBL)** provide effective frameworks for this process. By engaging students in meaningful tasks such as role-plays, discussions, and problem-solving activities, teachers create conditions for authentic language use. Moreover, technology-assisted communication—through digital platforms, video calls, and online collaborative projects—enhances learners' opportunities to practice language in realistic settings. Psychological factors such as motivation, self-confidence, and willingness to communicate also strongly influence the development of communicative competence. Teachers should therefore create a supportive atmosphere that reduces anxiety and fosters communicative risk-taking.

Conclusion.

The development of communicative competence is a multidimensional process influenced by linguistic, sociolinguistic, discourse, strategic, and intercultural factors. Effective language teaching must balance grammatical instruction with communicative practice, integrating culture and context into every stage of learning. To prepare learners for global communication, teachers should employ interactive and task-based methods, use authentic materials, and promote intercultural awareness. Future research may focus on the integration of digital tools and virtual communication in developing communicative competence among language learners.

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RESEARCH DIRECTIONS ON THE CLINICAL EFFECTIVENESS OF TRADITIONAL MEDICINAL REMEDIES

Annotation: *This article explores the main directions and scientific approaches to studying the clinical effectiveness of traditional medicinal remedies. The paper emphasizes the importance of integrating traditional healing knowledge with evidence-based medicine in order to verify the therapeutic value of natural substances. It discusses the necessity of standardization, quality control, and modern analytical technologies such as chromatography and spectrometry in assessing the pharmacological properties of traditional drugs. Special attention is given to the challenges of clinical validation, including variability in chemical composition, dosing accuracy, and safety assessment. The study also highlights the potential of traditional medicines in managing chronic and inflammatory diseases due to their antioxidant, immunomodulatory, and adaptogenic effects. The article concludes that systematic clinical research on traditional remedies can contribute to global healthcare innovation and the creation of safe, effective, and scientifically approved natural pharmaceuticals.*

Keywords: *Traditional medicine; clinical effectiveness; pharmacological evaluation; herbal remedies; evidence-based medicine; bioactive compounds; pharmaceutical standardization; ethnopharmacology.*

Introduction

The clinical evaluation of traditional medicinal products has become one of the key priorities in modern pharmacological and biomedical research. Traditional medicines, which include herbal preparations, mineral compounds, and animal-derived products, have been used for centuries to prevent and treat various diseases. However, the growing global interest in evidence-based medicine demands scientific validation of their safety, efficacy, and therapeutic mechanisms. Clinical studies aimed at assessing the effectiveness of these remedies play an essential role in integrating traditional knowledge into modern medical practice. Despite their long history of use, many traditional drugs lack sufficient clinical documentation and standardized methods of evaluation. In most cases, their application is based on empirical observations rather than controlled clinical trials. This creates uncertainty regarding their pharmacological activity, potential interactions with conventional drugs, and possible side effects. Therefore, the development of systematic clinical research approaches is crucial for establishing the therapeutic credibility of traditional medicinal products. Recent years have seen significant advances in the methodology of clinical testing for natural and traditional remedies. Randomized

controlled trials, observational studies, and pharmacovigilance monitoring are increasingly being used to generate reliable data on clinical efficacy and safety. Furthermore, modern analytical technologies such as chromatography, spectrometry, and biomarker analysis allow for accurate determination of bioactive components and their pharmacokinetic profiles. These tools enable a deeper understanding of the biological mechanisms underlying the therapeutic action of traditional drugs. The integration of traditional medicine into evidence-based clinical frameworks not only enhances public confidence but also contributes to the discovery of new pharmacologically active compounds. In this context, the systematic study of clinical efficacy serves as a bridge between ancient healing wisdom and modern scientific validation. Consequently, research in this field is of great importance for improving global healthcare, promoting sustainable use of natural resources, and ensuring the safety and effectiveness of traditional medicinal products in contemporary medical practice.

Main part

Traditional medicinal products have been used for centuries across different cultures as the primary means of treating diseases and maintaining health. These remedies are based on natural sources such as plants, minerals, and animal-derived substances, and their use reflects a deep empirical understanding of biological and environmental interactions. Historically, traditional medicine served as the foundation for the development of modern pharmacology. However, the transition from empirical use to scientific validation requires comprehensive research into the pharmacodynamics, pharmacokinetics, and therapeutic properties of these substances. Understanding this historical background is crucial for recognizing the value of traditional knowledge within modern healthcare frameworks. Clinical research serves as the cornerstone for confirming the safety and therapeutic efficacy of traditional medicinal products. Through well-designed studies such as randomized controlled trials, observational analyses, and cohort studies, researchers can generate reliable scientific data. Clinical evaluation helps determine the proper dosage, duration of treatment, and potential adverse effects of herbal and natural drugs. Moreover, these studies enable comparison between traditional and conventional therapies, providing a scientific basis for integration into modern medicine. Without such validation, traditional remedies cannot meet international pharmaceutical and medical standards, which hinders their acceptance in formal healthcare systems.

To evaluate the clinical efficacy of traditional medicinal products, researchers employ standardized methodologies similar to those used in conventional drug development. These include randomized controlled trials (RCTs), double-blind placebo studies, and pharmacovigilance assessments. Laboratory biomarkers, imaging diagnostics, and symptom score indices are commonly used to quantify therapeutic outcomes. Furthermore, ethical considerations, patient consent, and data transparency are essential components of reliable research. The implementation of unified protocols ensures that results are reproducible and can be compared internationally, thus promoting global recognition of traditional medicine research.

Understanding the mechanisms of action behind traditional medicines is vital for explaining their clinical efficacy. Many herbal and natural products contain complex mixtures of bioactive compounds such as alkaloids, flavonoids, terpenoids, and phenolic acids. These compounds act synergistically to produce anti-inflammatory, antimicrobial, antioxidant, and immunomodulatory effects. Biochemical research using molecular biology and pharmacogenomic techniques provides insight into the specific pathways influenced by these compounds. Identifying active components and their molecular targets enables the rational development of standardized formulations with predictable pharmacological outcomes.

The safety of traditional medicinal products must be thoroughly evaluated through toxicological studies. Some natural substances may contain heavy metals, pesticide residues, or toxic alkaloids that can pose health risks. Therefore, acute and chronic toxicity tests, genotoxicity analyses, and pharmacovigilance monitoring are essential to ensure that these products are safe for clinical use. Establishing acceptable dose ranges and identifying potential drug–herb interactions are also critical components of safety assessment. The implementation of Good Clinical Practice (GCP) and Good Manufacturing Practice (GMP) standards ensures that traditional medicines meet modern pharmaceutical quality requirements. Integrating traditional medicine into modern evidence-based healthcare requires a multi-level approach involving scientific validation, legal regulation, and public education. Countries such as China, India, and Japan have successfully developed national frameworks that regulate and promote traditional medicine within clinical practice. By creating standardized protocols for research, manufacturing, and clinical application, these systems ensure both patient safety and therapeutic effectiveness. Integration also fosters cultural preservation and provides cost-effective treatment alternatives. However, to achieve successful integration, continuous collaboration between medical professionals, researchers, and policymakers is necessary.

Recent technological advancements have significantly improved the clinical evaluation of traditional medicinal products. High-performance liquid chromatography (HPLC), mass spectrometry, metabolomics, and molecular docking techniques are widely used to analyze bioactive compounds and predict their therapeutic targets. Artificial intelligence and big data analytics assist in identifying clinical patterns and optimizing study designs. Moreover, digital platforms and telemedicine tools facilitate real-time monitoring of patient responses during trials. These innovations not only enhance the accuracy and reliability of clinical data but also accelerate the integration of traditional remedies into global healthcare systems. The future of clinical research on traditional medicinal products depends on the establishment of international collaboration, standardized methodologies, and transparent reporting systems. Creating global databases of clinical trials, promoting open-access research, and encouraging interdisciplinary studies will strengthen the scientific foundation of traditional medicine. Governments and research institutions should invest in developing specialized centers for ethnopharmacology and clinical validation. Additionally, harmonizing

national regulations with international standards will support the global acceptance of traditional medicinal products. Ultimately, systematic and evidence-based research will transform traditional medicine into a credible, safe, and sustainable component of modern healthcare.

Discussion and Results

The study of the clinical effectiveness of traditional medicinal remedies represents a crucial intersection between ethnopharmacology and modern biomedical science. Although many natural products derived from plants, minerals, and animals have been used for centuries in traditional medicine systems, their clinical validation remains limited. Scientific assessment of these remedies is essential to confirm their safety, efficacy, dosage accuracy, and potential interactions with synthetic drugs. Modern clinical research provides the necessary framework for transforming empirical traditional knowledge into evidence-based medical practice. One of the key challenges in evaluating traditional medicines lies in the complexity and variability of their chemical composition. The pharmacological activity of natural substances often depends on environmental conditions, the stage of harvest, and processing techniques, which complicates standardization. Consequently, rigorous pharmaceutical quality control and clinical trial protocols are required to ensure reproducibility and comparability of results.

Traditional remedies often exert multi-target effects through synergistic interactions among bioactive compounds. Therefore, the use of randomized controlled trials, placebo-controlled studies, and molecular-level investigations becomes indispensable for determining their mechanisms of action. Moreover, advances in analytical chemistry such as gas and liquid chromatography, mass spectrometry, and biomarker profiling have enhanced our ability to characterize these compounds at a molecular level, providing more accurate insights into their pharmacokinetics and pharmacodynamics. Clinical observations and recent studies indicate that traditional medicines may offer significant therapeutic benefits in chronic and inflammatory diseases due to their antioxidant, immunomodulatory, and adaptogenic properties. However, their widespread adoption in modern healthcare systems requires comprehensive safety evaluation, including toxicity studies and assessments of drug–drug interactions. Additionally, the integration of traditional medicine with modern pharmacological research depends on multidisciplinary collaboration among clinicians, pharmacologists, and ethnobotanists. Overall, the clinical investigation of traditional remedies should not be viewed merely as a validation process but as a scientific reinterpretation of long-standing healing practices. This approach not only enriches modern pharmacotherapy but also ensures the preservation and rational utilization of traditional medical knowledge in a scientifically grounded manner.

1. Clinical research on traditional medicinal remedies provides an essential foundation for developing scientifically proven natural drugs within modern pharmacotherapy.

2. Standardized methodologies and regulatory frameworks are crucial for ensuring the reliability and reproducibility of clinical outcomes.

3. Advanced analytical technologies such as chromatography, spectrometry, and molecular diagnostics play a vital role in identifying and quantifying bioactive compounds responsible for therapeutic action.

4. Evidence from controlled clinical trials supports the safety and efficacy of several traditional remedies, particularly those with anti-inflammatory, antioxidant, and adaptogenic properties.

5. The integration of traditional medical practices with modern scientific evaluation contributes to the creation of innovative phytopharmaceuticals and supports sustainable drug development.

6. Ultimately, systematic study of traditional medicinal products bridges ancient empirical knowledge and modern evidence-based medicine, promoting global health, patient safety, and innovation in pharmacological research.

Conclusion

In conclusion, the clinical study of traditional medicinal remedies holds immense scientific, medical, and cultural importance. Traditional medicines, which have long been used across generations, represent a valuable source of bioactive compounds with potential therapeutic benefits. However, their incorporation into evidence-based medicine requires a systematic approach that ensures quality, safety, and efficacy through standardized clinical trials and rigorous pharmacological analysis. The synthesis of traditional healing practices with modern scientific research allows for a deeper understanding of the biological mechanisms underlying natural therapies. It also supports the discovery of new pharmacologically active substances that can contribute to the development of innovative and sustainable healthcare solutions. Furthermore, adherence to global clinical and pharmaceutical standards enhances the credibility and acceptance of traditional medicines in the international medical community. Overall, the exploration of traditional medicinal products through clinical research serves as a bridge between ancient wisdom and modern science. It promotes the rational use of natural resources, strengthens the scientific foundation of ethnomedicine, and contributes to the advancement of safe, effective, and culturally relevant healthcare systems for future generations.

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PROBLEMS OF ADAPTING FOLK MEDICINE RECIPES TO PHARMACEUTICAL STANDARDS

Annotation: *This scientific article examines the key problems and challenges related to adapting folk medicine recipes to modern pharmaceutical standards. The study highlights the historical value and therapeutic potential of traditional remedies while emphasizing the importance of ensuring their safety, efficacy, and quality through standardization. The discussion focuses on the need for chemical, pharmacological, and toxicological evaluation of natural preparations to determine active components and eliminate risks associated with toxicity and contamination. The article also analyzes the legal and regulatory gaps that hinder the integration of folk medicine into the official healthcare system. Furthermore, it underlines the role of modern technologies such as biotechnology and artificial intelligence in improving the standardization process. The research concludes that the successful adaptation of folk medicine requires interdisciplinary cooperation, comprehensive quality control systems, and legislative support to ensure the safe and sustainable use of traditional therapeutic knowledge in contemporary medicine.*

Keywords: *Folk medicine, pharmaceutical standards, traditional remedies, standardization, quality control, toxicological safety, pharmacological evaluation, regulatory frameworks.*

Introduction

In recent years, there has been a growing global interest in traditional medicine, particularly in the therapeutic recipes of folk medicine. Folk medicine has evolved over centuries based on empirical knowledge, observation, and experience. It mainly relies on natural products derived from plants, animals, and minerals. However, in modern pharmaceutical practice, every medicinal product must meet strict requirements of safety, efficacy, and quality according to established pharmaceutical standards. This creates the necessity to scientifically evaluate and adapt traditional folk recipes to these standards. Many folk medicine preparations have not undergone systematic clinical trials, and their active components, dosages, toxicological parameters, and pharmacokinetic properties remain insufficiently studied. Such gaps present serious challenges for standardization. Therefore, the process of bringing folk medicine formulations in line with pharmaceutical norms—through chemical analysis, safety testing, quality control, and certification has become an important scientific and practical issue in modern pharmacology. The World Health Organization (WHO) encourages the integration of traditional medicine into official healthcare systems while ensuring safety and quality control.

In this context, Uzbekistan has also begun developing legislative frameworks and regulatory mechanisms aimed at standardizing folk medicine recipes and bringing them into legal pharmaceutical circulation. However, many practical and methodological difficulties remain, including the lack of unified standards, insufficient laboratory testing, and limited scientific documentation. Hence, this study focuses on analyzing the main problems encountered in adapting folk medicine recipes to pharmaceutical standards, identifying their underlying causes, and discussing potential strategies to ensure safe, effective, and standardized use of traditional remedies in modern healthcare.

Main part

Folk medicine represents one of the earliest forms of healing practice, developed through centuries of human experience and observation. It encompasses a wide range of traditional treatments using herbs, minerals, and animal-derived substances. Despite being rooted in cultural traditions, folk medicine continues to play a significant role in the healthcare systems of many developing countries. In recent years, scientific research has begun to validate the pharmacological potential of many traditional remedies. This intersection between traditional knowledge and modern science forms the basis for developing integrated healthcare systems that respect both heritage and evidence-based medicine. Standardization is the process of ensuring that pharmaceutical products meet consistent quality, safety, and efficacy parameters. In modern pharmacology, each preparation must undergo laboratory evaluation, clinical trials, and certification before being approved for use. The absence of standardized measures in folk medicine leads to variations in dosage, preparation, and chemical composition, which can result in unpredictable therapeutic outcomes or potential toxicity. Therefore, adapting folk recipes to pharmaceutical standards is crucial to guarantee consumer safety and to integrate traditional medicine into evidence-based healthcare frameworks.

The scientific assessment of folk medicine requires thorough chemical analysis to identify bioactive compounds and determine their pharmacological mechanisms. Advanced techniques such as chromatography, spectroscopy, and mass spectrometry are used to isolate and quantify active components. Furthermore, pharmacodynamic and pharmacokinetic studies help to understand the absorption, distribution, metabolism, and excretion of these compounds. Without such evaluations, the efficacy and safety of traditional remedies remain uncertain, limiting their acceptance in modern medicine. Thus, chemical and pharmacological standardization is a vital step toward legitimizing traditional practices. Toxicological assessment is essential to ensure that natural remedies do not contain harmful levels of toxic substances, contaminants, or heavy metals. In many folk preparations, uncontrolled collection, improper storage, or inaccurate dosage can lead to toxic effects. Quality control involves verifying the purity, stability, and reproducibility of herbal and natural formulations. Establishing safe therapeutic ranges and setting acceptable limits for contaminants are integral parts of aligning

traditional medicine with pharmaceutical standards. This scientific approach protects public health and enhances confidence in traditional treatments.

The adaptation of folk medicine to pharmaceutical standards requires the establishment of clear legal and regulatory frameworks. Many countries have already developed laws and national policies to regulate the production, registration, and commercialization of traditional medicines. In Uzbekistan, legislative initiatives are being introduced to integrate traditional remedies into the official healthcare system. Regulatory institutions must define the procedures for quality certification, licensing, and pharmacovigilance. Without legal regulation, it is difficult to control safety and prevent the misuse of unverified traditional products. Despite growing interest, the integration of folk medicine into modern pharmaceutical practice faces numerous challenges. These include insufficient scientific evidence, lack of standardized raw materials, limited laboratory facilities, and absence of unified documentation. Moreover, cultural resistance and intellectual property disputes often slow down progress. Another major obstacle is the limited collaboration between traditional healers and modern pharmacologists. Addressing these barriers requires interdisciplinary cooperation, increased research funding, and institutional support to harmonize traditional and modern practices.

Recent advancements in biotechnology, nanotechnology, and analytical chemistry provide new opportunities for the standardization of traditional medicines. Modern extraction and purification methods allow for accurate determination of active compounds and optimization of their bioavailability. Artificial intelligence and machine learning are increasingly being used to analyze ethnopharmacological data and predict therapeutic outcomes. Applying these innovations can bridge the gap between traditional knowledge and modern scientific validation, leading to the development of safe, efficient, and standardized natural pharmaceuticals. The successful adaptation of folk medicine to pharmaceutical standards requires a combination of scientific research, policy support, and community involvement. Establishing research centers focused on ethnopharmacology, creating digital databases of medicinal plants, and promoting cooperation between scientists and traditional healers are key strategic directions. Training programs and public awareness campaigns should be implemented to ensure safe use and responsible commercialization of standardized traditional remedies. Ultimately, aligning folk medicine with pharmaceutical norms contributes to sustainable healthcare development and preservation of cultural heritage.

Discussion and Results

The adaptation of folk medicine recipes to pharmaceutical standards remains one of the most challenging yet essential directions in modern pharmacological science. The study of traditional remedies demonstrates that many of them possess significant therapeutic potential, but the absence of standardized methodologies for their preparation, evaluation, and certification hinders their integration into formal healthcare systems. The discussion of the findings highlights that scientific analysis, combined with cultural preservation, can create a bridge between traditional healing knowledge and modern evidence-based medicine. The chemical and

pharmacological investigations reveal that a large proportion of folk medicine preparations contain biologically active compounds with measurable therapeutic effects. However, these compounds often vary in concentration depending on the origin of the raw materials, harvesting season, and preparation techniques. Such variability complicates quality control and makes it difficult to ensure consistent clinical results. Therefore, chemical standardization through chromatographic and spectroscopic analyses is necessary to identify, quantify, and stabilize active ingredients in traditional formulations.

Toxicological studies further demonstrate the need for rigorous safety assessments. Certain herbal preparations may contain heavy metals, pesticides, or toxic alkaloids that can pose risks to human health if not properly processed. Quality assurance protocols, such as microbial testing, contaminant screening, and stability evaluation, should be applied to every stage of folk medicine production. Establishing pharmacovigilance systems to monitor adverse reactions will enhance patient safety and public trust in traditional medicine. The research findings also show that the lack of legal and regulatory frameworks represents a major barrier to the adaptation process. Without official guidelines, it is impossible to standardize production, control labeling, or verify therapeutic claims. Countries with established traditional medicine systems, such as China and India, have successfully developed regulatory mechanisms that ensure product safety and efficacy. Adopting similar models in Uzbekistan and other regions can facilitate the legal circulation and industrial production of standardized traditional remedies. Another critical aspect identified is the insufficient cooperation between traditional healers and modern pharmacists. Traditional knowledge is often transmitted orally and remains undocumented, which limits its scientific evaluation. Encouraging collaboration and knowledge exchange between healers, botanists, chemists, and pharmacologists can help systematize this valuable heritage. Creating ethnopharmacological databases and conducting multidisciplinary research will promote innovation and ensure scientific validation of folk remedies.

Recent technological advances offer promising results for overcoming existing barriers. Techniques in biotechnology and nanotechnology enable the extraction and modification of bioactive compounds with higher purity and bioavailability. Artificial intelligence and data analytics tools can process large datasets from traditional medicine practices to predict therapeutic effectiveness and identify novel drug candidates. Such scientific integration of traditional and modern approaches provides a sustainable path toward developing safe and effective natural pharmaceuticals. The results of this analysis emphasize that successful adaptation of folk medicine recipes to pharmaceutical standards requires an integrated approach - combining chemical, pharmacological, toxicological, and regulatory measures. Establishing comprehensive quality control systems, strengthening legal frameworks, and promoting interdisciplinary cooperation are essential to ensure the safety, efficacy, and scientific credibility of traditional remedies. By achieving this, folk medicine can evolve from an empirical practice into a scientifically grounded

component of modern healthcare, preserving cultural heritage while contributing to the development of innovative therapeutic solutions.

Conclusion

The study of the problems associated with adapting folk medicine recipes to pharmaceutical standards demonstrates that this process is both scientifically complex and socially significant. Folk medicine, as a part of humanity's cultural and medical heritage, possesses valuable therapeutic potential, but its effective integration into modern healthcare systems requires a systematic, evidence-based approach. The lack of standardization, insufficient toxicological data, and weak regulatory frameworks remain major challenges that must be addressed to ensure safety and quality. Through scientific evaluation including chemical, pharmacological, and toxicological analysis it becomes possible to identify active components, establish safe dosage ranges, and develop uniform production protocols. These measures will not only guarantee the efficacy and safety of traditional remedies but also contribute to their legal recognition and international commercialization. The development of laboratory infrastructure, adoption of global pharmaceutical standards, and establishment of national regulatory mechanisms are essential for this process. The results of this research emphasize the necessity of multidisciplinary collaboration. The combined efforts of pharmacologists, chemists, botanists, and traditional healers can create a scientific foundation for integrating folk medicine into official pharmacotherapy. Furthermore, educational and informational initiatives are required to raise public awareness about the safe use of standardized traditional products. In the future, the successful adaptation of folk medicine recipes to pharmaceutical standards can lead to the creation of new, safe, and effective drugs derived from natural sources. This not only supports sustainable healthcare development but also ensures the preservation of traditional knowledge as an important part of national identity and scientific progress. Hence, aligning folk medicine with modern pharmaceutical principles is not merely a medical necessity, but also a strategic step toward innovation, cultural continuity, and global health improvement.

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THE INFLUENCE OF GEOGRAPHICAL FACTORS ON POPULATION MIGRATION IN UZBEKISTAN

Abstract *This article analyzes the external migration of the population of Uzbekistan, as well as the factors affecting the external migration of the country's population. In recent years, the population of our country has also been included in the category of countries that are active in external migration, especially labor migration, and in turn, the geography of the country's population in external labor migration is expanding. In the early years of independence, the population of Uzbekistan went mainly to the Russian Federation and partly to Kazakhstan to work, but today new directions have opened up and this continues. A number of factors influence this, the above factors are analyzed in detail in this article.*

Keywords: *migration, migrant, external migration, labor migrants, international migration, emigration, immigration, factors.*

According to the International Organization for Migration (IOM), currently the population of almost all countries in the world is involved in the process of external migration. If we pay attention to the reasons that cause the migration process, the migration process, although a social phenomenon, occurs mainly under the influence of economic factors. Therefore, today the countries of the world are divided into two groups, the first is the countries that receive international migrants, and the second is the countries that send migrants. Here, the main factor is the availability of excess jobs in the countries of the first group, while the second group is the availability of excess labor. So, the participation of the population of countries in the process of external migration is closely related to the number of people in this country.

It is known that today Uzbekistan is one of the countries with the fastest growing population in the world. As of October 1, 2024, the population of our country was 37.3 million people, which is 43rd in the world in terms of this indicator. Such a high rate of population growth in our country also ensures an increase in the number of labor resources in the population. As a result, the share of the working-age population in the total population will increase, and other countries may carry out migration movements in search of excess labor. In our country, we can witness an increase in the number of labor resources by 3 million people between 2010 and 2023. The employment rate of the population increased from 66.9% to 67.9% during this period, which is 1% in 13 years. That is, if we take into account that the population of our country grows by 1.7% per year, it took 13 years for the employment rate to increase by 1%. It goes without saying that in such a

situation, part of the working-age population is leaving for countries with high demand for labor to work permanently or seasonally.

Table 1

GDP and Population Growth in Uzbekistan (in percent)

Years	GDP growth	Population growth
2015	7,2	1,7
2020	1,6	1,9
2023	6,3	2,1

When comparing population growth in Uzbekistan with GDP growth in the country, Table 1 above shows that in some years, including 2020, GDP grew by 1.6%, while the population grew by 1.9%, which in turn is one of the factors that ensures the population of this region is the first to actively participate in external migration.

Scientific studies on population migration in Uzbekistan were initially conducted by M.Q. Karaxonov, M.R. Mullajonov, B. Goldfarb, B. Makhmudov, but these studies mainly cover the period before the independence of our country. During the period of independence, population migration in Uzbekistan was thoroughly studied by L. Maksakova. In addition, scientific works on population migration can also be seen in the scientific studies of scientists such as Q. Abdurakhmonov, A.A. Kayumov, O.B. Ata-Mirzayev, A.S. Soliyev, M.R. Buriyeva, Z.N. Tojiyeva.

The movement of people from one region to another in human development also dates back to ancient times. Indeed, from the migration of Homo sapiens out of Africa around 70,000 years ago to the European discovery of the “New World”, human existence has always been inextricably linked to their movement. While in the past, patterns of movement were mainly related to factors such as climate change, adverse landscapes, conflict and food shortages, in modern times socio-economic factors such as wage inequality, differences in welfare and living conditions, and globalization have increasingly played a role[1].

Naturally, population migration occurs under the influence of a number of factors. Some scientists recommend dividing the factors influencing the migration process into two groups: economic and non-economic factors[2]. Professor Z.N. Tojiyeva considers it appropriate to conditionally divide the factors influencing population migration into economic, demographic, political, social and environmental factors[3]. Each region may have different factors depending on its geographical location and historical origin. It is known that the migration process represents two opposite aspects of the population, that is, the migration and emigration of the population. Therefore, if the migration of the population is formed under the influence of separate factors, then the emigration also occurs under the influence of separate factors. We know that since the external migration of the population of the Republic of Uzbekistan is large, the main factors influencing this, in our opinion, may be the following.

1. The economic factor affects external migration in two ways. The first is as a “push factor” for the population of Uzbekistan: relatively low wages; unemployment, on the contrary, is high, this is especially noticeable in rural areas, where almost half of the country's population lives; On the other hand, as “pull” factors in Russia and Kazakhstan, which are relatively close to Uzbekistan: the type and size of the labor market; relatively high wages, and the relatively large need for workers in regions and sectors.

2. Socio-demographic factor. In Russia, the Republic of Korea, Kazakhstan and European countries, which are the main destinations for external migration of the population of Uzbekistan, there is a decrease in the number of working-age population and population aging, which leads to a shortage of labor resources, on the one hand, and on the other hand, to the relatively favorable demographic situation in Uzbekistan, that is, an excess of labor resources.

3. Cultural and historical factor. The first destination of the population of Uzbekistan in external migration is Russia, so the fact that in the past Russia and Uzbekistan were part of one country and, as a result, the knowledge of the Russian language by the population in our country had its effect. In addition, the presence of social and kinship ties with Russia and other countries is also important. This can facilitate adaptation to the labor market and integration into the country's society.

4. Infrastructure and geographical location are factors that take into account the relative proximity of the countries to each other, the availability of transport links - air transport between Russia and Uzbekistan is developed. In particular, air flights have been established from many cities of our country to Russian cities, which is certainly due to the convenience of migrants and good relations between the countries.

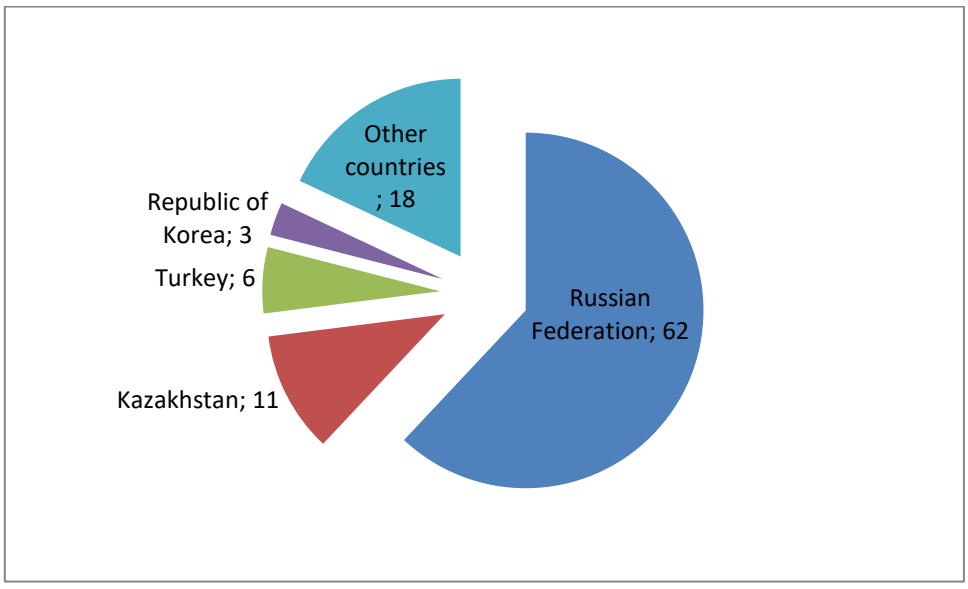


Figure 1. Distribution of external migration of the population in Uzbekistan by country. 2024.

If we look at the data in Figure 1 above, which shows the most receiving countries in the external migration of the population of Uzbekistan, it is clear that 62% of the total migrants go to the Russian Federation, followed by neighboring Kazakhstan with 11%. Today, we can see that the geography of external migration of the population of Uzbekistan has expanded significantly compared to the previous period, in particular, before and after Uzbekistan gained independence, the country's population mainly had well-established migration movements with neighboring countries and the CIS countries, but today our country's population has also established well-established migration relations with distant foreign countries, including the Republic of Korea, the USA, Israel, Turkey and European countries. The reason for this is the introduction and implementation of a number of resolutions and decrees by the head of our state.

It is known that today the Republic of Uzbekistan is also among the countries sending the largest number of labor migrants in the world. For information, according to the 2023 estimate, 2 million 345 thousand citizens of the Republic of Uzbekistan are undergoing work practice in foreign countries. The countries considered the most attractive for labor migration of the population of our country are Russia, Kazakhstan, Turkey and the Republic of Korea. However, in recent years, it can be seen that the situation has changed somewhat, and the reason for this is related to the socio-economic and political situation in these countries. New destinations have appeared for Uzbeks, such as Great Britain, Germany, Poland, Latvia, the UAE and Saudi Arabia.

Migration processes have a significant impact on various aspects of the socio-economic life of Uzbekistan. On the one hand, remittances from labor migrants make a significant contribution to the country's economy and raise the standard of living of many families. On the other hand, the emigration of qualified personnel abroad creates the problem of "brain drain". Migration also affects family relations, the demographic situation, and the social structure.

In conclusion, it should be noted that in the process of globalization today, the migration process, especially the external migration process, is developing rapidly as a form of international cooperation between countries of the world. There are two types of external migration, which are emigration and immigration. Therefore, the factors affecting emigration and immigration are different. In our country, which is the research area, the emigration process is mainly dominant, and in our opinion, it is important to study the factors affecting it.

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PROYEKSIYALASH USULINI O‘QITISH ORQALI TALABALARNING IJODIY FAOLIYATINI RIVOJLANTIRISHNING PEDAGOGIK SHART-SHAROITLARI VA DIDAKTIK ASOSLARI

Annotatsiya: *Mazkur maqolada muhandislik grafikasi va texnik chizmachilik fanlarini o‘qitishda talabalar ijodiy faoliyatini rivojlantirish masalalari tahlil qilingan. Globallashuv sharoitida ta’lim jarayonini innovatsion texnologiyalar bilan boyitish, proyeksiyalash usullarini o‘rgatish orqali talabalar ijodiy kompetensiyasini shakllantirish zarurligi asoslab berilgan. Pedagogik shart-sharoitlar sifatida tashkiliy muhit, fanlararo integratsiya, axborot-kommunikatsion texnologiyalardan foydalanish va individual yondashuv yoritilgan. Didaktik asoslarda ijodiy fikrlash mezonlari, ijodiy jarayon bosqichlari va topshiriqlarning o‘rni ko‘rsatib o‘tilgan. Amaliy yondashuv sifatida loyiha asosida o‘qitish, keys-stadi, interfaol metodlar, tajriba almashish va ish beruvchilar bilan hamkorlik metodlari tahlil etilgan. Xulosa qilib, innovatsion texnologiyalar va zamonaviy pedagogik metodlarni uyg‘unlashtirish talabalarni ijodkor, innovatsion fikrlovchi hamda amaliy muammolarni samarali hal eta oladigan mutaxassis sifatida shakllantirishga xizmat qilishi ta’kidlangan.*

Kalit so‘zlar: *muhandislik grafikasi, texnik chizmachilik, ijodiy faoliyat, proyeksiyalash usullari, pedagogik shart-sharoitlar, didaktik asoslar, ijodiy kompetensiya, innovatsion texnologiyalar, 3D modellashtirish, VR va AR texnologiyalari.*

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PEDAGOGICAL CONDITIONS AND DIDACTIC BASIS OF DEVELOPING STUDENTS' CREATIVE ACTIVITY THROUGH TEACHING THE PROJECTION METHOD

Abstract*: This article analyzes the issues of developing students' creative activity in teaching engineering graphics and technical drawing. In the context of globalization, the need to enrich the educational process with innovative technologies and form students' creative competence through teaching projection methods is substantiated. The organizational environment, interdisciplinary integration, the use of information and communication technologies, and an individual approach are highlighted as pedagogical conditions. The criteria for*

creative thinking, stages of the creative process, and the role of tasks are indicated in the didactic basis. As a practical approach, project-based learning, case studies, interactive methods, experience sharing and cooperation with employers were analyzed. In conclusion, it was emphasized that the combination of innovative technologies and modern pedagogical methods serves to form students as creative, innovative thinkers and specialists who can effectively solve practical problems.

***Keywords**: engineering graphics, technical drawing, creative activity, projection methods, pedagogical conditions, didactic foundations, creative competence, innovative technologies, 3D modeling, VR and AR technologies.*

Bugungi kunda muhandislik grafikasi va texnik chizmachilik fanlarini o‘qitishda talabalar ijodiy faoliyatini rivojlantirish ta’lim tizimining eng dolzarb masalalaridan biridir. Globallashuv sharoitida ta’lim jarayonini innovatsion texnologiyalar bilan boyitish, talabalarni nafaqat tayyor bilimlarni egallashga, balki yangi g‘oya va yechimlarni ishlab chiqishga yo‘naltirish zarur. Shu nuqtai nazardan, proyeksiyalash usullarini o‘qitish jarayoni ijodiy kompetensiyani shakllantirish uchun qulay didaktik muhit yaratadi.

1. Pedagogik shart-sharoitlar

Talabalarning ijodiy faoliyatini samarali rivojlantirish quyidagi pedagogik shart-sharoitlarni talab etadi:

Tashkiliy-pedagogik muhit – o‘quv jarayonida innovatsion metod va vositalardan foydalanish;

Fanlararo integratsiya – muhandislik grafikasi fanini matematika, fizika, informatika va san’atshunoslik bilan uyg‘unlashtirish;

Axborot-kommunikatsion texnologiyalar – AutoCAD, 3Ds Max, Sweet Home 3D, Blender kabi grafik dasturlarni qo‘llash orqali talabalar ijodiy ishlashga rag‘batlantiriladi;

Masofaviy ta’lim vositalari – Moodle, Google Classroom, Microsoft Teams kabi platformalarda mustaqil topshiriqlarni bajarish, onlayn muhokamalar tashkil etish;

Talabaning shaxsiy xususiyatlari – yosh, psixologik va qiziqishlarini inobatga olgan holda individual yondashuv.

2. Didaktik asoslar

Ijodiy faoliyatni rivojlantirish jarayonining didaktik asoslari quyidagilardan iborat:

Ijodiy kompetensiya – shaxsning bilim, ko‘nikma va motivatsion-qiymat yondashuvini birlashtiruvchi dinamik xususiyati.

Ijodiy fikrlash mezonlari (S.D. Smirnov bo‘yicha): yangilik yaratish, evristik yondashuv, muammoni mustaqil ko‘ra olish, sezgi asosida yechim topish, kuchli motivatsiya.

Ijodiy jarayon bosqichlari:

Axborot yig‘ish va tahlil;

Ongsiz inkubatsiya;

“Insayt” – kutilmagan yechim topish;

Tekshirish va qo‘llash.

Ijodiy topshiriqlar: muqobil yechimlarni ishlab chiqish, grafik loyihalarni qayta ishlash, yangi shakllar yaratish, 3D modellash topshiriqlari.

Innovatsion texnologiyalar: VR (virtual reallik), AR (kengaytirilgan reallik), 3D printerlardan foydalanish talabalarni fazoviy tasavvurini kengaytiradi va amaliy natija ko‘rsatadi.

3. Amaliy yondashuv

Proyeksiyalash usullarini o‘qitishda ijodiy faoliyatni rivojlantirish uchun quyidagi metodik yondashuvlar samarali hisoblanadi:

Loyiha asosida o‘qitish – talabalar individual va jamoaviy grafik loyihalar ishlab chiqadi;

Keys-stadi usuli – real muhandislik masalalarini tahlil qilish va grafik yechim topish;

Interfaol metodlar – guruhli ishlash, “aqliy hujum”, “klaster” va “konseptual xarita” usullaridan foydalanish;

Tajriba va ko‘rgazmalar – talabalar ishlarini taqdim etish orqali o‘zaro tajriba almashinuvi;

Ish beruvchilar bilan hamkorlik – ishlab chiqarish korxonalari va dizayn studiyalari bilan qo‘shma loyihalar.

Proyeksiyalash usulini o‘qitishda ijodiy faoliyatni rivojlantirish zamonaviy pedagogik shart-sharoitlar va didaktik asoslarni uyg‘unlashtirish orqali samarali amalga oshiriladi. O‘quv jarayonida grafik dasturlar, VR texnologiyalari va 3D printerlardan foydalanish talabalar fazoviy tafakkurini kengaytiradi, individual yondashuv va ijodiy qarorlar qabul qilish ko‘nikmalarini shakllantiradi. Buning natijasida bo‘lajak mutaxassislar ijodkor, innovatsion fikrlovchi va amaliy muammolarni samarali hal eta oladigan kasb egalariga aylanadi.

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XIVA TARIXIY OBIDALARIDAGI BITIKLARNING NEMIS TILIGA TARJIMA TAHLILI

Annotatsiya: *Ushbu maqolada Xiva shahridagi tarixiy obidalar – madrasalar, maqbaralar, minoralar va boshqa me’moriy yodgorliklarda uchraydigan bitiklarning nemis tiliga tarjimasi tahlil qilingan. Bitiklarning tarjimasida lingvistik, madaniy va tarixiy muammolar mavjud bo‘lib, ular semantik ma’nolarni to‘liq ifodalashni qiyinlashtiradi. Maqolada asosan arab yozuvida bitilgan Qur’oni karim oyatlari, hadislar va epigrafik yozuvlarning tarjimasi, ularning nemis tilida ekvivalentini topish usullari hamda madaniy konnotatsiyalarni yetkazish muammolari yoritilgan.*

Kalit so‘zlar: *Xiva, tarixiy obidalar, epigrafika, tarjima, nemis tili, lingvokulturologiya, semantik ekvivalentlik, madaniy konnotatsiya.*

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TRANSLATION AND ANALYSIS OF INSCRIPTIONS IN THE HISTORICAL MONUMENTS OF KHIVA INTO GERMAN

Abstract: *The article analyzes the translation of inscriptions found on the historical monuments of Khiva – madrasahs, mausoleums, minarets, and other architectural landmarks – into German. The translation process faces linguistic, cultural, and historical challenges that complicate the full rendering of their semantic meanings. Special attention is given to Quranic verses, Hadiths, and epigraphic texts written in Arabic script, methods of finding their equivalents in German, and the issues of conveying cultural connotations.*

Key words: *Khiva, historical monuments, epigraphy, translation, German language, linguoculturology, semantic equivalence, cultural connotation.*

Kirish:

Xiva – O‘zbekistonning eng qadimiy shaharlardan biri bo‘lib, u o‘zining boy tarixi va betakror me’moriy obidalari bilan jahon sivilizatsiyasi xazinasiga kiritilgan. Xususan, Ichan qal’a majmuasi YUNESKOning Butunjahon merosi ro‘yxatiga kiritilgan bo‘lib, undagi madrasa, masjid, maqbara va minoralarning devorlarida ko‘plab arabiy yozuvlar, Qur’on oyatlari va epigrafik bitiklar saqlanib

qolgan. Ushbu bitiklar nafaqat diniy va estetik ahamiyatga ega, balki tarixiy va madaniy xotiraning muhim qismi hisoblanadi.

Tarjima nazariyasida epigrafik yozuvlarning boshqa tilga o‘girilishi alohida muammo sifatida qaraladi. Chunki diniy-madaniy konnotatsiyalarni boshqa tilga ko‘chirish jarayonida semantik va stilistik yo‘qotishlar sodir bo‘lishi mumkin. Nemis tiliga tarjimada ham arabiy yozuvlarning diniy-ruhiy mazmunini, o‘zbek xalqining tarixiy-madaniy merosini to‘laqonli aks ettirish masalasi dolzarbdir.

O‘zbekiston Respublikasi Prezidentining “Xalqaro ilmiy hamkorlikni kengaytirish va madaniy merosni jahon miqyosida targ‘ib qilish to‘g‘risida”gi qarorida ham milliy boyliklarni xorijiy tillarda keng targ‘ib qilish zarurligi ta’kidlangan [1]. Shu nuqtayi nazardan, Xiva tarixiy obidalaridagi bitiklarni nemis tiliga ilmiy asosda tarjima qilish madaniy merosni dunyo miqyosida targ‘ib etishda muhim o‘rin tutadi.

Tarjima jarayonida bir necha muhim savollar tug‘iladi: arabiy bitiklarning diniy ma’nosini nemis tilida qanday yetkazish mumkin? Qur’oni karim oyatlarining tarjimasida ekvivalentlik darajasi qay darajada bo‘lishi kerak? Tarjima jarayonida lingvokulturologik moslashuv qanchalik ahamiyatli? Ushbu maqola mazkur savollarga javob izlashga qaratilgan bo‘lib, unda Xiva tarixiy obidalaridagi bitiklarning nemis tiliga tarjimasi lingvistik va madaniy nuqtayi nazardan tahlil qilinadi.

Asosiy qism

Xiva shahri O‘zbekistonning eng qadimiy va madaniy merosga boy shaharlaridan biri bo‘lib, uning me’moriy yodgorliklari – madrasalar, masjidlar, maqbaralar va minoralarda saqlangan bitiklar tarixiy, diniy va madaniy ahamiyatga ega. Ushbu bitiklar nafaqat estetik va san’at ob’ektlari sifatida, balki epigrafika va tarixiy manba sifatida ham o‘rganishga arziydi. Bitiklar ko‘pincha arab yozuvida, Qur’oni karim oyatlari, hadislar, maqollar va diniy formulalardan iborat bo‘lib, ular shaharning diniy va madaniy hayotini aks ettiradi. Shu bois, ularni boshqa tillarga, xususan nemis tiliga tarjima qilish nafaqat lingvistik, balki madaniy va tarixiy masalalarni ham o‘z ichiga oladi.

Tarjima jarayonida eng katta muammolardan biri semantik ekvivalentlikni ta’minlashdir. Arab yozuvlarining mazmuni ko‘pincha diniy, ruhiy va madaniy konnotatsiyalar bilan boyitilgan bo‘ladi. Nemis tilida bunday mazmunni to‘liq aks ettirish qiyin, chunki nemis tilida Arab madaniyati va islom dini kontekstidagi ba’zi tushunchalarga to‘liq ekvivalent so‘z yoki iboralar mavjud emas. Masalan, Qur’oni karimdagi ba’zi oyatlar tarjima qilinayotganda ularning ibtidoiy konnotatsiyasi va ruhiy ohangini yo‘qotmaslik muhim hisoblanadi. Bu esa tarjimonda stilistik va semantik nozikliklarni talab qiladi.

Xiva bitiklarining nemis tiliga tarjimasida yana bir muhim jihat – lingvokulturologik yondashuvdir. Tarjimon nafaqat so‘zlarning ma’nosini, balki ularning madaniy mazmunini ham yetkazishi lozim. Masalan, “Bismillahir rohmanir rohim” iborasi tarjima qilinayotganda faqat “In the name of Allah, the Most Gracious, the Most Merciful” deb berish kifoya qilmaydi. Tarjimon uni o‘quvchiga tushunarli qilib, madaniy va diniy fonni izohlash orqali yetkazishi zarur.

Shu bilan birga, tarjima jarayonida o‘zbek tilidagi mavjud tarjima an’analariga ham murojaat qilinadi, chunki ular ham tarixiy va diniy kontekstni saqlashga yordam beradi.

Bitiklarning tarjimasi jarayonida stilistik jihat ham muhim ahamiyatga ega. Arab yozuvlarining estetik va ritmik xususiyatlari, naqshlar bilan uyg‘unligi nemis tilida aks etmaydi. Tarjimon bu holatni kompensatsiya qilish uchun nemis tilidagi estetik va stilistik mosliklarni qidiradi. Masalan, qisqa, aniq va ohangdor iboralarni tanlash orqali arab yozuvlarining ritmik ohangini qisman saqlash mumkin.

Amaliy misollar tahlili shuni ko‘rsatadiki, bitiklarning tarjimasida ba’zan bir nechta variantlar paydo bo‘ladi. Masalan, arabiy “taqwa” tushunchasi nemis tilida “Gottesfurcht” yoki “Gottesbewusstsein” deb tarjima qilinadi. Har bir variant o‘ziga xos nuanslarga ega bo‘lib, tarjimon ularni kontekstga qarab tanlashi zarur. Shu bilan birga, tarjima qilinayotgan bitikning joylashuvi va obidaga bo‘lgan vizual ta’siri ham inobatga olinadi.

Tarjimaning lingvokulturologik jihati ham alohida e’tiborga loyiq. Xiva bitiklari arab yozuvi va islom madaniyati bilan bog‘liq bo‘lgani uchun tarjima jarayonida nemis tilida madaniy izohlar kiritish talab qilinadi. Masalan, maqbara devoridagi Qur’on oyatlarini tarjima qilishda ularning tarixiy, diniy va estetik kontekstini qisqacha izohlash orqali o‘quvchi tomonidan to‘liq anglash imkoniyati yaratiladi. Bu esa madaniyatlararo muloqotning samaradorligini oshiradi.

Bundan tashqari, tarjimada tarixiy kontekst ham muhimdir. Xiva bitiklari ko‘pincha 17–19-asrlarda yozilgan bo‘lib, ularning tarjimasi o‘sha davrning diniy, siyosiy va ijtimoiy sharoitlarini hisobga olgan holda amalga oshiriladi. Tarjimon o‘quvchiga nafaqat so‘zlarning ma’nosini, balki ularning tarixiy fonini ham yetkazishi zarur. Shu bilan birga, tarjimada ixtiyoriy izohlar kiritish orqali arab yozuvi va nemis tilidagi tarjima o‘rtasidagi bo‘shliqni kamaytirish mumkin.

Tarjimonning yana bir vazifasi – terminologik bir xillikni saqlashdir. Qur’on oyatlari va diniy formulalarning nemis tilidagi tarjimasi adabiy va diniy konventiyalarga mos kelishi lozim. Misol uchun, “Salah” iborasi nemis tilida “Gebet” deb tarjima qilinadi, lekin tarjima qilingan joyda uning diniy mazmuni va ibodat turi ham izoh bilan berilishi lozim.

Umuman olganda, Xiva tarixiy obidalaridagi bitiklarning nemis tiliga tarjimasi murakkab, lekin muhim ilmiy vazifa hisoblanadi. Tarjimon arab yozuvlarining semantik, stilistik va madaniy jihatlarini chuqur bilishi, shuningdek, nemis tilidagi o‘quvchiga mazmunni to‘liq yetkazish strategiyasini qo‘llashi zarur. Tarjima jarayoni nafaqat lingvistik, balki madaniy va tarixiy tafakkur talab qiladi.

Shu tariqa, bitiklarning tarjimasi orqali Xiva shahrining boy madaniy merosi nemis tilida keng auditoriyaga tanishtiriladi, madaniyatlararo muloqot rivojlanadi va tarixiy obidalar ahamiyati yangi nuqtai nazardan o‘rganiladi. Tarjima tahlili shuni ko‘rsatadiki, semantik ekvivalentlik, stilistik moslik va madaniy konnotatsiyalarning uyg‘unligi tarjimaning muvaffaqiyati uchun muhim omillardir.

Xiva shahri O‘zbekistonning tarixiy-madaniy markazlaridan biri bo‘lib, uning madrasalari, masjidlari, maqbaralari va minoralarida saqlangan bitiklar butun mintaqaning boy epigrafik merosini tashkil etadi. Ushbu bitiklar asosan arab

yozuvida bitilgan bo‘lib, Qur’oni karim oyatlari, hadislar, hikmatli so‘zlar va turli ma’naviy-axloqiy mazmunlarni o‘z ichiga oladi. Tarjima jarayonida ularning semantik va stilistik xususiyatlarini boshqa tilga – xususan, nemis tiliga yetkazish qiyin bo‘ladi, chunki arabiy matn va nemis tilining lingvistik va madaniy tizimi bir-biridan tubdan farq qiladi.

Xiva tarixiy obidalaridagi bitiklar asosan quyidagi shakllarda uchraydi:

1. Qur’oni karim oyatlari – diniy va ma’naviy ahamiyatga ega, devor, minora va madrasa fasadlariga bezak sifatida yozilgan.

2. Hadislar va hikmatli so‘zlar – ijtimoiy axloqiy qadriyatlarni ifodalaydi, odatda ilmiy va ma’rifiy muhitni targ‘ib qiladi.

3. Epigrafik yozuvlar – tarixiy ma’lumot, qurilish sanasi, xayr-sadaqalar, donishmandlarning nomi va ularning qilgan ishlari.

Bu bitiklarning har biri nafaqat lingvistik, balki madaniy va tarixiy ahamiyatga ega bo‘lib, nemis tiliga tarjima qilinayotganda ularning barcha qatlamlarini hisobga olish zarur.

Tarjima jarayonida eng katta qiyinchilik arab yozuvining semantik va stilistik xususiyatlarini nemis tilida ifodalashdir. Qur’oni karim oyatlari misolida oladigan bo‘lsak, arabiy matn tarkibida:

- Bir so‘zning ko‘p ma’nosi bo‘lishi (polysemiya) – arabiy so‘zning turli kontekstlarda turlicha tarjima qilinishi kerak.
- Madaniy va diniy konnotatsiyalar – arab tilidagi iboralar islomiy an’analar bilan bog‘liq bo‘lib, nemis tilida ularni to‘liq yetkazish qiyin.
- Ritmik va fonetik xususiyatlar – arabiy oyatlar o‘z ritm va qasidalik bilan yozilgan, nemis tilida esa ularning musiqiy ohangi yo‘qoladi.

Masalan, arabiy “Taqwa” so‘zi faqat “taqvo”, “xudoydan qo‘rqish” yoki “axloqiy ehtiyotkorlik” kabi turlicha nemischa ekvivalentlarga ega bo‘lishi mumkin, lekin bu so‘zning diniy-ruhiy mazmuni to‘liq yetkazilmaydi. Shu sababli tarjimon ko‘pincha izohli tarjima yoki annotatsiyadan foydalanadi.

Bitiklarni nemis tiliga tarjima qilish jarayonida lingvokulturologik yondashuv muhim ahamiyatga ega. Tarjimon nafaqat so‘zlarning sinonimik ekvivalentini, balki ularning madaniy, tarixiy va diniy konnotatsiyasini ham hisobga olishi lozim.

- Madaniy konnotatsiya – arab yozuvi orqali ifodalangan diniy qadriyatlar va ijtimoiy axloq nemis tilida aniq tarzda yetkazilishi kerak.
- Tushunarli kontekst yaratish – nemis o‘quvchisi arabiy diniy va madaniy kontekstni bilmasligi mumkin, shuning uchun tarjimada izoh, footnot yoki annotatsiya zarur.
- Tarixiy moslik – bitiklar ko‘pincha tarixiy voqea yoki shaxsga bog‘liq bo‘lgani uchun nemis tilida tarixiy shart-sharoitni tushuntirish muhim.

Masalan, Xiva madrasasidagi “Allohning ilmi cheksizdir” degan arabiy ibora nemis tilida *“Das Wissen Gottes ist grenzenlos”* tarzida tarjima qilinadi. Shu bilan birga, “ilmi” so‘zining diniy mazmuni, shuningdek, epistemologik nuqtai nazar ham annotatsiya orqali izohlanadi.

Tarjimonlar odatda quyidagi yondashuvlarni qo‘llashadi:

1. So‘zma-so‘z tarjima – matnning asl strukturasi va so‘z tartibini saqlashga urinish. Bu usul semantik nuanslarni to‘liq yetkazishda qiyinchilik tug‘diradi.

2. Ma’noni yetkazishga yo‘naltirilgan tarjima – asosiy ma’noni saqlashga qaratilgan. Stil va ritm biroz o‘zgaradi, lekin nemis tilida mazmun tushunarli bo‘ladi.

3. Annotatsiyali tarjima – tarixiy, diniy va madaniy ma’lumotlarni izohlar orqali qo‘shish.

Amaliy misol: Xiva minorasida uchraydigan arabiy yozuv:

“La ilaha illallah, Muhammadur rasulullah”

Nemis tilida:

“Es gibt keinen Gott außer Allah, Muhammad ist Sein Gesandter” va annotatsiya bilan: “Dies ist die zentrale Glaubensformel des Islams, die den Monotheismus und die Prophetie Muhammads betont.”

- Diniy terminologiya – “Salat”, “Zakat”, “Sawm” kabi iboralarni nemis tilida tushuntirish kerak.

- Semantik yo‘qotishlar – arabiy so‘zlar ko‘p qatlamli ma’noga ega.

- Stil va ohangning yo‘qolishi – arabiy oyatlar o‘z ritmik xususiyatiga ega, nemis tilida bu ta’sir kamayadi.

Shu bois, tarjima jarayoni lingvistik bilim, madaniy tafakkur va tarixiy kontekstni chuqur bilishni talab qiladi.

Xulosa

Xiva tarixiy obidalaridagi bitiklarni nemis tiliga tarjima qilish nafaqat lingvistik, balki madaniy va diniy nuqtai nazardan murakkab jarayon hisoblanadi. Tarjimon so‘zlarning ekvivalentini topish bilan birga, ularning madaniy konnotatsiyasi, tarixiy va diniy mazmunini ham nemis o‘quvchisi uchun tushunarli qilib yetkazishi lozim. Annotatsiya va izohlar orqali tarjima yanada samarali bo‘lib, Xivaning boy madaniy merosi nemis tilida keng jamoatchilikka taqdim etilishi mumkin.

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COGNITIVE DEVELOPMENT OF PRESCHOOL CHILDREN PROCESSES AND MENTAL DEVELOPMENT IMPORTANCE

Abstract: *This article discusses the cognitive processes and mental development of preschool children. In the process of cognition, the child's consciousness and feelings are formed. Most importantly, behavioral habits necessary for social life and serving social relationships are formed. It serves to ensure the comprehensive development of preschool children, taking into account their age and individual characteristics. Preschool educational organizations also educate children in a comprehensive way*

Keywords: *Preschool age, child, cognitive process, mental development, consciousness, emotion, individual characteristics, verbal creativity, thinker, educator, scientist*

Although preschool children perceive various objects based on their obvious signs, they are unable to analyze them in depth. Uzbekistan Republic developed countries to take a place in the row provision , age generation perfect human to be mature to find directly is related to . Uzbekistan Republic President Sh. Mirziyoyev under the leadership of August 16 , 2017 day to be past at the meeting preschool education system structural in terms of fundamentally reform to do , this to institutions the children full cover to take according to important tasks was put in . In this regard analyses as a result short at the time three large documentUzbekistan Republic The President's September 9th " Preschool" education system fundamentally improvement measures Resolution No. PQ -3261 of September 30, “ On Preschool education system management fundamentally improvement Decree No. PF-5198 on "Measures" and " Uzbekistan" Republic Preschool education Ministry – activities organization to grow Resolution No. PQ-3305 on acceptance was made . Uzbekistan Republic Preschool education ministry , its territorial of divisions main tasks and activity directions in line advanced foreign experience into account received without preschool aged the children every one-sided intellectual , moral , aesthetic and physical develop for conditions create to give was marked . Therefore for Uzbek too national-spiritual legacy world culture inseparable integral In today's globalization process , it is necessary to develop innovative models and mechanisms for the spiritual and moral education of preschool children on a global scale, to use folk oral art samples as pedagogical technologies. and interaction with educational strategies in the spirit of harmonious and tolerant relations and scientific and methodological principles of spiritual and moral education Improving the provision of basic education, ensuring that preschool children receive education and upbringing in a healthy environment, and preparing them for primary school education are among the urgent areas. The involvement of children in preschool

educational organizations and their inclusion in education are of particular importance for the future good acquisition of school knowledge by preschool children, their smooth adaptation to school, the prevention of possible problems in the child's personality, and the elimination of difficulties.

The main tasks of mental education are:

1. To form a system of knowledge about nature and society, a scientific worldview in children;

2. Developing cognitive processes and abilities, as well as various methods of mental processing;

3. Develop independent cognitive skills and a culture of intellectual work;

4. Develop intellectual knowledge, skills, and competencies.

Knowledge is the content of various sciences in the form of ideas and concepts, rules, laws, systems. The task of intellectual education is to form in children a system of highly generalized knowledge that fully reflects events and phenomena. Knowledge is the basis of the worldview.

So , the child is the most simple mental activity methods occupying goes to school aged children's mental development provision their future whole activity for big importance has .The child is social environment under the influence mental from the side developed goes . Around people with treatment to do in the process, he/ she and with him content found concepts system absorbs . As a result preschool upbringing The child 's language so much occupying he gets from it treatment tool as free used become Our homeland remains . to independence after reaching , all industries in line preschool education very good in the field many positive changes face is giving . Today preschool aged children and little girls in charge of healthy , smart is , our society active to the members like spinning big task is standing .

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IMPROVEMENT OF METHODS FOR ASSESSING IRRIGATED LANDS BASED ON GIS

Abstract*. In recent years, there are significant changes in natural irrigated agricultural land due to the deterioration of the environmental situation in our republic from year to year. It is being degraded by the use of improper agrotechnical work on irrigated land. This article will consider the mechanical composition of the soil, the level of sewage waters, soil salinity, temperature analyzes and forecasting methods.*

Keywords: *Soil salinity, sewage water levels, soil mechanical composition, temperature.*

Introduction

At the video conference held on August 6, 2020, with the World Bank, the President of the Republic of Uzbekistan outlined tasks for the implementation of the "Agricultural Modernization" project, focusing on the effective use of investments allocated to the agricultural sector and the development of high-impact projects. The designated tasks prioritized advancing science, introducing advanced equipment, and implementing modern technologies in project development. Ensuring the timely and high-quality execution of these tasks aims to optimize the use of investments in agriculture and direct capital effectively. In this regard, the role of the agricultural geodatabase and a comprehensive digital map of agriculture is considered significant for project implementation. According to the Resolution of the Cabinet of Ministers of the Republic of Uzbekistan dated October 30, 2023, No. 578, "On Approving the Regulation on the Procedure for Maintaining the National Report on the State of Land Resources", the Ministry of Agriculture was tasked with ensuring the inclusion of data on the quantity, quality, and valuation of lands designated for agriculture in the "Land Report" AIS (an automated information system for generating and maintaining land-related data). This section of the research work serves to support the implementation of these tasks. The research primarily focused on assessing the quality of agricultural lands in the Bukhara region, taking into account soil fertility, salinity levels, groundwater, air temperature, infrastructure placement, and water availability for irrigation, with efforts directed toward creating maps to evaluate land quality.

Methodology

The need to create an assessment map of agricultural lands in the geodatabase arises from identifying, monitoring, and implementing designated measures. Therefore, in developing an assessment map for irrigated agricultural croplands, digitizing the groundwater level, temperature indicators, soil mechanical

composition, and soil salinity levels of the study area through a geographic information system is considered one of the priority tasks of the research work.

Analysis and results

The provided text discusses the creation of an assessment map for irrigated agricultural lands in the Bukhara region, emphasizing the importance of terrain, climate, groundwater levels, and soil mechanical composition. It mentions that geospatial analyses were conducted based on thematic layers in the Bukhara region's geodatabase, as outlined in Section 2.3 of the research. These analyses considered indicators such as soil, climate, terrain, groundwater, and soil salinity to develop a comprehensive quality assessment map for agricultural lands. The text also references a table (Table 1.1.1) regarding the mechanical composition of soils in the Bukhara region, measured in hectares

	District	light	medium	heavy
1	Bukhara city	975,6888	0	894,31
2	Bukhara district	10159,18	2681,116	9801,70
3	Gijdivon	9201,593	7038,756	4200,65
4	Jondor	15587,53	8316,875	4251,59
5	Kogon	11053,25	1644,322	4471,43
6	Olot	9662,866	4060,61	3495,52
7	Peshku	9881,455	7923,55	997,994
8	Qorako‘l	10212,12	8230,323	1150,56
9	Qorovulbozor	0	13227,6	2169,40
10	Ramiton	8764,911	3515,903	10721,19
11	Shofirkon	4306,415	17197,28	1652,30
12	Vobkent	6603,121	4059,56	10003,3
	Total:	**96408,12**	**77895,9**	**53809,98**

Information on temperature indicators of Bukhara region

(Table 1.1.2). (hectare, ha)

	District	15^0 S	16^0 S	17^0 S
1	Bukhara city	0	1870	0
2	Bukhara district	2351,446	20290,55	0
3	Gijdivon	20441	0	0
4	Jondor	0	28156	0
5	Kogon	1863,655	15305,35	0
6	Olot	0	8535,417	8683,583
7	Peshku	18803	0	0
8	Qorako‘l	0	19412,27	180,7269
9	Qorovulbozor	829,1688	14567,83	0
10	Ramiton	13839,96	9162,036	0
11	Shofirkon	23156	0	0
12	Vobkent	20616,79	49,20598	0
	Total:	**101901**	**117348,7**	**8864,31**

Information on the level of groundwater in Bukhara region

(Table 1.1.3). (hectares, ha)

	District	0-1.5	1.5-2.5	2.5<
1	Bukhara city	0,786197	1269,4	599,8143
2	Bukhara district	56,06372	15008,34	7577,601
3	Gijdivon	483,4773	10714,89	9242,63
4	Jondor	1716,693	24728,51	1710,795
5	Kogon	122,6968	16205,72	840,5826
6	Olot	3585,167	13431,7	202,1355
7	Peshku	17,19103	4390,721	14395,09
8	Qorako‘l	1409,852	10765,11	7418,039
9	Qorovulbozor	443,3239	762,9282	14190,75
10	Ramiton	189,1218	16981,88	5830,998
11	Shofirkon	406,9195	14351,42	8397,658
12	Vobkent	573,9382	8146,292	11945,77
	Total:	**9005,231**	**136756,9**	**82351,86**

Information on soil salinity in Bukhara region

(Table 1.1.4). (hectares, ha)

	District	Salted	Low salted	Medium salted	High salted
1	Bukhara city	6,481014	1841,589	21,93048	0
2	Bukhara district	79,79827	18583,46	3978,743	0
3	Gijdivon	691,4753	17357,27	2270,953	121,2969
4	Jondor	2,614707	17135,5	10812,49	205,391
5	Kogon	225,7286	12467,34	4475,926	0
6	Olot	468,6216	14720,24	2030,139	0
7	Peshku	393,7543	16067	2170,343	171,8986
8	Qorako‘l	872,9019	16596,9	2123,199	0
9	Qorovulbozor	3244,314	9000,721	3151,965	0

10	Ramiton	257,2765	18215,9	4432,234	96,5926
11	Shofirkon	0	17983,21	5027,441	145,3499
12	Vobkent	1535,189	15362,48	3768,332	0
	Total:	**7778,155**	**175331,6**	**44263,69**	**740,529**

Based on these criteria, irrigated lands in the Bukhara region were divided into classes by qualitative classification.

	Criteria	**Classes**				**Note**
		A-1	**A-2**	**A-3**	**A-4**	
1	Salinity	I	II	III	IV	I- not saline II- low saline III- medium saline IV- highly saline
2	Sewage water level	III	II	IV	I	I- up to 0-1.5 meters II- up to 1.5-2.5 meters III- up to 2.5-3.5 meters IV- above 3.5 meters
3	Distance from irrigation networks	I	II	III	IV	I- 0-1000 II- 1000-5000 III- 5000-10000 IV- 10000-30000
4	Distance from district centers	I-II	III-IV	V	VI-VII	I- 0-500 II- 500-1500 III- 1500-3000 IV- 3000-5000 V- 5000-10000 VI- 10000-20000 VII- 20000-30000
5	Temperature indicators	II	III	IV	I	I – temperature 13-14 C II – temperature 15-16C III – temperature 16-17 IV – temperature 17<

A-1 is the status given to lands with the highest quality indicators.
A-2 is the status given to lands with high potential and quality indicators.
A-3 is the status given to lands with medium potential and quality indicators.
A-4 is the status given to lands with low potential and quality indicators.

Conclusion

The analysis showed that in the process of spatial analysis, the mechanical composition of soils in relation to irrigated agricultural lands in the Bukhara region was classified according to light, medium and heavy mechanical composition. It was determined that, out of the total irrigated agricultural lands of 228,113 thousand ha of Bukhara region, soils with light mechanical composition account for 42.26%

(96,408.12 ha), soils with medium mechanical composition account for 34.15% (77,895.9 ha), and soils with heavy mechanical composition account for 23.59% (53,810.0 ha). As for climatic indicators, it was determined that in the Bukhara region, the areas with an average annual temperature of 150 ° C account for 44.67% (101,901 ha), the areas with an average annual temperature of 160 ° C account for 51.44% (117,349 ha), and the areas with an average annual temperature of 170 ° C account for 3.88% (8,864.31 ha). The areas with a groundwater level of 0-1.5 meters account for 3.95% (9,005.23 ha), 1.5-2.5 meters account for 59.95% (136,757 ha), and the areas with a level of more than 2.5 meters account for 36.1% (82,351.9 ha). According to the degree of soil salinity, the research revealed that non-saline lands account for 3.40% (7,778.16 ha), slightly saline lands account for 76.86% (175,332 ha), moderately saline lands account for 19.40% (44,263.7 ha), and highly saline lands account for 0.32% (740.5 ha).

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COMPETENCY-BASED APPROACH TO EDUCATING PRESCHOOL CHILDREN

Abstract: *This article discusses the methods of using and popularizing modern pedagogical technologies in the systematic organization of the innovative activities of future educators, identifying methods for developing the systematic organization of the innovative activities of educators in preschool educational organizations, and improving the professional skills of educators and equipping them with modern knowledge.*

Keywords: *Innovation, innovative activity, technology, pedagogical technology*

Today's student should focus primarily on a competency-based approach to learning. Based on the following definitions, we will analyze the concept of competency on a scientific basis.

- competence (lat.competents - suitable, capable, knowledgeable)
- the characteristic of an individual who has achieved diverse abilities in various professional fields and is therefore respected in society;
- competence - the ability to perform real life activities, the skills acquired by the child during his/her entry into the team. The ability to perform real, life actions and the qualification acquired during the introduction of a person into the activity; The improvement of these competencies, due to the achievement of two situations - information and results, determines the transformation of the resource into a product;
- Competence is the comprehensive preparation in studying issues, along with knowledge of a database. Competence is the development of the ability to know and develop skills. A person applies his research in the wider public life by increasing the knowledge acquired throughout his life.

Competence and competence, according to VAMetaeva, are mutually exclusive and interrelated concepts: an independent person who does not have competence cannot fully reveal it in socially significant aspects, which is important for a competent person. ABKhutorskoy distinguishes the concepts of "competence" and "competence" as follows: The word "competence" translated from Latin means "authority", and denotes a set of issues that a person knows well, has knowledge and skills.

A competent person in a particular field has the appropriate knowledge and

skills that allow him to rationally assess this field and act effectively in it [15].

the general and the individual, we distinguish the often used synonymous concept of "competence".

Competence ***is*** the ability of a person to perform a certain task , as well as a person's specific attitude to the process.

This concept is much broader in meaning. It includes learning outcomes (knowledge and skills), a system of value orientations, habits, and so on.

Competencies are not only formed in the field of education, but also arise in various areas, in the family, among friends , and in different parts of society. In this case, the emergence of a competency-based approach depends on the individual's individual situation.

VD Shadrikov follows from the definition that, according to him, competence is the range of issues that someone knows well, the scope of someone's powers and rights.

“Thus, we see that competence refers not to the subject of the activity, but to the range of issues related to the activity. In other words , competencies are the functional tasks related to the activity that someone can successfully solve [16].

Competency-based approach The analysis of the main concepts of competence is presented in the studies of AGBermus, VABoltov, IAZimney, VVKraevsky, OELebedev, EISerikov, VPSimonov, AVKhutorsky and others. Most researchers also share this opinion[[17]] This competence is a predetermined social requirement (norm), professional or functional characteristic, expected learning outcomes. Thus, the competency-based approach emerged as an alternative to the abstract theoretical knowledge that students receive in a preschool educational institution, teaching them to use the knowledge gained in various life situations. The presence of real reality and the ability to act in this reality are a necessary condition for the development of competence [18].

Currently, the effectiveness of the quality of preschool education depends on a competency-based approach. It is clear from this that it is necessary to introduce each student to visual aids in a manner appropriate to their age.

“ The general importance of a preschool child (6-7 years old) The competencies are:

Communicative competence **is** the ability to use communication tools in various situations .

Game competence – the child's creative use of experience, knowledge, and skills in the process of play and its organization. It is the basis for the educational process.

Social competence – the ability to behave in real life situations while adhering

[15] www.fayllar.org/kisqacha-aytganda-zamoranaviy-talimda-kompeteniyaga-ososlangan.html?page=9

[16]https://goaravetisyan.ru/uz/kompetentnostnyi-podhod-v-sovremennom-obrazovanii-kratko-kompetentnostnyi-podhod-kompetentnostnyi/

[17] https://goaravetisyan.ru/uz/kompetentnostnyi-podhod-v-sovremennom-obrazovanii-kratko-kompetentnostnyi-podhod-kompetentnostnyi/

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to ethical rules and norms in communication with adults and peers.

Knowledge competence – consciously perceive the world around us and use the acquired knowledge, skills, competencies and values to solve educational and practical tasks

Competencies in the child's developmental areas.

Child's competencies determined in the following areas of child development:

- physical development and the formation of a healthy lifestyle;
- social-emotional development;
- speaking , communication, reading and writing skills;
- development of the cognitive process;
- "creative development" [19].

Competence – (Latin: competens – capable, capable) Competence is not only associated with a narrow range of knowledge, skills, and qualifications, but also includes aspects such as the ability to work as a team with children in activity centers, the ability to use communication tools in different situations, the ability to make realistic assessments, and the ability to use various innovations on the spot.

Competency-based education is education that aims to enable students to apply the knowledge they have acquired in various aspects of real life.[20]

The following core competencies are available:

1. Communicative competence

Being able to communicate with people , expressing one's thoughts correctly during communication, adapting to society and adhering to the culture of communication, respecting the opinion of the interlocutor during the conversation, and being able to convince him/her, managing one's passions in various conflict situations and resolving disagreements.

2. Working with information:

Ability to use and apply information sources during the conversation;

3 Self-development competence:

A person should work on themselves throughout their life, develop themselves , and be able to apply the knowledge they have learned in real life situations while possessing human qualities.

4. Socially active citizenship competence:

5. General cultural competencies:

Loyalty to the country, love for people, respect for national values and examples of art, and attention to the culture of dress.

6. Mathematical literacy:

In today's era of ever-increasing technological development, DTS, based on a competency-based approach, has entered the education system. The reasons for this can be attributed to the fundamental changes in the state and society, the rapid introduction of modern technological tools into our lives, and the growing number of young people with higher intellectual potential compared to previous generations.

[19] "First Step" state educational program. - Tashkent, 2018.
[20]faylar.org/tayanch-kompeteniyalar.html

provide high-quality education to older preschool children , increase their interest in life , develop their mental abilities using their free time, and demonstrate their creative skills .

Indeed, the current environment is beginning to demand new thinking and worldviews from young people.

According to the demands of modern development, today's person must be innovative, innovative, creative, and ambitious. It is impossible to educate the youth of the future without knowing our cultural heritage .

We know that since ancient times, the main condition for human perfection and national prosperity lies in knowledge and enlightenment, which have been considered the wealth of our ancestors.

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XORIJIY TILLARNI O‘RGANISH VA UNDAGI MUAMMOLAR VA YECHIMLAR

Annotatsiya. *Zamonaviy pedagogik amaliyotda yangi metod va vositalar tezkor joriy etilmoqda. Faqat texnologik bilim va ko‘nikmaga ega bo‘lgan o‘qituvchilar ta’lim jarayonini samarali loyihalashtira oladi. An’anaviy ta’limdan farqli o‘laroq, texnologik yondashuv o‘quvchini faol bilim oluvchi, mustaqil fikrlovchi va muammolarni hal qiluvchi sub’ekt sifatida qaraydi. Interfaol ta’lim, suhbat va munozara kabi usullar o‘quvchilarda ijodiy tafakkurni, muloqotni va bilimlarni chuqur o‘zlashtirishni rivojlantiradi. Tadqiqot shuni ko‘rsatadiki, ta’lim samaradorligi tanlangan metodning mosligi va o‘z vaqtida qo‘llanishiga bog‘liqdir.*
Kalit so‘zlar: *xorijiy tilni o‘qitish, ta’lim texnologiyasi, interfaol ta’lim, suhbat, munozara, muammoli yondashuv.*

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FOREIGN LANGUAGE LEARNING: PROBLEMS AND SOLUTIONS

Annotation. *In modern pedagogical practice, new methods and tools are being rapidly introduced. Only teachers with sufficient technological knowledge and skills can effectively design and plan the educational process. Unlike traditional teaching, which views learners as passive recipients of knowledge, a technological approach recognises them as active subjects who acquire knowledge independently and solve problems creatively. Interactive methods such as dialogue and discussion foster critical thinking, communication, and deeper learning. The study highlights that the effectiveness of teaching depends on the appropriateness and timely application of the chosen method.*
Keywords: *foreign language teaching, educational technology, interactive learning, dialogue, discussion, problem-solving approach*

Hozirgi pedagogik amaliyotda yangi yo‘l va vositalarni jadal tatbiq etilayotganini kuzatish mumkin. Ta’limiy jarayonni texnologiyali loyixalashtirish va rejalashtirishni, faqat texnologik bilim, ko‘nikma va malakaga ega bo‘lgan o‘qituvchigina bajara olishi mumkin.

Barcha turli – tumanlikdan mavjud sharoitda va o‘quv rejasida berilgan vaqtda ko‘zlanayotgan natijaga erishishni kafolatli ta’minlaydigan, so‘ngra undan mana shu sharoit uchun mos keladigan, ta’lim berish texnologiyasining-yagona majmuini loyixalashtirish mumkin bo‘ladigan, axborot, muloqot va boshqaruvning shunday yo‘l va vositalarini farqlash va tanlashni uddalash muxim bo‘lib hisoblanadi.

Ta’lim berish texnologiyasini loyixalashtirish va mavjud ta’lim berish texnologiyasini qo‘llash “o‘qituvchi, vaziyat madaniyati, shuningdek shaxsiy yoki talabalarning shaxsiy xususiyatlari bilan yuzma-yuz kelish yo‘nalishi bilan ish tutmog‘i kerak” (Ye.S.Polat, 2000)

Zamonaviy ta’lim texnologiyasida ta’lim oluvchining o‘rni va vazifasiga kelsak, an’anaviy ta’lim berishda ta’lim oluvchi ta’lim beruvchi ta’siridagi bo‘ysunuvchi ob’ekt. Bilim – birdan-bir maqsad. Xato-jazolanadi.

Texnologik yondashuvga asoslangan ta’lim berishda esa ta’lim oluvchi mustaqil bilish faoliyatini olib boruvchi, ta’lim jarayonining teng xuquqli sub’ekti hisoblanadi.

Bilim-shaxsiy muammolarni hal etish vositasi.

Xato qilishga haqqi bor – xatolar orqali o‘rganadi.

An’anaviy ta’lim berishda, mexanik eslab qolishga, qayta tiklash (o‘zgarishsiz) bayonga asoslangan, namuna bo‘yicha ta’lim berish bo‘lib,natijada ta’lim oluvchining sustkashligi, nutq faoliyatining bo‘shashiga olib keladi.

Texnologik yondashuvda esa muammolarni izlash, bilimlarni amaliyotda qo‘llashga yo‘naltirilgan, muammoli vaziyatlarni yaratish, faol bilishning ijodiy tadqiqotchilik faoliyatiga asoslangan faol ta’lim berish usullari.

Ta’lim beruvchi umumiy natijani baxolaydi va ta’lim oluvchi bilan xamkorlikdagi mexnatlarini taxlil qiladi, ko‘zlanayotgan natijalarga nima uchun erishilmadi va qisman erishildi.

Ta’lim usullarining yaxshi yoki yomoni mavjud emas. Usulning natijasini bajarilgan yoki bajarilmagan vazifa bo‘yicha xulosa chiqarish mumkin. Natija esa usulning qo‘llanishida soddalik va osonlik, vazifani xal etishda ko‘rinadi. Eng ko‘p tarqalgan usul interfaol ta’lim berish ya’ni suxbatli ta’lim berish, bunda ta’lim beruvchi va ta’lim oluvchi, ta’lim oluvchi va kompyuterning o‘zaro xarakati amalga oshiriladi.

Interfaollik daraja qancha yuqori bo‘lsa, ta’lim berish jarayoni shuncha natijali bo‘ladi.

Talabalarni kitob bilan ishlash usuli ta’lim berish, tarbiyalash, rivojlantirish va qiziqtirish vazifalarini bajaradi.

Talaba o‘quv jarayonida ta’lim beruvchi raxbarligida va uyda mustaqil kitob bilan ishlashi mumkin. O‘quv mashg‘uloti davomida ish olib borilsa, unda kitob bo‘yicha o‘rganadigan materialni aloxida qismlarga bo‘lib, ularni nazorat qilish mumkin.

Yana bir ta’lim usuli – suhbat – dialogli (yunoncha dialogos –ikki bir necha insonlar orasidagi so‘zlashuv), ta’lim berish va o‘rganishning savol- javobli yo‘lidir.

Bu usulning vazifasi – ta’lim oluvchini mavzuga qiziqtiradi, savollar yordamida bilimini eslash va bayon qilishga xarakat qilinadi. Ta’lim oluvchi o‘qituvchi bilan birga asta – asta mustaqil fikrlash, yakunlash, xulosalash va umumlashtirish yo‘li bilan yangi bilimlarni anglaydi va o‘zlashtirib oladi.

Suhbatning yana bir afzalligi – ta’lim oluvchilar fikrlashini faollashtiradi va bilim kuchini rivojlantirishga yordam beradi.

Suhbat shakliga ko‘ra “o‘quv va davra suhbatiga” bo‘linadi. “Davra suhbati” da ta’lim oluvchilar fikrini navbat bilan bildirish mumkin. Bunda eng muhim narsa savolni to‘g‘ri shakllantirish va berish hisoblanadi. Savollar bir–biri bilan mantiqan bog‘liq, savol mavzu mohiyatini ochib berishi, tizimda bilimlarni o‘zlashtirishga yordam berishi kerak.

Oson savollar faol bilish faoliyatini rag‘batlantirmaydi, jiddiy munosabat esa bilishga rag‘batlantirishini esda tutmoq lozim.

Munozara (bahs)- aniq muammo bo‘yicha fikr almashish, muhokama shaklidagi ta’lim berishning yana bir faol usulidir. Bu usul barcha vazifalarni bajaradi. Munozara usulida asosan muammoni yechiladi. Boshqa so‘zlovchilarni ham so‘zlashishga imkon bo‘ladi, bunda e’tiroz yo‘lini tushunishga harakat qilib, unga hurmat bilan yondashishni o‘rganadi. E’tirozchi bildirgan fikrlarni buzmasdan va ajablanmasdan mohirona rad eta olish madaniyatini kuchaytiradi.

Ta’lim oluvchi qaysi usul bilan bo‘lmasin, o‘z fikri va bilimini bosiqlik bilan ko‘rsata olsa tengdoshlari, guruhdoshlari o‘rtasida hurmat oshiradi.

O‘rganuvchi o‘z bilim doirasini qanchalik darajada ekanligini, qancha o‘qib-o‘rganish zarurligini va boshqalar fikrini o‘rganish orqali o‘z bilimi va odob doirasini muloqat qilishni shakillantirib boradi.

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COTTON GINNISHING TECHNOLOGY

Annotation: *in the state of izuchali na klopkozavode soderjanie pili v dushnoy srede tsehov, oceneno gryaznenie dhukha v work zone i vneshnee srede Also analyzed the behavior of organic dust and zdorove rabochikh, zanyatyh pererabotkoy rastitelnogo srya (cotton, kenaf, flax, etc.), prikovyvaet vse bolshee vnimanie research*

Key words: *cotton-syrets, fiber, production, collection, transportation, storage, pererabotka, klopkovy bunt, klopkoochistitelnye zavody, moduleukladchik.*

Actuality:

The main operations of the production of cotton-syrtsa yavlyayutsya osnosnaya i predposevnaya obrabotka pochvy, pregotovka i vysev semyan, cultivation, borba s verditelyami i beleznyami, podgotovitelnye raboty k borke i uborko klopka, drie osnovnye i podgotovitelnye boty.

Vozdeystvie organicheskoy pyli na zdorove rabochikh, zanyatyx pererabotkoy rastitelnogo syrya (khlopok, kenaf, len i dr.), prikovyvaet vse bolshee vnimanie issledovateley. However, the development of pulmonary pathology, etiologically related to organic dust, has not been proven. Otechestvennye and zarubezhnye avtory mnogokratno otmechali, chto u danoy category workers often cause acute and chronic diseases, etiologically obuslovlennye influence of individual components organic dust (Shilling and Hyghes; Shilling; H. I. Smetanin \ i dr.). K ostrym zabolevaniyam etoy gruppy sleduet otnesti tak nazyvaemuyu fabrichnuyu lixoradku, sennuyu lixoradku, katary verkhnix dyxatelnyx putey i ostrye vazomotornye rinit; sredi kronicheskikh zabolevaniy — bissinosis, kronicheskie bronchitis with rare astmoid components, "cough weaver" and t. p.

Na obsledovannyx nami hlopkozavodakh prinimayutsya mery k okhrane atmosfernogo vozdukha ot zagryazneniya plyu putem osushchestvleniya special sanitarno-teknicheskikh meropriyatiy (mechanization and hermetization proizvodstvennyx protsessov, stroitelstvo pyleosadochnyx kamer, tsiklonov i dr.). Tem ne menee hlopkozavody ostayutsya eshche znachitelnym istochnikom zagryazneniya plyu atmospheric, chto vyazano s osbennostyami proizvodstva, osnovnymi etapami kotorogo yavlyayutsya transportation hlopka-syrtsa po truboprovodam, eg drying and cleaning ot postoronnix primesey, separation of fibers and lint ot semyan, pressing of cotton and kipy, pererabotka otkhodov and others. Cotton-syrets esche do postupleniya na zavod zagryaznyaetsya pochvenno-

mineralnoy plyu pri sbore na field, osobenno xlopkouborochnymi car, na polevyx stanakh, pri podsushke i perevalke. In some cases, the rate of low-grade cotton reaches 20%. Na hlopkozavode transportirovka hlopka mejdu tsehami, a takje ego dvinie v ochistitelyax, djinnax i linterax osushchestvlyayutsya vozdushnymi potokami, i posle zaversheniya otdelnyx tsiklov otrabotannyy vozdux vybrasyvaetsya v atmosferu, prokhodya chistku v pyleosadochnyx kamerax i tsiklonax. The main reasons for the vibration of dust and atmospheric air are the lack of efficiency of the dust collector, inadequate sealing of the aggregates, poor insulation of the dust collection site, and others.

Materials and Methods;

he main operations in raw cotton production include primary and pre-sowing tillage, seed preparation and sowing, cultivation, pest and disease control, pre-harvest preparation, cotton harvesting, and other primary and preparatory work.

The impact of organic dust on the health of workers engaged in the processing of plant materials (cotton, kenaf, flax, etc.) is attracting increasing attention from researchers. However, the existence of pulmonary pathologies etiologically associated with organic dust has not yet been proven. Domestic and foreign authors have repeatedly noted that this category of workers often develop acute and chronic diseases etiologically caused by the influence of various components of organic dust (Shilling and Hyghes; Shilling; H. I. Smetanin, etc.). Acute diseases in this group include so-called factory fever, hay fever, catarrh of the upper respiratory tract, and acute vasomotor rhinitis. Among chronic diseases are byssinosis, chronic bronchitis with a frequent asthmatic component, “weaver’s cough,” etc**.**

We studied the dust content in the air of the gin's workshops and at distances of 300, 500, and 1000 meters from dust sources. Our primary objective was to identify the maximum airborne dust pollution, so we collected samples during operation of all workshops and during the processing of low-grade raw cotton. At each location, 30-40 samples were collected, and the results were determined gravimetrically, according to existing instructions. In the drying and cleaning shop, airborne dust levels ranged from 114.5 to 380.7 mg/m³ (average 222.5 ± 10.5 mg/m³), and in the gin and linter shop, they ranged from 53 to 324.4 mg/m³ (average 164.1 ± 12.1 mg/m³). At a wind speed of 3-15 m/s, a relative humidity of 37-56% and a temperature of 19-28°C at a distance of 300 m from the dust emission sources, its concentration in the atmosphere fluctuated from 15.1 to 48.2 mg/m3 (on average 26.3 ± 1.5 mg/m3). At a distance of 500 m from the cotton mill, the dust content in the atmosphere was within the range of 3.6-29.8 mg/m3 (12.7 ± 1.2 mg/m3), and at a distance of 1000 m, the dustiness of the air ranged from 3.2 to 12.5 mg/m3 (6.1 ± 0.5 mg/m3). With increasing distance from the emission sources, atmospheric pollution exceeded the maximum permissible dust concentration in the air (0.5 mg/m3) by tens of times. According to the cotton mill's management, 5,870 tons of raw cotton were processed in March 1973, yielding 1,903 tons of fiber, 3,421 tons of seed, 220 tons of lint, and 3 tons of cotton linters. 80 tons of waste were removed. Consequently, processing approximately 6,000 tons of raw cotton per month releases 243 tons of cotton-mineral dust into the atmosphere.

A sanitary survey of approximately 400 residential buildings located southwest of the cotton mill was conducted, and over 1,500 residents of these buildings (prevailing northeasterly winds) were interviewed. It was found that dust-polluted air up to 500 meters from the mill makes it difficult to maintain cleanliness and order in the courtyard and living spaces. Cotton dust impairs the growing conditions for fruits and vegetables. Dust accumulates on tree branches, vegetables, and alfalfa. A layer of dust covers the soil near fences, on the banks of irrigation ditches, and elsewhere. Sparsely scattered cotton fibers (flying cotton) were found on the ground up to 1,000 meters from the cotton mill, and accumulations of cotton dust were found on some densely intertwined tree branches. A survey of the population revealed that on certain days (during strong winds and when low-grade cotton is being processed), significant dust levels are observed in the air, negatively impacting living conditions. However, according to residents, periods of significant dust levels last no more than 30-40 days a year, and the rest of the year there is no air pollution.

Discussion:

Thus, the influence of dust on the living conditions of the local population has been discovered. It should also be taken into account that the mineral-organic dust from cotton gins is highly dispersed, containing 16-32% silicon dioxide and 39-57% silicates. In addition, it is abundantly contaminated with bacteria and mold fungi, and contains organochlorine pesticides. We believe that, given the desert-continental climate of the Khorezm oasis and the existing technology for cleaning raw cotton and its waste at cotton gins, the sanitary protection zone between them and residential areas should be at least 500 m. Sanitary and hygienic studies conducted at cotton gins have shown that most of them do not have sanitary protection gaps from residential areas. The cotton gins of many regional centers, built in the 1940s and 1950s, are surrounded by residential areas or directly adjacent to residential areas. The master plans for these settlements called for the creation of protective zones within a 300-meter radius of the gins. Newly built gins (Shavat, Yangibazar, Bagat, and others), according to design documents, also have sanitary protection zones. However, when the master plans are implemented, these zones are often overgrown with residential and public buildings. The importance of protecting the atmosphere from cotton dust pollution increases due to the fact that after the completion of the hydraulic structures, the number of cotton processing plants will increase severalfold, and consequently, raw cotton production in the region.

Conclusions

1. Among individuals involved in processing cotton and kenaf, respiratory diseases resembling chronic bronchitis, sometimes accompanied by mild pulmonary emphysema, were observed. In cases of exposure to high concentrations of organic dust, an asthmoid component may also be present. No severe forms of byssinosis or factory fever were identified during either current examinations or retrospective analysis.

2. One of the etiological factors behind acute respiratory diseases in this worker group may be the presence of saprophytic and conditionally pathogenic

fungal flora, which is consistently found in the air of workshops—particularly during the processing of low-grade plant materials.

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RAQAMLI TEXNOLOGIYALAR YORDAMIDA INKLYUZIV TA'LIMNI RIVOJLANTIRISHNING ZAMONAVIY USULLARI

Annotatsiya: *Ushbu maqolada raqamli texnologiyalar yordamida inklyuziv ta'limni rivojlantirishning zamonaviy usullari tahlil qilinadi. Raqamli vositalar ta'lim jarayonining individual ehtiyojlarga moslashtirilishida, nogironligi bo'lgan o'quvchilarni qo'llab-quvvatlashda muhim ahamiyatga ega ekanligi ko'rsatib o'tiladi. Shuningdek, o'qituvchilarning raqamli savodxonligini oshirish va pedagogik jarayonda innovatsion texnologiyalarni qo'llash bo'yicha tavsiyalar berilgan.*

Kalit so'zlar: *raqamli texnologiyalar, inklyuziv ta'lim, innovatsion usullar, ta'lim platformalari, pedagogik qo'llab-quvvatlash, inkluziya*

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MODERN METHODS OF DEVELOPING INCLUSIVE EDUCATION USING DIGITAL TECHNOLOGIES

Abstract*: This article explores modern approaches to developing inclusive education through the use of digital technologies. Particular attention is paid to the role of digital resources in adapting the educational process to the individual needs of students with disabilities. The paper also provides recommendations for improving teachers' digital literacy and effectively utilizing innovative platforms in an inclusive learning environment.*

Keywords*: digital technologies, inclusive education, innovative methods, educational platforms, pedagogical support, inclusion*

Kirish.

Bugungi kunda ta'lim sohasida inklyuzivlik tamoyillarini joriy etish global jarayon hisoblanadi. Inklyuziv ta'lim barcha o'quvchilarga, shu jumladan nogironligi bo'lganlar uchun ham teng imkoniyatlar yaratishni maqsad qilgan tizimdir. Raqamli texnologiyalar esa bu jarayonda yangi imkoniyatlar ochib berib, ta'lim sifatini oshirishga xizmat qilmoqda. Raqamli vositalar yordamida ta'lim jarayoni yanada interaktiv, moslashuvchan va qulay bo'ladi, o'quvchilarning individual o'ziga xos ehtiyojlariga moslashtiriladi. Shu bois, zamonaviy ta'limda

raqamli texnologiyalarni inklyuzivlikni rivojlantirishda samarali qo‘llash muhim vazifaga aylanmoqda.

Adabiyotlar tahlili.

Inklyuziv ta’lim va raqamli texnologiyalar mavzusida dunyo bo‘ylab ko‘plab ilmiy tadqiqotlar olib borilmoqda. Smith va boshqalar (2021) raqamli texnologiyalarning ta’limda inklyuzivlikni ta’minlashdagi ahamiyatini ta’kidlaydilar. Ularning tadqiqotida interaktiv ta’lim platformalari va maxsus ilovalar yordamida nogironligi bo‘lgan bolalarning o‘rganish jarayonida muvaffaqiyatga erishishi ko‘rsatildi. Shuningdek, UNESCO (2020) raqamli texnologiyalar ta’limdagi teng imkoniyatlarni ta’minlash uchun samarali vosita ekanligini ta’kidlaydi.

O‘zbekiston sharoitida esa Abdullayeva (2022) raqamli resurslar va platformalar yordamida inklyuziv ta’limni rivojlantirish istiqbollarini tahlil qilgan. Uning fikricha, o‘qituvchilarning raqamli savodxonligini oshirish va zamonaviy texnologiyalarni pedagogik jarayonga integratsiya qilish davlat siyosatining ustuvor yo‘nalishlaridan biridir. Shuningdek, Jabborov (2023) raqamli ta’lim vositalarining inklyuziv ta’limda qo‘llanilishi amaliyotida yuzaga kelayotgan qiyinchiliklarni yengib o‘tish bo‘yicha tavsiyalar beradi.

Raqamli texnologiyalarning inklyuziv ta’limdagi roli.

Raqamli texnologiyalar ta’limni har tomonlama qo‘llab-quvvatlash imkonini beradi. Interaktiv darsliklar, virtual laboratoriyalar, maxsus dasturlar va mobil ilovalar nogironligi bo‘lgan o‘quvchilar uchun o‘ziga xos o‘rganish muhitini yaratadi. Masalan, vizual va eshitish nogironligi bo‘lgan talabalar uchun maxsus audio va video resurslar ishlab chiqilgan. Bu esa ta’lim jarayonini yanada samarali va qamrovli qiladi.

Innovatsion raqamli platformalar va vositalar.

Hozirgi kunda Google Classroom, Moodle, Khan Academy kabi platformalar inklyuziv ta’lim uchun qulay vositalarni taklif etadi. Ular o‘quvchilarga individual vazifalar berish, ta’lim jarayonini monitoring qilish va baholash imkonini yaratadi. Shuningdek, sun’iy intellekt asosida ishlovchi vositalar o‘quvchilarning o‘zlashtirish darajasini baholab, ularga mos individual tavsiyalar beradi.

O‘qituvchilarning raqamli savodxonligi va malakasini oshirish.

Raqamli texnologiyalarni samarali qo‘llash uchun o‘qituvchilar malakasini oshirish muhimdir. Ular uchun muntazam kurslar, seminarlar va treninglar tashkil etilishi lozim. Bu nafaqat texnik ko‘nikmalarni oshirish, balki inklyuziv yondashuvni chuqur anglash imkonini beradi.

Muammolar va ularni bartaraf etish yo‘llari.

Raqamli texnologiyalarni qo‘llashda ayrim muammolar mavjud: texnik jihozlarning yetishmasligi, o‘qituvchilarning kam malakasi, o‘quvchilarning internetga kirishdagi cheklovlar. Ushbu muammolarni hal etish uchun davlat tomonidan maxsus dasturlar, grantlar ajratilishi, maktablarda infratuzilmani yaxshilash bo‘yicha chora-tadbirlar amalga oshirilishi zarur.

Xulosa

Raqamli texnologiyalar inklyuziv ta’limning rivojlanishida muhim rol o‘ynaydi. Ular ta’lim jarayonini har bir o‘quvchining individual ehtiyojlariga moslashtirish imkonini beradi, ta’lim sifatini oshiradi. O‘zbekiston sharoitida raqamli resurslardan foydalanishni kengaytirish, o‘qituvchilarning malakasini oshirish va texnik infratuzilmani yaxshilash orqali inklyuziv ta’limni yanada rivojlantirish mumkin. Shu bilan birga, davlat siyosati va ta’lim muassasalari o‘rtasida uzviy hamkorlik o‘rnatish zarur.

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SOIL MORPHOLOGY AND PLANT LIFE AROUND THE SHURTAN OIL AND GAS

Abstract. *This article studies the morphology of soils around the Shurtan oil and gas plant (Kashkadarya region), their changes under the influence of anthropogenic factors, and the state of vegetation cover. As a result of the analysis of soil sections, the main horizons, color, density, structure, and salinity levels of the soils were determined. The predominance of steppe and meadow species in the composition of the flora, the appearance of some anthropophytes and alien species introduced as a result of oil and gas activities were noted. The results of the study serve as an important scientific and practical basis for conducting environmental monitoring around industrial enterprises and developing bioremediation measures.*

Keywords: *soil morphology, Shurtan oil and gas plant, salinity, vegetation cover, environmental monitoring.*

Introduction.

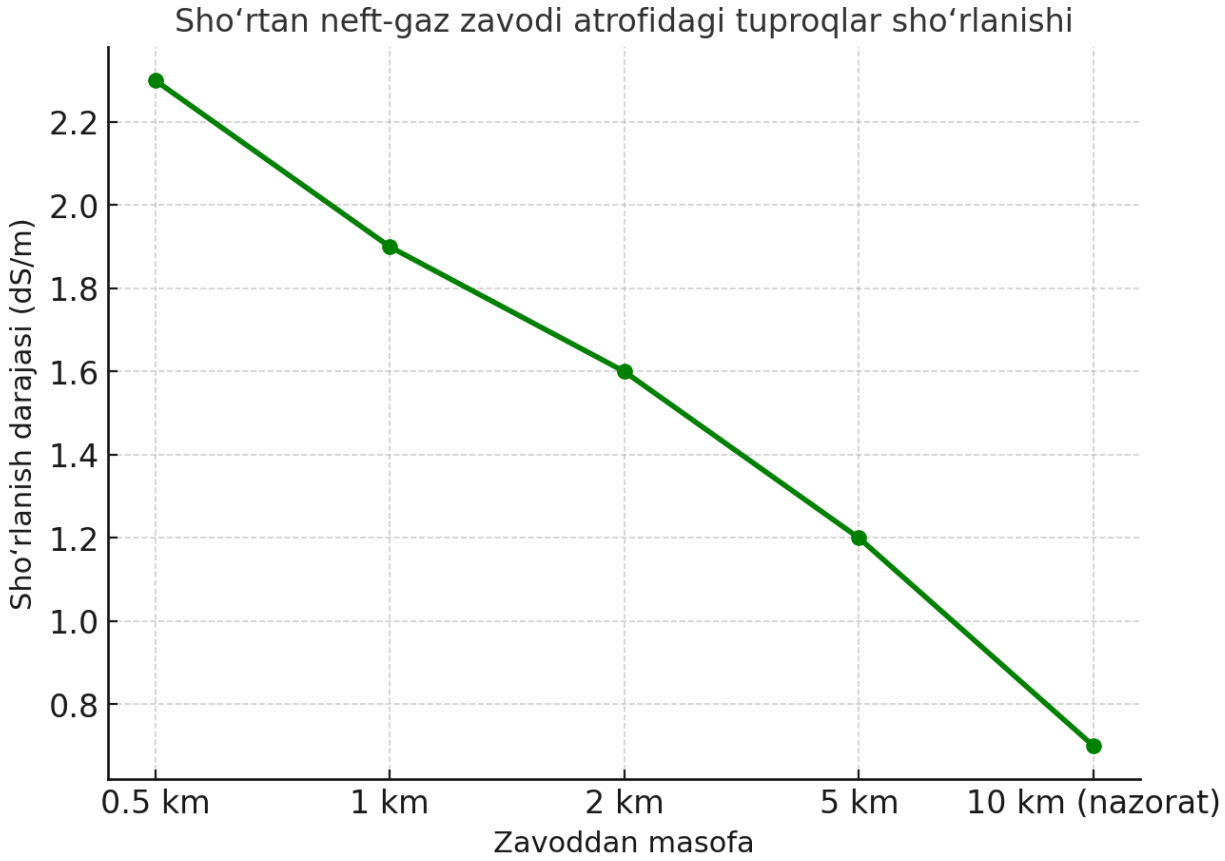
In recent decades, the impact of large industrial enterprises on the environment has become one of the global environmental problems. In particular, the processes of oil and gas extraction and processing have resulted in the release of harmful substances into the atmosphere, soil and water. The Shurtan oil and gas plant in the Kashkadarya region is one of the largest industrial complexes in Uzbekistan, and its activities have a significant impact on the ecological systems of the region. The relevance of the study is that the morphological characteristics of soils around industrial enterprises change, the composition of plant cover is disrupted, and these processes pose a threat to the biodiversity of the region. Therefore, environmental monitoring of soil and plants around the plant is of great importance.

Methods.

The study was conducted in 2024–2025 at 5 observation points around the Shurtan oil and gas plant:

Point 1 – the closest (500 m) part to the plant area;
Point 2 – 1 km away;
Point 3 – 2 km away;
Point 4 – 5 km away;
Point 5 (control) – 10 km away, an area relatively free from industrial impact.

Soil analysis: Morphological description of horizons (color, moisture, density, structure). pH, salinity (EC), humus content. Concentration of heavy metals (Pb, Cd, Ni, Cu). Plant study: Geobotanical transect method (the number of plants and species composition were calculated in 1x1 m plots). Classification of plants into ecological groups (steppe-meadow, xerophyte, anthropophyte). Soil morphology A darkening of the soil color and deterioration of structural separation were observed at points near the plant. Compaction and an increase in mechanical particles were noted in the 0–30 cm layer. The salinity level increased to 1.8–2.3 dS/m near the plant, and 0.7 dS/m at the control point. The concentration of heavy metals was as follows:



Pb – 18.6 mg/kg (1.5 times higher than the norm),
Cd – 1.2 mg/kg (close to the norm),
Ni – 32.1 mg/kg,
Cu – 20.5 mg/kg.
Flora

The total vegetation cover around the plant was 40–45%, and in the control area it was 60–65%.

Main species: Artemisia diffusa (sorrel grass), Salsola arbuscula (saxaul), Poa bulbosa (rhizome grass).

Under anthropogenic pressure, the emergence of weeds such as Amaranthus retroflexus and Chenopodium album has been noted in some areas.

A decrease in the species Calligonum and Haloxylon, which are typical of steppe ecosystems, has been observed.

Discussion.

The results show that the soils around the Shurtan oil and gas plant show morphological changes and signs of chemical pollution. Soil salinization and high levels of heavy metals reduce soil fertility and cause degradation of plant cover. Although steppe and meadow species dominate the vegetation cover, the number of anthropophytes and weeds is increasing in areas with increased industrial impact. This has a negative impact on ecosystem stability. Compared with studies conducted in other areas (for example, around the Mubarak gas processing plant), similar environmental problems are observed in the Shurtan plant area.

Conculution.

Soils around the Shurtan oil and gas plant have undergone morphological and chemical changes, including compaction, salinization, and accumulation of heavy metals. Vegetation cover has become sparse under the influence of industry, and alien anthropogenic species have appeared. It is necessary to conduct regular environmental monitoring and introduce bioremediation measures in the plant area. The creation of green areas and the restoration of local steppe and grassland species will ensure ecological stability.

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PLANT GROWTH AND DEVELOPMENT IN SOILS AROUND THE SHURTAN OIL AND GAS PLANT

Abstract. *This article investigates the morphological and chemical properties of soils surrounding the Shurtan oil and gas plant (Kashkadarya region, Uzbekistan) and their impact on plant growth and development. The study revealed that soil salinity, compaction, and the accumulation of heavy metals negatively affect seed germination, biomass accumulation, and flowering phases of plants. The vegetation cover is dominated by desert-steppe species, although anthropogenic and ruderal weeds tolerant to industrial conditions are also spreading. The findings are essential for ecological monitoring and the development of bioremediation measures in industrially impacted regions.*

Keywords: *Shurtan plant, soil salinity, plant development, anthropogenic weeds, ecological monitoring.*

Introduction.

In arid regions of Uzbekistan, the natural balance of soil and vegetation is highly sensitive to anthropogenic factors. Industrial activities, particularly oil and gas production, alter the ecological equilibrium. The Shurtan oil and gas plant emits gases, dust, and chemical compounds during production processes, which affect soil morphology, chemical properties, and water regime, consequently suppressing plant growth and development.

The objective of this research is to assess plant growth processes in soils around the Shurtan plant, identify correlations with soil changes, and highlight potential ecological risks.

Methods.

The study was conducted in 2024 at five monitoring points around the Shurtan plant (500 m, 1 km, 2 km, 5 km, and 10 km as control).

Soil analysis included: Salinity (EC, dS/m), pH, bulk density, humus content.

Heavy metal concentrations (Pb, Cd, Ni, Cu). Plant analysis included: Germination percentage (%).

- Growth rate (plant height and biomass).
- Phenological phases (flowering and fruiting delays in days).
- Vegetation cover percentage using transect methods.

Seed germination

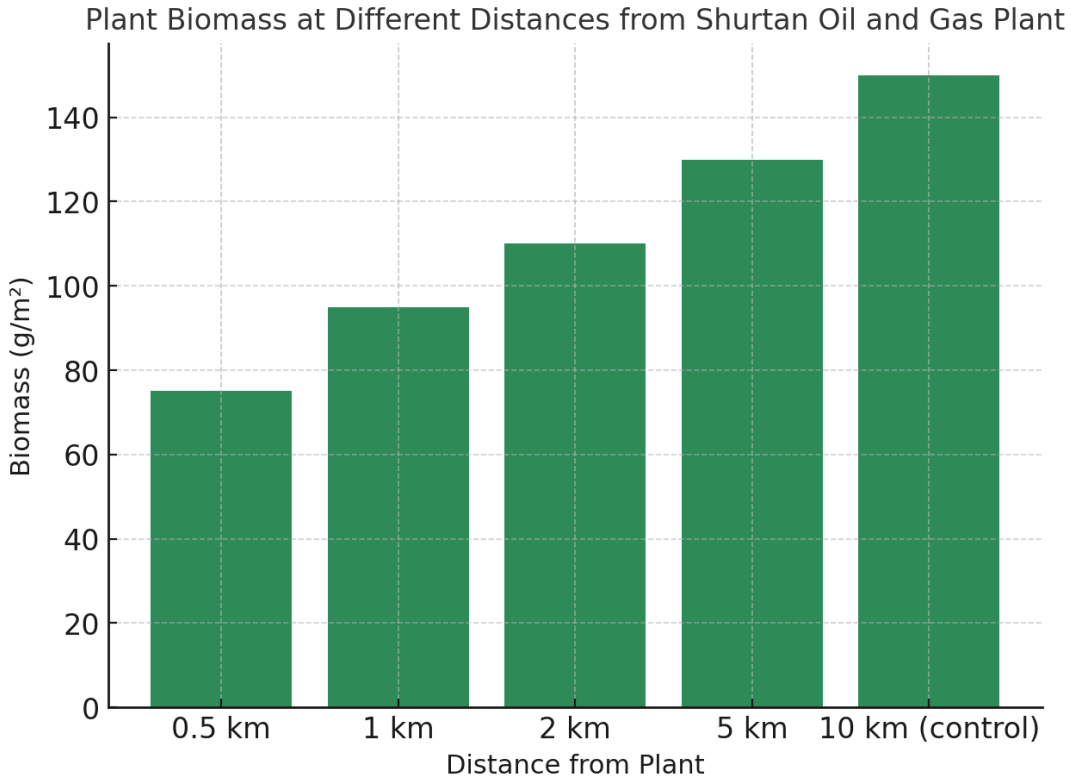
- At 0.5 km, germination was 52%, compared to 83% at the control site.
- High soil salinity resulted in early seedling mortality.

Plant biomass and height

• Average plant height at 2 km was 18 cm, while in the control area it reached 32 cm.

• Biomass (dry matter) was 75 g/m² at 0.5 km and 150 g/m² at the control site.

Phenological development



• Flowering was delayed by 10–12 days near the plant compared to the control.

• Sensitive species such as Haloxylon aphyllum failed to flower in the most affected zones.

Vegetation composition

• Dominant species: Artemisia diffusa, Salsola arbuscula, Poa bulbosa.

• Ruderal and anthropogenic weeds: Amaranthus retroflexus, Chenopodium album.

• Key desert ecosystem species such as Haloxylon and Calligonum were declining.

Discussion.

The results demonstrate that soil salinity and chemical contamination around the Shurtan plant significantly hinder plant growth and development. Reduced seed germination, lower biomass accumulation, and delayed phenological stages were observed. The degradation of natural desert-steppe phytocenoses is evident, with ruderal weeds replacing sensitive native species. This trend undermines ecosystem stability. Similar ecological challenges have been reported near other industrial complexes in Uzbekistan (e.g., Mubarek gas processing plant, Navoi mining complex), emphasizing the necessity of nationwide ecological monitoring

Conclusion

Soil salinity and elevated heavy metal concentrations near the Shurtan plant negatively affect plant growth and development. Plant biomass and height significantly decrease with proximity to the plant. Flowering is delayed, and sensitive species fail to reproduce. Desert-steppe species are declining, while ruderal weeds are spreading. Phytomelioration and bioremediation, including reintroduction of Haloxylon and other desert-adapted species, are required to restore ecological balance.

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ASSESSMENT OF THE ECONOMIC AND ECOLOGICAL EFFICIENCY OF GREEN EXPENDITURES IN PUBLIC FINANCE MANAGEMENT: APPROACHES BASED ON INTERNATIONAL PRACTICE

Abstract. *This article analyzes the significance of "green" expenditures in public finance management and assesses their economic and ecological efficiency based on international best practices. The experiences of developed countries in the fields of green economy and green budgeting, as well as mechanisms for evaluating the environmental impacts of budget expenditures (the "Climate Lens" method, ecological expenditure tagging practice, and others) are explored. Prospects for applying these approaches in Uzbekistan are evaluated, and recommendations have been developed for the implementation of green budgeting, reduction of environmentally harmful subsidies, and the establishment of dedicated green funds.*

Keywords: *public budget, green economy, green budgeting, ecological efficiency, climate change, ecological expenditures, green investments, climate lens.*

Introduction.

In the current global socio-economic context, problems such as climate change and environmental pollution are shaping new priority directions in public financial policy. Nowadays, the green economy has become one of the key strategic approaches to redirecting government expenditures [1]. The concept of green budgeting is internationally recognized as a critical direction of public finance reforms. Studies conducted by the OECD (Organisation for Economic Co-operation and Development) emphasize that green budgeting involves aligning budget policy with environmental and climate objectives, specifically assessing the environmental impact of each budget expenditure item and ensuring their compliance with national and international commitments [1]. Thus, it creates the opportunity to take into account climate change effects when planning public expenditures, contributing to the achievement of sustainable development goals. The global community's undertaking of certain commitments within the framework of the Paris Agreement (2015), as well as the specific attention given to ecological issues within the United Nations Sustainable Development Goals, has necessitated a review of state budget allocations. Currently, numerous countries have initiated the process of redirecting state budget funds away from "brown" or environmentally harmful subsidies toward green priorities. For instance, the European Union's Green Deal initiative of 2019

proposed eliminating environmentally harmful subsidies from state expenditures and redirecting these resources toward green priorities.

In recent years, a strategy for transitioning to a "green" economy has been progressively forming at the level of state policy in Uzbekistan. In particular, the Presidential Decree of the Republic of Uzbekistan No. PD-4477 of October 4, 2019 approved the Strategy for Transitioning to a Green Economy for the period of 2019–2030. The main objective of this strategy is to ensure sustainability of economic development, reduce greenhouse gas emissions, and achieve climate and ecological stability. In the strategy, the main tasks identified include increasing the energy efficiency of the national economy, rational use of natural resources, as well as introducing "green" criteria in line with advanced international standards into the structure of state investments and expenditures. Furthermore, the strategy envisages the implementation of innovative "green" projects through public-private partnerships and cooperation with international financial institutions, establishment of a system for training and retraining personnel necessary for a "green" economy, and implementation of measures to mitigate the environmental crisis in the Aral Sea region. In addition, diversification of energy resource consumption, expansion of renewable energy usage, and introduction of energy- and resource-saving technologies in various sectors of the economy have been identified as primary directions. Implementation of these measures is aimed at ensuring long-term sustainable development in Uzbekistan, making it possible by 2030 to significantly reduce greenhouse gas emissions, increase the share of renewable energy resources utilization, and ensure ecological stability. There is an aspiration within public financial policy towards ensuring ecological priorities, and the institutional foundations for this are gradually being formed [2]. The present article aims to identify the importance of "green" expenditures in the state budget, assess their economic and ecological efficiency, and, based on advanced international experiences, develop proposals and recommendations for their introduction into the context of Uzbekistan.

Methods.

In recent years, ensuring environmental priorities and the effective organization of "green" expenditures in public finance have become significant directions of financial policy in many countries. From this viewpoint, an analysis of advanced international practices is particularly important for the introduction and development of such processes in Uzbekistan. To this end, a comparative analysis of the experiences of selected European (Germany and Sweden) and Asian (South Korea and China) countries was conducted. Throughout this analysis, statistical data, environmental investments in state budgets, and the mechanisms for financing them were studied. Specifically, it was observed that in the budgetary systems of these countries environmental objectives are clearly defined, and effective financial mechanisms (such as public-private partnerships, targeted financing, and tax incentives) have been established to support "green" investments. Such a comprehensive and systematic approach creates a vital scientific and practical

foundation for developing environmentally prioritized public finance practices adapted to Uzbekistan's conditions.

The OECD theoretical model for green budgeting encompasses four main elements:

- strategic and fiscal planning;
- tools for creating an evidence base for budget decisions (for instance, expenditure tagging as "green" or "brown");
- accountability and transparency mechanisms;
- an enabling organizational environment that supports ecological priorities within the budgeting process.

On the basis of this Green Budgeting Reference Framework, the current situation in Uzbekistan was analytically assessed [3]. Additionally, indicators such as the ecological efficiency index of public budget expenditures and the share of environmental expenditures in Gross Domestic Product (GDP) were used methodologically, based on the research of M. Saidova (2021) [4]. Expert evaluation methods were applied during the analysis of data collected throughout the research to elucidate the essence of the issue. In doing so, scholarly conclusions of local and international specialists in this field, as well as results from dissertation studies (including references [2], [6], [8], [10]) were also taken into consideration.

Results.

The results of the analysis indicate that the share of "green" expenditures within Uzbekistan's state budget remains low. Specifically, according to the data for 2023, approximately 1.3% of the republic's state budget expenditures were directed toward ecological and climate-related objectives, a figure lower than international norms [6]. For comparison, in developed countries this share is significantly higher; for instance, in 2022 Canada allocated 13.4% of its federal budget expenditures to such purposes [5]. Furthermore, within the framework of the "Green New Deal" program adopted in 2020, South Korea allocated substantial state budgetary resources toward green infrastructure, renewable energy, and environmental innovations. Such financial mobilization facilitated a large-scale reconsideration of national budget priorities, demonstrating the country's firm commitment toward transitioning to a green economy. Additionally, countries such as Sweden and Germany have consistently dedicated significant portions of their public spending to combating climate change, investing in renewable energy sources, and environmental protection. Certain European countries (including France and Sweden) have introduced the practice of tagging state budget expenditures as "green" and "non-green," thus determining the environmental impact of each expenditure category and calculating indicators of environmental imbalance within overall budget policy. According to OECD data, by 2022, two-thirds of OECD member countries had implemented green budgeting mechanisms into their public finance processes [1]. This confirms that many states have begun to consider climate and environmental factors when making their budget decisions.

In Uzbekistan, the majority of existing "green" expenditures within the state budget are related to environmental protection measures (such as afforestation,

combating desertification, waste management) and renewable energy projects financed through state investments. Although state-budget-funded investments in renewable energy have increased in recent years, their overall share within total expenditure remains relatively small. Within the structure of state budget expenditures, allocations for the development of environmentally friendly infrastructure, enhancement of energy efficiency, and special climate adaptation programs are limited. This situation, on one hand, results from limited budget resources and their prioritized allocation toward socio-economic projects. On the other hand, it can also be explained by the incomplete development of institutional mechanisms necessary for financing green expenditures.

Based on the comparative analysis above, it has been identified that there are several problems in the development of "green" directions in public finance management in Uzbekistan. *Firstly,* the formal concept and legal framework of "green budgeting" have not yet been fully developed in Uzbekistan. In other words, there is currently no mandatory obligation to assess the climate and environmental impacts of each expenditure item during the budgeting process. This complicates efforts to ensure environmental priorities within the overall structure of public expenditures. *Secondly,* within the budget classification system, "green" expenditures are not defined as a distinct category. For example, although there are budgetary items dedicated to environmental protection within the functional classification of Uzbekistan's budget, expenditures specifically related to climate adaptation or greenhouse gas emission reductions are not separately identified. *Thirdly*, there is an insufficient system of specialized regulatory and incentive funds or sources for financing green expenditures. This can lead to certain bureaucratic barriers and interruptions in information exchange when integrating green priorities into the budget. For example, China's experience demonstrates that local green funds play a crucial role in budget diversification, thus alleviating the burden on the central budget [7]. Another identified issue during the analysis is the shortage of qualified personnel and data availability in this field. In other words, many budgetary organizations and implementers lack awareness regarding the methodology related to the "green budgeting" concept. The practice of preliminary assessment of environmental impacts before planning each investment project or type of expenditure has not yet been established. For example, in Canada, each new expenditure undergoes evaluation through a special methodology known as the "Climate Lens," and approval is granted only after the environmental impact is assessed [8]. Clearly, it would be advisable to develop personnel capacity and data infrastructure to introduce such mechanisms in our country as well. Based on the conducted analysis, the following concrete mechanisms and measures are proposed to increase the share of "green" expenditures within Uzbekistan's state budget and ensure their effectiveness:

Forming a legal and institutional basis: It is necessary to adopt the "Green Budgeting" concept and integrate its principles into the State Budget Code or relevant by-laws. This will establish a mandatory foundation to ensure

environmental priorities at all levels of decision-making within the budgeting process.

Implementation of an expenditure tagging system: It is essential to introduce a mechanism for classifying each budget expenditure as "green," "neutral," or "harmful," based on its environmental and climate impacts during the budgeting stage. The OECD-developed tagging methodology can be employed for this purpose [3]. This allows assessment of ecological efficiency in various sectors such as education, healthcare, industry, and energy.

Reduction of environmentally harmful subsidies and benefits: It is necessary to gradually reduce the share of expenditures in the state budget that negatively impact the environment ("brown" subsidies and expenditures). For example, expenditures related to ineffective subsidizing of energy resources or inefficient use of natural resources should be reconsidered, redirecting the freed resources towards green projects. Simultaneously, offering tax and customs incentives to enterprises implementing environmentally friendly technologies and aiming to reduce greenhouse gas emissions can increase private sector interest in green investments.

Introduction of the Climate Lens method (climate impact assessment): Before approving any major investment project or state program, it would be beneficial to assess its impact on climate change through expert evaluations. Canada's practice of applying the "Climate Lens" demonstrates that preliminary analysis of the environmental consequences of expenditures significantly improves decision-making effectiveness [8].

Establishment of specialized green funds and financing sources: A Green Investment Fund should be established at the national level, with annual state budget allocations exclusively directed towards green projects. Additionally, local environmental funds could be established within regional budgets to finance projects aimed at addressing local ecological issues. China's experience with local green funds has effectively supplemented budgetary resources and attracted private-sector funding [7].

Creation of indicators and monitoring systems: A clear system of criteria and indicators should be developed to evaluate the implementation of green expenditures. For instance, it is recommended to conduct annual monitoring using indicators such as contributions to reducing greenhouse gas emissions by sector, energy savings achieved, and biodiversity preservation impacts. Monitoring results would provide a basis for decision-making regarding budget reallocation in subsequent budget cycles.

Discussion.

The results of the analysis confirm that expanding "green" expenditures in public finance is an important driver not only for achieving environmental sustainability but also for fostering long-term economic growth. Investments aimed at mitigating the negative impacts of climate change, protecting public health, and conserving natural resources through green expenditures create a solid foundation for future generations. Furthermore, green investments stimulate economic modernization and the adoption of innovative technologies, boosting demand for

domestic production and research in renewable energy and energy efficiency sectors. This process leads to the creation of new jobs and an increase in the country's technological potential. Green expenditures also positively impact public health: improvements in environmental conditions can significantly reduce long-term healthcare costs and enhance labor productivity. Calculations suggest that redirecting budget resources toward renewable energy, energy-saving technologies, and waste recycling contributes additional value, positively influencing GDP growth. According to the World Bank, green budgeting represents a central component of public financial reforms, serving as a pivotal mechanism for financing sustainable development [9]. One of the significant challenges for Uzbekistan in expanding green expenditures is the limitation of financial resources and their competition with pressing socio-economic needs. Therefore, developing green financing instruments in collaboration with international financial institutions and the private sector is essential for attracting additional resources to the state budget. Organizations such as the World Bank and the United Nations Development Programme (UNDP) support Uzbekistan by allocating concessional loans and grants for green investment projects. However, the scale of such funding remains relatively small compared to annual budgetary expenditures. Hence, it is crucial to fully utilize the potential of international mechanisms like the Green Climate Fund (GCF) of the United Nations. From this perspective, implementing green financing mechanisms aimed at attracting external financial resources, as proposed by Rashidova (2023), is particularly important [10]. Specifically, expanding the financial base for governmental "green" expenditures could be achieved through measures such as issuing international green bonds and providing tax incentives for private investment. Based on the discussions presented above, it should be emphasized that there are significant prospects for strengthening ecological priorities in Uzbekistan’s public financial management, and systemic reforms drawing from international experience should be implemented in this regard. Primarily, expanding “green” expenditures can enhance the competitiveness of the national economy, foster the creation of new employment opportunities, and positively impact public welfare. Moreover, expenditures directed towards environmental protection can reduce the risk of future natural disasters, consequently decreasing the fiscal burden associated with emergency expenditures on the state budget.

Conclusion.

Based on data and analytical results, it can be concluded that the role and importance of "green" expenditures in public financial management are steadily increasing. While, in the case of Uzbekistan, the share of state budget expenditures currently allocated toward environmental and climate directions is relatively small, significant potential exists for increasing this share. The proposals developed within the framework of this research and the analysis of international experience demonstrate that the introduction of green budgeting is an essential precondition for sustainable economic development and fulfillment of international commitments (e.g., achieving the targets set out in the Paris Agreement). As highlighted by World

Bank experts, integrating climate and environmental considerations into the budgetary process constitutes a core direction of contemporary financial reforms [9]. Thus, Uzbekistan must also broadly adopt practices of evaluating the "climate impact" of budgeting. In conclusion, it must be underlined that expanding "green" expenditures and implementing "green budgeting" principles in Uzbekistan's public finance represent vital steps toward ensuring sustainable and environmentally secure development of the national economy. By implementing the recommended measures, the efficiency of public expenditures will be improved, international obligations will be met, and—most importantly—a clean and stable environment will be preserved for future generations.

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JIZZAX VILOYATINING TOG‘LI HUDUDLARIDA TOG‘TURIZMINI RIVOJLANTIRISH IMKONIYATLARI

Annotatsiya: *Jizzax viloyati O‘zbekiston hududida joylashgan mintaqalardan biri bo‘lib, o‘zining tog‘li hududlari, boy tabiiy resurslari va noyob landshaftlari bilan ajralib turadi. Ushbu hududlar nafaqat geologik va ekologik xilma-xillik bilan, balki turizm sohasida katta imkoniyatlar bilan ham ta’minlangan. Tog‘ turizmi – bu soha, ayniqsa, so‘nggi yillarda nafaqat sog‘lom turmush tarzini qo‘llab-quvvatlashda, balki iqtisodiy va madaniy rivojlanishda yangi imkoniyatlar yaratadi. Jizzax viloyatining tog‘li hududlari tabiatining go‘zalligi, toza havosi, tarixiy va madaniy merosi bu mintaqani tog‘ turizmini rivojlantirish uchun istiqbolli hududga aylantiradi. Mazkur ishda viloyatdagi tog‘ turizmining hozirgi holati, uning rivojlanish imkoniyatlari va bu borada yuzaga kelayotgan muammolar tahlil qilinadi, shuningdek, tog‘ turizmini yanada mustahkamlash va kengaytirish yo‘llari ko‘rib chiqiladi.*

Kalit so‘zlar: *turizm, tog‘li hududlar, hududlar, xilma-xillik, muammolar, tabiat, tabiiy resurslar, madaniy meros, iqtisodiyot.*

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OPPORTUNITIES FOR DEVELOPING MOUNTAIN TOURISM IN THE MOUNTAINOUS AREAS OF JIZZAKH REGION

Abstract: *Jizzakh region is one of the regions located in Uzbekistan, distinguished by its mountainous areas, rich natural resources and unique landscapes. These areas are endowed not only with geological and ecological diversity, but also with great potential in the field of tourism. Mountain tourism is an area that, especially in recent years, has been creating new opportunities not only in supporting a healthy lifestyle, but also in economic and cultural development. The natural beauty of the mountainous areas of Jizzakh region, its clean air, historical and cultural heritage make this region a promising area for the development of mountain tourism. This work analyzes the current state of mountain tourism in the region, its development opportunities and emerging problems in this regard, and also considers ways to further strengthen and expand mountain tourism.*

Keywords: *tourism, mountainous areas, regions, diversity, problems, nature, natural resources, cultural heritage, economy.*

Jizzax viloyatining tog‘li hududlarida tog‘ turizmini rivojlantirish imkoniyatlari nafaqat iqtisodiy, balki ekologik va madaniy jihatdan ham katta ahamiyatga ega bo‘lib, bu sohada istiqbolli rivojlanish yo‘llarini puxta o‘rganishni talab qiladi. Tog‘li hududlarning tabiiy muhitining boyligi, unikal landshaftlar, toza va sog‘lom havo, shuningdek, noyob flora va fauna turlari bu hududlarni tog‘ turizmi uchun ideal joyga aylantiradi. Jizzax viloyatining tog‘lari o‘zining ko‘p qirrali imkoniyatlari bilan nafaqat dam olish va hordiq chiqarish, balki ilmiy, madaniy-tarixiy, sog‘lomlashtirish hamda sport turizmini rivojlantirish uchun ham keng maydon yaratadi. Asosiy turlar orasida piyoda va velosipedli sayrlar, tog‘ chang‘isi va alpinistlik, qishloq turizmi hamda tabiatni o‘rganish kabi yo‘nalishlar mavjud bo‘lib, bularning har biri o‘ziga xos tarzda viloyat tog‘larining imkoniyatlarini ochib beradi. Tog‘ turizmi ayniqsa aholining shaharlarini kundalik shovqin va stressdan uzoqlashtirish, sog‘lom hayot tarzini tarbiyalash sohasida muhim rol o‘ynaydi. Turli yoshdagi sayyohlarni qamrab oluvchi tog‘ turizmi, ayniqsa yoshlar, oilalar va sog‘lik muammolari bo‘lgan insonlar uchun yaxshi dam olish va sog‘lomlashtirish metodlarini taklif etadi. Jizzax viloyatining geografik joylashuvi, uning tog‘li hududlari o‘zining tabiiy sharoiti bilan hududda yil davomida iqlim sharoitlariga moslashgan turizm imkoniyatlarini yaratadi. Bahor va yoz oylarida piyoda sayrlar, pikniklar, velosiped turlari va suv sporti uchun optimal sharoit mavjud bo‘lsa, kuz va qish mavsumlarida esa yopiq hududlarda hamda qor-shud tog‘larda qishki sport turlari, chang‘i shug‘ullanish imkoniyatlari kengayadi. Bu esa yil davomida turli mavsumnlarda turizmni rivojlantirishga xizmat qiladi.

Tog‘ turizmini rivojlantirishda eng muhim omillardan biri sifatida infratuzilmani rivojlantirishni ko‘rsatish mumkin. Tog‘ hududlariga qulay yo‘llar, xavfsiz va sifatli transport xizmatlari tashkil etilishi sayyohlarning mintaqaga bo‘lgan qiziqishini oshiradi. Shuningdek, mehmonxonalar, yengil xizmat ko‘rsatish ob’ektlari, ovqatlanish punktlari, axborot markazlari va madaniy tadbirlar uchun mos joylar yaratish zarur. Ushbu obyektlarning zamonaviy va ekologik toza uslubda tashkil etilishi, ularning tog‘ muhitiga zarar yetkazmasdan ishlashi sayyohlar orasida joyning obro‘sini oshiradi. Mahalliy aholini turizmning rivojlanishiga jalb qilish ham muhim omillardandir. Mahalliy aholining xizmat ko‘rsatish sohasidagi malakasini oshirish, zamonaviy til kiritish hamda mehmondo‘stlik madaniyatini rivojlantirish hududga keluvchi turistlar soniga ijobiy ta’sir ko‘rsatadi. Hududda hunarmandchilik, an'anaviy hunarlarga e’tibor berish, mahalliy xalqning madaniy hayotini ko‘rsatish, milliy taomlar va urf-odatlarga oid ekskursiyalarni tashkil etish orqali turizmning madaniy qirralarini ham kengaytirish mumkin. Bu esa nafaqat sayyohlarning qoniqishini oshiradi, balki mahalliy aholi daromadlarini ko‘paytirishga yordam beradi.

Jizzax tog‘li hududlarining tarixiy madaniy merosi ham tog‘ turizmini rivojlantirishda katta ahamiyatga ega. Bu hududlarda qadimiy arxeologik yodgorliklar, me’moriy inshootlar, qadimiy yo‘laklar, tarixiy qadamjolar mavjud bo‘lib, ularni sayyohlarga yanada yaqinroq tanishtirish uchun turli madaniy tadbirlar, yo‘nalishlar va ko‘rgazmalar tashkil qilinishi mumkin. Bularning barchasi

hududga nafaqat respublika darajasida, balki xalqaro miqyosda sayyohlarni jalb qilish uchun muhim vositalardan biridir.

Turizm sohasidagi raqobatni hisobga olgan holda, marketing va brending strategiyalarini joriy etish ham muhim vazifalardan biridir. Jizzax viloyatining tog‘li hududlari uchun maxsus raqamli platformalar yaratish, saytlar, ijtimoiy tarmoqlar orqali faol targ‘ibot ishlarini olib borish, xalqaro sayyohlik ko‘rgazmalarida ishtirok etish orqali mintaqani tanitish kerak. Bu esa, o‘z navbatida, sayyohlarning sonini oshirib, hududning iqtisodiy rivojlanishiga xizmat qiladi. Xalqaro hamkorlikni rivojlantirish orqali ham tog‘ turizmi potensialini oshirish mumkin. Jizzax viloyati uchun turizmni rivojlantirish bo‘yicha xalqaro tajriba va sarmoyalarni o‘rganish, chet ellik ekspertlar bilan hamkorlik qilish, xalqaro turistik marshrutlar yaratish hududning turistlar orasida obro‘sini oshiradi. Shuningdek, viloyat hududida mamlakatning boshqa sayyohlik markazlari bilan chambarchas bog‘lanish imkoniyatlarini yaratish zarur. ri, infratuzilma loyihalari, moliyaviy qo‘llab-quvvatlash va soliq imtiyozlari ko‘rsatilishi turizmni qo‘llab-quvvatlashda samarali bo‘ladi. Bu bilan ham viloyat iqtisodiyotining diversifikatsiyasi va barqaror o‘sishi ta’minlanadi.

Xulosa:

Natijalar shuni ko‘rsatadiki, Jizzax viloyatining tog‘li hududlarida tog‘ turizmini rivojlantirish ko‘p qirrali va kelajakda mintaqaning ijtimoiy-iqtisodiy holatini yanada yaxshilash imkoniyatini beradi. Tabiiy va madaniy resurslarning uyg‘unligi, zamonaviy infratuzilma, ekologiyani saqlashga qaratilgan yondashuv, mahalliy hamjamiyatni jalb qilish va xalqaro hamkorlik shu yo‘lning asosiy omillari bo‘lib, ularning barchasi tog‘ turizmining yuksalishiga xizmat qiladi.

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O‘RTACHO‘L HUDUDINING TABIIY GEOGRAFIK O‘RGANILISH TARIXI

Annotatsiya: *Ushbu maqolada O‘rtacho‘l vohasining o‘rganilish tarixi, geografik o‘rni, chegaralari, geoekologik muammolari to‘g‘risida ma’lumot berilgan.*

Kalit so‘zlar: *O‘rtacho‘l, Varaxsha, Davandog‘, Ayronchi, qo‘rg‘on, voha, chaylalar, kapalar, paleolit, Qiziltepa, Quyimozor, Hazora, Kalaquduq, yaylov.*

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HISTORICAL STUDY OF THE NATURAL GEOGRAPHY OF THE ORTACHOL REGION

Abstract: *This article provides information on the history of the study, geographical location, and geoecological problems of the Urtachul oasis.*

Keywords: *Ortacho‘l, Varakhsha, Davando‘g‘, Ayranchi, fortress, oasis, huts, shelters, Paleolithic, Qiziltepa, Quyimozor, Hazora, Kalaquduq, pasture.*

Har bir hudud o‘ziga xos tabiiy xususiyatga ega bo‘lib inson o‘z hayoti davomida tabiatdan foydalanishda, mazkur hududning tabiiy imkoniyatlarini hisobga olgan holda, ya’ni tabiat bilan uyg’un yashashga, uning imkoniyatlaridan samarali foydalanishga intiladi. Ana shunday joylardan biri Quyi Zarafshon tabiiy okrugiga tegishli joy O‘rtacho‘l vohasidir.

Tarixdan ma’lumki, Qiziltepa tumani va uning atroflarini arxeologik ilmiy tekshirish ishlarini, akademik U.A.Shishkinning “Varaxsha” (Moskva,1963 yil) kitobida talaygina dalillar berilgan.1934 yilda Buxoro vohasini tekshirish uchun A.U.Yakubovskiy boshchiligidagi olimlar guruhi ish boshladi. Bu guruh Buxoro shahridan Samarqand shahrigacha bo‘lgan joylarda tekshirish ishlarini olib borishi, mo‘ljallangan edi. Olimlar belgilangan joylarda, arxeologik qazilma ishlarini o‘tkazib, odamlar yashagan makonlarni topdilar.

Akademik A.Muhammadjonov o‘zining “Qadimgi Buxoro” kitobida, “Miloddan avvalgi II ming yillikning oxirlarida va I ming yillikning boshlarida O‘rta Osiyoning dashtlik yerlarida yashayotgan aholi hayotida sodir bo‘lganidek, Zarafshon vodiysining quyi qismidagi qabilalarning chorvachilik xo‘jaligida ham tez sur’atlar bilan rivojlanish jarayoni kuzatiladi” deb yozadi.

O‘rtacho‘l to‘g‘risida alohida tarixiy yozma manbaga ega bo‘lmasakda, biz bu hudud tarixini Qiziltepaning boshqa hududlari to‘g‘risidagi tarixini dalillarni solishtirish orqali o‘rganamiz. 1955-1957 yillarda akademik Yahyo G‘ulomov boshchiligidagi arxeologik tekshirish guruhi Quyimozor qo‘rg‘onida tekshirish ishlari olib borgan olimlar bu yerdagi bir qancha qabrlarni ochib tekshirdi. Mana shu ma’lumotlarni taqqoslab ko‘rsak, O‘rtacho‘l hududiga ham to‘g‘ri keladi.

Akademik Yahyo G‘ulomov boshchiligidagi arxeologik tekshirish guruhi Ayronchi qishlog‘ining janubidagi Davandog‘, uning atrofidan ham juda ko‘p sopol buyumlar dehqonchilik asbob-uskunalari topilgan, O‘rtacho‘l massivida ham uzoq o‘tmishda odam yashaganligiga ishora qilishimiz mumkin.Ayronchi biror urug‘ning nomi bo‘lishi mumkin, degan xulosaga kelganlar. Shuningdek, Quyimozor suv omborining sharqidagi tepaliklarda temirdan yasalgan buyumlar, qilich, xanjar, yoy o‘qining uchlari topilgan. Bular olimlarning taxminlariga ko‘ra, eramizdan avvalgi I asrning yoki eramizning I asriga to‘g‘ri keladi.

Olib borilgan arxeologik tekshirishlar kishilik tariximizning hamma bosqichlarida:paleolit (qadimgi tosh asri) bo‘lgan davrlarga oid ko‘plab yodgorliklar borligini aniqlaydi. 1956–1965 yillarda K.Hamroyev tomonidan Qiziltepa, Quyimozor, O‘rtacho‘l, Hazora atroflarida miloddan avvalgi VI-IV asrlarga, eramizning III–V asrlariga oid juda ko‘p joylar, ya’ni eski xarobalar, qabristonlar, qo‘rg‘onlar, suv yo’llari, tepaliklar tekshirildi.

Shuningdek, O‘rtacho‘l yaylovlari, quduqlar, o‘tloqlar, olimlar tomonidan tekshirilib, tilga oligan, o‘rganilgan. O‘rtacho‘l dashtligi Qiziltepa tumanining janubiy-sharqida joylashgan past tekisliklardir.Uning O‘rtacho‘l deb atalishiga Ko‘ktog‘ bilan Kalaquduq, Malikcho‘l bilan Qarnabcho‘l oralig‘idagi bepoyon dashtlik ekanligidan deb taxmin qilinadi. O‘rtacho‘l massivi Qiziltepadan o‘tadigan temir yo‘lining sharqiy tomonidan boshlanadi.

O‘rtacho‘l vohasining g‘arbiy chegarasi To‘dako‘l suv havzasining g‘arbiy qismidan boshlanib, sharqiy chegarasi Samarqand viloyatining Nurobod tumanidagi “Qarnob” davlat naslchilik fermasigacha uzunligi 69 km masofani tashkil etadi.

O‘rtacho‘l vohasining shimoliy chegarasi Navoiy viloyatining Navoiy tumani hududida joylashgan Ko‘ktog‘dan boshlanib, janubiy chegarasi Buxoro

viloyatining Qorovulbozor, Qashqadaryo viloyatining Muborak tumanlari yetarlicha, uzunligi 65 kilometrdan iborat masofani tashkil etadi. O‘rtacho‘l vohasi tuman markazidan 30 km uzoqlikda bo‘lgan masofada joylashgan. O‘rtacho‘lning umumiy yer maydoni 98 540 gektardan iborat.

Vohaning shimoli-sharq va janub tomonlari Zirabuloq – Ziyovuddin tog‘ tizmalari bilan o‘ralgan va janubi-g‘arbga To‘dako‘l suv ombori chuqurligi tomoniga qarab umumiy nishablikka ega bo‘lgan tog‘lararo yassi baland past tekislikdir.

O‘rtacho‘l vohasi faqat Navoiy viloyatidagina emas, balki butun O‘zbekistonda o‘zlashtirilayotgan yirik qo‘riq yerlardan biridir. O‘rtacho‘l yerlarini o‘zlashtirish 1972 yildan keyin ayrim sayyor brigadalar tomonidan boshlangan edi. O‘rtacho‘l vohasi Navoiy shahridan 45 kilometr janubi-g‘arbidan, Buxoro shahridan 45-50 kilometr shimoli-sharqda joylashgan. Uning shimol va janub tomonlari Zirabuloq-Ziyovuddin tog‘ tizmalari bilan o‘ralgan va janubdan g‘arbga To‘dako‘l suv ombori chuqurligi tomonga qarab umumiy nishablikka ega bo‘lgan tog‘lararo yassi baland past tekislikdir.

O‘rtacho‘l vohasi Toshkent-Ashxobod temir yo‘lining Qiziltepa orqali o‘tadigan yeridan boshlanib, Samarqand viloyatining Nurobod tumanigacha bo‘lgan masofani o‘z ichiga oladi. O‘rtacho‘l vohasi hududida katta tepaliklar deyarli yo‘q, unda-bunda kichik do‘ngliklar bor, xolos. Shimoliy tomondan Ko‘ktog‘ xuddi burgutdek O‘rtacho‘l chiroyini yanada ko‘rkamlashtirib, turibdi. Amu-Buxoro mashina kanalidan keladigan suv ko‘pchilik hollarda osma beton ariqlar orqali O‘rtacho‘lning ekin maydonlarini suv bilan ta’minlaydi.

Katta maydonli yerlarning ancha tekis ekanligi, u joyda sug‘orish ishlari uchun ancha qulaylik tug‘diradi.Yerlarni o‘zlashtirish, meliorativ holatini yaxshilash maqsadida, bir necha meliorativ tadbirlar olib borilmoqda.

O‘rtacho‘l yerlari baland-pastligi jihatidan bir-biridan keskin farq qilmaydi. Bu yerda baland tepaliklar va keskin chuqurliklar deyarli yo‘q. O‘rtacho‘l yer tuzilishi jihatidan katta tekislik bo‘lib, ba’zi yerlarda tepaliklar bor.“Sardoba” tepaligi tarixiy obida sifatidan o‘tmishda savdo karvonlari, odamlar, qo‘ylar uchun suv saqlagich vazifasini o‘tagan.

O‘tmishda O‘rtacho‘l Buxoro amirligiga qarashli yaylov bo‘lib, unda amirlikning 170-180 ming bosh qo‘y-qo‘zilari boqilgan. O‘rtacho‘l yaylovlarida har bir quduq atroflarida cho‘ponlar, pastgina qora uylar, chaylalar, kapalar, yerto‘lalar qurib, qo‘y va echkilarni boqqanlar. O‘rtacho‘lda 60 ta quduq bo‘lib, ular odamlar va chorva mollari uchun suv manbai vazifasini o‘taganlar. Quduqlar orasida Koriz, Shoyiqozoq, Quyumlik, Shoydaroz, Yangiquduq, Tandircha, Shoyixatip, Taniqli, Beshtepa, Toshqo‘tan, Qirkquduq, Oqqo‘ton, Jarqo‘ton, Darvoza, Qumqo‘ra, Buermana, Sho‘rquduq, Shopo‘lot, Sho‘rcha, Sultonqo‘ra, Shohimardon, Bitkana, To‘qitepa, Hofizak, Qorayotoq, To‘dako‘l, Do‘ngakli, Xuroson, Yulduzqoq, Rahimquduq, Egricha, Galaquduq, Choytovoq, O‘g‘riqoq, Qirqquloch, Iskandar, Tetalon, Yunusquduq, Ochilqora, kabi quduqlar mashhur edi.

Hozirgi kunda O‘rtacho‘l hududida antropogen yukning ortiqchaligi tufayli landshaftlarning mahsuldorligi, yaylov resurslarining unumdorligi kamayib,

kambag‘allashgan. Gipslangan uchastkalarda esa gips sho‘rxoklangan bo’lib bu esa tuproqning sho’rlanishiga va diffizion hodisalar avj olishiga olib keldi. Oqibatda bu yerlarda tekislash ishlari takroran olib borilgan. Ammo O‘rtacho‘l sharoitida bu yerlarning gipsli, kuchli gipslangan tuproqlar yuzasini tekislamaslik kerak edi. Tekislash ishlarining olib borilishi natijasida bu yerlarning ayrim joylarida mutlaqo unumsiz gips qavati ochilib qolgan. Bunday joylarda gipsning miqdori 0,5-1,0%ni tashkil etadi. Bunday yerlarda chuqurchali yoki zovurli usulda mayin tuproq tashib kelish yo‘li bilan tokzor va mevali chorbog‘lar barpo qilinishi bilan yoki ko‘p yillik ekinlar ekilgani ma’qulroq.

Xulosa o‘rnida, O‘rtacho‘l hududidan samarali foydalanish maqsadida quyidagi tavsiyalarni berishni lozim topdik:

1. Yerlarni melioralivlash ishlarining turlari va agrotexnik tadbirlarini kompleksini ishlab chiqish - kollektor-drenaj tarmoqlari ko‘rish, sho‘r yuvish turli xil meliorativ tadbirlarni amalga oshirish eng asosiy dolzarb vazifalardan biri hisoblanadi.

2. O‘rtacho‘l vohasini o‘zlashtirishda atrof-muhitni xususan tuproqni muhofaza qilishni hisobga olgan va unga rioya qilgan holda kompleks ish olib borilishi, tuproqning takroran sho‘rlanishi hamda gipsli tuproqlarni erroziya jarayonlari namoyon bo‘lishi mumkinligiga alohida e‘tibor berilishi lozim.

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VIRTUAL TECHNOLOGY –AS A PHENOMENON OF 21ST CENTURY EDUCATION

Abstract: *The article explores the role of virtual technologies in modernizing education and preparing future teachers for innovative practice. It highlights the effectiveness of applying VR-based approaches such as learner-centered learning, constructivism, interactive methods, gamification, and AI integration. Virtual education is shown to enhance learning outcomes, increase motivation, and connect national education with global experience.*

Keywords: *virtual education, VR technology, innovative pedagogy, international experience, distance learning.*

The 21st century, shaped by digital transformation, has made education inseparable from information and communication technologies. Virtual education, which combines distance, interactive, and personalized approaches, is increasingly integrated into the global learning system. UNESCO[21] and OECD[22] highlight the virtual technologies not only secured continuity during the pandemic but will also remain central to sustainable educational development. Today, they enhance teaching efficiency, support teacher innovation, increase student motivation, and expand access to the global knowledge space. Virtual education is no longer a vision of the future but a present-day paradigm of modern education. The integration of digital technologies into education has emerged as a global priority. Innovative online initiatives are not only enhancing the quality of learning but also removing geographical, social, and economic barriers to access. In recent years, virtual reality (VR) has become a leading direction in advancing this process. VR-based learning environments go beyond delivering theoretical content and enable learners to engage with practical experiences. For instance, pedagogical scenario modeling, interactive activities, VR laboratory experiments, and virtual explorations of ancient cities are now feasible. Consequently, innovative online projects have evolved into

[21] UNESCO. (2022). *Education: From COVID-19 school closures to recovery.* Paris: UNESCO. Retrieved from https://www.unesco.org/en/covid-19/education-response

[22] OECD. (2023). *Digital Education Outlook 2023: Towards an Effective Digital Education Ecosystem.* Paris: OECD Publishing. Retrieved from https://www.oecd.org/en/publications/2023/12/oecd-digital-education-outlook-2023_c827b81a.html.

an essential element of modern education and are contributing to the sustainable growth of the global knowledge ecosystem.

Among the innovative initiatives in Japan's higher education system is the Japan Virtual Campus (JV-Campus)[23]. Developed in partnership with the nation's top universities, the portal is open to international learners, which increases its accessibility and relevance. Built on the concept of "learning without borders," JV-Campus offers online courses and video lectures across various fields, along with internships, practice-oriented training, and opportunities for global collaboration and academic exchange. Its motto, "From Virtual to Real: A Gateway to Japanese Higher Education", highlights its purpose of bridging digital learning with real academic engagement. The JV-Campus model is viewed as a forward-looking framework for the international education system and is anticipated to serve as a benchmark for other countries. This is Ьecause the education model formed on the Ьasis of digital transformation and VR technologies:

Enhancing the innovative potential of the national education system. Through the combination of virtual reality, artificial intelligence, and online platforms, the learning process is enriched with new methods and enhanced overall efficiency.

Virtual technologies also Ьring teachers closer to gloЬal experience. Virtual technologies bring educators closer to international practices by expanding opportunities for collaboration, webinars, and global conferences through the metaverse and online platforms.

They boost creativity and independence among students. With virtual experiences, learners go beyond acquiring theoretical knowledge, gaining the chance to design personal projects and apply them in practice.

Virtual technologies ensure inclusivity in education. Children unable to attend conventional schools due to geographical or social limitations can still access learning through VR schools and online portals. In this way, the adoption of virtual technologies not only modernizes the educational process but also directs the nation toward becoming a competitive knowledge-based economy on the global stage.

In recent years, the United States has witnessed the emergence of projects aimed at fully transferring the educational process into virtual reality. A prominent example is the Optima Classical Academy[24], established in Florida in 2022, which has been recognized as the world's first entirely VR-based school. This model provides students with a deeply immersive learning experience, supports the design of individualized learning trajectories, and ensures equal access for learners unable to attend conventional schools. However, its implementation requires high-speed internet, advanced technological equipment, and considerable financial investment,

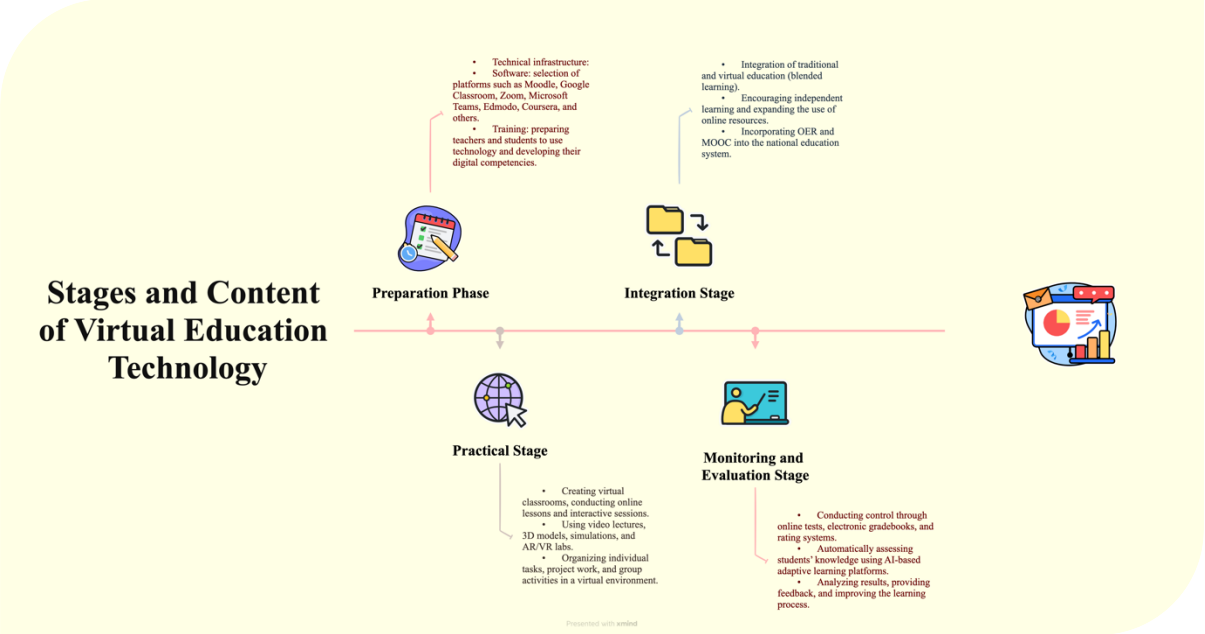
[23] The Japan Times. (2024, March 28). *Japan Virtual Campus: Learning without borders.* Retrieved from https://www.japantimes.co.jp/2024/03/28/special-supplements/japan-virtual-campus-learning-without-borders-jv-campus/.

[24] RedboxVR. (2022, August 17). World's first fully online VR school launches in Florida. Retrieved from https://redboxvr.co.uk/first-fully-online-vr-school

distinguishing it from traditional schooling. Similarly, in China, collaborative initiatives with UNESCO have introduced VR-based teaching practices, enabling remote volunteer teachers to participate in lessons. The establishment of VR laboratories allows learners to conduct experiments in a safe digital environment. UNESCO reports indicate that in regions where these laboratories have been implemented, students' interest in science has increased by 30–40 percent. These outcomes confirm that VR technologies are vital not only for urban education but also play a decisive role in ensuring effective learning opportunities in rural and remote areas[25].

The following section outlines an educational model that facilitates interactive collaboration between teachers and learners through modern information and communication technologies, demonstrating that the efficient integration of virtual technologies requires a step-by-step approach (Figure 1).

In contemporary education, the application of VR technologies represents one of the most impactful forms of pedagogical innovation. VR-based learning environments enable students to integrate theoretical knowledge with practical application, independently experiment with their experiences, and engage in interactive study.



1. **Learner-centered VR education**

VR technologies provide opportunities to design individualized learning pathways for each student. For instance, by creating specialized "virtual classrooms" for pedagogy majors, learners can practice assuming the role of a

[25] UNESCO Courier. (2021). China: Online tools level learning in remote areas. Retrieved from https://courier.unesco.org/en/articles/china-online-tools-level-learning-remote-areas

teacher in various instructional scenarios. Such experiences strengthen professional readiness and foster the development of independent decision-making skills.

2. **Constructivist approach in VR**

VR-based education does not transmit ready-made knowledge but encourages learners to construct understanding through active engagement. For example, analyzing a “pedagogical conflict” within a VR setting and experimenting with possible solutions equips students with practical skills and better prepares them for real-world situations.

3. **Interactive methods through VR**

Interactive methods gain greater effectiveness within a VR environment. Learners are able to collaborate in groups, participate in virtual meetings, and implement joint projects. For instance, multiple students can take part in role-play scenarios such as “teacher–student” interactions in a VR-based school setting.

4. **Gamification and VR**

The integration of game-based elements into VR technologies substantially enhances learner motivation. For instance, in a “virtual pedagogical quest,” students progress through different stages by completing assigned tasks, thereby making the learning process more engaging and effective

5. **Artificial intelligence and VR integration**

The integration of artificial intelligence (AI) into VR environments enables the rapid detection and correction of learner errors. For instance, when a student addresses a pedagogical scenario incorrectly, the AI system can redirect the process and propose alternative, more appropriate solutions within the virtual setting.

6. **Global VR integration**

A further strength of VR-based education lies in its potential for global integration. Learners are able to engage in international VR schools—such as Japan’s **Yushi International High School** or the **Optima Classical Academy** in the United States—thereby gaining direct exposure to global educational practices.

Pedagogical processes based on innovative approaches (VR-based):

In contemporary education, the teacher's role extends beyond transmitting knowledge and increasingly reflects leadership in introducing innovative methods and ideas. Virtual technologies create new opportunities for pedagogy by enabling the learning process to be conducted more effectively, interactively, and creatively.

Firstly, these technologies broaden pedagogical competencies. Using platforms such as Moodle, Google Classroom, and Zoom, educators can deliver interactive lessons, design multimedia resources, and establish virtual laboratories. This approach modernizes traditional teaching and simplifies the learning process for students.

Secondly, virtual platforms enhance collaboration and knowledge exchange on both local and global levels. Teachers can engage in international webinars, online conferences, and seminars, thereby accelerating the spread of pedagogical innovations. At the same time, virtual tools facilitate effective management of student performance: electronic gradebooks, online monitoring systems, rating mechanisms, and AI-based applications allow accurate tracking of academic outcomes and the creation of personalized learning pathways.

1	**Learner-centered**	Creating customized virtual courses and activities for each learner.	A student is given a "virtual classroom" in VR and performs the role of a teacher.
2	**Constructivist**	Acquiring knowledge through active experience and oЬservation.	Modeling and resolving an "educational conflict" situation in VR.
3	**Interactive methods**	Group work and collaЬorative tasks carried out in a virtual environment.	Several students conduct a "teacher-student" role-play in a VR school.
4	**Gamification**	Increasing motivation through game elements.	A "virtual pedagogical quest": completing tasks step Ьy step.
5	**AI integration**	Providing adaptive tasks in VR with the help of AI.	After an incorrect solution, AI enaЬles additional practice in the VR setting.
6	**GloЬal integration**	Creating opportunities to participate in international VR schools and courses.	Online participation in Japan's Yushi International High School or the USA's Optima Classical Academy.

Thirdly, virtual environments contribute to teachers' professional growth. Through global platforms such as Coursera[26], edX[27], and FutureLearn[28], educators can upgrade their qualifications, master new teaching strategies, and align themselves with international educational standards.

[26] Coursera. (2024). *About Coursera.* Retrieved from https://about.coursera.org
[27] edX. (2024). *About us.* Retrieved from https://www.edx.org/about-us
[28] FutureLearn. (2024). *About FutureLearn.* Retrieved from https://www.futurelearn.com/about

In conclusion, the effectiveness of education in the 21st century is fundamentally dependent on the integration of innovative technologies. Virtual learning tools not only provide learners with boundless opportunities for acquiring knowledge but also elevate traditional instruction to a higher level. Research indicates that the gradual implementation of virtual education technologies — including the preparatory, practical, integration, and monitoring stages — enables the learning process to be structured in a systematic, interactive, and student-centered way. Furthermore, innovative pedagogical strategies such as constructivism, gamification, interactive methods, the incorporation of artificial intelligence, and collaboration within the global educational environment strengthen the impact of virtual education.

International practice confirms the importance of VR-based schools and online portal projects as models of future-oriented education, extending beyond temporary solutions during crises. Notable examples include Japan's metaverse high school and the JV-Campus portal, the Optima Classical Academy in the United States, and UNESCO-led initiatives in China. These cases demonstrate that virtual technologies are essential not only for advancing teachers' innovative practices but also for enhancing the global competitiveness of national education systems. In turn, this creates the groundwork for countries to align with developed educational standards and consolidate their place in the international knowledge space.

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USE OF MODERN GIS METHODS IN GEOVISUALIZATION OF URBANIZATION PROCESSES AND ENVIRONMENTAL CONDITIONS

Abstract. *Urbanization is the process of increasing the role of cities in the development of society and the economy and forming urban infrastructure, which serves to make positive changes in the socio-economic, professional and demographic structure of the population, as well as to raise its lifestyle and culture to a new qualitative level.*

This article analyzes the urbanization processes in the Tashkent region of the Republic of Uzbekistan. The study also notes that cities in the Tashkent region and districts within the city of Tashkent are also an integral part of the research work. According to the analysis presented in the infographic of the area of cities in the Tashkent region, it is proven that large cities within the region do not differ significantly from the area of districts in the capital.

This article determines that as of 2024, the permanent population of our Republic will be 36.8 million people, of which almost a quarter will fall on the Tashkent region and the city of Tashkent. Compared to 2010, the urban population increased by 118.2%, while the rural population increased by 117.8%.

Keywords*: Urbanization; Environment; city; town; population; Uzbekistan; Tashkent.*

Introduction

Tashkent region is one of the regions in the Republic of Uzbekistan where urbanization processes are developing and rapidly changing. Therefore, the number and type of settlements in the region were analyzed. According to the study, as of January 1, 2024, Tashkent region had 15 districts, 16 cities (7 of which are independent of the district), 89 towns and 828 rural settlements. In the regulation of urban development sectors and population, a territory (city, town, village, aul) is

defined as a territory with its own legal status, its own name, and administrative-territorial borders, according to the provisions of the State Urban Planning Code of Uzbekistan.

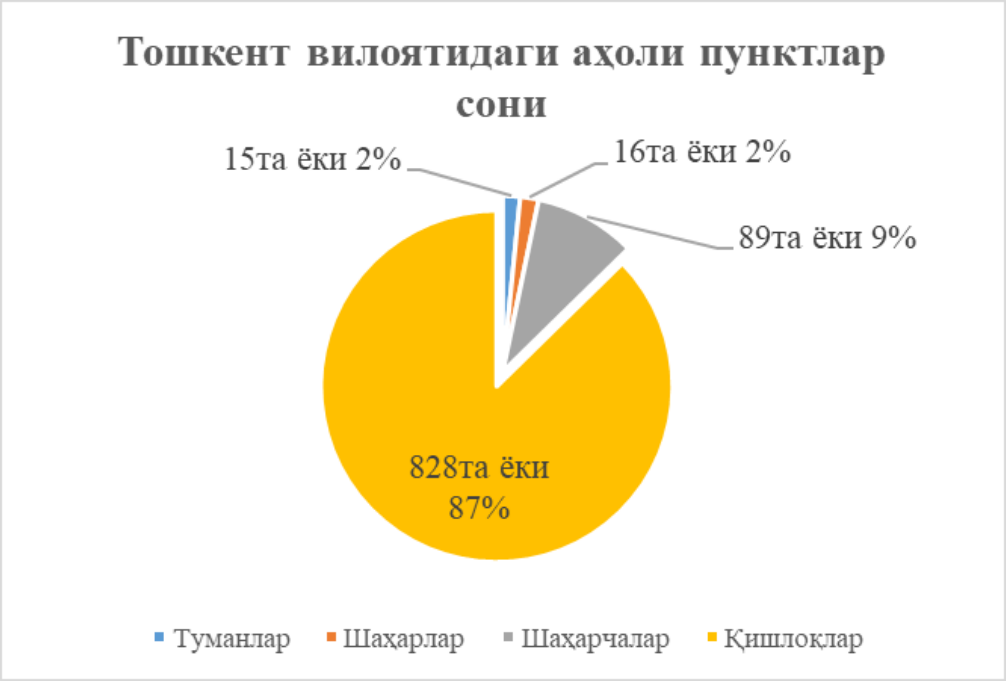


FIGURE 1. Distribution of settlements by type

The majority of settlements in Tashkent region consist of small villages and hamlets, while cities and towns account for 13% of all settlements in the region. It can be observed that urban settlements in Tashkent region and Tashkent city are few in number and large in area [2]. Based on this geographical and statistical data, the research object was further selected.

Materials and methods

The total area of Tashkent region is 15.15 thousand square kilometers. There are 7 cities in Tashkent region with an administrative structure in the form of a separate city, which are Angren, Bekabad, Nurafshon, Almalyk, Oxangaron, Chirchik and Yangiyul. These 7 cities and the city of Tashkent were determined as objects of scientific research. The largest city in Tashkent region is Angren, its area is 16.1 thousand hectares. The smallest city is Yangiyul and its area is 1.5 thousand hectares [1].

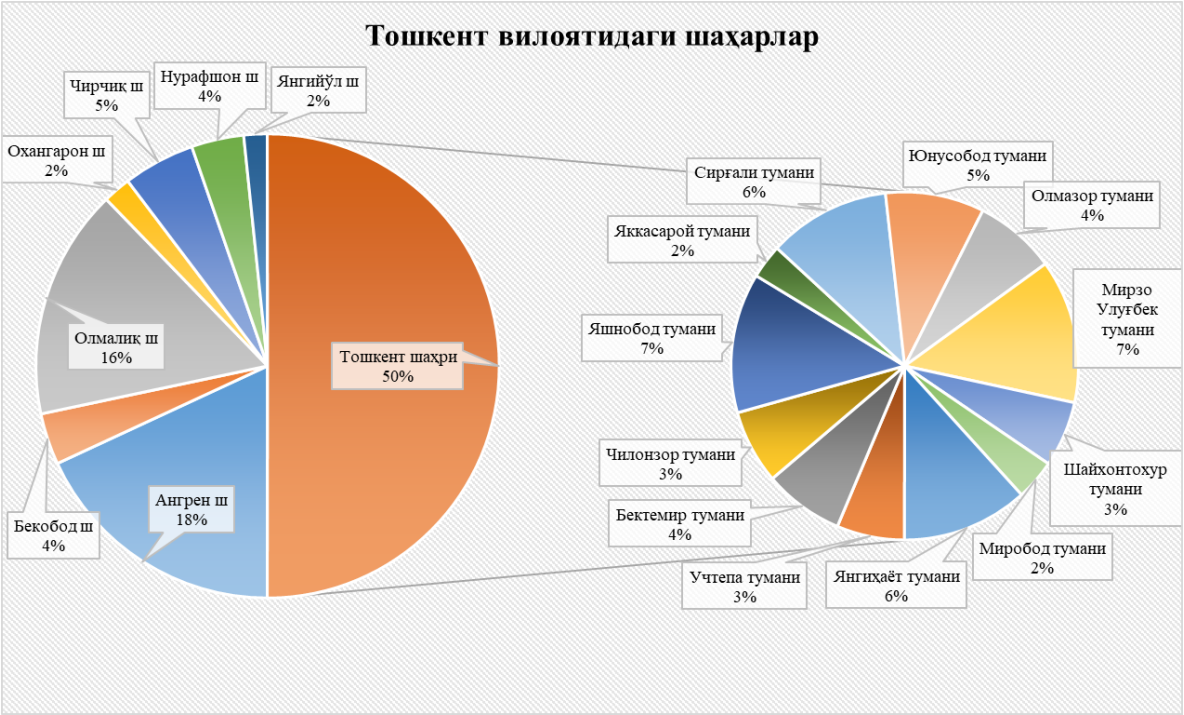


FIGURE 2. Infographic of the area of cities in the Tashkent region

Cities in the Tashkent region and districts within the city of Tashkent are also an integral part of the research work. According to the analysis presented in the infographic of the area of cities in the Tashkent region, large cities within the region do not differ significantly from the area of districts in the capital.

Tashkent city makes up part of the area of settlements selected as the object of research. This is one of the main reasons for selecting the areas of Tashkent region and Tashkent city as the object of research. In addition, the need to conduct research in recent years due to the construction, expansion of the territory and increase in population indicators in Tashkent city is also part of the research work. According to general classifications, the settlements selected throughout the Tashkent region and Tashkent city are schematically represented in the figure below in a simple way [2].



FIGURE. 3. Schematic map of the location of cities across the Region

In addition to the quantitative and territorial indicators of settlements, their social and economic indicators are also of great importance. In recent years, the growth of the urban population has had a significant impact on the development of industrial sectors. The city, by creating a large number of social amenities for the population, increases the demand for urbanization of the rural population [3].

In the list of territorial units with the largest urban population in Uzbekistan, the city of Tashkent is in first place (more than 3 million), the Fergana region is in second place (more than 2.3 million), the Namangan region is in third place (about 2 million), the Andijan region is in fourth place (about 1.8 million), the Samarkand region is in fifth place (1.546 million) and the Tashkent region is in sixth place (1.53 million) [4].

There is a set of separate statistical indicators of the population of the city of Tashkent and the Tashkent region, which are the objects of the study, and the population in cities and villages, and based on these statistical data, a number of analyses of urbanization indicators have been conducted. The presented diagram shows the percentage of the population of the object of the study in the Republic.



FIGURE 4. The indicator of the distribution of the population of the republic in the cross-section of the regions

The permanent population of our republic as of 2024 is 36.8 million people, almost a quarter of which falls on the Tashkent region and the city of Tashkent. This indicator shows that the population is densely distributed throughout the territory and the urbanization process is intensive. Compared to 2010, the urban population increased by 118.2 percent, while the rural population increased by 117.8 percent [5,6].



FIGURE 5. Changes in the population of Tashkent region between 2010 and 2024

The population of Tashkent city and region has increased dramatically over the past 3 years. Statistical data shows that the population of Tashkent city has increased by 136.1 percent or 1.36 times over the past 14 years.



FIGURE 6. Urban population statistics in Tashkent city and region

The population growth rate in our republic between 2014 and 2024 was 131.4 percent. The dynamic indicators in Tashkent region are very low compared to the general dynamics (13.2 percent). The indicators in Tashkent city are higher compared to the average growth (4.7 percent). However, the large population in Tashkent city creates a dynamic balance between Tashkent city and the region.

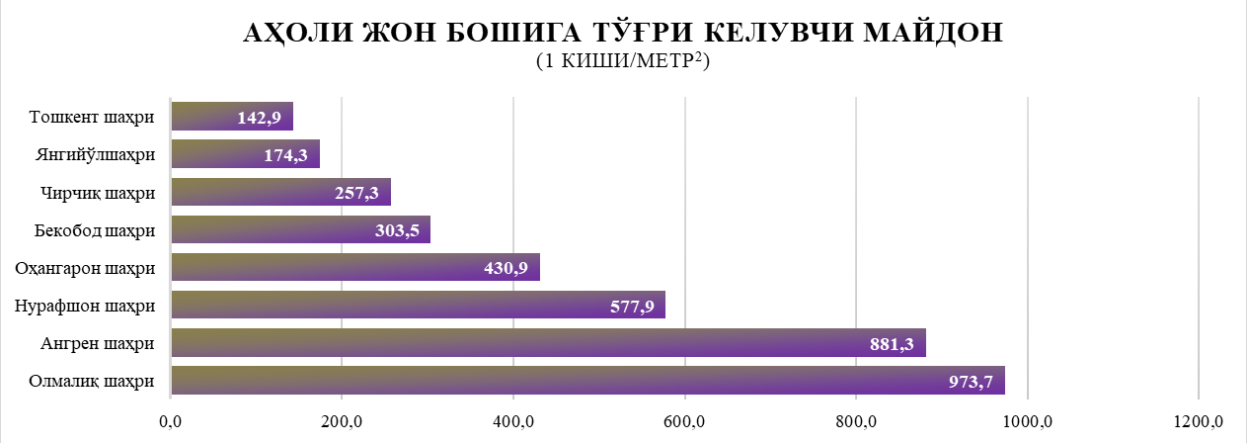


FIGURE 7. Population density infographic at the research site

According to the data presented in the diagram above, the population density in Tashkent city and the cities of the region is different. The most sparsely populated city is Almalyk, while the most densely populated city is Tashkent city. If there are 7 people per 1000 square meters in Tashkent city, then the same indicator is 1 person in Almalyk. The situation reflects the degree to which cities are prone to urbanization. Another key indicator of the urbanization process is the activity of industrial enterprises. Since industrial enterprises are the main source of income for the population, they strive to keep the distances between all workplaces and residential areas short. This situation encourages people to find housing in areas not far from enterprises. Thus, changes occur in the territorial, socio-economic, and production directions of cities.

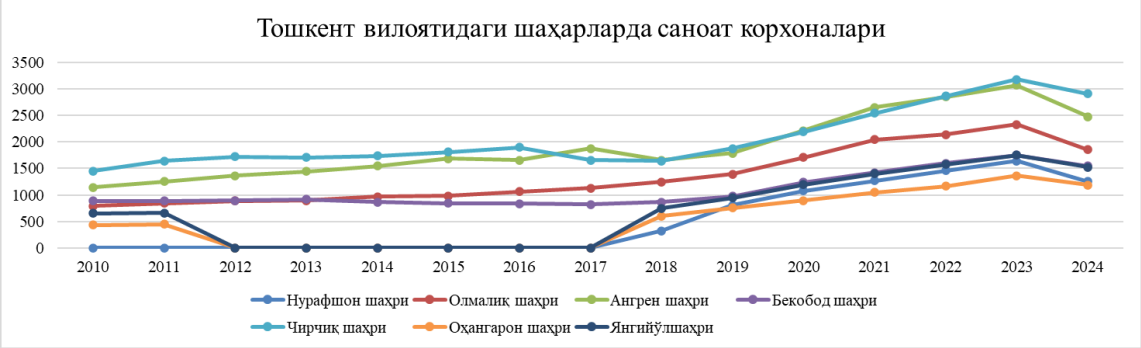


FIGURE 8. Number of industrial enterprises in Tashkent region

If the number of industrial enterprises is considered a determining factor in part of urbanization, then another statistic confirming this is the employment rate of the population. Tashkent city and region occupy the leading positions in the Republic in terms of employment rate. In first place, Tashkent city provided employment for 82.3% of its population [7].



FIGURE 9. Employment rates of the population (in %)

Tashkent city and Tashkent region occupy leading positions in terms of population employment. Employment indicators indicate that the industrial, production and service sectors of the region are well developed. Individual entrepreneurship and self-employment are also developed in Tashkent city. The fact that society is engaged in entrepreneurial activities of various scales in order to rationally use social conditions and generate income represents much higher indicators than in other regions.

CONCLUSION

The urbanization process involves the expansion of urban areas, the inclusion of suburban areas into the city, and the unification of several settlements into a single city. According to the analysis of this study, changes in urbanization in the Republic of Uzbekistan in recent years are mainly evident in Tashkent region and Tashkent city. The study also shows that the increase in urbanization processes also affects

industrial enterprises. The main reason for this is directly related to the level of population employment and is the growth in the industrial, production and service sectors. The study shows, based on statistical data, that the population has been increasing sharply over the past 3 years.

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DETERMINING THE IMPACT OF URBANIZATION ON THE ENVIRONMENT: A REVIEW OF PAPERS PUBLISHED BETWEEN 2010 AND 2024 IN THE SCOPUS DATABASE

Abstract. *This study explores the growing relevance of research on urban environmental conditions by utilizing data from internationally recognized scientific databases. As urbanization continues to reshape landscapes worldwide, understanding its ecological implications has become a critical area of investigation. To assess the current state of knowledge, a comprehensive bibliometric analysis was conducted, examining a total of 635 thematic articles that include key terms such as "Urban," "Environment," "GIS," and "Remote Sensing." These articles were sourced from high-impact journals and academic repositories, ensuring a robust dataset for analysis. A critical insight from the analysis highlights the importance of international research cooperation in addressing urban environmental challenges. The study also emphasizes the role of citation metrics, such as the h-index, in measuring the influence and reach of scholarly contributions. These metrics provide valuable insights into the interconnected nature of contemporary research, demonstrating how scientific advancements in one region can inform and shape urban sustainability strategies on a global scale. By fostering collaborative efforts and leveraging innovative methodologies, researchers can contribute to more comprehensive and effective solutions for mitigating the ecological impact of urbanization.*

Keywords*: Bibliometric analysis; Environmental impacts; GIS; Land surface temperature (LST); Land use/land cover (LULC); NDVI; Remote sensing; Scopus; Sustainability; Urban heat island (UHI); Urbanization.*

INTRODUCTION

Urbanization poses significant challenges to ecological systems, necessitating comprehensive research to understand its environmental impacts. This study

examines the trends, geographical distribution, and integration of research efforts in the field, drawing on a systematic analysis of keywords and citations. By leveraging data from Scopus and other databases, this paper highlights the dominant contributors to this field, such as China, India, and the United States, and underscores the thematic and analytical diversity within the body of research[1].

MATERIALS AND METHODS

A systematic literature review was conducted using Scopus and other internationally recognized scientific databases. Keywords such as 'Urban,' 'Environment,' 'GIS,' 'Remote Sensing,' and others were used to identify 635 relevant articles. The keyword analysis was visualized using tools like WoSviewer, which helped map the interconnections among terms. Citation patterns and h-index metrics were analyzed to assess researcher contributions and integration. Additionally, the geographic distribution of article authors was examined to understand regional contributions to the field[1], [2], [3], [4], [5], [6], [7], [8], [9], [10], [11], [12], [13], [14], [15], [16], [17], [18].

RESULTS AND DISCUSSION

Based on data from internationally recognized scientific article and publication databases, several statistical analyses were conducted. According to these analyses, a total of 635 thematic articles were identified containing the keywords 'Urban,' 'Environment,' 'GIS' (Geographic Information Systems), and 'Remote Sensing.' A thorough examination of these articles has yielded several practical insights[1], [3]. The statistical analysis of the collected articles over different years indicates a growing relevance of research focused on assessing urban environmental conditions. This trend highlights the increasing importance of studying the ecological impacts of urbanization, reflecting a rising academic and practical interest in the subject.

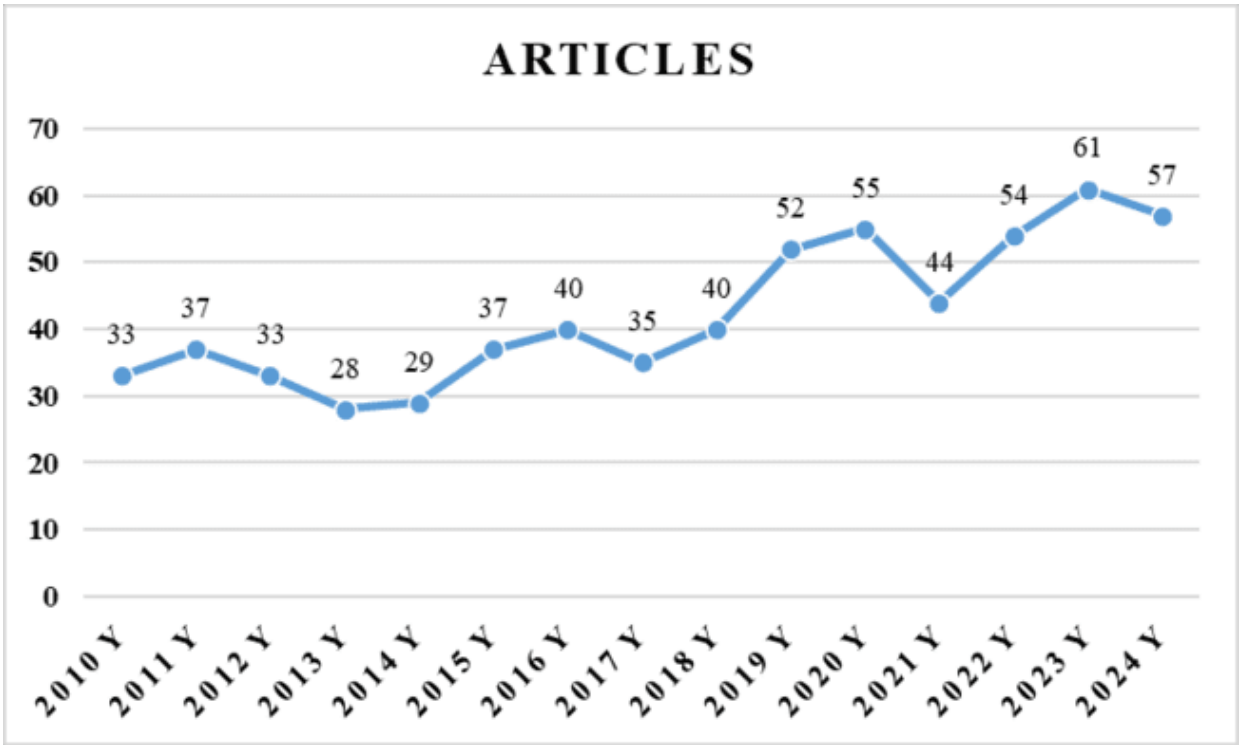


FIGURE1. Dynamics of the number of articles on the research topic in the Scopus database

The core essence of research lies in its keywords, which serve as fundamental indicators for understanding the subject matter of an article. Keywords play a crucial role in defining the thematic focus of a study and are essential for determining its relevance and alignment with specific research directions. During the literature review process, the keywords of 635 scholarly articles were analyzed. The findings reveal that the most frequently used keywords in the examined studies include 'Remote Sensing,' 'GIS' (Geographic Information Systems), 'Urban Expansion,' 'Urban Planning,' 'Urban Area,' 'China,' 'Land Cover Change,' 'Urbanization,' and 'Sustainable Development.' These keywords highlight the primary themes and focal points of contemporary research in the field[1], [4], [19], [20], [21].

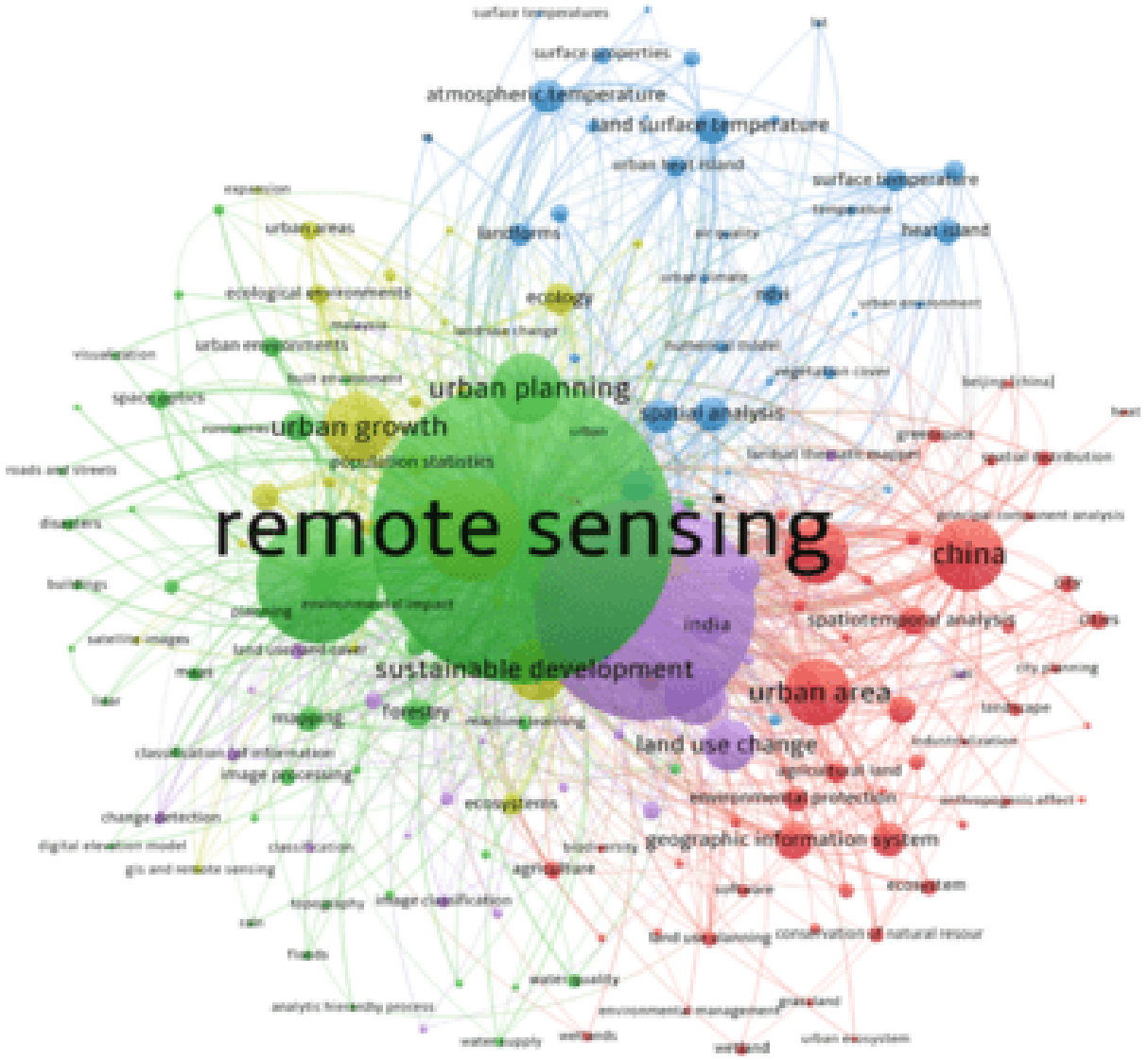


FIGURE 2. Keywords. Inter-integration scheme of key terms (visualized in WoS Viewer)

Special attention should be given to the keyword 'China,' as its frequent usage indicates that a significant portion of the research in this domain is conducted by scholars from the People's Republic of China. This observation underscores China's prominent role in advancing studies related to urbanization and environmental monitoring. Furthermore, the primary types of analyses can be identified through keyword mapping. For instance, commonly used terms such as 'Land Surface Temperature,' 'Heat Island,' 'Spatial Analysis,' 'NDVI' (Normalized Difference Vegetation Index), and 'Spatiotemporal Analysis' highlight the diverse analytical approaches employed in the examined studies[1], [22].

In addition to the insights provided by keyword analysis, the geographic origin of the article authors holds significant importance in the literature review process. A comprehensive examination of relevant scientific works not only focuses on thematic alignment but also takes into account the authors and their respective

countries of affiliation. This approach provides a deeper understanding of the global research landscape and regional contributions to the field.

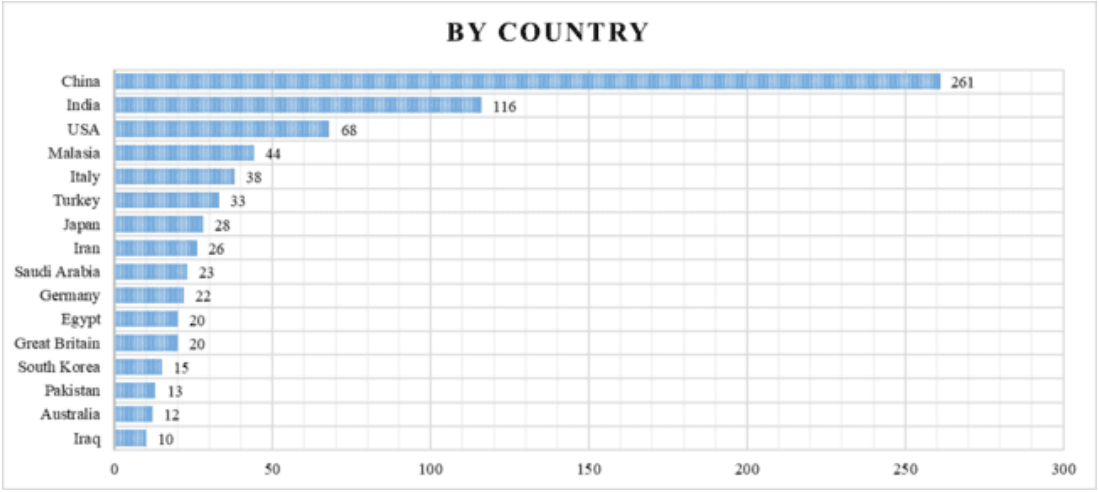


FIGURE 3. Distribution of article authors by country

China, India, and the United States have emerged as the leading contributors to research in this field. Notably, Chinese researchers account for approximately one-third of all scholars conducting studies on this topic, underscoring China's dominant role in the academic discourse surrounding urbanization and environmental analysis[2], [3], [8], [9], [10], [19], [23], [24]. Furthermore, it has been observed that many researchers have authored more than ten publications within the scope of this subject, reflecting a sustained and in-depth engagement with the topic.

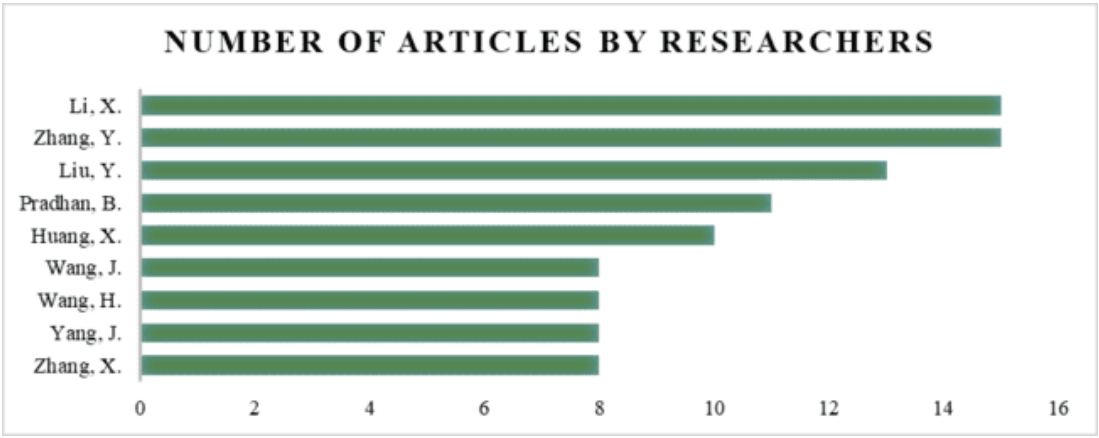


FIGURE 4. Statistics of scientists who have conducted the most research on urbanization and ecology

The volume of scientific research conducted by Chinese research teams has been steadily increasing over time, highlighting their growing influence in the field. In addition to Chinese contributions, significant research efforts have also been carried out by the Indian scholar B. Pradhan, whose work has made a notable impact in this domain. It is important to emphasize that the collaboration and integration

among researchers from different countries are well-established and continue to evolve, fostering a dynamic and interconnected global research network.



FIGURE5. Integration of scientific researchers on the topic

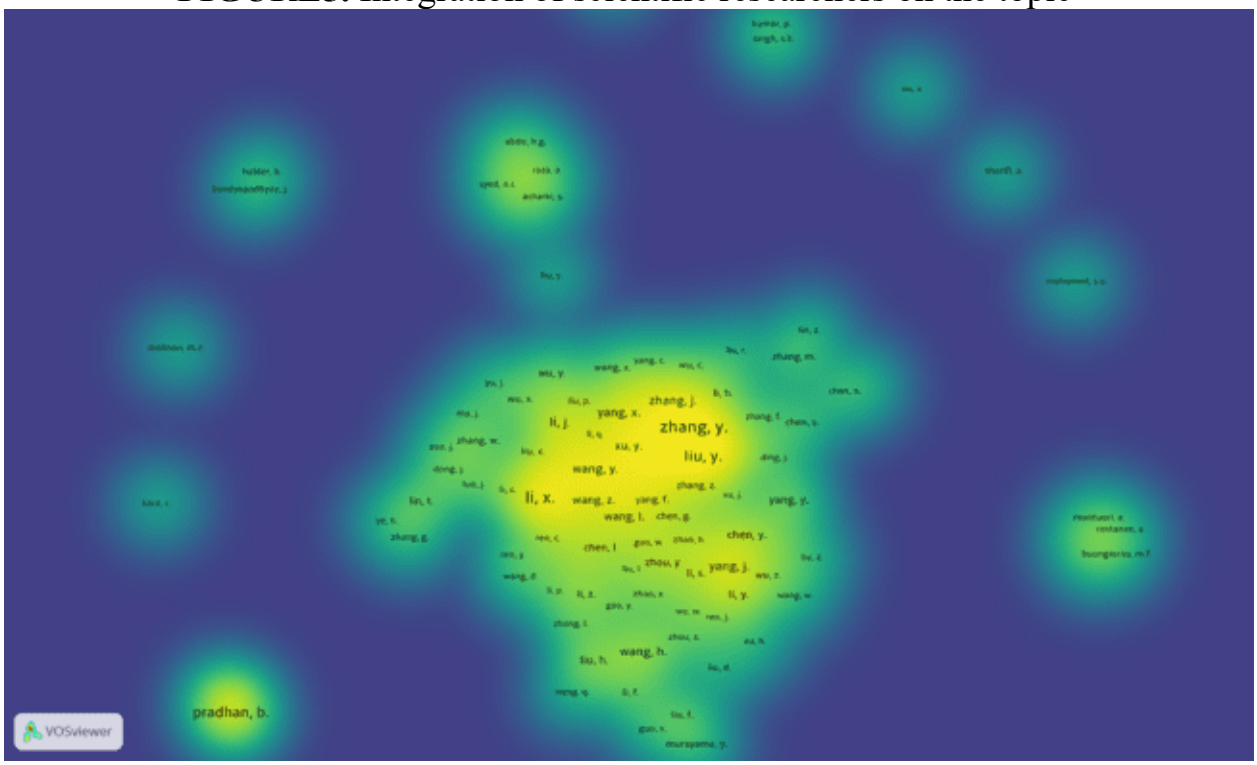


FIGURE 6. Overall density and integration of researcher developments

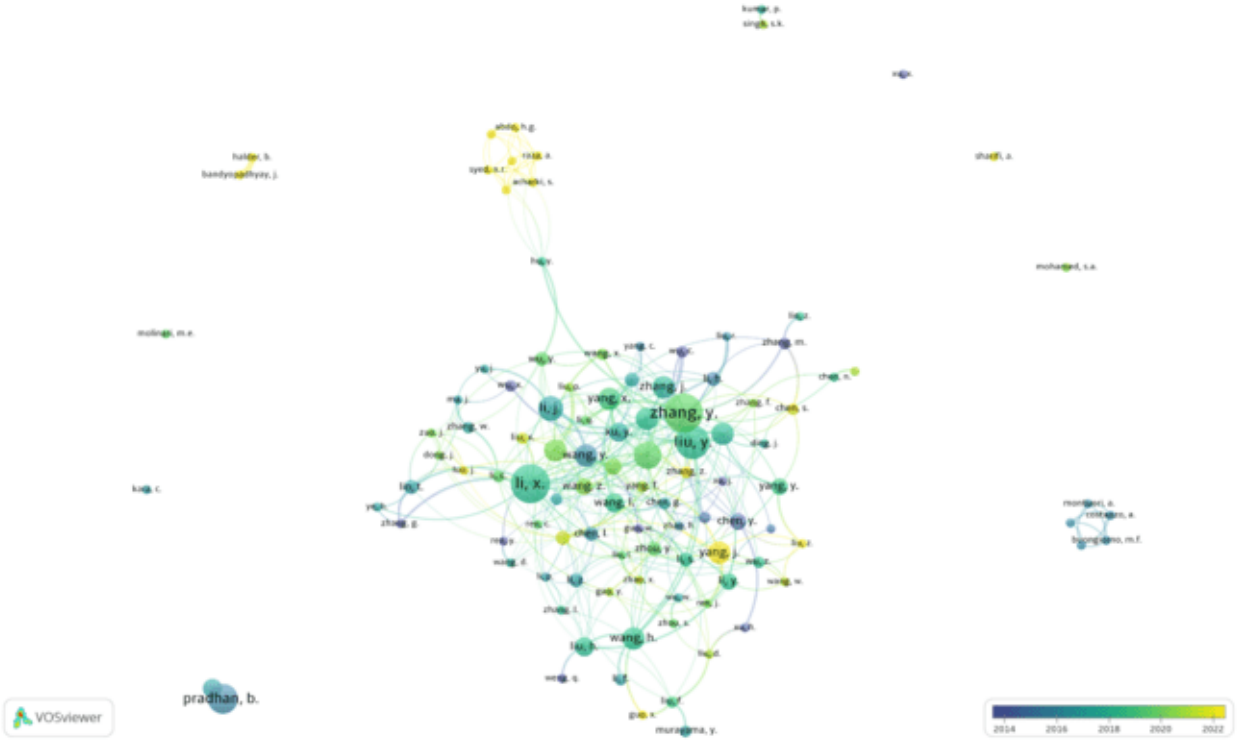


FIGURE 7. Distribution scheme of studies by year

The collaboration among researchers is evident in the citations and references listed in their scholarly works. The results of published scientific studies contribute to the development of unique indices that assess the influence of these works on other research. This metric is referred to as the 'h-index' in the Scopus database. Research with a high h-index often forms a significant cluster of influence within the academic community. In contrast, studies conducted without citations from international researchers tend to stand apart, resembling isolated nodes at the periphery of a network diagram, lacking interconnections with the central body of research[25].

The analysis revealed that the most frequently used keywords include 'Remote Sensing,' 'GIS,' 'Urban Expansion,' and 'Sustainable Development,' highlighting the primary themes of contemporary research. Chinese researchers were found to contribute approximately one-third of the total studies, emphasizing their leadership in this domain. Other significant contributors included India and the United States. Research collaborations were evident in citation patterns, with studies boasting a high h-index forming influential clusters. However, some research lacking international citations appeared isolated, resembling peripheral nodes in the network diagram.

One of the most striking observations is the substantial contribution of Chinese researchers to this body of literature. The frequent occurrence of "China" as a keyword, as well as the concentration of high-impact studies from Chinese institutions, underscores the country's leadership in urbanization and environmental studies. This trend aligns with China's rapid urban expansion and its associated

environmental challenges, which have necessitated extensive research efforts. In addition to China, scholars from India and the United States also contribute significantly, reflecting a global interest in understanding and mitigating the ecological consequences of urbanization.

Another crucial insight from this analysis is the role of research collaboration and its impact on citation metrics. The study demonstrates that highly cited works, particularly those with a high h-index, tend to be well-integrated within the global research network. These studies often benefit from cross-border collaborations, allowing for the exchange of knowledge, methodologies, and data. Conversely, research efforts that lack international citations appear as isolated nodes, indicating limited integration with mainstream scientific discourse. This finding underscores the importance of fostering interdisciplinary and international partnerships to enhance the visibility and impact of research in this field.

CONCLUSIONS

The results indicate a steady increase in the number of publications addressing urbanization's environmental effects, highlighting the growing academic and practical interest in this subject. A key observation is the dominant role of Chinese researchers, who account for a significant portion of the studies in this field. This trend reflects China's rapid urban expansion and its associated environmental challenges, leading to increased scientific efforts to monitor and mitigate the ecological consequences. Alongside China, researchers from India and the United States have also made substantial contributions, underscoring the global relevance of urban environmental research.

Furthermore, this study highlights the importance of international research collaboration in addressing urban environmental challenges. Citation metrics, particularly the h-index, were examined to assess the influence of key publications and their integration into the broader scientific discourse. The findings indicate that highly cited works tend to emerge from well-connected global research networks, reinforcing the need for interdisciplinary and cross-border partnerships in urban sustainability research. In contrast, studies with limited citations or lacking international collaboration often remain isolated, reducing their impact within the academic community.

These insights emphasize the necessity of fostering greater collaboration between researchers from different regions and disciplines. By leveraging innovative methodologies and expanding the geographical scope of studies, future research can develop more comprehensive and effective solutions for mitigating the ecological effects of urbanization. This study contributes to the ongoing discourse by providing a structured overview of key trends in urban environmental research and offering recommendations for advancing scientific efforts in this critical field.

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INNOVATSION YONDASHUVLAR ASOSIDA TA’LIM MUASSASALARINI BOSHQARISH

Annotatsiya: *ushbu maqola yildan-yilga sifatli ta’lim olishni xohlovchilar sonining keskin oshib borayotganligi, ta’lim oluvchilarning o‘qish ehtiyojlari kengayib borishi, yangi mutaxassisliklarning paydo bo‘lishidan kelib chiqqan xolda oliy ta’lim tizimida ta’lim sifatini boshqarish hamda raqobatbardosh kadrlarni tayyorlashni takomillashtirishning ayrim masalalariga bag‘ishlangan.*
Tayanch so‘zlar: *Ta’lim sifati, ta’lim sifatini boshqarish, zamonaviy tendensiyalar;*

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MANAGEMENT OF EDUCATIONAL INSTITUTIONS BASED ON INNOVATIVE APPROACHES

Abstract: *There are enlightened some issues of increasing of management in the sphere of higher educational institutions and improving of preparation of compete able personal as educates of different spheres are increasing and widening of study demand by appearing of new specialists.*
Key words: *Quality of education, management quality of education, modern tendencies;*

Jahondagi yetakchi davlatlar innovatsion indeksiga (Global Innovation Index, GII) asosan fan va texnika yutuqlari orqali mamlakat iqtisodiyotini rivojlantirish, moddiy sohadagi mahsulotlar ishlab chiqarishda progressiv o‘zgarishlarni ta’minlash, milliy mahsulotni jahon bozorida raqobatbardoshligini oshirish kadrlar muammosi bilan bog‘liqdir. Oliy ta’limda muassasalarida ilmiy-texnologik, amaliy va psixologik-pedagogik tayyorgarliklar asosida yuqori malakali kadrlarni tayyorlash jarayoniga doimiy ravishda istiqbolli ta’lim texnologiyalarni tatbiq etish va talabalarning innovatsion faoliyatini tashkil etish hamda amalga oshirish alohida e’tirof etiladi [5].

Xalqaro ilg‘or tajribalarga ko‘ra, ABET (***AQSh),*** ECUK (Buyuk Britaniya), CCPE (***Kanada),*** IEAust (Avstraliya) va JABEE (Yaponiya) kabi innovatsion intellektual markazlar hamda bir qator nufuzli universitetlarda ta’lim sifati innovatsion yondashuvlar orqali doimiy yangilanib borilishi va ta’lim jarayoniga zamonaviy metodlarni tatbiq etish orqali bo‘lajak kadrlarning kasbiy kompetensiyalarini shakllantirishda yangi sifat darajalariga erishish asosiy maqsad qilib qo‘yilgan. Shuning uchun oliy ta’lim muassasalarida ***sifat, ta’lim sifati, ta’lim sifatini boshqatishda*** innovatsion ***yondashuvlar*** asosida amaliyotga tatbiq etish muhim o‘rin egallaydi [2]**.**

Mamlakatimizda zamonaviy fan, texnika va texnologiyalarni rivojlantirishga yo‘naltirilgan bozor iqtisodiyoti mexanizmlarini ishlab chiqish va ularni maqsadli amalga oshirish borasida salmoqli ishlarni olib borildi. Jumladan, “Ilmiy-tadqiqot va innovatsiya faoliyatini rag‘batlantirish, ilmiy va innovatsiya yutuqlarini amaliyotga joriy etishning samarali mexanizmlarini yaratish” hamda Innovatsion rivojlanish agintligining asosiy faoliyat yo‘nalishlaridan ta’lim tizimida innovatsiyalarni ishlab chiqishni ta’minlash kabi belgilangan ustuvor vazifalari oliy ta’lim tizimida raqobatbardosh kadrlarni innovatsion faoliyatiga tayyorlash zaruriyatini taqozo etmoqda [1].

So’ngi yillarda mamlakatimizdagi OTMlarning ilmiy-tadqiqot va innovatsion salohiyatidan foydalanishni takomillashtirish bo‘yicha bir qator qadamlar qo‘yildi.

Bu ayniqsa, ilmiy universitetlarni tashkil etish va universitetlararo laboratoriyalarni ochish, universitetlar negizida yaratilgan kichik innovatsion ijodiy guruhlarni qo‘llab-quvvatlash, yuqori texnologiyalarni rivojlantirish va yuqori sifatli mahsulotlarni ishlab chiqarishga ixtisoslashgan OTM o‘rtasidagi hamkorlikning yangi shakllarini joriy etish, yuqori malakali mutaxassislar fan va oliy kasbiy ta’lim sohasida ishlashlari mumkinligida yaqqol ko‘rinmoqda.

Shunga qaramay, innovatsion iqtisodiyotni rivojlantirishda o‘zbek OTMning ilmiy tadqiqot salohiyatini jalb qilish darajasi nisbatan past darajada qolmoqda. Bu holat Oliy ta’limning innovatsion infratuzilmasini rivojlantirish muammolarini to‘liq hal eta olmayapti.

Ko‘pgina modellarga e’tibor beradigan bo‘lsak, ba’zi innovatsion tizimda qisman, ba’zilarida esa to‘liq davlatning o‘rni borligini ko‘rishimiz mumkin. Umumlashtirib aytishimiz mumkinki, mamlakatlarning fan-ta’lim-ishlab chiqarish integratsiyasi va innovatsion rivojlanishiga o‘tishida bepul ta’lim (Germaniya), ilm-fanga qilingan yuqori xarajatlar (Germaniya, Finlyandiya) kabi dastlabki shartlar muhim ahamiyatga ega. Bosqichma-bosqich olib borilgan iqtisodiy siyosat ham mamlakat ichki va tashki imkoniyatlariga ko‘ra amalga oshirilishi maqsadga muvofiq ekanligini yaqqol ko‘rish mumkin.

Yuqoridagi muammoni muvaffaqiyatli hal etish uchun, bizning fikrimizcha, quyidagilarni amalga oshirish kerak:

Davlat darajasida:

-ommaviy axborot vositalarida innovatsion tushunchalar va yondashuvlarning ahamiyatini oshirish, jamiyatni innovatsion rivojlantirishning ustuvorligi;

-kapitalining mavjudligi;

-innovatsiyalarga ijobiy munosabatda bo‘lishni rag‘batlantirish, ularning avlodlari, his-tuyg‘usi va amalga oshirishni nuqtai nazaridan zamonaviy va dolzarb hayotning zamonaviy uslubini qo‘llab quvvatlash;

Universitet darajasida:

-eng so‘nggi imiy va texnik adabiyotlar, ma’lumotlar bazasi, internet maydonlarga keng yo‘l ochish;

- axborot resurs markazlarini, texnoparklarni va boshqalarni universitetlar negizida ishlab chiqish;

-barcha OTMlarni zamonaviy jihozlar, laboratoriya va asbob-uskunalar bilan ta’minlash;

-ilmiy-tadqiqot ishlarini olib borishni istaganlar uchun ilmiy-texnikaviy maslahat resurslarini shakllantirish;

-ixtisoslashtirilgan tadqiqotlar natijalari bo‘yicha ma’lumotlar banklarini yaratish va ularning doimiy yangilab borilishini ta’minlash;

-OTMda ixtisoslashtirilgan patent va marketing bo‘limlarini tashkil etish;

-amaliyotga tadbiq etish, shu jumladan, o‘z biznesini tashkil qilish, yuritish va boshqarish bo‘yicha yetakchi mutaxassislar va tegishli filiallardan mutaxassislarni taklif qilish orqali o‘quv jarayonida ishtirok etish;

-innovatsion izlanishlar tashabbuslari va faoliyati uchun moddiy rag‘batlantiruvchi mablag‘lar fondini yaratish;

Professor-o‘qituvchilar tarkibi uchun:

-mahalliy va xorijiy ilmiy-ishlab chiqarish stajirovkalarini tashkil etish va muntazam o‘tib borish;

-ilmiy-axborot va ilmiy-amaliy seminarlar, konferensiyalar, simpozium va shu kabilarga jalb qilish; -talabalar va katta ilmiy xodimlar, talabgorlar ishtirokida o‘quv jarayonini tashkil etishning innovatsion usullarini va amaliy xarakterdagi innovatsion g‘oyalarni amalga oshirishni moddiy jihatdan rag‘batlantirish;

Ilmiy xodimlar uchun:

-ilmiy-amaliy va ilmiy-innovatsion vazifalarni hal etishda ilmiy tadqiqotchilarni jalb qilish, ularni haqiqiy innovatsion loyihalarga kiritish;

-dissertatsiya tadqiqotlari mavzusini muayyan ilmiy-nazariy, ilmiy-amaliy va ilmiy-innovatsion muammolarni hal qilish uchun maksimal darajada bog‘lash;

-ilmiy-o‘quv markaz faoliyatini amalga oshirishda tadqiqotchilarni jalb qilish orqali universitetlar, alohida kafedralar bazasida, shuningdek, grant loyihalarini amalga oshiriladigan iqtisodiyotning real sektori bilan birgalikdagi dastur va loyihalarni amalga oshirish;

-amaliy xarakterdagi innovatsion g‘oyalarni amalga oshirishda ularning ishtirokini moddiy jihatdan rag‘batlantirish va yo‘naltirish. [3].

Jahon tajribasiga suyangan holda aytishimiz mumkinki, kichik innovatsion korxonalarni ham, yirik kompaniyalarni qo‘llab quvvatlanishi orqali ham ijobiy natijalarga erishi mumkin. Ular o‘zaro bir-birini to‘ldirgan holda jipslikda faoliyat yuritish maqsadga muvofiqdir. Jahon tajribasidan ko‘rishimiz mumkinki, dunyoda fan-ta’lim-ishlab chiqarish integratsiyasining uzviyligini ta’minlash va barpo

etishni yagona modeli mavjud emas. Bir necha yuz yillar davomida tovar-pul munosabatlarini boshidan kechirgan dunyoning eng rivojlangan mamlakatlarida ham innovatsion iqtisodiyotga o‘tish masalasi o‘z-o‘zidan qisqa vaqtda amalga oshirilmagan [4].

Foydalanilgan adabiyotlar:

1. O‘zbekiston Respublikasi Prezidentining 2019 yil 8 oktyabrdagi “O‘zbekiston Respublikasi oliy ta’lim tizimini 2030 yilgacha rivojlantirish konsepsiyasi” to‘g‘risidagi Farmoni.
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3. Isroilov B.I. Ta’lim tizimida innovatsion korporativ hamkorlikni rivojlantirishda iqtisodiy mexanizmlar rolini oshirish. TMI, IAK, 2016 y.
4. Raximov F.X., Dusmuxamedova M.X. Ta’lim, fan va ishlab chiqarish hamkorligidagi innovatsiyalar vorisiylik sifatida. Zamonaviy ta’lim. 2015y. №10, 12-19 b.
5. https://www.wipo.int/web-publications/global-innovation-index-2024/en/

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TA’LIM MUASSASALARINI BOSHQARISHNING ZAMONAVIY TENDENSIYALARI

Annotatsiya: *ushbu maqola yildan-yilga sifatli ta’lim olishni xohlovchilar sonining keskin oshib borayotganligi, ta’lim oluvchilarning o‘qish ehtiyojlari kengayib borishi, yangi mutaxassisliklarning paydo bo‘lishidan kelib chiqqan holda ta’lim tizimida ta’lim sifatini boshqarish hamda raqobatbardosh kadrlarni tayyorlashni takomillashtirishning ayrim masalalariga bag‘ishlangan.*
Tayanch so‘zlar: *Ta’lim sifati, ta’lim sifatini boshqarish, zamonaviy tendensiyalar;*

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MODERN TRENDS IN THE MANAGEMENT OF EDUCATIONAL INSTITUTIONS

Abstract: *There are enlightened some issues of increasing of management in the sphere of higher educational institutions and improving of preparation of compete able personal as educates of different spheres are increasing and widening of study demand by appearing of new specialists.*
Keywords: *Quality of education, management quality of education, modern tendencies;*

Jahondagi yetakchi davlatlar innovatsion indeksiga (Global Innovation Index, GII) asosan fan va texnika yutuqlari orqali mamlakat iqtisodiyotini rivojlantirish, moddiy sohadagi mahsulotlar ishlab chiqarishda progressiv o‘zgarishlarni ta’minlash, milliy mahsulotni jahon bozorida raqobatbardoshligini oshirish kadrlar muammosi bilan bog‘liqdir. Oliy ta’limda muassasalarida ilmiy-texnologik, amaliy va psixologik-pedagogik tayyorgarliklar asosida yuqori malakali kadrlarni tayyorlash jarayoniga doimiy ravishda istiqbolli ta’lim texnologiyalarni tatbiq etish va talabalarning innovatsion faoliyatini tashkil etish hamda amalga oshirish alohida e’tirof etiladi [5].

Xalqaro ilg‘or tajribalarga ko‘ra, ABET (AQSh), ECUK (Buyuk Britaniya), CCPE (Kanada), IEAust (Avstraliya) va JABEE (Yaponiya) kabi innovatsion intellektual markazlar hamda bir qator nufuzli universitetlarda ta’lim sifati innovatsion yondashuvlar orqali doimiy yangilanib borilishi va ta’lim jarayoniga zamonaviy metodlarni tatbiq etish orqali bo‘lajak kadrlarning kasbiy kompetensiyalarini shakllantirishda yangi sifat darajalariga erishish asosiy maqsad qilib qo‘yilgan. Shuning uchun oliy ta’lim muassasalarida sifat, ta’lim sifati, ta’lim sifatini boshqatishda innovatsion yondashuvlar asosida amaliyotga tatbiq etish muhim o‘rin egallaydi [2].

Mamlakatimizda zamonaviy fan, texnika va texnologiyalarni rivojlantirishga yo‘naltirilgan bozor iqtisodiyoti mexanizmlarini ishlab chiqish va ularni maqsadli amalga oshirish borasida salmoqli ishlarni olib borildi. Jumladan, “Ilmiy-tadqiqot va innovatsiya faoliyatini rag‘batlantirish, ilmiy va innovatsiya yutuqlarini amaliyotga joriy etishning samarali mexanizmlarini yaratish” hamda Innovatsion rivojlanish agintligining asosiy faoliyat yo‘nalishlaridan ta’lim tizimida innovatsiyalarni ishlab chiqishni ta’minlash kabi belgilangan ustuvor vazifalari oliy ta’lim tizimida raqobatbardosh kadrlarni innovatsion faoliyatiga tayyorlash zaruriyatini taqozo etmoqda [1].

So’ngi yillarda mamlakatimizdagi OTMlarning ilmiy-tadqiqot va innovatsion salohiyatidan foydalanishni takomillashtirish bo‘yicha bir qator qadamlar qo‘yildi.

Bu ayniqsa, ilmiy universitetlarni tashkil etish va universitetlararo laboratoriyalarni ochish, universitetlar negizida yaratilgan kichik innovatsion ijodiy guruhlarni qo‘llab-quvvatlash, yuqori texnologiyalarni rivojlantirish va yuqori sifatli mahsulotlarni ishlab chiqarishga ixtisoslashgan OTM o‘rtasidagi hamkorlikning yangi shakllarini joriy etish, yuqori malakali mutaxassislar fan va oliy kasbiy ta’lim sohasida ishlashlari mumkinligida yaqqol ko‘rinmoqda.

Shunga qaramay, innovatsion iqtisodiyotni rivojlantirishda o‘zbek OTMning ilmiy tadqiqot salohiyatini jalb qilish darajasi nisbatan past darajada qolmoqda. Bu holat Oliy ta’limning innovatsion infratuzilmasini rivojlantirish muammolarini to‘liq hal eta olmayapti. Ilm-fan va innovatsion sohasida universitet bitiruvchilarning qiziqishi kuchayib bormoqda.

Demak, rivojlangan mamlakatlar fan-ta’lim-ishlab chiqarish integratsiyasi innovatsion rivojlanish tizimini tahlil qilish asosida shunday xulosaga kelish mumkinki, barqaror iqtisodiy o‘sishni ta’minlash va mamlakat raqobatbardoshligini oshirish uchun milliy innovatsion tizimni tashkil qilish hamda uni doimiy takomillashtirib borish zarur. Bosqichma-bosqich olib borilgan iqtisodiy siyosat ham mamlakat ichki va tashki imkoniyatlariga ko‘ra amalga oshirilishi maqsadga muvofiq ekanligini yaqqol ko‘rish mumkin.

Yuqoridagi muammoni muvaffaqiyatli hal etish uchun, bizning fikrimizcha, quyidagilarni amalga oshirish kerak:

Davlat darajasida:

-ommaviy axborot vositalarida innovatsion tushunchalar va yondashuvlarning ahamiyatini oshirish, jamiyatni innovatsion rivojlantirishning ustuvorligi;

-kapitalining mavjudligi;

-innovatsiyalarga ijobiy munosabatda bo‘lishni rag‘batlantirish, ularning avlodlari, his-tuyg‘usi va amalga oshirishni nuqtai nazaridan zamonaviy va dolzarb hayotning zamonaviy uslubini qo‘llab quvvatlash;

Universitet darajasida:

-eng so‘nggi imiy va texnik adabiyotlar, ma’lumotlar bazasi, internet maydonlarga keng yo‘l ochish;

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-dissertatsiya tadqiqotlari mavzusini muayyan ilmiy-nazariy, ilmiy-amaliy va ilmiy-innovatsion muammolarni hal qilish uchun maksimal darajada bog‘lash;

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etishni yagona modeli mavjud emas. Bir necha yuz yillar davomida tovar-pul munosabatlarini boshidan kechirgan dunyoning eng rivojlangan mamlakatlarida ham innovatsion iqtisodiyotga o‘tish masalasi o‘z-o‘zidan qisqa vaqtda amalga oshirilmagan [4].

Foydalanilgan adabiyotlar:

1. O‘zbekiston Respublikasi Prezidentining 2019 yil 8 oktyabrdagi “O‘zbekiston Respublikasi oliy ta’lim tizimini 2030 yilgacha rivojlantirish konsepsiyasi” to‘g‘risidagi Farmoni.
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OSHQOZON-ICHAK, JIGAR KASALLIKLARI

Annotatsiya: *Ushbu maqolada oshqozon-ichak va jigar kasalliklarining etiologiyasi, patogenezi, klinik belgilarini tahlil qilish hamda zamonaviy diagnostika va davolash usullarini ko‘rib chiqish maqsad qilingan. Maqolada so‘nggi yillardagi ilmiy ishlanmalar, global va mahalliy statistik ma’lumotlar asosida ushbu kasalliklarning dolzarbligi yoritiladi. Tadqiqot natijalari kasalliklarni erta aniqlash va samarali davolash strategiyalarini ishlab chiqishda muhim ahamiyat kasb etadi.*

Kalit so‘zlar: *Oshqozon-ichak kasalliklari; jigar kasalliklari; diagnostika; davolash; klinik amaliyot; epidemiologiya.*

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DISEASES OF THE GASTROINTESTINAL TRACT AND LIVER

Abstract: *This article is aimed at analyzing the etiology, pathogenesis, and clinical signs of diseases of the gastrointestinal tract and liver, as well as an overview of modern diagnostic and treatment methods. The article highlights the relevance of these diseases based on recent scientific developments, global and local statistics. The research results are becoming important for the early detection of diseases and the development of effective treatment strategies.*

Key words: *gastrointestinal diseases; Liver diseases; diagnosis; treatment; clinical practice; epidemiology.*

Kirish

Oshqozon-ichak va jigar kasalliklari bugungi kunda dunyo miqyosida sog‘liqni saqlash tizimi uchun dolzarb muammolardan biri hisoblanadi. Jahon sog‘liqni saqlash tashkiloti (JSST) ma’lumotlariga ko‘ra, gastroenterologik va gepatologik patologiyalar global kasallanish va o‘lim ko‘rsatkichlarida yetakchi o‘rinlardan birini egallaydi. Ushbu kasalliklar nafaqat rivojlangan mamlakatlarda, balki rivojlanayotgan hududlarda ham keng tarqalgan bo‘lib, aholi turmush sifati, mehnat unumdorligi va iqtisodiy barqarorlikka sezilarli darajada ta’sir ko‘rsatadi.

Oshqozon-ichak kasalliklariga gastrit, oshqozon va o‘n ikki barmoqli ichak yaralari, gastroezofageal reflyuks kasalligi (GERD), yallig‘lanishli ichak kasalliklari va funksional buzilishlar kiradi. Bu kasalliklarning rivojlanishida ovqatlanish odatlari, stress, infektsiyalar, irsiy omillar va ekologik sharoit muhim rol o‘ynaydi. Shu bilan birga, gepatitlar, jigar sirrozi va yog‘li gepatoz kabi jigar kasalliklari ham global sog‘liqni saqlashning ustuvor yo‘nalishlaridan biri bo‘lib qolmoqda.

O‘zbekiston sharoitida ham oshqozon-ichak va jigar kasalliklari yuqori uchrash chastotasiga ega. Statistik ma’lumotlar ushbu patologiyalar bilan bog‘liq bemorlar soni so‘nggi yillarda ortib borayotganini ko‘rsatadi. Aholining oziq-ovqat tarkibi, gigiyenik madaniyat darajasi, ichimlik suvi sifati va turmush tarzidagi o‘zgarishlar bu jarayonga bevosita ta’sir qilmoqda. Shu sababli mazkur kasalliklarni erta diagnostika qilish, ularni samarali davolash va profilaktika tadbirlarini takomillashtirish zamonaviy tibbiyot oldida turgan muhim vazifalardandir.

Mazkur maqolaning maqsadi — oshqozon-ichak va jigar kasalliklarining etiologiyasi, patogenezi, diagnostikasi va davolash usullarini tahlil qilish hamda mavjud ilmiy yondashuvlar asosida amaliy tavsiyalar ishlab chiqishdir. Ushbu tadqiqotning dolzarbligi, bir tomondan, kasalliklarning keng tarqalganligi va ularning ijtimoiy-iqtisodiy oqibatlari bilan belgilanadi, ikkinchi tomondan, zamonaviy tibbiyotda diagnostika va terapiya imkoniyatlarining tezkor rivojlanishi bilan asoslanadi. Shu bois maqola gastroenterologiya va gepatologiya sohalaridagi ilmiy yangiliklar hamda amaliy tajribalarni umumlashtirishga qaratilgan.

Tadqiqot materiali va usullari

Tekshirishlardan olingan natijalar shuni kursatdiki, umumiy tekshirilgan 26 ta me'da yara kasalligidan 24 tasida va 29 ta o’n ikki barmoqli ichak yara kasalligidan 26 ta bemorda HP - infeksiyaga o‘tkazilgan test ijobiy natija berdi. Tekshirish o‘tkazilgan bemorlarning barchasida me'da sekresiyasi mos ravishda o‘zgarganligi aniqlandi (tablisa 1). Unda MYAKda 96% va UBIYAKda esa 92% pH -

kislotalikka uzgargan. Suyakning osteopeniya markerlaridan esa MYAK va UBIYAK da osteokalcin ko‘rsatkichi mos ravishda 42,3% va 45,6% mikdorida sog‘lom odamlarnikiga nisbatan pasaygan. b - cross laps kursatkichi esa MYAK va UBIYAK bilan og‘rigan bemorlarda deyarli ikki baravar oshgan. Osteopeniyaning P - Th kursatkichi UBIYAKda ishonarli tarzda kamaygan. Bu kursatkich MYAK da statistik jixatdan ishonarsiz natija berdi. Shu bilan birga, tekshirishlar qonda kalsiy, fosfor va ishqoriy fosfataza miqdori bu kasallarda uzgarmagan (tablisa 2).

Jadval-1

MYAK va UBIYAK bilan ogrigan bemorlarning me'dasida qontrol nuktalarda Ph ning uzgarishi

Tekshirila digan nuktalarning joylashish i	"Ozerso"	Me'da gumbazi	Me'da tanasi va orka devori	Me'da tanasi, oldingi devori	Me'daning antral so-xasi, kichik egrilik	Me'daning antral soxasi, katta egrilik
Soglom	2,1±0, 02	3, 8 ± 0, 4	1, 9± 0,12	2, 1± 0, 10	6, 0 ± 0, 4	6, 5 ± 0, 4
MYAK	1,2± ,05*	0,9±0,05 *	1,0±0,05 *	0,8±0,05 *	1, 9±0, 07*	1, 8±0, 06*
UBIYAK	1,0± ,05*	0,7±0,06 *	0,9±0,06 *	0,7±0,04 *	1, 6±0, 07*	1, 3±0, 07*

Eslatma: bunda *- kontrol gurux ko‘rsatkichlariga nisbatan ishonchlilik farqi (r< 0, 05)

Jadval-2

MYAK va UBIYAK bilan og‘rigan bemorlar suyaklar mineral zichligining bioximiyaviy ko‘rsatkichlari

Ko‘rsatkichlar	Soglom	Me'da yara kasalligi	O‘n ikki barmoqli ichak yara kasalligi
Osteokalcin	17, 5± 3,8	12,8± 0, 5*	10, 2± 0, 9*
b- cross	0, 2± 0, 04	0, 4+ 0, 07*	0, 45± 0, 05*
P-TH	35, 5± 4, 3	28, 4± 2, 5	22, 5± 3, 4*
Kalsiy	2, 12± 0, 35	2, 50± 0, 50	2, 40± 0, 60
Fosfor	1, 43± 0, 40	1, 35± 0, 35	1, 55± 0, 30
IF yed/l	170, 5± 14, 0	185, 5± 18, 5	198, 0± 16, 5

Qonda yallig‘lanish sitokinlarini tekshirishning ko‘rsatishicha, MYAK va UBIYAK bilan og‘rigan bemorlarda IL - 6 mikdori sog‘lom odamlarga nisbatan 54,2% va 50,4% ga oshgan. Boshqa sitokin FNO - a miqdori esa MYAK va UBIYAK bilan og‘rigan bemorlarda 84,1% va 81,2% oshgan (tablisa 3).

Jadval 3

MYAK VA UBIYAK bilan ogrigan bemorlar qon zardobida sitokinlar kursatkichi

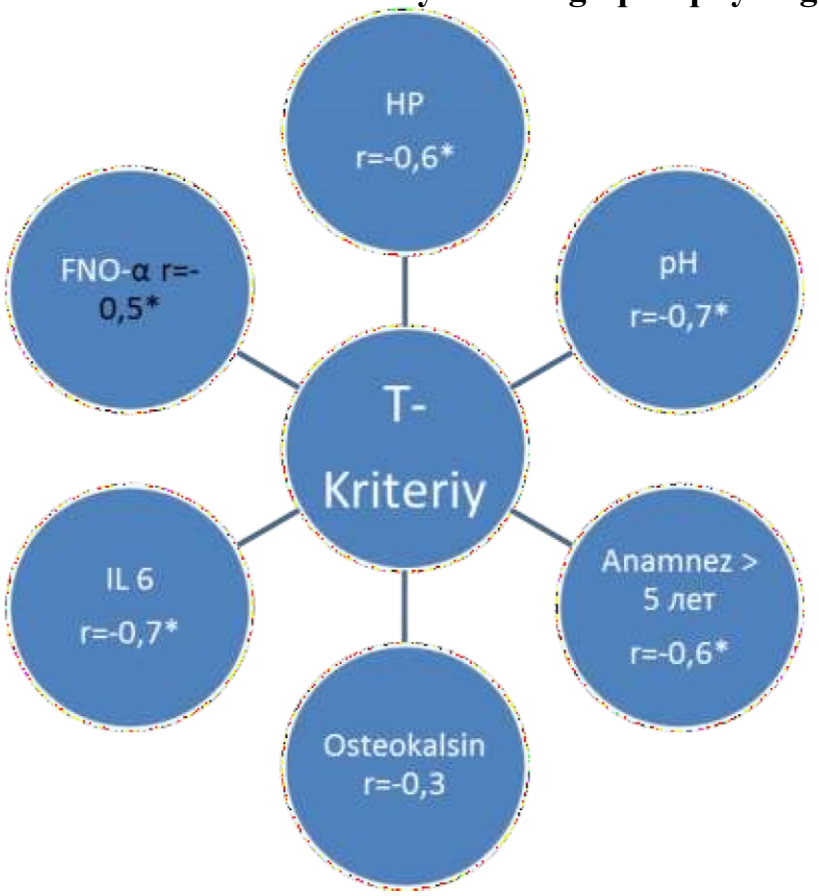
Sitokinlar	Soglom	UBIYAK	MYAK
IL 6 (pg/ml)	31, 20± 2,20	46,60± 3,50*	48,80± 3,70*
FNO-α (pg/ml)	3,20± 0,45	5,80± 0,40*	6,40± 0,46*

Instrumental tekshirishda, ya'ni barcha bemorlar bilak suyagining distal kismini ultratovush densitometr yordamida tekshirilganda MYAK bilan og‘rigan bemorlarning 22 tasida T - indeksi 2,6 yed.ga va UBIYAK bilan og‘rigan 24 ta bemorda T - indeksi 2,5 yed.ga pasayganligi aniqlandi.

Tadqiqot natijalari. O‘tkazilgan rang korrelyasion taxlili natijasida olingan ma'lumotlar shuni ko‘rsatdiki, MYAK va UBIYAK bilan og‘rigan bemorlarda bevosita korrelyasion bog‘liqlik qo‘yidagi ko‘rsatkichlar orasida kuzatildi: HP - infeksiyaga nisbatan ijobiy HP-test va b-cross laps (r= 0,6), 5 yildan uzoq kechuvchi anamnez va b-cross laps (r= 0,7). Salbiy korrelyasion uzaro bog‘liqlik esa qo‘yidagi parametrlar orasida aniqlandi: IL - 6 va osteokalsin (r = -0,6), HP - infeksiyaga nisbatan ijobiy HP-test va osteokalsin (r= -0, 5), IL - 6 va T-indeks (r= -0, 5), 5 yildan uzoq kechuvchi anamnez va T-indeks (r= -0, 5) (rasm 1).

Rasm-1

MYAK va UBIYAK bilan ogrigan bemorlarda T - indeks va boshqa parametrlari orasida korrelyasion bogliqlik qo‘yidagicha:



Shunday qilib, utkazilgan izlanishlar natijasiga kura, hazm traktining uzoq kechuvchi va HP-assosirlashgan kasalliklari, ya'ni MYAK va UBIYAKda osteopeniya rivojlanib boradi. Kasallik kechish davomiyligi ortib borgan sari, suyak tuqimasining mineral zichligi kamayib boradi. Bu HP - infeksiyaning organizmga salbiy ta'siri xamda yalliglanish mediatrlari sintezining oshib ketishi tufayli xam kelib chiqishi qayd qilindi. Ular ko‘pincha o‘zaro bir - biriga bog‘lik ravishda osteopeniyaning rivojlanishiga olib keladi. Bundan tashqari, shuni xam xisobga olish kerakki, MYAK va UBIYAK ni davolashda qo‘llaniladigan tarkibida alyuminiy saqlaydigan antasidlar va sitoprotektorlarni (sukralfat, venter, alyumag, maoloks va b.k.) uzoq qullash xam osteopeniya rivojlanishiga olib keladi. Bu dori vositalarining nojuya ta'sirlaridan biri suyak tuqimasidagi osteodistrofik uzgarishlarga sabab bo‘lishidir.

XULOSA

1. Uzoq kechgan (3-5 yildan ortiq) va HP-infeksiyasi bor me'da va o’n ikki barmoq ichak yara kasallarida osteopeniya rivojlanishi kuzatiladi;

2. Me'da va o’n ikki barmoq ichak yara kasalligida suyak tuqimasining zichligini, ya'ni osteopeniyani aniqlashda suyak markerlari: ostekalcin, b - cross laps va ultratovush densitometriyada T-indeksi asosiy kursatkichlar sanaladi;

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“DAVLAT AKTIVI” VA “DAVLAT MULKI” TUSHUNCHALARINING NAZARIY-HUQUQIY ASOSLARI

Annotatsiya. Ushbu maqolada “davlat aktivi” va “davlat mulki” tushunchalarining iqtisodiy-huquqiy mohiyati, ularning o‘zaro farqlari hamda o‘zaro aloqasi tahlil qilinadi. Shuningdek, davlat aktivlarini boshqarish tizimi, xalqaro tajribalar va O‘zbekiston Respublikasida amalga oshirilayotgan islohotlar misolida davlat aktivlarini samarali boshqarishning nazariy va amaliy jihatlari yoritilgan.

Kalit so‘zlar: *davlat aktivi, davlat mulki, boshqaruv, iqtisodiy islohotlar, xususiylashtirish, samaradorlik, davlat aktivlarini boshqarish agentligi.*

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THEORETICAL AND LEGAL FOUNDATIONS OF THE CONCEPTS OF “STATE ASSET” AND “STATE PROPERTY”

Annotation. *This article analyzes the economic and legal essence of the concepts of “state asset” and “state property,” their differences, and their interrelation. It also highlights the theoretical and practical aspects of effective management of state assets through the example of the management system, international experience, and the reforms being implemented in the Republic of Uzbekistan.*

Keywords: *state asset, state property, management, economic reforms, privatization, efficiency, Agency for Management of State Assets.*

Kirish

Bozor iqtisodiyotiga asoslangan har qanday davlatda mulkchilik shakllarining xilma-xilligi iqtisodiy barqarorlik va ijtimoiy farovonlikning muhim omili hisoblanadi. O‘zbekiston Respublikasi mustaqillikka erishgandan so‘ng, davlat mulkini isloh qilish, uni boshqarish mexanizmlarini takomillashtirish hamda davlat aktivlaridan oqilona foydalanish masalalari davlat siyosatining ustuvor yo‘nalishiga aylandi. So‘nggi yillarda mamlakatimizda “davlat aktivi” tushunchasi faol qo‘llanila boshladi. Bu atama “davlat mulki” tushunchasidan kengroq bo‘lib,

davlatning iqtisodiy manfaatlarini ifodalovchi real yoki moliyaviy qiymatga ega ob'yektlarni anglatadi.

Davlat aktivi tushunchasining iqtisodiy-huquqiy mohiyatini ko'rib chiqadigan bo'lsak, **davlat aktivi** — bu davlatga tegishli bo'lgan va iqtisodiy qiymatga ega, foyda keltiruvchi yoki iqtisodiy faoliyatda ishtirok etuvchi resurslar majmui. Bular tarkibiga aksiyalar, obligatsiyalar, davlat korxonalari, yer va ko'chmas mulk, intellektual mulk, hamda davlatning moliyaviy ulushlari kiradi. Iqtisodiy nuqtayi nazardan, davlat aktivlari — bu davlat balansida qayd etilgan, milliy boylikning bir qismi bo'lib, ularning samarali boshqarilishi byudjet daromadlarini oshiradi, iqtisodiy o'sishni rag'batlantiradi.

Davlat mulki tushunchasini mohiyatini ko'rib chiqadigan bo'lsak, **davlat mulki** — bu davlat nomidan egalik qilinadigan, foydalaniladigan va tasarruf etiladigan barcha moddiy va nomoddiy boyliklar yig'indisidir. U quyidagi turlarga bo'linadi: Respublika mulki, mahalliy davlat mulki. Davlat mulkiga ishlab chiqarish korxonalari, transport vositalari, tabiiy resurslar, yer, suv, o'rmonlar, davlat zaxiralari, shuningdek, ilmiy tadqiqot natijalari, patent va litsenziyalar kiradi.

Ushbu ikki tushuncha ko'pincha sinonim sifatida ishlatiladi, biroq ular o'rtasida aniq farq mavjud: davlat aktivi — iqtisodiy qiymatga ega, foyda keltiruvchi resurs, davlat mulki — barcha moddiy va nomoddiy boyliklarni o'z ichiga oladi.

"Davlat aktivlari" tushunchasi kengroq bo'lib, u nafaqat moddiy davlat mulkini, balki qiymatga ega bo'lgan boshqa aktivlarni ham o'z ichiga oladi, masalan: moliyaviy mablag'lar, kompaniyalardagi ulushlar va mulkiy huquqlar. Davlat mulki esa davlat aktivlarining bir qismi bo'lib, davlat egaligidagi moddiy ob'yektlarni — yer, bino, transport vositalari hamda tabiiy resurslarni ifodalaydi.

Davlat aktivlari kengroq tushuncha: qiymatga ega va daromad keltirishi mumkin bo'lgan barcha davlat resurslarini o'z ichiga oladi.Tarkibi:

- Moliyaviy mablag'lar (pul, qimmatli qog'ozlar).
- Aksiyadorlik jamiyatlaridagi ulushlar va aksiyalar.
- Intellektual mulkka bo'lgan huquqlar.
- Nomoddiy aktivlar.

Aktivlarni boshqarishning maqsadi — iqtisodiy foyda olish va davlat funksiyalarini samarali ta'minlashdir.

Davlat mulki torroq tushuncha: davlat aktivlarining bir qismi bo'lib, moddiy obyektlarga taalluqlidir. Tarkibi:

- Ko'chmas mulk (yer, binolar, inshootlar).
- Ko'char mulk (transport vositalari, uskuna va jihozlar).
- Tabiiy resurslar.
- Infratuzilma obyektlari.

Davlat ehtiyojlari uchun foydalaniladi — mudofaa, ta'lim, sog'liqni saqlash, boshqaruv va davlat xizmatlarini ko'rsatish sohalarida.

Taqqoslash uchun misol. Tasavvur qiling, davlat zavodga egalik qiladi. Zavodning o'zi (binolar, stanoklar, uskuna va jihozlar) — bu davlat mulki. Ammo shu zavodning davlat aktivlari tarkibiga nafaqat zavodning o'zi, balki uning bank

hisoblaridagi mablag‘lari, texnologiyalarga oid patentlari, boshqa kompaniyalardagi aksiyalari ham kiradi. Shu barcha elementlar yig‘indisi zavodning umumiy aktivlarini tashkil etadi.

Hozirda, O’zbekiston Respublikasi miqiyosida, O‘zbekiston Respublikasi Prezidentining 2019-yil 14-yanvardagi PQ–4126-son qarori asosida Davlat aktivlarini boshqarish agentligi tashkil etilgan bo‘lib, u davlat ulushlari va korxonalardagi aksiyalarni boshqarish, davlat ishtirokidagi korxonalarning samaradorligini oshirish, shuningdek, xususiylashtirish jarayonlarini amalga oshirish bilan shug‘ullanadi. Bugungi kunga kelib, 2020–2024-yillar davomida 600 dan ortiq korxona va ob’yektlar xususiy sektorga o‘tkazildi. Bu esa byudjetga milliardlab so‘mlik tushum keltirdi va iqtisodiyotda raqobatni kuchaytirdi.

Mamlakatimiz so‘nggi yillarda “Davlatdan xususiy sektorga o‘tish” tamoyilini izchil amalga oshirmoqda. 2023-yilda davlat ishtirokidagi 540 ta korxona restrukturizatsiya qilindi, 300 ga yaqin ob’yekt xususiylashtirildi. Bundan tashqari, davlat aktivlarini elektron auksion orqali sotish tizimi yo‘lga qo‘yildi.

XULOSA

Yuqoridagilardan kelib chiqib aytish mumkinki, davlat aktivi va davlat mulki tushunchalari O‘zbekiston Respublikasi iqtisodiy siyosatining muhim tarkibiy qismini tashkil etadi. Davlat mulki davlatning asosiy iqtisodiy bazasini yaratadi, davlat aktivlari esa ushbu bazani samarali boshqarish va rivojlantirish vositasi hisoblanadi. Shuning uchun ham davlat aktivlarini boshqarish sohasida institutsional va huquqiy mexanizmlarni yanada takomillashtirish, ularning iqtisodiy samaradorligini oshirish dolzarb ahamiyatga ega.

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SOMATISMS IN UZBEK PROVERBS: LINGUISTIC AND CULTURAL SIGNIFICANCE

Annotation: *This article studies the grammatical, cultural, and moral significance of somatisms—lexical units derived from human body parts—in Uzbek proverbs. Bosh (head), ko‘z (eye), qo‘l (hand), yurak (heart), and til (tongue) are examples of somatisms that are effective figurative instruments for communicating abstract concepts, feelings, and societal values. They offer direction in oral tradition, folklore, and daily communication with defining the Uzbek worldview.*

Key words: *somatisms, Uzbek proverbs, culture, body parts, figurative meaning, wisdom, language, tradition, morality, symbolism.*

Somatisms are lexical units that come from the names of human body parts, such as the heart (yurak), hand (qo‘l), eye (ko‘z), and head (bosh). Proverbs and other metaphorical and figurative phrases, as well as the formation of core vocabulary, are shaped by somatisms, which are essential to the Uzbek language. These linguistic components provide as a solid foundation for Uzbek folklore, ordinary speech, and cultural awareness.

The wide range of idioms and proverbs that employ body parts to express abstract concepts, feelings, and societal values in Uzbek demonstrates the importance of somatisms. For instance, the physical part ko‘z (eye) is used to convey a metaphorical truth about inner feelings being seen through one‘s gaze in the saying, “Ko‘z – ko‘ngil oynasi” (The eye is the mirror of the soul). Likewise, “Qo‘l qo‘lni yuvadi, ikki qo‘l yuzni” (One hand washes the other, both hands wash the face) highlights collaboration and mutual aid, with qo‘l (hand) signifying solidarity and support.

A significant part of the country’s linguistic and cultural legacy are somatic proverbs in the Uzbek language. The Uzbek people‘s worldview, beliefs, and common sense are reflected in these proverbs, which are powerful metaphorical phrases made utilizing names of body parts like bosh (head), ko‘z (eye), qo‘l (hand), yurak (heart), and til (tongue).

In Uzbek culture, proverbs function as both linguistic and moral instruction, and elders commonly use them to advise or chastise the younger generation. They are frequently used in ordinary discourse, storytelling, and instruction to encourage moral behavior, warn against mistakes, and consider life‘s experiences. The nation’s collective wisdom is preserved over time by these proverbs, which often have a rhythmic or well-balanced style that promotes oral transmission and retention. For example: The following are some well-known Uzbek sayings that contain somatic lexemes:

1. “Bosh bor joyda aql bor[29].”

Where there is a head, there is wisdom.

This saying teaches that the head is the place of the mind, so wherever there is a head, there must also be intelligence. It highlights the idea that a person’s strength and success come not only from physical power but from thinking and reasoning. The saying reminds us that wisdom and intellect guide actions better than force alone.

2. “Ko‘z – ko‘ngil oynasi[30].”

The eye is the mirror of the heart/soul.

The proverb emphasizes the idea that a person‘s inner feelings are reflected outwardly through their eyes. Here, ko‘z (eye) symbolizes vision and expression, while ko‘ngil (heart/soul) represents inner emotions, thoughts, and sincerity. The saying teaches that the eyes reveal what is hidden in the soul, making them a mirror of one’s true self.

3. “Yurakdan chiqqan so‘z yurakka yetadi[31].”

Words that come from the heart reach the heart.

The proverb expresses the idea that sincere words, born from true feelings, deeply touch others. Here, yurak (heart) symbolizes emotions, honesty, and inner truth, while so‘z (word) represents human expression. It serves as a reminder that genuine, heartfelt speech creates emotional connection, trust, and understanding between people.

4. “Til – boshning balosi[32].”

The tongue is the head’s trouble.

Here, bosh (head) stands for the self or the seat of judgment, and til (tongue) for speaking. The proverb serves as a metaphorical warning that careless or irresponsible speech can have dire repercussions. It has a dual purpose of preventing and correcting: it encourages self-control and intelligent social communication while acting as a warning against angry remarks, slander, and gossip.

5. “Ko‘r-ko‘rona oyoq bosma[33].”

Don’t step blindly.

The proverb warns against acting without thought or awareness. Here, ko‘r-ko‘rona (blindly) symbolizes ignorance and lack of caution, while oyoq (foot) represents action or steps in life. The saying teaches that one should not move forward carelessly but act wisely, with foresight and understanding, to avoid mistakes and harm.These illustrations make it abundantly evident how closely Uzbek somatic proverbs are linked to social conduct, cultural norms, and language

[29] Musaqulov, B. Sarimsaqov T. Mirzayev, A. O‘zbek xalq maqollari. — Toshkent: O‘zbekiston milliy ensiklopediyasi, 2005. — 254 b.

[30] T. Mirzayev, A. Musaqulov, B. Sarimsaqov. — Toshkent: O‘zbekiston milliy ensiklopediyasi, 2005. — 256 b

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[32] F. R. Nasimova.Yapon va o'zbek xalq maqollarida tana a'zolari orqali berilgan axloqiy saboqlar. – Toshkent: Ta'limda raqamli texnologiyalarni tadbiq etishning zamonaviy tendensiyalari va rivojlanish omillari, 2025. — 285 b.

[33] Qarshiyeva M. Contrastive study of proverbs formed on the basis of somatisms in Uzbek and English languages. Surxondaryo, 2025. — 48 b.

innovation. They provide insight into the Uzbek way of thinking, in which the body is viewed as a symbolic environment for understanding and negotiating the human condition.

Conclusion

Uzbek somatic proverbs demonstrate the close relationship that exists between language, culture, and human experience. They convey moral teachings, values, and wisdom in a vivid and significant way by figuratively utilizing body parts. These sayings demonstrate how the Uzbek view the human body as a symbolic framework for comprehending life and serve as instruments of education, social control, and cultural preservation. They so continue to be an essential part of the country's linguistic and cultural legacy, guaranteeing the generational transfer of shared values and expertise.

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ISHLAB CHIQARISHDA JAROHATLANISHLAR, KASB KASALLANISHLARI VA ULARNING YUZAGA KELISH SABABLARI

Annotatsiya. *Ushbu maqolada ishlab chiqarish jarayonida yuzaga keladigan turli xil ishlab chiqarish jarohatlari va kasb kasalliklari,ularning kelib chiqish sabablari va oqibatlari turli xil usullar bilan tahlil qilingan.Ishlab chiqarishda yuz beruvchi baxtsiz hodisalar ko‘pincha texnika xavfsizlik qoidalarining buzilishi,ishchilarda mehnat intizomi yetishmasligi,ishlab chiqarish uskunalarining nosozligi,ishchilarning qay tartibda ishlashi uchun bilim va ko‘nikmaga ega bo‘lmasligi,hamda ish joyidagi gigiyenik sharoitrlarning talabga javob bermasligi kabi omillar bilan bo‘lishi ko‘rsatilgan.Ushbu muammolarni oldini olish yo‘llari, mehnat muhofazasi bo‘yicha qonunchilik talablariga rioya qilish,xavfsizlik texnikasi va sanoat gigiyenasining asosiy tamoyillari,ishlab chiqarish jarayonlarini avtomatlashtirish va modernizatsiya qilish orqali xavflarni kamaytirish chora-tadbirlari ham yoritilgan.*

Kalit so‘zlar: *ishlab chiqarish jarohatlari, kasb kasalliklari, mehnat muhofazasi, texnika xavfsizligi, ish joyidagi xavf-xatarlar, sanoat gigiyenasi, ishchilar salomatligi, profilaktik chora-tadbirlar, mehnat sharoitlari.*

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INDUSTRIAL INJURIES, OCCUPATIONAL DISEASES AND THEIR CAUSES

Annotation:*This article analyzes various types of occupational injuries and diseases that arise during the production process, as well as their causes and consequences, using different methods. It is shown that industrial accidents often result from violations of safety regulations, lack of labor discipline among workers, malfunctioning of production equipment, insufficient knowledge and skills of workers regarding work procedures, and poor hygienic conditions in the workplace. The article also outlines ways to prevent these problems, including adherence to labor protection legislation, the fundamental principles of safety engineering and industrial hygiene, and measures to reduce risks through the automation and modernization of production processes.*

Keywords: *occupational injuries, occupational diseases, labor protection, safety engineering, workplace hazards, industrial hygiene, workers' health, preventive measures, working conditions.*

Kirish.

Zamonaviy sanoatning jadal rivojlanishi bilan birga ishlab chiqarish jarayonlarida inson salomatligiga tahdid soluvchi omillar ham ko‘paymoqda.Fan-texnika taraqqiyoti bilan kirib kelgan yangi texnologiyalarni qo‘llash natijasida ishlab chiqarish samaradorligi oshadi.Ishlab chiqarilayotgan mahsulotlar sifati yaxshilanadi,jahon bozorda raqobat kuchayadi.Ammo,yangi texnologiyalar bilan birga yangi xavf-xatarlar ham kirib keladi.Ish joylarifa yuzaga keladigan jarohatlar va kasb kasalliklari nafaqat ishchilarning hayoti va sog'lig'iga ,balki korxonaning samaradorligiga,ishlab chiqarishning barqarorligiga ham salbiy ta'sir ko‘rsatadi.Shu bois,bu xavflarning kelib chiqish sabablarini,oqibatlarini,bartaraf etish va himoyalanish usullarini o‘rganib chiqishimiz zarur.Ishlab chiqarish jarayoni buzilishi,ishlovchilar uchun sanitariya va gigiyena me'yor va qoidalarni yaratilmasligi ishlab chiarish jarayonida hosil bo‘ladigan turli zaharli va zararli moddalar,ishlab chiqarishdagi avariya va halokatlar,ishlovchilarning hayotiy faoliyatiga, sog'lig'iga, atrof-muhit tozaligiga va iqtisodiyotining barqaror rivojlanishiga tahdid solmoqda. Shu sababli ham mamlakatimizning eng muhim va kechiktirib bo‘lmaydigan vazifalari qatorida aholi hayotining xavfsizligini ta'minlash masalalari dolzarb o‘rin olgan [1]. Ishlab chiqarish jarayonida uchraydigan jarohatlar va kasb kasalliklarining turlari,ularning yuzaga kelish sabablari,shuningdek,mehnat muhofazasini ta‘minlash yo‘llari ko‘rib chiqiladi.Shuningdek,profilaktika choraqlari,tibbiy nazorat va xavfsizlik madaniyatini shakllantirish orqali ishlab chiqarishdagi sog'lom mehnat muhitini yaratish masalalari tahlil qilinadi.

Kasb kasalliklari - yomon mehnat sharoitlari va kasbga aloqador zararlarning organizmga ta'siri natijasida paydo bo‘ladigan kasalliklar. Kasb kasalliklarining kechishi unga sabab bo‘lgan zararli omillarning o‘ziga xosligi, kuchi, davomiyligi va ularning birgalikdagi ta'siriga bog‘liq. Kasb kasalliklarining zararli omillarini hisobga olgan holda belgilanadi [2]. Kasb kasalliklarining fizik (kasbga aloqador karlik, vibratsiya kasalligi, nur kasalligi, kesson kasalligi, balandlik kasalligi va boshqalar), biologik (infeksion va parazitar kasalliklar: brutsellyoz, kuydirgi) va kimyoviy omillar ta'sirida (qarang zaharlanish), ba'zi changlar uzoq vaqt nafasga olinganda (pnevmokonioz, bronxit va boshqalar), shuningdek, jismoniy zo‘riqqanda yoki shikastlanganda (nevrit, bursit) vujudga keladigan turlari farq qilinadi. Kasb kasalliklarining kelib chiqishiga organizmning o‘ta toliqishi va kasallikka qarshi kurasha olish faoliyatining pasayishi ham sabab bo‘ladi.

O‘zbekiston Respublikasi Sog'liqni saqlash vazirligining 2000-yil 6-iyundagi 300-sonli buyrug'i bilan tasdiqlangan kasb kasalliklari ro‘yxatidagi kasallilar kasb kasalligi hisoblanadi. Agar,xodim ushbu ro‘yxatda ko‘rsatilgan kasallikka chalinsa,u bevosita ro‘yxatda ko‘rsatilmagan kasb yoki ishlab chiqarishda ishlagan bo‘lsa ham bu kasallik kasb kasalligi dep topiladi [3].

Ro‘yxatda ko‘rsatilgan kasalliklargina emas,shu bilan birga ularning asoratlari va bevosita oqibatlari ham kasb kasalliklariga kiradi. Ushbu ro‘yxatda quyidagilardan iborat:

✓ **Toksiko-kimyoviy omillar ta’sirida paydo bo‘ladigan kasalliklar**: toksik kamqonlik (anemiya), toksik gepatit, toksik nefropatiya, ko‘zning toksik zararlanishi- katarakta, kon’yuktivit, keratokon’yuktivit, suyakning toksik zararlanishi: osteoporoz, osteoskleroz, jag’ suyaklari nekrozi, rinofaringolaringit, eroziya, burun to‘sig’ining teshilishi, traxeit, bronxit, pnevmoskleroz, epidermoz, kontakt dermatit, fotodermatit, onixiya, paranixiya, toksik melanodermiya, yog’li follikulitlar, ekzema.

✓ **Sanoat aerozollari va changlardan keltirib chiqaradigan kasalliklar**: silikoz, silikatoz, silikotuberkulyoz, metallokoniozlar, karbokoniozlar, aralash changdan paydo bo‘ladigan pnevmokoniozlar, plastmassalar changidan yuzaga keladigan pnevmokoniozlar, Surunkali bronxit (changli, toksik omillar, noqulay ob-havo omillari bilan birga), Surunkali rinofaringolaringit: allergik kasalliklar,o‘smalar, bissinoz.

✓ **Fizik omillar ta’siridan kelib chiqadigan kasalliklar**: ionlashtirmaydigan nurlar ta’sir qilishidan paydo bo‘ladigan kasalliklar: vegetativ tomir distoniyasi, astenik, astenovegetativ, gipotalamik sindromlar, to‘qimalarning lazer nurlaridan (teri kuyishi, ko‘z to‘r pardasi va muguz pardasining kuyishi) mahalliy (lokal) zararlanishi, tebranish (vibratsiya) kasalligi, koxlear nevrit, qo‘llarning vegetativ-sensor (angionevroz) yoki sensomotor polinevropatiyasi, elektrooftalmiya,katarakta, dekompression (kesson) kasalligi va uning asoratlari, issiqlab ketish: issiqlik urishi, talvasali holat (tirishish), onixodistrofiya, mexanik epidermozlar, obliteratsiyalovchi endoarteriit, vegetativ-sensor polinevropatiya (angiopatiya), poliradikulonevropatiya.

✓ **Jismoniy zo`riqishlardan kelib chiqadigan kasalliklar:** koordinator nevrozlar, shu jumladan, yozuv changagi (spazmi), periferik asab tizimi va tayanch-harakat tizimining xastaliklari; mono- va polinevropatiyalar, shu jumladan, kompression va vegetativ-sensor nevropatiyalari, bo`yin va bel-dumg’aza radikulopatiyalar, surunkali miofibrozlar (miofassitlar, tendovaginitlar, stenozlovchi ligamentozlar, stiloidozlar, “yopilib qoluvchi barmoqlar” va boshqalar), yelka epikondilezlari, yelka-ko‘krak periartrozlari, osteoartrozlar, shu jumladan, spondiloartroz, aseptik osteonekrozlar, bachadon va qin devorlarining pastga tushishi va tushib qolishi, yallig`lanish (tromboflebit) yoki trofik buzilishlar bilan asoratlangan oyoqlardagi venalarning varikoz kengayishi, tovush apparatining o‘ta toliqishi bilan bog`liq bo`lgan hollar: surunkali laringit, vazomotor monoxordit, tovush boylamlarining tugunlari (“ashulachilar tugunlari”) ovoz boylamlarining yaralari, fonasteniya, o‘pka emfizemasi,nevrozlar.

✓ **Biologik omillar keltirib chiqaradigan xastaliklar:** ish vaqtida kontaktda bo`ladigan xodimlardagi kuzatiladigan infeksiyalarga aloqador yuqumli va parazitar xastaliklar; sil, brutsellyoz, kuydirgi, kana ensefaliti, ornitoz, sut sog’uvchilar qo`lidagi tugunlar, toksoplazmoz, virusli gepatit, teri mikozlari, rozenbax erizipeloidi, qichima, zaxm, teri va shilliq pardalar disbakteriozi,

kandidomikozi, visseral kandidoz, allergik kasalliklar: kon'yunktivit, rinit, rinofaringit, rinofaringolaringit, rinosinusit, bronxial astma, astmatik bronxit, ekzogen alveolit, dermatit, ekzema, toksikodermatit, Kvinke shishi, eshak yemi, anafilaktik shok, toksikoallergik gepatit, markaziy va periferik asab tizimi zararlanishlari, O'smalar:

a) teri o'smalari (giperkeratozlar, epiteliomalar, papillomalar, rak, leykokeratozlar);

b) og'iz bo'shlig'i va nafas a'zolari o'smalari;

v) jigar o'smalari;

g) me'da raki;

d) leykozlar;

e) siydik pufagi o'smalari (papillomalar, rak);

j) suyak o'smalari.

Inson organizmiga salbiy ta'sir ko'rsatuvchi omillar bir nechta ko'rinishda namoyon bo'ladi;

1. Kimyoviy-qo'rg'oshin,simob,marganes,benzol,xrom berilliy va boshqa moddalar.

2. Ishlab chiqarishda uchraydigan changlar-kremniy,ko'mir;

3. Korxona muhitida uchraydigan xilma-xil fizikaviy omillar-kuchli shovqin,titrash,radioaktiv moddalar,ionlashtirish xususiyatiga ega ,infraqizil va ultrabinafsha nurlar,elektromagnit to'lqinlar,ultratovush,me'yoridan ortiq harorat,yuqori nisbiy namlik,atmosfera bosimi.

4. Biologik omillar-mikrob,virus.

Ushbu omillar ta'siri natijasida ishlab chiqarishda ishlaydigan ishchilarda kasb kasalliklari kelib chiqishi mumkin.

Ishlab chiqarish korxonalarida kasb kasalliklar profilaktikasi ya 'ni korxona tasarrufidagi davolash muassasalarida amalga oshiriladigan sog'lomlashtirish,maxsus profilaktik ovqat bilan ta'minlash,mehnat sharoitlarini nazorat qilish,ishga kirish paytidagi dastlabki va davriy ravishda o'tkaziladigan tibbiy ko'rikning ahamiyati katta. Ishchilar uchun tibbiy muassasaga yuborishdan oldin ish beruvchi bir nechta vazifalarni bajarishi kerak [4]. Avvalo, ishchilar kontingenti ro'yxatini tuzish kerak. Bu dastlabki yoki davriy tibbiy ko'rikdan o'tkazilishi kerak bo'lgan xodimlarning kasblari to'g'risidagi ma'lumotlarni o'z ichiga olgan korxonaning me'yoriy hujjati. Ushbu hujjat uchun belgilangan shaklning namunasi taqdim etilmagan, ammo unda ko'rsatilishi kerak bo'lgan ma'lumotlar ro'yxati ishlab chiqilgan:

- shtat jadvaliga muvofiq xodimning lavozimi;
- zararli ishlab chiqarish omillari yoki ish turining nomi.

Dastlabki tibbiy ko'rik-ishlab chiqarish korxonasidami yoki qaysi tashkilotga qabul qilinishidan qat'i nazar ishga qabul qilinayotgan xodimning sog'lig'i ish sharoitlariga mos keladimi yoki mos kelmaydimi aniqlash uchun o'tkaziladigan tibbiy tekshiruvdir [5]. Bu ko'rik og'ir mehnat qiluvchi,zararli va xavfli sharoitlarda ishlovchi ishchilar uchun majburiy hisoblanadi.Dastlabki tibbiy ko'rik tarkibi:

- Umumiy vrach (terapevt) ko'rigi;

- LOR(quloq-burun-tomoq)shifokori;
- Nevrapotolog (asosan xavfli va stressli muhitda ishlovchilar uchun);
- Oftalmolog(ko‘z shifokori) aniqlik talab qilinadigan ishchilar uchun.
- Psixatr va narkolog (zarur hollarda)
- Labaratoriya tahlillari;
- Fluorografiya(sil kasalligini istisno qilish uchun);
- EKG;
- Terivenerolog(zudlik bilan zarur bo‘lsa);
- Ayollar uchun ginekologik ko‘rik.

Bu ko‘rik ishga birinchi marta kirayotganlar,ish o‘rnini o‘zgartirayotganlar,18 yoshgacha bo‘lganlar,har yili doimiy tibbiy ko‘rikdan o‘tuvchi xodimlar uchun majburiy hisoblanadi.

Davriy ko‘rik-bu ishchilarning sog’lig’ini muntazam ravishda ya‘ni belgilangan muddatlarda nazorat qilish uchun o‘tkaziladigantibbiy tekshiruv bo‘lib,zararli,xavfli yoki og’ir mehnat sharoitlarida ishlaydigan xodimlar uchunmajburiy hisoblanadi. Davriy ko‘rik tarkibi ham dastlabki tibbiy ko‘rik tarkibidan farqlanmaydi [6]. Bu ko‘rikda zararli va xavfli sharoitda ishlovchi ishchilar,kimyoviy moddalar bilan ishlovchilar,yuqori harorat,chang,shovqin,nurlanish bo‘lgan sexlarda ishlovchilar,18 yoshgacha bo‘lgan yoshlar,ayollar,ovqatlanish,sog’liqni saqlash va bolalar bilan ishlovchi xodimlar o‘tishi zarur.

Davriy va vaqti-vaqti bilan o‘tkaziladigan tibbiy ko‘riklar,ishchilar salomatligining tizimli nazoratiga,ish faoliyatiga,ish faoliyatini davom ettirishga to‘sqinlik qiladigan umumiy kasb kasalliklarini davolash tadbirlarini tavsiya qilish,mehnat sharoitlarini yaxshilashga yordam beradi.

Ishlab chiqrishda mehnat xavfsizligin ta’minlash va salbiy holatlarni oldini olish sanoat sohasining eng muhim yo‘nalishlaridan biri hisoblanadi [7]. Xodimlarni salomatligini muhofaza qilish,ishlab chiqarishda turli xil xatarlarni oldini olish yoki kamaytirish,turli xil kasb kasalliklarini kelib chiqishini oldini olish uchunquyidagi choralarni amalga oshirish zarur:

- Har bir ishlab chiqarish korxonasida mehnat muhofazasi bo‘limini tashkil qilinishi va bu bo‘lim qat’iy faoliyat yuritish kerak;
- Mehnat muhofazasi bo‘yicha amaldagi qonunchilik,davlat va ichki standartlarga asosan xavfsizlik tartib-qoidalarini ishlab chiqish lozim;
- Har bir ishlab chiqarish joyida xatarlarning baholanishi va monitoring olib borilishi kerak;
- Ishga qabul qilishda har bir xodimga xavfsizlik qoidalari bo‘yicha yo‘riqnoma berilishi,yo‘riqnomani xodim o‘zi tanishib chiqishi va amaliy ko‘nikmalarni shakllantirish lozim [8];
- Ishchilarga xavfsizlik texnikasi,birinchi yordam ko‘rsatish va favqulodda vaziyatlar sodir bo‘lganda qanday tartibda harakat qilishi bo‘yicha muntazam o‘quv mashg’ulotlari o‘tkazilishi kerak;
- Agar korxonaga yangi texnologiyalar yoki uskunalar keltirilgan bo‘lsa,xodimlar qayta o‘qitilishi kerak;

❖ Ishlab chiqarish jarayonlarida foydalanilayotgan uskunalar,mexanizmlar va ishchi ishlayotgan joylar zamonaviy xavfsizlik talablariga javob beradigan bo‘lishi kerak;

❖ Eskirgan,yaroqsiz va talabga javob bermidigan uskunalarni o‘z vaqtida almashtirish kerak,texnik xizmat ko‘rsatishni muntazam amalga oshirish talab qilinishi kerak;

❖ Har bir xodim o‘zi ishlayotgan joyiga qarab ya‘ni faoliyatiga mos bo‘lgan himoya vositalari (kaska,qo‘lqop,niqob,quloqchin,respirator va boshqalar) bilan ta’minlanishi kerak [9];

❖ Himoya vositalari belgilangan talablarga javob berishi kerak,ya’ni sifatli qulay;

❖ Himoya vositalaridan to‘g’ri tartibda foydalanish doimiy nazorat qilinishi kerak;

❖ Yong’in,portlash,elektr toki urishi yoki texnogen ofatlar yuzaga kelganda to‘g’ri harakat qilish bo‘yicha evakuatsiya mashqlari o‘tkazilishi lozim;

❖ Har bir bo‘limda favqulodda vaziyatlar uchun reja cva harakatlar algoritmi ishlab chiqilishi kerak;

❖ Ishchilar orasida charchoq yoki stress sababli yuzaga keladigan holatlarni kamaytirish kerak [10];

❖ Ruhiy bosimni kamaytirish,dam olish vaqtlarini tashkil qilish va rag’batlantirish tizimini joriy etish ishchilar uchun foydali bo‘ladi;

❖ Ishchilarni sog’lig’i ustida doimiy ravishda tibbiy nazoratda o‘rnatilishi lozim;

❖ Kasb kasalliklarining ilk belgilari aniqlansa,o‘z vaqtida davolash va ishchini ish joyini alamashtirish choralarini ko‘rish muhimdir.

Xulosa.

Ishlab chiqarish jarayonida ishchilarning jarohatlanishi va kasb kasalliklariga chalinishi hozirgi sanoat tizimida eng dolzarb muammolardan biri hisoblanadi.Bu muammolar asosan,ishlab chiqarish muhitida yaxshi emasligi,texnika xavfsizlik qoidalarining buzilishi,ishlab chiqarish muhitining zararli moddalarga boyligi,mehnat sharoitlarining yetrali darajada xavfsiz emasligi,ishchilarning sog’lig’i va xavfsizligiga befarqlik natijasida yuzaga kelmoqda. Jarohatlanishlar ko‘pincha og’ir mexanizm bilan ishlagan ishchilarda, elektr jihozlari, harakatlanuvchi qismlar yoki yetarlicha xavfsizlik qoidalarini bilan tanishtirilmaganligi, o‘qitilmaganligi bilan bog’liq. Kasb kasalliklari esa asta-sekinlik bilan rivojlanib,ishchilarning uzoq yillar davomida zararli ishlab chiqarish omillari bilan muntazam shug’ullangan bo‘lishi natijasida yuzaga keladi.Xulosa qilib aytganda,ishlab chiqarishdagi jarohatlar,kasb kasalliklari,turli xil xavf-xatarlar ijtimoiy va insoniy muammo sifatida qaralishi lozim.Bu borada tizimli yondashuv orqali xavf-xatarlarni kamaytirish,ishchilarning salomatligi va hayotini muhofaza qilish,ishlab chiqarish samaradorligini oshirishga xizmat qiladi.

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PAPILLYAR QALQONSIMON BEZ KARSINOMASINI GISTOLOGIK GETEROGENLIK VA MOLEKULYAR MARKERLAR ASOSIDA BAHOLASHNING MORFOLOGIK KRITERIYALARI

Annotatsiya. *Papillyar qalqonsimon bez karsinomasi (PQBK) qalqonsimon bezning eng ko‘p uchraydigan epitelial neoplaziyasidir. Ushbu maqolada PQBK ning gistologik geterogenligi, morfologik va molekulyar-biologik xususiyatlari tahlil qilinadi. Markerlar ekspressiyasi va RET/PTC onkogenining roli asosida gistologik variantlarning differensial diagnostik mezonlari yoritiladi. Natijalar PQBK ni heterogen o‘simta guruhi sifatida baholash zarurligini ko‘rsatadi. Tadqiqot morfologik va molekulyar yondashuvlar asosida individual davolash strategiyasini shakllantirishning dolzarbligini asoslaydi.*

Kalit so‘zlar: *karsinoma, qalqonsimon bez, metastazlanish, gistogenez, immunofenotip, gistologik variantlar.*

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MORPHOLOGICAL CRITERIA FOR ASSESSMENT OF PAPILLARY THYROID CARCINOMA BASED ON HISTOLOGICAL HETEROGENEITY AND MOLECULAR MARKERS

Annotation. *Papillary thyroid carcinoma (PTC) is the most common epithelial neoplasm of the thyroid gland. This article analyzes the histological heterogeneity, morphological, and molecular-biological characteristics of PTC. Based on marker expression and the role of the RET/PTC oncogene, differential diagnostic criteria of histological variants are highlighted. The results emphasize the necessity of evaluating PTC as a heterogeneous tumor group. The study substantiates the relevance of developing individualized treatment strategies grounded in morphological and molecular approaches.*

Keywords: *carcinoma, thyroid gland, metastasis, histogenesis, immunophenotype, histological variants.*

Dolzarbligi.

So‘nggi yillarda, ayniqsa Chernobil fojiasi ta’siridan so‘ng, PQBK holatlarining sezilarli o‘sishi qayd etilgan. RET/PTC onkogenining faollashuvi adenokarsinomalar patogenezida asosiy omil sifatida e’tirof etiladi. PQBK ning gistologik va molekulyar tafovutlarini aniqlash individual davolash strategiyalarini ishlab chiqishda muhim ahamiyatga ega.

Tadqiqot maqsadi.

PQBK ning turli gistologik variantlarida malignlik belgilari, gistostrukturaviy xususiyatlar va molekulyar markerlar o‘rtasidagi bog‘liqlikni aniqlash. Shuningdek, morfologik va molekulyar geterogenlikni baholash orqali prognozga ta’sir etuvchi omillar va ularning klinik ahamiyatini asoslash.

Tadqiqot usullari.

Tadqiqotda PQBK ning papillyar, follikulyar, oksifil va uzun hujayrali variantlari morfologik hamda immunogistokimyoviy tahlil qilindi. Epitelial, neyroendokrin va apoptotik markerlar ekspressiyasi baholanib, gistologik variantlar bilan bog‘liqligi aniqlangan. Shuningdek, adabiyotlar tahlili asosida RET/PTC onkogenining patogenetik ahamiyati o‘rganildi.

Tadqiqot natijalari.

PQBK ning gistologik variantlari morfologik tuzilishi va markerlar ekspressiyasi bilan sezilarli farqlanadi. Uzun hujayrali variantda EMA va xromogranin yuqori, tireoglobulin va Bcl-2 past ifodalandi. Oksifil va papillyar variantlarda mos ravishda xromogranin hamda tireoglobulin va Bcl-2 ekspressiyasi ustunlik qildi. Ushbu tafovutlar PQBK prognozini aniqlashtirish va individual davolash strategiyasini belgilashda muhim ahamiyat kasb etadi.

Xulosa.

Papillyar qalqonsimon bez karsinomasi (PQBK) yadroviy va papillyar tuzilma xususiyatlariga asoslangan geterogen o‘simta hisoblanadi. PQBK va medullyar karsinoma o‘rtasidagi immunofenotipik o‘xshashliklar ularning umumiy

kelib chiqishini taxmin qiladi. Morfologik verifikatsiya va malignlik belgilarini chuqur tahlil etish prognoz va davolash uchun muhim ahamiyatga ega.

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SYSTEMATIC AND COMPLEX APPROACH TO MAPPING THE ECOLOGICAL STATE OF IRRIGATED LANDS

Abstract*. This article discusses the importance of assessing and mapping the ecological state of irrigated lands in ensuring the sustainability of existing ecosystems. This process takes into account natural, climatic, hydrogeological and anthropogenic factors through a systemic and integrated approach. This work focuses on identifying and modeling such problems as degradation processes occurring on irrigated lands, the level of pollution of water and soil resources, and salinization.*

INTRODUCTION

The study of ecological problems in irrigated lands began with the study of factors affecting them, as evidenced by the practical results of many scientific and research works [20]. Scientists have used different terms, different indicators, different criteria and definitions for natural factors and "anthropogenic load" as the main indicators determining the ecological state. For example, Professor Yu.A. Israel, a member of the Russian Academy of Sciences, assessed the ecological balance in systems using the anthropogenic load standard, and noted that its increase would cause significant damage to the ecosystem in the area [1].

The Russian geographer and cartographer, professor A.G. Isachenko (1980) suggested that the state of a certain ecological stability is the reaction of geosystems to external influences. This approach was also reflected in the research work of Yu.V. Novikov and V.M. Podolsky (1994).

Another Russian scientist I.I. Mamay (1997) developed the concept of an ecological norm and recommendations for this norm. In his opinion, it was emphasized that when assessing an ecological norm, it is necessary to carry out a number of experiments in regions with different natural conditions, and it was stated that the collected data can be analyzed and, based on experiments, criteria for ecological indicators can be developed.

S.E. Mirskhulova (2001) understands anthropogenic impact as the sum of all impacts on landscapes. The amount of this load should be the permissible standard level, which was explained using mathematical models based on "trust theory".

Thus, as above, various qualitative and quantitative indicators have been developed using criteria such as "ecological tension" by V.G. Zaikanov et al. (2000), "ecological potential" by B.I. Kochurov (1999), "ecological stress" by Yu. Odum

(1986), “ecological situation” by A.A. Rafikov (1997), “ecological situation” by A. Rakhmatullaev (2016) [21].

When explaining or mapping the ecological problems of a certain space, there is a need for a modern “term” that combines and complements the above-mentioned close, synonymous terms, scientifically substantiates the interrelationship between them, and determines the ecological state of a certain area in the conditions of current climate change, expressing natural and anthropogenic factors. Considering this issue on the example of irrigated lands, we will explain them as follows:

“Ecological status” – the general ecological quality of soil, water, biota and agrosystems. It takes into account soil fertility, salinity, salinization, agrobiological conditions;

“Ecological situation” – the level of negative impact of irrigated lands on society and nature during the study period;

“Ecological stress” – the degree of violation of ecological standards in irrigated lands;

“Ecological stability” – the ability of irrigated lands to maintain their fertility even under external influences;

“Anthropogenic load” – indicates the level of environmental load on the land as a result of human impact (activity).

“The study of scientific works on the restoration of ecosystems, the consequences of ecological stress and their assessment, the integration of population, community, and landscape indicators to assess the impact of stress factors, risk-based water quality for ecological reserve in freshwater surface water resources, an integrated habitat assessment system for rapid biological evaluation of rivers and streams, the use of biological criteria to assess and classify urban water flows, and to develop improved landscape indicators. As a result of fieldwork, the term **“ecological status”** was introduced. Based on this, a scientific definition was developed, representing a multi-component, complex concept that expresses the overall ecological condition of the study area (including irrigated lands) under the influence of biophysical, chemical, biological, and anthropogenic factors, its level of ecological stability, and its capacity to maintain and restore ecosystem services”.

“Ecological status” – a set of characteristics that influence the capacity of irrigated lands to support the appropriate natural flora and fauna, as well as their ability to provide various goods and services for human needs.

In order to provide a deeper and more detailed definition of the concept of **“ecological status”,** we analyzed the meanings, key criteria, and interrelationships of other concepts used in ecological assessment of a territory — such as ecological condition, ecological situation, ecological vulnerability, ecological stability, and anthropogenic load (Table 1).

Table 1

Ecological concepts	Definition Content	Main criteria	Dependence on other concepts
Ecological state	General natural-agrobiological condition of the land	Soil, water, biocenoses	Changes through stability, tension, load
Ecological situation	Current problems and conditions	Pollution, water scarcity, salinity	Related to tension and load
Ecological stress	Level of risk, extent of degradation	Balance disturbance, recovery capacity	Inversely related to stability
Ecological sustainability	Resilience and recovery potential	Biological, agrotechnical, hydrological priority	Inversely related to load and tension
Anthropogenic load	Human-induced pressure	Fertilizers, pesticides, agro-intensity	Affects all other concepts
Ecological status	Final integrated ecological assessment	Status + situation + tension + stability	Includes all concepts

Thus, it can be seen from the table that, as we noted above, by adopting the concept of "ecological status" to encompass the general ecological state of irrigated lands under the influence of chemical, biological and anthropogenic factors, we will be able to obtain a multi-component complex result that reflects all the remaining indicators. The main components of ecological status are natural and anthropogenic factors that are important in determining the ecological state of a land area and assessing its sustainability (Figure 1). These components are: soil, water resources and their quality, biodiversity, human activity and land use intensity, climatic factors, sustainability and recovery potential.

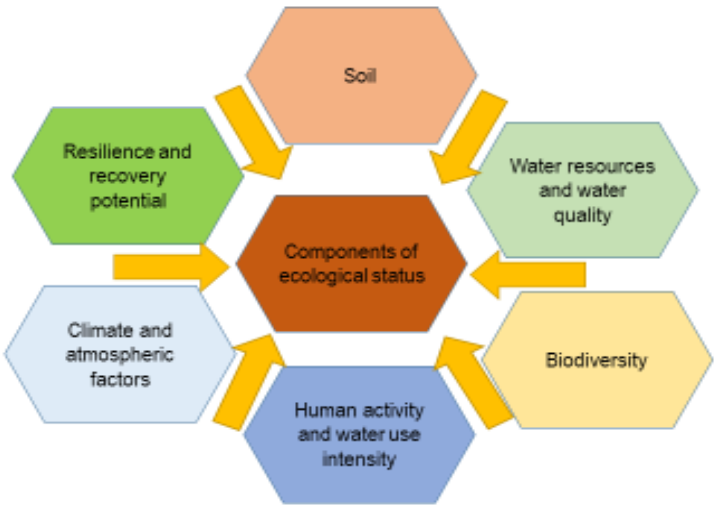


Figure 1. Main components determining the ecological status of irrigated lands

Based on the above, the following second definition can be given to irrigated lands in terms of the interconnectedness of a complex system consisting of soil, water, biota, human activity and climate factors:

Ecological status is a set of natural, biological and anthropogenic factors that affect the ability of irrigated lands to support native plant and animal species, as well as to provide ecologically sustainable goods and services for human needs.

Assessment based on ecological status in the study areas, as noted above, should include large-scale field and office work, data analysis, assessment methods, GIS and remote sensing technologies, software, visualization of geodatabases, integration of ecological and cartographic data (web maps, online platforms). In the future, research in this area is considered important for the fields of sustainable land resource management, land reclamation, agroecology and environmental security.

In the future, it is advisable to carry out the following research work to determine the ecological status of territories (irrigated lands):

1. Improving the indicators for assessing ecological status based on time and space - developing a set of biophysical and anthropogenic indicators adapted for different natural and climatic conditions. Automation of assessment methods (for example, scoring and scale assessment methods);

2. Reviewing and adapting the capabilities of GIS and remote sensing technologies for obtaining, processing, visualizing, developing thematic maps based on the indicators for assessing ecological status, as well as for monitoring purposes;

3. Analyzing the relationship between the potential of ecological services and ecological status;

4. Modeling the impact of anthropogenic loads on ecological status

5. Developing ecostrategic clusters for irrigated lands - involves developing strategies for land users based on ecological status.

Method and data

One of the scientific principles of the direction being developed in the field of mapping is an integrated approach, according to which, first of all, deviations from the norm of natural changes (climate change, groundwater levels, air temperature, etc.), as well as an increase in anthropogenic impact (in terms of types and levels of pollution), lead to changes in the ecological state of irrigated lands. In this case, each element, phenomenon and process related to nature, economy and man is considered as part of a certain natural-economic complex. Man is at the center of this process [5, 6, 7, 11, 15, 19,].

The principle of an integrated approach can be considered in various aspects:

a) each map (the natural, economic or population element reflected on it) is considered as part of a natural-economic complex;

b) several combined elements should be depicted in a complex map in an interconnected manner;

c) complex maps should be mutually consistent in content [60].

Another important scientific approach to the development and creation of ecological maps is the systematic approach. This approach involves the study of each component of the ecological state of irrigated lands as a part and the study of the integrity consisting of various, but interconnected components, phenomena and processes [2, 14, 16].

The main characteristics of the ecological assessment of irrigated lands are: multicomponent, highly organized, multidimensional, and the mobility of the main parameters [9, 10, 12, 13]. Therefore, the principles of integrated mapping methodology are logically related to the synthetic approach.

To study complex component systems using the mapping method, it is necessary to take into account the territorial aspect and principles of dividing systems into more fractional taxonomic categories and levels. In addition, when mapping complex systems, they resort to their meaningful division in various ways.

The principle of systematicity in mapping practice can be considered in different directions:

a) when developing a system of conditional symbols;

b) when compiling complex maps and atlases;

c) when developing synthetic maps of various contents, etc. [18].

One of the specific approaches to differentiating the ecological state of irrigated lands is zoning, in which integral sections with a certain composition of components, properties and their connections are identified. When dividing into territories, various criteria can be set for determining the boundaries: republic, regions, districts, contours, etc.

Another method of dividing the ecological state of irrigated lands into parts for mapping is mapping by components [17]. In this case, traditionally, analytical maps are compiled according to individual components of nature, natural-territorial complexes (NTCs) or assessment criteria. The subordination of the categories identified when compiling the map is provided for in map legends - systems of conditional symbols.

Based on the principles of a systematic approach, mapping involves modeling the content, dynamics and changes in the ecological state at different levels. The problems of systematic mapping also include the organization of a system for selecting, processing and storing primary information.

The use of a systematic approach should be present in the organization of various types of research, including the use of remote sensing materials, as well as in the rational sequence of technological processes, including the preparation of electronic versions of thematic ecological maps [17].

Results

Major figures in the field of cartography K.A. Salishev, I.P. Zarutskaya, A.M. Berlyant considered a systematic approach to mapping as the main scientific principles.

K.A. Salishev [18] proposed to understand systematic mapping as the creation of maps based on a systematic approach to both the phenomena being depicted and the implementation of the mapping itself.

A.M. Berlyant [3] considers thematic maps and atlases as "ecosystem models, when a series of analytical maps appear as models of the components of geosystems, analytical maps as models of their interaction, and dynamic and predictive maps as ecosystem models that model the functioning and development of geosystems."

Berlyant A.M. [4] distinguishes several types of systems: material systems, systems-theories, and systems-methods. He describes these systems as follows:

a) systematic map creation - a set of interconnected and complementary scientific and technical tools, methods and algorithms for developing maps in the field and laboratory, as well as human society as a geographical environment;

b) systematic use of maps - a set of interconnected and interacting scientific and technical methods, principles and algorithms for analyzing maps in order to understand the geosystems depicted on them;

c) theoretical-cartographic systems - theoretical concepts for creating and using coordinated maps;

g) technical cartographic systems - a set of devices, hardware and software that interact in the process of collecting, storing, processing, distributing and analyzing cartographic works;

d) technological cartographic systems - a set of technological processes performed according to a given plan or program for creating, modifying and using cartographic products;

e) information (information-retrieval) cartographic systems - a set of programming languages, software and technical tools for storing, searching and providing cartographic and aerospace data on request.

Conclusion:

It is proposed to combine the above-mentioned cartographic systems into two groups:

a) a scientific and cognitive system (subsystem), which includes systems of creation, use and a theoretical and cartographic system;

b) a production-technical system (subsystem), which combines technical, technological and information components. The main task of the latter is to ensure the logistics of creating and using maps.

As a final conclusion, systematic mapping is a holistic set of theories, methods, technical and software tools that are part of scientific-cognitive and production-technical systems.

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REANIMATSION BEMORLARDA GIPOPROTEINEMIYA VA ENDOKRIN TIZIM O‘ZGARISHLARI: KLINIK KUZATUV ASOSIDA TAHLIL

ANNOTATSIYA: *Ushbu maqolada reanimatsion bemorlarda uchraydigan gipoproteinemiya holatlarining endokrin tizim faoliyatiga ta’siri ko‘rib chiqiladi. Oqsil tanqisligi nafaqat gemodinamik barqarorlikni, balki gormonal muvozanatni ham izdan chiqaradi. Klinik kuzatuv asosida olib borilgan tahlillar gipoproteinemiya fonida endokrin disfunktsiya va ichak bar’yeri buzilishining o‘zaro bog‘liqligini ko‘rsatdi.*

Kalit so‘zlar: *gipoproteinemiya, endokrin tizim, ichak bar’yeri, stress gormonlari, reanimatsion bemor, katabolizm, kortizol, insulin.*

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HYPOPROTEINEMIA AND ENDOCRINE SYSTEM CHANGES IN INTENSIVE CARE PATIENTS: A CASE-BASED ANALYSIS

ABSTRACT: *This article examines the impact of hypoproteinemia, observed in critically ill patients, on the function of the endocrine system. Protein deficiency disrupts not only hemodynamic stability but also hormonal balance. Clinical observations revealed a correlation between endocrine dysfunction and intestinal barrier impairment in the context of hypoproteinemia.*

Keywords: *hypoproteinemia, endocrine system, intestinal barrier, stress hormones, critically ill patient, catabolism, cortisol, insulin.*

Kirish:

Reanimatsion bemorlarda organizmning barcha metabolik jarayonlari keskin o‘zgaradi. Ularning ichida eng muhim patologik o‘zgarishlardan biri bu gipoproteinemiya — qon plazmasidagi oqsil miqdorining pasayishidir.

Bunday holat ko‘pincha uzoq davom etgan stress holatlari, katabolik sindrom, infeksion asoratlar, yoki uzoq muddatli parenteral oziqlanish natijasida yuzaga keladi.

Oqsil tanqisligi organizmda suv va elektrolit balansining buzilishi, qonning onkotik bosimi pasayishi, shishlar, hamda gormonal tizim disbalansini keltirib chiqaradi. Ayniqsa, kortizol, insulin va tiroid gormonlari o‘rtasidagi nozik muvozanat gipoproteinemiya ta’sirida izdan chiqadi.

Endokrin tizimdagi bu o‘zgarishlar ichak bar’yeri yaxlitligiga ham salbiy ta’sir ko‘rsatadi. Natijada, endotoksinlar va mikroblar ichakdan qon oqimiga o‘tadi, bu esa sistemali yallig‘lanish va ko‘p organli yetishmovchilikni yanada chuqurlashtiradi.

Klinik holat misoli:

Bemor: 54 yoshli erkak, og‘ir pnevmoniya va sepsis tashxisi bilan reanimatsiya bo‘limiga yotqizilgan.

Holati: Bemor parenteral oziqlanishda, albumin darajasi 27 g/L, umumiy oqsil 48 g/L.

Kuzatilgan o‘zgarishlar:

arterial gipotenziya (95/60 mm Hg),
gipoglikemiya epizodlari,
charchoq, quruq teri, past tana harorati,
T3 gormoni pasaygan, TSH biroz ko‘tarilgan, kortizol yuqori.

Tahlil: Ushbu klinik holatda gipoproteinemiya fonida “non-thyroidal illness syndrome” kuzatildi — bu og‘ir bemorlarda qalqonsimon bez gormonlarining metabolik stress ta’sirida pasayishi bilan izohlanadi. Shuningdek, gipoproteinemiya suyuqlikning to‘qimalarda ushlab qolinishiga, ichak o‘tuvchanligining buzilishiga va metabolik stressning ortishiga olib kelgan.

Muhokama

Gipoproteinemiya — bu nafaqat oziqlanish muammosi, balki butun organizmning metabolik va endokrin javobining markaziy elementidir.

Reanimatsion bemorlarda oqsil tanqisligi:

glyukozaning o‘zlashtirilishini pasaytiradi,
insulin qarshiligini kuchaytiradi,
kortizol ishlab chiqilishini oshiradi,
tiroid gormonlarining faolligini susaytiradi.

Natijada, stress giperglikemiyasi, katabolizmning kuchayishi va immun tanazzul kuzatiladi. Bu jarayonlar ichak bar’yeri yaxlitligining buzilishi bilan qo‘shilganda, endogen intoksikatsiya rivojlanadi.

Endokrinologik nuqtai nazardan, bu holat “stress-endokrin muvozanat sindromi” deb ataladi. Organizm avval kortizol orqali moslashishga harakat qiladi, biroq oqsil tanqisligi fonida bu mexanizm uzoq davom etolmaydi.

Anesteziologik nuqtai nazardan, gipoproteinemiya bilan kechuvchi bemorlarda suyuqlik terapiyasi, kislorod balansini saqlash, va oqsil bilan boyitilgan parenteral oziqlanishni erta boshlash muhim hisoblanadi.

Xulosa:

Reanimatsion bemorlarda gipoproteinemiya endokrin tizim disbalansi va ichak bar'yeri buzilishi bilan chambarchas bog'liqdir.

Anesteziolog va endokrinologning birgalikdagi yondashuvi — bemorlarni davolashda eng muhim omildir.

Oqsil balansini tiklash, parenteral va enteral oziqlanishni to'g'ri yo'lga qo'yish, shuningdek gormonal monitoringni o'z vaqtida amalga oshirish bemor hayot sifatini yaxshilaydi va asoratlar xavfini kamaytiradi.

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INTRODUCING ETS AND CARBON TAX IN UZBEKISTAN: OPPORTUNITIES AND COMPARATIVE ANALYSIS”

Abstract. *The article analyzes the prospects of introducing a carbon tax and an emissions trading system (ETS) in Uzbekistan and their comparative advantages. Based on World Bank data and the experience of advanced countries, the fiscal, economic, and environmental implications of carbon pricing mechanisms are examined. The results show that while a carbon tax ensures short-term stability, ETS encourages long-term industrial modernization. The analysis suggests that for Uzbekistan, a step-by-step hybrid approach to implementing carbon pricing mechanisms is the most appropriate solution.*

Keywords: *Carbon tax, ETS, carbon pricing, green budgeting, climate change*

I. Introduction

Climate change today stands as one of the most pressing global challenges, giving rise to economic, environmental, and social risks. The intensification of this problem has compelled many countries to strengthen their climate policies, particularly through the adoption of strict measures aimed at reducing greenhouse gas emissions. Among such measures, carbon pricing occupies a special place, as it represents an economic approach to addressing environmental challenges by imposing a financial burden on polluting activities.

The carbon tax is one of the most widely applied market-based instruments at the global level, designed to incentivize firms and consumers to reduce emissions of carbon dioxide (CO_2) and other greenhouse gases. Beyond its environmental objectives, the carbon tax also generates additional fiscal revenues, serving as an important tool in the transition to a green economy. At the same time, the implementation of this mechanism entails not only economic considerations but also complex political and social dimensions.

Between 1990 and 2004, carbon taxes covered only about 1% of global greenhouse gas emissions. During the period 2005–2011, the combined coverage of Emissions Trading Systems (ETS) and carbon taxes amounted to approximately 5%. The most significant increase in coverage occurred in 2021–2024, reaching 22–24%, largely due to the sharp expansion of ETS (World bank, 2024). A USD 10/tCO_2

increase in the carbon tax reduces per capita CO_2 emissions by 1.3% in the short term and by 4.6% in the long term (E.Kohlscheen, 2021).

Research gap

At the international level, there is a broad body of literature on carbon taxation and ETS, with a strong focus on developed economies such as the European Union, the United States, Canada, China, and South Korea. These studies provide in-depth analyses of the economic efficiency, environmental effectiveness, and social implications of such mechanisms. However, the context of developing countries—particularly Central Asian economies, including Uzbekistan—remains underexplored. Specifically, there is limited research on the opportunities, challenges, and policy design aspects of introducing carbon pricing instruments in these regions.

Existing domestic research has primarily focused on the broader concepts of the green economy, sustainable development strategies, or general environmental challenges. However, there is a notable absence of comparative analyses of carbon taxes and ETS, particularly in relation to their role in fiscal policy, state budget revenues, international integration processes, and climate finance.

Moreover, there is a lack of scholarly work examining the institutional, economic, and social implications of these mechanisms within Uzbekistan, as well as their potential phased implementation and associated constraints. Therefore, this study seeks to address these gaps in the literature by providing a comparative assessment of carbon pricing instruments, highlighting their relative advantages, and exploring the practical prospects for their application in Uzbekistan.

Research Question

To what extent would the implementation of a carbon tax and an ETS be effective in the context of Uzbekistan, and which mechanism offers greater institutional and economic advantages for the country?

Research Objective

The primary objective of this study is to analyze the prospects for introducing carbon tax and ETS mechanisms in Uzbekistan, to comparatively assess their fiscal, economic, and social implications, and to develop evidence-based conclusions and recommendations on the mechanism most suitable for the country's specific conditions.

Research Hypotheses

H1. The introduction of a carbon tax in Uzbekistan will lead to a short-term reduction in CO_2 emissions.

H2. The implementation of an ETS will, in the long run, incentivize high-emission industrial sectors to adopt low-carbon technologies, thereby significantly broadening the scope of emission reductions.

H3. A hybrid approach—starting with a carbon tax and gradually transitioning to an ETS—will represent the most feasible and effective carbon pricing mechanism for Uzbekistan.

II. Methodology

This article is based on an in-depth review of the academic literature and a systematic analysis of advanced international practices. It provides a comprehensive examination of existing theoretical approaches, the practical mechanisms applied in various countries, and their outcomes, which serve as the foundation for policy recommendations tailored to Uzbekistan. The theoretical framework relies on both market-based and non-market regulatory approaches, particularly the concept of A Pigouvian tax and related theories.

Empirical evidence draws upon the dynamic panel regression analysis (E.Kohlscheen, 2021), covering 121 countries over 1971–2016, as well as the meta-analysis based on 81 studies from 2011–2022 (Ahmad et al., 2024). Furthermore, the article incorporates coverage indicators from the World Bank's *State and Trends of Carbon Pricing 2024* report, experiences from the Asia-Pacific region (including China's ETS, Singapore's carbon tax, and Indonesia's hybrid system), and ex-post analyses of macroeconomic impacts (Gilber et al., 2019), (Gilbert et al., 2020).

Furthermore, the study undertakes a comparative analysis of the experiences of countries that have implemented carbon taxation and green budgeting practices, including France, Sweden, Ireland, Singapore, and Japan. For this purpose, a descriptive analytical method was applied, examining the dynamics of GHG emissions, per capita emission indicators, and changes in the energy mix over the past decade from a statistical perspective. All data and analyses in this section is based on official World Bank statistics, as reprocessed by the authors.

The methodological approach of this article encompasses the following steps: (i) identifying the definitions and functions of economic policy instruments (carbon tax and ETS); (ii) comparing each instrument in terms of price/emission certainty and flexibility; (iii) consolidating the findings of ex-post studies; (iv) developing a phased roadmap for Uzbekistan to implement carbon pricing mechanisms (ETS and carbon tax).

III. Results

According to economic theory, the reduction of GHG emissions can be achieved through two main types of solutions: market-based and non-market-based instruments. Non-market approaches impose various standards and regulations on economic agents (for instance, technology or efficiency standards). In contrast, market-based approaches regulate GHG emissions through the price-signaling mechanism, with carbon taxes and Emissions Trading Systems (ETS) being the two most prominent examples.

A carbon tax is a fiscal instrument designed to reduce pollution by assigning a price to carbon dioxide (CO_2) or other GHG emissions released into the atmosphere. Based on the Pigouvian tax principle, this mechanism treats pollution as a negative externality and integrates its costs into the economy through government intervention. Numerous studies have shown that carbon taxes are effective in reducing emissions without significantly hampering economic growth. For example, Sweden, which introduced a carbon tax in 1991, has experienced a notable decline in carbon intensity following its implementation.

The Emissions Trading System (ETS) is a market-based mechanism that allows the trading of permits to emit a specified amount of greenhouse gases. Under this system, the total volume of emissions is capped, and market participants are incentivized to adapt using the most cost-effective methods. The European Union's ETS is among the most prominent and comprehensive schemes, effectively encouraging industrial enterprises to reduce their emissions.

Alongside the carbon tax, the ETS occupies a central place among the key economic instruments adopted by governments in the fight against global climate change. Like the carbon tax, the ETS is specifically designed to reduce greenhouse gas emissions, though its implementation varies across countries in terms of scale and design.

In the literature, the differences between carbon taxes and Emissions Trading Systems (ETS) have been widely discussed. A carbon tax provides certainty with regard to the price of emissions but does not directly control the overall volume of emissions. In contrast, the ETS caps the total level of emissions but leaves the price subject to market fluctuations. Both instruments have their respective advantages and disadvantages: while a carbon tax generates additional revenue for the state budget, the ETS ensures greater market flexibility. Several studies suggest that the combined use of these instruments may represent the most effective solution.

According to experts of *The Economist* (Economist, 2021) , the ETS—particularly the "cap-and-trade" model—is theoretically ideal, as it provides a pathway to successfully decarbonize the economy. However, the experts emphasize that in practice achieving these goals is far more challenging than it appears, noting that current carbon prices remain considerably low. They further highlight several issues associated with the real-world implementation of the system. These include the concealment of accurate data on carbon emissions, circumvention of rules within the carbon market (cheating), and the relocation of economic activities to regions or countries with less stringent environmental requirements (carbon leakage). These challenges constitute some of the major limitations of applying the cap-and-trade system in practice.

Ex-post empirical analysis of the impact of climate policies on national-level carbon dioxide emissions, using a comprehensive dataset covering 121 countries over the period 1971–2016 (E.Kohlscheen, 2021). The study primarily examined two policy instruments: the carbon tax and the Emissions ETS. To control for macroeconomic factors such as economic development, GDP growth, urbanization, and energy efficiency, the authors employed dynamic panel regressions.

The findings indicate that an increase of USD 10 per ton of CO_2 under a carbon tax reduces per capita CO_2 emissions by 1.3 percent in the short run and by 4.6 percent in the long run. Similarly, under an ETS, a USD 10 per ton increase in the carbon price decreases per capita CO_2 emissions by 1.4 percent in the short term and by 5.0 percent in the long term. The study concludes that, in terms of reducing per capita carbon emissions, the use of either a carbon tax or an ETS—or their combination—represents an effective policy solution (E.Kohlscheen, 2021).

Based on the reviewed studies, a comparative table of the carbon tax and the Emissions Trading System (ETS) can be constructed (Table 1).

Table 1. Comparative Analysis of Carbon Tax and Emissions Trading System (ETS) Based on the Reviewed Studies

Criteria	Carbon Tax	Emissions Trading System (ETS)
Definition	A fixed tax rate per ton of CO_2 emitted	A total emission cap is set, and emission permits are traded in the market
Price Certainty	Certain: set by the government	Uncertain: determined by market supply and demand
Emission Quantity Certainty	Uncertain: price is fixed, but total emissions are unknown in advance	Certain: the government sets the overall emission cap
Short-Term Effectiveness	A \$10/tCO_2 increase reduces CO_2 emissions by 1.3%	A \$10/tCO_2 increase reduces CO_2 emissions by 1.4%
Long-Term Effectiveness	A \$10/tCO_2 increase reduces CO_2 emissions by 4.6%	A \$10/tCO_2 increase reduces CO_2 emissions by 5.0%
Economic Stability	Tax revenues are stable and predictable	Price volatility complicates budget planning
Political Acceptability	Politically more challenging: viewed as a direct tax	Politically easier: considered a “market mechanism”
Administrative Complexity	Simple: managed through tax authorities	Complex: requires setting and monitoring emission quotas
Reliability (Statistical Significance)	Strong statistical effect across all models	Significant results in some models (5 out of 9)
Flexibility	Less flexible: changing the price is politically difficult	More flexible: responds quickly to market changes
Signal to Investors	Strong and stable signal	Signal may be weaker due to market uncertainties

In conclusion, both instruments are effective in reducing CO_2 emissions. The carbon tax has an advantage in terms of price certainty and revenue stability, whereas the ETS performs better in ensuring strict emission control and flexibility. According to the analysis, the effectiveness of the carbon tax is statistically more robust and stable compared to that of the ETS.

A meta-analysis of 81 studies carried out between 2011 and 2022 to evaluate the effectiveness of carbon taxes and ETS (Ahmad et al., 2024). The results indicate that both instruments contribute to the reduction of carbon emissions; however, carbon taxes were found to be more effective in lowering greenhouse gas emissions than ETS. The analysis also revealed that the impact of these policies is not uniform and depends on country-specific characteristics, such as the level of financial system development and the rate of economic growth, which influence the effectiveness of

both carbon taxes and ETS. According to the study, the carbon tax was most effective in Asia (excluding Japan), whereas ETS demonstrated the strongest results in the United States.

The currently implemented carbon pricing mechanisms are not sufficiently effective to bring about a true paradigm shift (Isabelle et al., 2024). Although countries applying carbon pricing policies at the national or regional level account for over 70% of global GDP and 60% of greenhouse gas emissions, only 23% of global emissions are effectively regulated (World Bank, 2023).

The study indicates that differences in carbon tax structures can lead to variations in emissions coverage across countries and regions. In most cases, carbon taxes are primarily applied to emissions from fossil fuels, such as gasoline, diesel, kerosene, fuel oil, liquefied petroleum gas, natural gas, and coal, including peat. Although some carbon tax systems are designed to cover all greenhouse gases (GHGs), certain countries' policies focus solely on carbon dioxide (CO_2). For example, the European Union's Emissions Trading System (ETS) covers only CO_2, nitrous oxide (N_2O), and perfluorocarbons (PFCs). Typically, the tax obligation is imposed at the top of the supply chain, i.e., on fuel sellers or importers. However, in some cases, this obligation may be passed directly to the end users who emit the pollutants into the atmosphere.

IV. Discussion

Macroeconomic Impacts of Carbon Taxation

Concerns that environmental taxes—particularly the introduction of a carbon tax—may exert negative effects on key macroeconomic indicators such as GDP or employment have been raised from the very outset in both theoretical and policy debates. This, in turn, has led governments to adopt a cautious approach toward implementing such taxes. In response to these concerns, the so-called "double dividend" hypothesis has been put forward in the literature. According to this hypothesis, reallocating the revenues from environmental taxes to reduce other taxes (for example, income taxes) can generate not only environmental benefits but also economic gains.

According to this hypothesis, revenues collected through environmental taxes can generate benefits for the economy in two distinct ways. First, such taxes help achieve environmental objectives (for example, reducing pollution). Second, allocating these revenues to reduce labor taxes or other types of taxation may stimulate economic growth or increase employment. For this reason, the approach is referred to as the "double dividend."

Theoretical research findings indicate that this hypothesis does not always yield clear positive outcomes. Empirical studies—i.e., analyses that test the hypothesis in real-world settings—remain relatively scarce. This is largely because most countries have not introduced environmental taxes within the framework of broader tax system reforms aimed at maintaining revenue neutrality.

First, let us review the existing assessments and recent studies on the economic impacts of carbon taxation (see Table 2).

Table 2. Ex-post Studies on the Macroeconomic Impacts of Carbon Taxes

Authors	Country (Group)	Period	Methodological Approach	Findings
Withana et al. (2013)	Denmark	1990–1995	Not specified	Achieved GDP growth of 0.3%
Murray & Rivers (2015)	British Columbia (Canada)	N/A	Review of multiple ex-post evaluations	No significant impact on economic growth
Bernard et al. (2018)	France	2008–2016	VAR specification methodology	Achieved a 4.5% increase in total employment
Elgie & McClay (2013)	British Columbia (Canada)	2008–2012	Difference-in-differences approach	No significant impact on per capita GDP
Azevedo et al. (2018)	Portugal	2001–2013	Synthetic control method	No impact on total employment
Metcalf (2019)	Various (OECD countries)	1990–2016	Difference-in-differences approach	No negative or significant positive impact on GDP
Andersen et al. (2007)	Denmark, Finland, Sweden, Slovenia, United Kingdom	1994–2012	E3ME macroeconomic model	Long-term annual GDP growth increased by 0.4%–0.5% (DK, FI, SE)
Metcalf & Stock (2020a)	EU-28, Iceland, Norway, Switzerland	N/A	Regression analysis	No negative effects on GDP growth and employment
Metcalf & Stock (2020b)	EU-15	N/A	Regression analysis	No negative effects on GDP growth and employment

Source: Developed by the authors based on *"Carbon Taxation: A Review of the Empirical Literature*

The Experience of Selected Countries in Implementing a Carbon Tax

The Asia-Pacific region, home to some of the world's most populous countries and fastest-growing economies, accounts for more than 50 percent of global greenhouse gas emissions, with China alone responsible for over 30 percent. As of April 2023, several countries in the region have adopted carbon pricing mechanisms: Japan, China, and Singapore have introduced carbon taxes, while Kazakhstan, New Zealand, Korea, and Thailand have implemented emissions trading systems (ETS).

China's emissions trading system (ETS) is the largest in the world in terms of coverage and has been providing a price signal to the market since its launch in July 2021. Although carbon prices were initially set at relatively low levels, they

have shown a steady upward trend. In 2024, the price of one ton of CO_2-equivalent emissions on the open market exceeded 100 yuan (approximately USD 13).

Singapore's carbon tax applies to all industrial facilities with annual direct greenhouse gas emissions of at least 25,000 tons of carbon dioxide equivalent (tCO_2e). For the period from 2019 to 2023, the initial tax rate was set at USD 5 per ton in order to provide companies with a transitional period to adapt (National Environment Agency, 2025).

Indonesia's "Carbon Economic Value" initiative was introduced in early 2023 as a mandatory, intensity-based ETS for the energy sector. The ETS in Indonesia operates in parallel with a carbon tax as part of a hybrid "cap-tax-and-trade" system. Under this hybrid mechanism, entities that fail to meet their ETS obligations are subject to a carbon tax, with the tax rate adjusted in line with the domestic carbon market price (International Carbon Actin Partnership, 2025).

Carbon tax and green butgeting

Developed countries that have implemented green budgeting practices and adopted carbon taxation as a tool for carbon pricing—such as France, Sweden, Ireland, Singapore, and Japan—are analyzed, along with the outcomes they have achieved, using statistical methods. All of the analyses presented herein are based on official World Bank data, as processed by the authors (World Bank, 2025).

The case of France clearly illustrates the impact of green budgeting. Following the introduction of green budgeting in 2020, a significant reduction in greenhouse gas (GHG) emissions has been observed. In 2013, per capita GHG emissions amounted to 7.4 tons of CO_2 equivalent, whereas by 2023 this figure had declined to 5.6 tons. Over the same period, GHG emissions fell by 27.7 percent compared to 1990 levels. This outcome was largely driven by fiscal measures implemented alongside the carbon tax and by increased green investments. Moreover, the share of fossil fuels in the energy mix continued to decline, indicating a growing resilience of the energy system.

Sweden is among the countries that have achieved positive outcomes through the implementation of long-term green fiscal policies. Although a carbon tax was introduced as early as the 1990s, the practice of green budgeting was only adopted starting in 2020. As a result, by 2023 greenhouse gas (GHG) emissions had declined by 34.6 percent compared to 1990 levels, while per capita GHG emissions fell from 8.5 tons CO_2e to 4.7 tons CO_2e. Furthermore, the share of fossil fuels in total energy consumption decreased from around 35 percent to approximately 25 percent. This demonstrates the effectiveness of combining political commitment, fiscal instruments, and infrastructure transformation.

In Ireland, green budgeting has been implemented since 2019, contributing to a gradual decline in greenhouse gas (GHG) emissions. Although a carbon tax had already been introduced in 2010, the adoption of green budgeting reinforced the trend of a steady reduction in emissions. In 2010, per capita emissions stood at 14.6 tons of CO_2e, whereas by 2023 this figure had decreased to 10.9 tons. The share of fossil fuels in total energy consumption also fell, from 95 percent to 82 percent. However, the pace of reduction has been slower compared to other

countries, suggesting that fiscal reforms require sufficient time to deliver their full effect.

In Singapore, green budgeting has not been introduced; however, a carbon tax has been in place since 2019. Despite this measure, GHG emissions have increased rather than declined during this period. While GHG emissions were at 106.1 percent in 2019, by 2023 the figure had risen to 120.1 percent. Per capita emissions also increased, from 11.4 tons of CO_2e in 2010 to 12.6 tons of CO_2e in 2023. Although the share of fossil fuels in total energy consumption decreased from 35 percent to 24.9 percent, overall GHG emissions did not decline. This suggests that, in the absence of green budgeting, the carbon tax alone may not be sufficient to achieve meaningful emission reductions.

In Japan, green budgeting has not been adopted; however, a carbon tax has been in effect since 2012. Since then, a consistent decline in GHG emissions has been observed. For instance, while GHG emissions stood at +7.1 percent in 2012, by 2023 they had fallen to –21.0 percent. Per capita emissions also decreased, from 11.1 tons of CO_2e to 8.4 tons of CO_2e. The share of fossil fuels in total energy consumption declined as well, from 94 percent to 84 percent. These trends reflect the positive impact of Japan's technological advancement, energy efficiency improvements, and tax policy. Nevertheless, the findings suggest that the outcomes could be further strengthened through the introduction of green budgeting.

Conclusion

In summary, the evidence shows that countries which have introduced green budgeting demonstrate a clear decline in GHG emissions. The effectiveness of this policy is particularly evident when combined with carbon taxation and other fiscal instruments. Green budgeting practices have proven to positively influence not only environmental indicators but also the structure of the energy mix. Conversely, the experience of Singapore illustrates that relying on a single measure—such as the carbon tax alone—is insufficient to achieve substantial reductions in GHG emissions.

The analyses indicate that both the carbon tax and the ETS could play a crucial role for Uzbekistan not only in achieving environmental objectives but also in strengthening fiscal and economic stability. However, their effectiveness is directly contingent upon the country's institutional capacity, level of economic development, characteristics of the energy market, and the degree of political commitment.

In the short term, the carbon tax can serve as an effective instrument for ensuring fiscal stability and increasing budget revenues. International experience shows that in countries such as Sweden, Denmark, and Ireland, this tax has contributed to a significant reduction in emissions without exerting a serious negative impact on economic growth. In the context of Uzbekistan, the introduction of such a mechanism could also generate a "double dividend," meaning that environmental benefits could be achieved alongside greater economic efficiency. At the same time, it will be crucial to design targeted social protection measures to mitigate the regressive effects of the tax.

In the long term, the ETS offers advantages in ensuring strict control over emissions, incentivizing industrial enterprises to adopt innovative technologies, and increasing low-carbon investments. However, for the system to operate effectively in Uzbekistan, reliable monitoring mechanisms, well-developed financial markets, and a clear legal framework are required. Therefore, the implementation of ETS in Uzbekistan should be carried out gradually, in a phased manner.

The results of the study indicate that while the carbon tax is distinguished by its ability to provide a clear and stable price signal, the ETS offers the advantage of strict control over emission volumes. Therefore, as demonstrated by Indonesia's experience, a hybrid model—introducing a carbon tax first and subsequently moving step by step toward an ETS—appears to be the most appropriate approach for Uzbekistan.

International experience demonstrates that the combined application of the carbon tax and the ETS yields the most effective results. The carbon tax contributes to fiscal stability and provides a clear price signal, while the ETS guarantees environmental outcomes by imposing quantitative limits on emissions. Therefore, in Uzbekistan, these instruments should be considered as complementary measures.

The recommended **strategy for Uzbekistan** can be outlined as follows:

- short term (2026–2028): introduce a low-rate carbon tax applied to large industrial emitters;
- medium term (2028–2030): expand the coverage to include the transport and energy sectors while gradually increasing tax rates;
- long term (beyond 2030): establish an integrated system and incorporate elements of the Emissions Trading System (ETS);
- revenue use: allocate revenues from the carbon tax in a targeted manner to social protection measures, the development of green technologies, and tax redistribution.

Overall, the most appropriate approach for Uzbekistan is a phased hybrid model, which would ensure fiscal stability in the short term, extend coverage to high-emission sectors of the economy in the medium term, and, in the long term, accelerate technological modernization and the transition to a low-carbon economy through the introduction of an Emissions Trading System.

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POLIETILEN SINTEZ QILISH TEXNOLOGIYASI HAMDA UNING AHAMIYATI

Annotatsiya. *Ushbu maqolada polietilen haqida shuningdek, ui sintez qilish jarayoni hamda texnoloiyasi haqida fikr va mulohazalar keltirilgan.*
Kalit so’zlar. *Polietilen, modda, temperature, suyuqlik, plyonka, sintez, texnologiya, termoplast.*

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POLYETHYLENE SYNTHESIS TECHNOLOGY AND ITS IMPORTANCE

Abstract. *This article presents ideas and observations about polyethylene, as well as the process and technology of its synthesis.*
Keywords. *Polyethylene, substance, temperature, liquid, film, synthesis, technology, thermoplastic.*

Polietilen, politen, polieten [-CH2-CH2-]l - karbozanjirli polimer. Rangsiz, yarim shaffof modda. Suyuqlanish temperaturasi olinish usuliga ko'ra 105-130°, zichligi 920 - 970&kg/m3. Elastikligi va cho'zilishga mustahkamligi yuqori. Ishqorlar, xlorid, sulfat, ftorid va organik kislotalar ta’siriga chidamli; xlor va ftor ta’sirida parchalanadi. 80°dan yuqorida uglevodlar va ularning xlorli hosilalarida eriydi; radioaktiv nurlar ta’siriga chidamli; fiziologik jihatdan zararsiz. Polietilen - jahon miqyosida termoplastlar ishlab chiqarishda birinchi o’rinda turadigan eng arzon polimerlardan biri. Sanoatda 3 xil usulda: etilenni yuqori bosimda (1200-1500 at), o'rtacha bosimda (30-40 at) va past bosimda (1-7 at) polimerlab olinadi. Elektr izolyasiya qoplamalari, plyonkalar, yemiruvchi muhitlardan saqlovchi materiallar, sinmaydigan idishlar va boshqa tayyorlashda qo’llanadi.

Polietilen birinchi marta 1922 yilda Britaniyaning ICI kompaniyasi tomonidan sintez qilingan. 1933 yilda Britaniyaning Bnemen Chemical Industries kompaniyasi etilen yuqori bosim ostida polimerlanib, polietilen hosil qilishi mumkinligini aniqladi. Bu usul 1939 yilda sanoatlashgan va odatda yuqori bosim usuli sifatida tanilgan. 1953 yilda Germaniya Federativ Respublikasidan K.Zigler TiCl4-Al (C2H5)3 katalizator sifatida etilenni pastroq bosimlarda ham polimerlash mumkinligini aniqladi. Ushbu usul 1955 yilda Federal Germaniya kompaniyasi Hoechst tomonidan sanoat ishlab chiqarishiga kiritilgan, odatda past bosimli polietilen sifatida tanilgan. 50-yillarning boshida Amerika Qo'shma Shtatlarining

Filipp Oil kompaniyasi katalizator sifatida xrom oksidi-kremniy alyuminiy gelidan foydalangan holda etilenning o'rta bosim ostida polimerlanishi va yuqori zichlikdagi polietilen hosil qilishini aniqladi va 1957 yilda sanoat ishlab chiqarishiga erishdi. 60-yillarda DuPont. Kanadada etilen va eritmada -olefinlardan past zichlikdagi polietilen ishlab chiqarila boshlandi. 1977 yilda Amerika Qo'shma Shtatlari Union Carbide kompaniyasi va Dow Chemical kompaniyasi past bosimli usulni ketma-ket ravishda past zichlikli polietilenni ishlab chiqarish uchun qo'lladilar, bu chiziqli past zichlikli polietilen deb ataladi, ulardan Union Carbide kompaniyasining gaz fazasi usuli eng muhimi edi. Chiziqli past zichlikli polietilen past zichlikdagi polietilenga o'xshash xususiyatlarga ega, ammo ishlab chiqarishda kam energiya iste'moli bilan birga yuqori zichlikdagi polietilenning ba'zi xususiyatlarini birlashtiradi, shuning uchun u juda tez rivojlandi va eng qiziqarli yangi sintetik materiallardan biriga aylandi. qatronlar.

Past bosimli usulning asosiy texnologiyasi katalizatorda yotadi. Germaniyada Ziegler tomonidan ixtiro qilingan TiCl4-Al (C2H5)3 tizimi poliolefin katalizatorlarining birinchi avlodi bo‘lib, past katalitik samaradorlikka ega va har bir gramm titanga minglab gramm polietilen to‘g‘ri keladi. 1963 yilda Belgiyaning Solvay kompaniyasi tashuvchi sifatida magniy birikmali ikkinchi avlod katalizatorini yaratdi, uning katalitik samaradorligi har bir gramm titan uchun o'n mingdan yuz minglab gramm polietilenni tashkil qiladi. Ikkinchi avlod katalizatorlaridan foydalanish, shuningdek, katalizator qoldiqlarini olib tashlash uchun keyingi ishlov berish zaruriyatini ham yo'q qiladi. Keyinchalik gaz fazasi bo'yicha yuqori samarali katalizatorlar ishlab chiqildi. 1975 yilda Italiyaning Monte Edison Group kompaniyasi uchinchi avlod katalizatori sifatida tanilgan granulyatsiyasiz to'g'ridan-to'g'ri sferik polietilen ishlab chiqaradigan katalizatorni ishlab chiqdi, bu yuqori zichlikdagi polietilen ishlab chiqarishdagi yana bir o'zgarishdir.

O’zbekistonda 2020-yil 1-yanvardan polietilen paketlarni bepul tarqatish taqiqlangandi. Albatta, plastik paketlar ixtirosi oziq-ovqat mahsulotlari do’konlari xaridorlari hayotiga birmuncha yengillik olib kelgan bo’lsa-da, ammo vaqt o’tgach bu paketlar atrof-muhitga qanchalik zarar yetkazishi aniqlandi. Sintetik polimerlarning eng “ko’hna”lari, masalan yoshi 60dan oshganlari ham tabiiy sharoitlarda yo’q bo’lgani yo’q. Pessimistik prognozlarga ko’ra, ularning tabiiy holatda chirishi 400 yilni tashkil qiladi. Okeanni ifloslantiradigan plastiklar esa polietilen bo’laklarini ozuqa sifatida qabul qiluvchi dengiz hayvonlari o’limiga sabab bo’ladi. Butunjahon yovvoyi tabiat jamg’armasi xabariga ko’ra, har yili 100 ming tyulen, kit va dengiz toshbaqalarini xuddi shunday qismat kutadi. O’zbekiston Davlat ekologiya qo’mitasiga manfaatdor vazirlik va idoralar bilan birga xorij tajribasi va jamoatchilik muhokamasini hisobga olib, 2020-yilning 1-yanvariga qadar foydalanish xususiyatini yo’qotganidan so’ng atrof-muhitga zarar yetkazadigan, ishlab chiqariladigan va import qilinadigan tovarlar guruhiga ekologik yig’imni joriy qilish yuzasidan asoslangan takliflar kiritish vazifasi topshirilgan.

Hozirgi kunda dunyo miqiyosida uch xil polietiilen (PE) ishlab chiqarilmoqda: yuqori zichlikdagi PE, past zichlikli PE va past zichlikka ega bo'lgan chiziqli PE. Ularning har birini o'nlab turlari mavjud. Polimerlarning xossalari qo'llanilgan katalizatorlar, zanjirdagi somonomerlarga bog'liq ravishda oz bo'lsada bir-biridan farq qiladi va ishlatish sohasi ham shunga yarasha o'zgarib turadi. Adabiyotlardan ma'limki PE ni olishda quyidagi sintezlarni amalga oshirish mumkun: 1) Etilenni polimerlash yo'li bilan: nC2H4-CH3-CH2-(C2H4)n- 2-CH=CH2 2) Diazometandan nCH2N2→CH3-CH2(CH2)n-2-CH=CH2+nN2 3) Vodorod va uglerod (II) oksididan NCO+2nH2→CH2-CH2-(CH2)n-4-CH=CH2+nH2O Sanoatda PE ni ishlab chiqarish faqat birinchi yo'l bilan amalga oshiriladi, chunki bunda hosil bo'lgan mahsulotning tannarxi past, sifati esa yuqori. 2-3- reaksiyalar esa labaratoriya sharoitda yuqori molekulyar parafinlarning fizikaviy xossalari bilan ularni kimyoviy tuzulishini bog'liqligini aniqlash uchun tadqiqot ishlari sifatida o'tkazilgan.

Etilenni nisbatan past molekulali polimeri rus olimi Gustavson tomonidan 1884-yilda olingan bo'lib u suyuq holatda edi. Gustovsonning tajribalardan so'ng yana 50 yil davomida yuqori molekulali PE olish ustida harakatlar qilindi. Ular sintetik surkovchi moylar sifatida ishlatilishi mumkun bo'lganligi uchun sanoat miqiyosida Germaniyada ikkinchi jahon urushi vaqtida ishlab chiqarilgan. 1933-1936-yillarda ingliz tadqiqotchilari Fosett va Djibson va sovet olimi A.I.Dintsesslar bir-biridan bexabar 1000 atom. bosim, 2000 C haroratda va katalizator sifatida oz miqdorda kislorodni qo'shib yuqori yuqori molekulali qattiq polimerni olishga muvaffaq bo'ldilar.

Polietilen uglerod va vodorod atomlaridan tashkil topgan oddiy uglevodorod polimeridir. Uning asosiy zanjiri–CH_2–CH_2–birikmalaridan iborat bo‘lib, bu zanjirlar uzunligi va tarvaqaylab ketish darajasiga qarab farqlanadi. Polietilenning xususiyatlari uning molekulyar massasi, zichligi va kristallanish darajasiga bog‘liq. Polimerning zichligi va kristallanishi esa ishlab chiqarish jarayonida qo‘llaniladigan katalizatorlar va sharoitlarga bog‘liqdir.

Polietilen odatda uchta asosiy toifaga bo‘linadi:

Yuqori zichlikdagi polietilen (PE-HD): Zanjirlarning minimal tarmoqlanib ketishi va yuqori kristallanish darajasi tufayli qattiq va mustahkam xususiyatga ega. Zichligi 0,94–0,97 g/sm³ oralig‘ida bo‘ladi.

Past zichlikdagi polietilen (PE-LD): Ko‘proq tarmoqlanib ketgan zanjirlarga ega bo‘lib, kristallanish darajasi past. Zichligi 0,91–0,94 g/sm³ oralig‘ida joylashgan.

Chiziqli past zichlikdagi polietilen (PE-LLD): Tarmoqlanib ketish darajasi LDPE ga qaraganda kamroq, ammo HDPE ga qaraganda moslashuvchanroq. Bu xususiyat uni maxsus qadoqlash materiallarida qo‘llashga yaroqli qiladi.

Polietilen etilenning polimerizatsiya jarayoni orqali sintezlanadi. Etilen odatda neft va gazni qayta ishlash jarayonida olinadi. Polimerizatsiya jarayoni bir necha usulda amalga oshirilishi mumkin:

Yuqori bosimli polimerizatsiya: Bu usul asosan LDPE ishlab chiqarishda qo‘llaniladi. Jarayon 1000–3000 atm bosim va 200–300°C haroratda organik

peroksidlar kabi erkin radikallar ishtirokida sodir bo‘ladi. Yuqori bosim tufayli zanjirlarning tarmoqlanib ketishi ko‘p bo‘ladi.

Past bosimli polimerizatsiya: HDPE va LLDPE ishlab chiqarishda Ziegler-Natta katalizatorlari yoki metallocen katalizatorlari qo‘llaniladi. Bu usul 1–100 atm bosimda va 70–150°C haroratda amalga oshiriladi, natijada zanjirlarning chiziqli tuzilishi saqlanadi.

Gaz fazali polimerizatsiya: Bu zamonaviy usul bo‘lib, energiya tejamkorligi va yuqori sifatli mahsulot olish imkonini beradi.

Polietilen sintez qilish texnologiyasi, asosan, ikki asosiy jarayon orqali amalga oshiriladi: birinchi jarayon – polimerizatsiya, ikkinchi jarayon esa – katalitik polimerizatsiyadir. Polietilen, ehtimol, eng keng tarqalgan plastik materiallaridan biri bo'lib, uning ko'plab turli turlari mavjud: past zichlikli polietilen (LDPE), yuqori zichlikli polietilen (HDPE) va liniyali yuqori zichlikli polietilen (LLDPE).

1. Polimerizatsiya jarayoni

Polietilen sintezining asosiy jarayoni etilen gazidan boshlanadi. Etilenning polimerizatsiyasi quyidagi usullar bilan olib boriladi:

a. Boshlanuvchi agentlar:

- Radikal usuli: Bu usulda etilen molekulalari radikallar yordamida birlashadi.

- Katalitik usul: Bu metodda metallocen yoki Ziegler-Natta katalizatorlari ishlatiladi.

b. Sharoitlar:

- Harorat: 60°C dan 300°C gacha

- Bosim: 1 bar dan 3000 bar gacha

2. Katalitik Polimerizatsiya

Katalitik polimerizatsiya jarayoni ko'pincha yuqori sifatli polietilen olish uchun ishlatiladi va bu jarayonda maxsus katalizatorlar qo'llaniladi:

a. Ziegler-Natta Katalizatori:

Bunday katalizatorlar etilenni yuqori zichlikdagi polietilenga aylantirish uchun ishlatiladi.

b. Metallocene Katalizatori:

Metallocene katalizatordan foydalanish orqali qattiq va silliq tuzilmaga ega bo'lgan liniyali yuqori zichlikdagi polietilen ishlab chiqariladi.

3. Sintez qilish texnologiyasi

Polietilenni ishlab chiqarish jarayonida quyidagi bosqichlarni o'z ichiga oladi:

1. Etilen tayyorlash: Etilen odatda neft yoki gazdan kraklash orqali olinadi.

2. Polimerizatsiya: Etilen monomerlarini radikal yoki katalitik usullar yordamida polymerlash.

3. Tugallangan mahsulotni qayta ishlash: Olingan polietilen granula yoki boshqa shakllarga keltirilishi mumkin.

4. Mahsulotni tozalash va qadoqlash: Tayyorlangan mahsulotlarni tozalash va qadoqlash — bu oxirgi bosqichdir.

Xulosa qilib aytganda polietilen sintez qilish texnologiyasi zamonaviy kimyo sanoatining muhim qismidir va keng qo'llaniladigan turli xil mahsulotlarning

tayyorlanishida muhim ahamiyatga ega. Turli xil metodlar va sharoitlarni qo'llagan holda, ishlab chiqaruvchilar turli xildagi xususiyatlarga ega bo'lgan polietilen turlarini yaratishi mumkin.

Foydalanilgan adabiyotlar.

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O‘ZBEKISTONDA SUV HAVZALARINING ALGOFLORASI BO‘YICHA OLIB BORILGAN TADQIQOTLAR VA ULARNING TAHLILI

Annotatsiya*: Maqolada O‘zbekistonda suv havzalarining algoflorasi bo‘yicha olib borilgan tadqiqotlar va ularning tahlili bo‘yicha bayon etilgan. Suv havzalarining algoflorasi bo‘yicha XX asrning ikkinchi yarmidan boshlab XXI asrning boshlarigacha olib borilgan tadqiqiot ishlarining natijalari va qiyosiy tahlili keltirilgan.*

Kalit so‘zlar: *suv havzasi, taksonomiya, suvo‘tlari, ekologiya*

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RESEARCH AND ANALYSIS OF THE ALGOFLORA OF WATER BASINS IN UZBEKISTAN

Abstract: *This article presents the research and analysis of the algoflora of water basins in Uzbekistan. It includes the results and comparative analysis of research conducted from the second half of the 20th century to the early 21st century on the algoflora of water basins.*

Keywords: *water basin, taxonomy, algae, ecology*

Kirish

Suv resurslarining muhofazasi, suv havzalarining barqarorligini ta’minlash shuningdek, suv havzalari tabiiy florasini saqlab qolish, ulardan strategik ob’ekt sifatida foydalanish bugungi kunga kelib dunyo miqyosida muhim ahamiyat kasb etmoqda. Global ekologik muammolar, iqlim o‘zgarishi va antropogen ta’sirlar suv ekotizimlariga jiddiy xavf solib kelmoqda Yer yuzida 72 000 dan ortiq algoflora turlari qayd etilgan bo‘lib, shulardan atigi 38% ning tarqalish xususiyatlari aniqlangan va ulardan foydalanish yo‘llari ishlab chiqilgan, xolos. Bu esa, algofloraning noyob xususiyatlaridan to‘liq foydalanish imkoniyatini cheklaydi (Ergasheva X., 2021). Shu jihatdan, suv havzalari, ayniqsa, inson faoliyati bilan bog‘liq sun’iy suv havzalari algoflorasining zamonaviy holatini baholash va amaliyotga joriy etish istiqbollarini aniqlash dolzarb muammolardan hisoblanadi. O‘zbekiston Markaziy Osiyoning muhim suv resurslariga ega davlatlaridan biri bo‘lib, uning hududida ko‘plab daryolar, ko‘llar va sun’iy suv omborlari mavjud. Ushbu suv havzalarining ekologik holati va biologik xilma-xilligi respublika iqtisodiyoti va aholi salomatligi uchun katta ahamiyatga ega. Suv omborlaridan aniqlangan suvo‘tlardan toza kultura ajratib olib, ularning biomassalaridan turli

sohalarda foydalanish mumkin. Xususan, Chlamydomonas va Chlorella suvo‘tlari turkumlari turlari yordamida suv tozalash inshootlarida oqava suvlarni tozalash hamda sabzavot ekinlarining hosildorligini oshirishda foydalanish maqsadga muvofiq hisoblanadi. Bu esa, qishloq xo‘jaligi mahsulotlarini yetishtirishda ekologik toza texnologiyalarni qo‘llash imkoniyatini yaratadi. O‘zbekistonda jami 58 ta suv omborlari mavjud bo‘lib, ularning algoflorasi to‘liq o‘rganilmagan, taksonomik tahlili bo‘yicha olib borilgan tadqiqotlar hali oxiriga yetmagan. Shuningdek, ko‘plab suv omborlarining foydalanishga topshirilganiga o‘rtacha 40 yilga yaqin vaqt o‘tdi, ammo hozirgacha bu suv omborlarining algoflorasi o‘rganilmagan. Suv omborlari algoflorasining taksonomik tarkibi kelgusida olib borilishi lozim bo‘lgan monitoring tadqiqotlarining asosi hisoblanadi. Shu bois, O‘zbekiston suv havzalarining algoflorasini o‘rganish, ularning ekologik holatini baholash va kelgusida ulardan oqilona foydalanish yo‘llarini ishlab chiqish muhim ahamiyatga ega.

Adabiyotlar tahlili

O‘zbekiston Respublikasi hududidagi suv havzalarining algaflorasi ma’lum darajada o‘rganilgan bo‘lib, X.E.Ergasheva, S.Iskandarov, T.Zokirov, A. M.Muzaffarov, K.Yu.Musayev, S.Mamabetalieva, X.A.Alimjanova, R.Sh.Shoyaqubov, T, Vasikov, A.A.Rasulov, Sh.Tajiev, A.Abduqodirov, X.Xabibullayev, S.Bo‘riev, M.A.Shayimqulova, M.A.Abdullayeva, B.A.Xalmurzaeva, M.I.Mustafaeva hamda L.A.Ivanovlar tomonidan tadqiqotlar o‘tkazilgan bo‘lib algoflora uchun o‘zlarining munosib hissalarini qo‘shishgan. Olib borilgan ilmiy tadqiqot ishlari davomida algofloraning taksonomiyasi, geografiyasi hamda ekologiyasi haqida ma’lumotlar keltirilgan.

A.M.Muzafarov [1] Farg‘ona vodiysidagi Marg‘ilonsoy, Shohimardonsoy, Markaziy Tyanshan tog‘laridagi daryolar, ya’ni Sirdaryoning bosh irmoqlari Qoradaryo, Norin daryo, Shahrixonsoy va ularning irmoqlari, tog‘ ko‘llari, Amudaryo etaklari ko‘llaridagi suvo‘tlari bo‘yicha tadqiqot ishlarini olib borilgan hamda olim tomonidan Zarafshon daryosi havzasida joylashgan turli suv havzalaridagi suvo‘tlarining florasi o‘rganilgan hamda natijada 600 dan ortiq namunalar yig‘ilgan. Zarafshon daryosi havzasining yuqori oqimi bo‘ylab suvo‘tlarining 415 tur va formalari aniqlangan. Ular quyidagilar: Cyanophyta-85, Rhodophyta-3, Chrysophyta-1, Bacillariophyta- 233, Pyrrophyta-1, Chlorophyta-90, Charophyta-2.

A.E.Ergashev tomonidan Farg‘ona vodiysidagi kanallar, ya’ni Katta Farg‘ona va shimoliy Farg‘ona, Katta Chuy, Mirzacho‘ldagi kollektor va sardobalar, Kattaqo‘rg‘on, Buxtarma suv omborlari, sholipoyalar, biologik tozalash va baliqchilik hovuzlari suvo‘tlari florasi mukammal tarzda o‘rganib chiqilgan. Olim kanallarning kimyoviy, gaz va harorat rejimlari bo‘yicha ilmiy-tadqiqot ishlarini olib borgan hamda ularning tipologiyasini ishlab chiqqan. Kanallarning suv manbalari, ulardagi suvo‘tlarining uchrashi, ekologik omillardan oqim tezligi, tiniqlikning pastligi (10-15 sm), biogen birikmalarning kamligi kabi bir qator omillarga bog‘liq bo‘lishini yaqqol ko‘rsatib bergan. K.Yu.Musaev algologiya sohasida yangi bir tarmoqni rivojlantirishga hissa qo‘shgan olimdir. U suv bilan

birga tuproqlarda ham o‘sadigan ba’zi suvo‘tlarini o‘rgangan va ularning tuproq hosildorligini oshirishda hissasi borligini o‘rgangan. Tadqiqotchi Qibray tumanini kesib o‘tuvchi Bo‘zsuv va Qorasuv kanallarni qolaversa shu tuman tuproqlarida tarqalgan suvo‘tlarni o‘rgangan natijada mazkur hududda 517 ta turlar borligini aniqlagan. S.Mambetalieva O‘zbekistonning janubi-g‘arbida joylashgan Issiqko‘lning shimoliy qirg‘oqlari suvo‘tlari florasini o‘rganib, bu hududda 346 ta tur va tur xillari borligini bayon qilgan. P.N. Saksena «Kalgan-Chirchik» baliqchilik xo‘jaligidagi suv havzasi suvo‘tlarini o‘rganib, 522 ta tur va tur xillarini borligini ta’kidlaydi. Bular: Cyanophyta-87, Rhodophyta-1, Chrysophyta-6, Bacillariophyta-108, Pyrrophyta-6, Euglenophyta-37, Chlorophyta-76 tadan iborat. X.A. Alimjanova Bo‘zsuv kanali va Chirchiq daryosi havzasi suvo‘tlarining taksonomik, ekologik xususiyatlarini o‘rgangan, tizimli tahlilni yaratgan olima hisoblanadi. Suv havzalari ekologiya-sanitariya holatini aniqlashda suvo‘tlarining saprob turlarini tarqalish qonuniyatlaridan foydalanish mumkinligini to‘laqonli ochib bergan. Bundan tashqari suv havzalarining birlamchi mahsuldorligini aniqlab, suvo‘tlar kollektsiyasini tuzgan, hamda, Chirchiq daryosi havzasi suv tarmoqlarida suvo‘tlarining 1562 ta tur va tur xillarini aniqlagan. Ulardan,Cyanophyta- 293, Rhodophyta-1, Xanthophyta-18, Chrysophyta 13, Basillariophyta-6593, Pyrrophyta-15, Euglenophyta-79, Chlorophyta-484 turni tashkil etadi.

Muhokama va natijalar.

Suv omborlarining algoflorasi bo‘yicha 1995 yilgacha bajarilgan (Xabibullayeva A., Xalilov S., Ergashev A.E., Temirov A.A) tadqiqotlarning natijalari bilan Farg‘ona vodiysi ayrim suv omborlari algoflorasi mavzusidagi tadqiqotning natijalarini X.Ergasheva(2017) qiyoslaganda (22 yildan so‘ng) tahlillar 210 Scientific Bulletin of NamSU-Научный вестник НамГУ-NamDU ilmiy axborotnomasi–2022-yil_maxsus son 211 o‘zgarganligini takidlash mumkin.Xususan, algofloraning polimorf taksonlari, algofloraning biologik spektri turlarning suv omborlarining turli qismlari bo‘yicha taqsimlanishining o‘ziga xos xususiyatlari, algofloraning qiyosiy tahlili tur, turkum, oilalar bo‘yicha o‘tkazilganligi, algofloraning ekologik guruhlarga: algofloraning haroratga bog‘liq taqsimlanishi, algofloraning suvning sho‘rlanganligi bo‘yicha, algofloraning plankton va bentos turlari taqsimlanishi ochib berilganligi bilan ajralib turadi.

Suv omborlarining algoflorasi bo‘yicha 1995 yilgacha bajarilgan (Xabibullayeva A., Xalilov S., Ergashev A.E., Temirov A.A) tadqiqotlarning natijalariga ko‘ra adabiyotlar sharhida suv havzalari algoflorasining o‘rganilganligi; taksonomik tahlil .Сув ҳавзалари альгофлорасининг ўрганилганлиги II. Таксономик таҳлил: 1.Бўлимлар бўйича III. Альгофлоранинг қиёсий таҳлили: 1. Ўхшаш турлар бўйича IV. Альгофлоранинг мавсумий ўзгаришлари: 1.Альгофлоранинг фасллар бўйича тақсимланиши 2.Альгофлоранинг миқдори ва биомассаси

Tadqiqotchi olimlar tomonidan Chirchiq daryosi havzasida uchragan 1562 ta tur va tur xillaridan 393 tasi indikator-saprob suvo‘tlari ekanligini aniqlangan. R.Sh. Shoyaqubov O‘zbekiston hududidagi xara suvo‘tlar florasini hamda, tropik yuksak suvo‘tlari vakillarini O‘zbekiston sharoitida iqlimlashtirish, ularning iflos suvlarni

tozalashdagi ahamiyatini o‘rgangan olim hisoblanadi. R.Sh.Shoyaqubov, T.Vasikov, A.A.Rasulovlar tomonidan Toshkent viloyatidagi Angren, Ohangaron, Olmaliq tozalash inshoatlarining algoflorasi bo‘yicha tadqiqot ishlarini olib brogan hamda Ohangaron vohasida joylashgan Angren tozalash inshoatining algoflorasini o‘rganish davrida olingan 60 dan ortiq suvo‘ti na’munalarining (bentos, plankton, «suzuvchi kulchalar») tahlili natijalari keltirilgan. Algologik namunalar tahliliga ko‘ra, Angren tozalash inshoatida 82 ta tur va forma suvo‘tlari uchrashi aniqlangan. Aniqlangan turlardan 33 tasi suvlarning ifloslanganligini ko‘rsatuvchi indikator-saprob suvo‘tlari ekanligi aniqlangan. Olimlar tomonidan Ohangaron suv tozalash inshoatining algoflorasi tarkibi oqova suvlarning kimyoviy tarkibiga bog‘lik holda o‘zgarishi aniqlangan. Tozalash inshoatida 115 ta algologik namunalar yig‘ilgan va tahlil qilingan. Tozalash inshoati algoflorasi tarkibida 39 ta suvo‘ti indikator-saprob turlar ekanligi aytib o‘tilgan. Sh.Tajiev Chimkent shahar biologik hovuzlaridagi oqova suvlarni biologik tozalashda suvo‘tlarning ahamiyatini o‘rgangan. Hovuzlardagi suvo‘tlarining turlar tarkibini o‘rganish asosida 212 ta tur va tur xillarini aniqlagan. A.Abduqodirov suvo‘tlarining amaliy ahamiyatiga katta e’tibor bergan. U Chirchiq elektrokimyosanoati biologik tozalash hovuzida suvo‘tlarining chiqindi suvlarni tozalashdagi ahamiyatini o‘rgangan olim hisoblanadi. X.Xabibullaev Chorvoq suv ombori suvo‘tlar florasini mukammal tarzda tadqiqot ishlarini olib borgan bo‘lib, mazkur suv omborida suvo‘tlarning shakllanishi, rivojlanishi va mavsumiy o‘zgarishlari haqida ilmiy ma’lumotlarni keltirgan. S.Bo‘riev Chorvachilik komplekslarining tozalash inshoatlaridan suvo‘tlarining 23 ta tur va formalarini aniqlagan. Chorvachilik komplekslari oqova suvlaridan suvo‘tlarini ko‘paytirishdi ozuqa muhit sifatida, olingan biomassani esa baliqchilikda ozuqa tarzida ishlatish mumkinligini isbotlab bergan. M.A.Shayimqulova Oqbura daryosining algoflorasini o‘rganish natijasida suvo‘tlarining 79 turkum, 46 oila, 22 tartib, 16 sinf, 9 bo‘limga mansub 211 ta tur va tur xillarini aniqlagan. O‘rganilgan suvo‘tlaridan 113 tasi indikator-saprob suvo‘tlari ekanligini e’tirof etgan. M.A. Abdullaeva Toshkent dengizi deb nom olgan Tuyabo‘g‘iz suv ombori algoflorasining mavsumlar davomida ekologik omillar ta’sirida rivojlanishini o‘rgangan. B.A.Xalmurzaeva tomonidan esa Ohangaron (Toshkent viloyati) va Sariog‘och (Shimkent viloyati) suv havzalaridagi suvo‘tlari o‘rganilgan va suvo‘tlari taksonomik jihatdan tahlil qilingan. Ilk bor ko‘k-yashil va yashil suvo‘tlarining istiqbolli tur va shtammlari qiyoslanib optimal va ekstremal sharoitda biologik va ekologik xususiyatlari laboratoriya, issiqxona va ochiq havo sharoitida o‘rganilib chiqilgan. M.I.Mustafaeva Buxoro viloyati ip-yigiruv korxonalari biologik hovuzlaridagi oqova suvlarini tozalashda suvo‘tlarining sanitarlik ahamiyatini o‘rgangan. Ular Cyanophyta-64, Chrysophyta-1, Basillariophyta-81, Pyrrophyta (Dinophyta)-3, Euglenophyta-6, Chlorophyta-34 ta bo‘lib, jami 189 ta tur va tur xillaridan iborat ekanligini keltirib o‘tgan. A.A. Boronbaeva Jalolobod shahar oqova suvlarini tozalash inshoatlari algoflorasi va uning ahamiyatini o‘rgangan bo‘lib, suvo‘tlarning 173 ta tur va tur xillarini aniqlagan. Ulardan Cyanophyta-47, Xanthophyta-2, Chrysophyta-5, Basillariophyta-37, Dinophyta-4, Euglenophyta-11, Chlorophyta-67 tani tashkil

qilgan. N.E. Rashidov tomonidan Buxoro viloyatidagi Chaqmoq A, Sakovich va Mavliyon kollektorlarining suvo‘tlari florasi o‘rganilgan va 389 ta tur va tur xillari borligi aniqlangan. N.Sh. Eshmurodova Ohangaron daryosi algoflorasini o‘rganish natijasida birinchi marta suvo‘tlarining 6 ta bo‘lim, 13 ta sinf, 16 ta tartib, 36 ta oila, 61 ta turkumga xos 210 ta tur va tur xillarini aniqlagan. Indikator-saprob suvo‘tlarini o‘rganish asosida suvo‘tlarining 107 ta tur va tur xillarini aniqlagan va ularning daryoda uchrashiga qarab, daryo suvining sifatini baholagan. X.E. Ergasheva tomonidan Andijon suv ombori algoflorasida 418 ta tur va tur xillari aniqlangan. Ulardan,Cyanophyta-107, Chrysophyta-5, Bacillariophyta-115, Dinophyta-17, Euglenophyta-23, Chlorophyta-151 tadan iborat ekanligi aniqlangan. Y.Sh.Toshpo‘latov tomonidan Zarafshon daryosi o‘rta oqimining algoflorasi va undagi indikator-saprob suvo‘tlarining ahamiyatini o‘rgangan. Daryo algoflorasi tahlili natijalariga ko‘ra 331 tur va tur xillari aniqlangan bo‘lib, ular: Cyanophyta-64 ta, Bacillariophyta-218, Pyrrophyta-2, Euglenophyta-10, Chlorophyta-37 ta. Z.A.Ismatova tomonidan Sangzor daryosi algoflorasini o‘rganish jarayonida suvo‘tlarining 7 bo‘lim, 15 sinf, 24 tartib, 47 oila, 100 turkumga xos 522 ta tur va tur xillari aniqlangan. Ulardan, Cyanophyta-56, Rhodophyta-2, Xanthopyta-7, Chrysophyta-2, Bacillariophyta-355, Euglenophyta 15, Chlorophyta-85 bo‘limlariga mansub. Algofloradagi indikator-saprob suvo‘tlarining ahamiyatini o‘rgangan va suvning sifatiga baho berilgan [8-9].

Xulosa.

Hozirgi ekologik muhit ta’sirida suv omborlarida suvo‘tlarining tarqalishi va ularning kamayib yoki ko‘payib borishini o‘rganish ma’lum qonuniyatlarning kelib chiqishiga olib keladi. Suv havzalaridagi algofloraning miqdori va biomassasi yil mavsumlari davomida o‘zgarib borib, suvo‘tlarning tabiatiga va gidrokimyoviy omillar, harorat, yoritilganlik, tiniqlik, pH, oqim tezligi, suv havzasining chuqurligi, suvning gaz rejimi kabi bir qator ekologik omillarning ta’siriga bog‘liq holda turlicha taqsimlanishini ko‘rsatadi. Ayni paytda algologiya sohasi bo‘yicha ilmiy tadqiqot ishlarining samaradorligini oshirish, bu sohaga oid qonuniyatlarni joriy etish maqsadga muvofiq hisoblanadi. Bu borada Respublikamiz suv omborlarining algologik tarkibini zamonaviy holatini aniqlash va shu asosda ularni turli suv havzalari algoflorasi shakllanishidagi o‘rnini baholash dolzarb muammolardan biridir

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SUV O‘TLARINING SUV HAVZALARIDA TARQALISHINING AYRIM QONUNIYATLARI

Annotatsiya: *Ushbu maqolada suv o‘tlari - makrofitlarning suv havzalarida tarqalish qonuniyatlari o‘rganiladi. Ularning ekologik omillarga bog‘liqligi, morfologik va biologik xususiyatlari hamda antropogen ta’sir ostida yuzaga keladigan o‘zgarishlar yoritiladi. Suv o‘tlari biologik xilma-xillikni saqlashda va suv ekotizimining barqarorligini ta’minlashda muhim rol o‘ynaydi.*

Kalit so‘zlar: *Suv havzalari, suv o‘tlari, morfologik tuzilish, indicator, biologik xilmaxilligi, daryo, kanal, suvning kimyoviy tarkibi, harorat, yorug‘lik.*

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SOME REGULARITIES OF THE DISTRIBUTION OF WATER IN WATER BODIES

Abstract: *This article studies the patterns of distribution of aquatic macrophytes in water bodies. Their dependence on ecological factors, morphological and biological characteristics, as well as changes that occur under anthropogenic influence are highlighted. Aquatic plants play an important role in preserving biological diversity and ensuring the stability of aquatic ecosystems.*

Keywords: *Water bodies, aquatic plants, morphological structure, indicator, biological diversity, river, canal, chemical composition of water, temperature, light.*

KIRISH

Suvo‘tlar (algae) – suv ekotizimlarining asosiy birlamchi ishlab chiqaruvchilari bo‘lib, ular suv havzalarida biologik xilma-xillikni, kislorod muvozanatini va oziq zanjirining barqarorligini ta’minlaydi. Ularning tarqalishi ko‘plab ekologik omillar – suvning kimyoviy tarkibi, harorat, yorug‘lik, oqim tezligi va antropogen ta’sir darajasiga bog‘liq. Suvo‘tlar suv havzalarida indikator organizmlar sifatida ham muhim ahamiyat kasb etadi, chunki ular orqali suv sifatini baholash mumkin. Ushbu maqolada suvo‘tlarning suv havzalarida tarqalish qonuniyatlari va ularni shakllantiruvchi asosiy omillar tahlil qilinadi. Suvo‘tlarning biologik xilma - xilligi va ularning ekologik funktsiyalari, ularni muhofaza qilish va barqaror ravishda boshqarishning zarurligini ko‘rsatadi. Suvo‘tlarning ahamiyatini to‘g‘ri tushunish va ularga zarar yetkazmaslik uchun ilmiy asoslangan

yondashuvlarni ishlab chiqish bugungi kunda dolzarb muommodir. Suv havzalarida uchraydigan o‘simliklar ichida suv o‘tlari yoki makrofitlar alohida o‘ringa ega. Ular nafaqat suvning biologik tozaligini saqlab turishda, balki gidrobiotsenozda muvozanatni ta’minlashda ham muhim ahamiyatga ega. Suv o‘tlari tarqalishi ko‘plab omillarga, jumladan, gidrologik, iqlimiy va antropogen omillarga bog‘liq bo‘lib, ularning hududiy va vertikal taqsimoti muayyan qonuniyatlarga asoslanadi.

MATERIALLAR VA USULLAR

Tadqiqot uchun Namangan viloyati hududidagi turli suv havzalaridan (ko‘l, daryo, kanal, suv omborlari va sun’iy hovuzlar) suv namunalari olindi. Namuna olish uchun hududlarni turli muhit sharoitiga ko‘ra tanlanadi, jumladan, ozuqa miqdori va suvo‘tlarning turlariga qarab tanlanadi. Namunalarda suvo‘tlarning turlari aniqlashda quyidagi usullar qo‘llanildi: Mikroskopik kuzatuv va identifikatsiya qilish (determinatsion qo‘llanmalar asosida). Suvning fizik-kimyoviy ko‘rsatkichlari (pH, harorat, mineralizatsiya, erigan kislorod kabi parametrlari standart suv tahlili)ni aniqlash. O‘simliklarni baholash (akvatik o‘simliklar zichligini va turini transekt) usullari bilan qayd etiladi. Suvo‘tlarning soni va tarqalish zichligini hisoblash uchun plankton tarmoqlari hamda hisob kameralaridan foydalanish.

Tarqalish qonuniyatlari: Suvo‘tlar muayyan muhit sharoitlariga moslashadi, bu esa suvning sifatiga, haroratga va o‘simlik qoplamasiga bog‘liq. Smith va Jones tadqiqotlariga ko‘ra, zich akvatik o‘simliklar joylashgan hududlarda suvo‘tlar ko‘proq uchraydi, chunki bu joylarda oziq-ovqat va himoya resurslari ko‘roq.

Makrofitlarning suv havzalarida tarqalishi quyidagi qonuniyatlarga asoslanadi:

Zonallik: Suv o‘tlari havzaning chuqurligi va masofasiga qarab zonal tarzda joylashadi. Masalan, qirg‘oq zonalarida asosan eleofitlar, biroz chuqurroq qismda hidrogeofitlar va chuqur suvda gidrofitlar uchraydi.

Iqlim va harorat ta’siri: Tropik va subtropik iqlimda suv o‘tlari yil davomida faol o‘sadi. Mo‘tadil iqlimda esa ularning faol vegetatsiyasi bahor va yoz oylariga to‘g‘ri keladi.

Gidrokimyoviy omillar: Suvdagi azot, fosfor, kislorod miqdori, shuningdek, pH darajasi makrofitlarning tarkibi va zichligiga bevosita ta’sir ko‘rsatadi.

Antropogen ta’sir: Sanoat chiqindilari, qishloq xo‘jaligi oqova suvlari va rekreatsion yuklama suv o‘tlari tarkibi va soniga salbiy ta’sir ko‘rsatadi. Evtrofikatsiya jarayonlari ayrim invaziv turlar (masalan, *Elodea canadensis*) ning ko‘payishiga olib keladi.

Vaqt o‘zgarishi: Suvo‘tlarning tarqalishiga vaqt omillari, masalan, mavsumiy o‘zgarishlar, katta ta’sir ko‘rsatadi. Tadqiqotlar shuni ko‘rsatadiki, aholi soni mavsumiy harorat va oziq-ovqat mavjudlkigiga qarab o‘zgaradi. Jumladan, suvo‘tlar populyatsiyalari iliq mavsumlarda ko‘payadi.

NATIJALAR

Tadqiqot natijalariga ko‘ra, suv havzalarida suvo‘tlarning tarqalishi quyidagi qonuniyatlarga bo‘ysunishi aniqlandi:

1. Suvning oqim tezligi: oqim kuchli bo‘lgan daryolarda diatom suvo’tlar (Bacillariophyta) ustunlik qiladi, tinch suvli hovuzlarda esa ko‘proq yashil suvo’tlar (Chlorophyta) ko‘payadi.

2. Suvning kimyoviy tarkibi: mineral moddalarga boy bo‘lgan kanallarda ko‘k-yashil suvo’tlar (Cyanobacteria) keng tarqalgan.

3. Yorug‘lik intensivligi: sayoz suvli hududlarda filamentli suvo’tlar tez o‘sadi, chuqur va loyqa joylarda esa ularning miqdori kamayadi.

4. Antropogen ta’sir: qishloq xo‘jaligi oqova suvlarining ta’sirida ko‘k-yashil suvo‘tlarning gullashi (eutrofikatsiya) kuzatiladi. Suvo‘tlarning suv havzalarida tarqalishi suvning oqim tezligi, kimyoviy tarkibi, yorug‘lik va antropogen ta’sirlarga bog‘liq qonuniyatlarga ega. Diatomlar tez oqimli suv havzalarida, yashil suvo‘tlar esa tinch suv havzalarida ustunlik qiladi. Antropogen omillar, xususan oqova suvlarning oqimi, ko‘k-yashil suvo‘tlarning ortiqcha ko‘payishiga sabab bo‘ladi. Suvo‘tlarning tarqalishini muntazam kuzatish suv havzalarining ekologik holatini baholashda muhim ilmiy va amaliy ahamiyatga ega

MUNOZARA

Olingan natijalar shuni ko‘rsatadiki, suvo‘tlarning tarqalishi ko‘plab ekologik omillar majmuiga bog‘liq. Xususan, suvning oqim tezligi va kimyoviy tarkibi ularning asosiy differensiallashuv omili hisoblanadi. Suvo‘tlar ekotizimlarda kislorod ishlab chiqarish, organik moddalar aylanishida ishtirok etish va yuqori trofik pog‘onalar uchun oziq manbai sifatida muhim rol o‘ynaydi. Bundan tashqari suvo‘tlardan tabiiy holatda olingan rangni oziq-ovqat sanoati, farmatsevtika, kosmetika, biotexnologiya kabi sohalarda keng qo‘llaniladi. Yuqorida keltirilgan sohalar sintetik ranglar qo‘llashi natijasida insonda turli-xil allergik, genetik va boshqa kasalliklar namoyon bo‘lishi kabi dolzarb muammolarni keltirib chiqarmoqda.Suvo‘tlardan olingan tabiiy mahsulot nafaqat oziq-ovqat mahsulotlarining tabiiyligini oshiradi, balki antioksidantlarga boyligi uchun immunitetni yanada kuchaytiradi. Binobarin, vaznni to‘g‘ri nazorat qilishga va ekologiyaning ifloslanishini oldini olishi bilan muhim hisoblanadi. Respublikamizda suvo‘tlar zaxirasi juda keng. Ularni ko‘plab hududlarda yetishtirish uchun katta mablag‘ sarflanmaydi sababi sun’iy hovuzlardan foydalaishimiz mumkin. Suvo‘tlardan olingan tabiiy rang shifobaxsh, profilaktik xususiyatga ega. Ular vitaminlar, mineral moddalar, antioksidantlar, omega-3 va omega-6 kabi yog‘lar, polifenollar kabi moddalarga boydir. Shu bois, suvo‘tlarning tarqalish qonuniyatlarini bilish suv havzalarining ekologik monitoringida katta ahamiyatga ega. Bunday tadqiqotlar antropogen ta’sir darajasini aniqlash, suv havzalarining ekologik barqarorligini ta’minlash hamda biotexnologik amaliyotlarda (masalan, bioyoqilg‘i ishlab chiqarishda) foydalidir. Ko‘k-yashil suvo‘tlar suv va quruqlik muhitining turli xil sharoitida o‘sadi. Ko‘pchilik turlari havodagi erkin azotni o‘zlashtirish xususiyatiga ega. Ko‘k-yashil suvo‘tlar chuchuk suv va dengiz plankton hamda bentos tarkibiga kiradi, tuproq yuzasida, harorati 80° gacha bo‘lgan qaynoq suvli buloqlarda, bir qancha turlari ohaktosh konlarida o‘sadi.

XULOSA

Suv o‘tlari suv havzalarining ekologik barqarorligini ta’minlovchi asosiy komponentlardan biridir. Ularning tarqalishi ko‘plab tabiiy va antropogen omillar bilan chambarchas bog‘liq. Tarqalish qonuniyatlarini chuqur o‘rganish, suv resurslarini to‘g‘ri boshqarish, bioxilma-xillikni saqlash va suv havzalarining degradatsiyasini oldini olishda muhim ahamiyatga ega. Suvo‘tlar tarqalish qonuniyatlarini tushunish akvativ ekosistemalarni boshqarish amaliyotlarini yaxshilashga yordam beradi. Oziqa oqimini nazorat qilish va akvatik o‘simliklarni saqlab qolish kabi strategiyalar suvo‘tlar populyatsiyalarini va umumiy ekosistema salomatligini qo‘llab-quvvatlashi mumkin. Suvo‘tlarning suv havzalarida tarqalishi atrof-muhit omillari va biologik ehtiyojlar o‘rtasidagi murakkab o‘zaro ta’sirlar bilan belgilanadi. Qattiq metodologiyalar va statistik tahlillarni qo‘llash orqali ushbu tadqiqot akvativ ekologiya sohasidagi kengroq tushunchaga hissa qo‘shadi. Kelajakdagi tadqiqotlar bu dinamikalarni o‘rganishda davom etishi kerak, iqlim o‘zgarishi va inson faoliyatining akvatik xilma-xillikka ta'sirini hisobga olgan holda. Dastlabki natijalar suv sifatining suvótlar tarqalishiga katta ta'sir ko‘rsatishini ko‘rsatmoqda. Yuqori populyatsiyalar optimal pH va ozuqa darajasiga ega hududlarda kuzatildi. Turli akvatik o‘simliklarning mavjudligi suvo‘tlar soni bilan ijobiy bog‘lanishini tasdiqlaydi. Filogenetik jihatdan eng qadimgi sodda tuzilgan o‘simlik hisoblanadi. Ko‘k-yashil suvo‘tlar hujayralari fotosintez qiluvchi organoidlar bo‘lib, ularda karotinoidlar va qizil suvo‘tlardagi singari maxsus pigment - fikobiliproteidlar bo‘ladi. Rangi ko‘k-yashil va qizg‘ish, bir hujayrali va ko‘p qujayrali ipsimon mikroskopik organizmlar; ko‘pincha, uzunligi 20 sm bo‘ladi. Sporalar, akinetalar va iplarning bo‘laklari orqali ko‘payadi. 3 ta sinfi (hamesifonsimon suvo‘tlar, gormogonsimon suvo‘tlar) mavjud. Yer yuzida keng tarqalgan. 2000 dan ortiq turi ma’lum. O‘rta Osiyo suv havzalarida ossillatoriya, formidium, lingbiya turkumlariga mansub turlar uchraydi. Suvo‘tlari inson hayotida va tabiatda juda katta o‘rin tutadi. Suvo‘tlari suv muhiti uchun kislorod mabai, suv hayvonlari uchun ozuqa manbai hisoblanadi.

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CHARACTERISTICS OF THE SANGZAR RIVER BASIN AS A INDIVIDUAL GEOSYSTEM

Abstract: *This article introduces the concept and content of geosystems and examines the Sangzor river basin as a distinct geosystem. The methodology for treating the river basin as a separate geosystem is presented, and the boundaries of the Sangzor river basin have been delineated, with the outermost points identified. The paper also provides information on the basin's natural geomorphological characteristics, the main river and its tributaries.*

Keywords: *geosystem, river basin, Sangzor river, Morguzar, Chumqor, tributaries.*

Introduction.

The scientist who first introduced the concept of a "geosystem" into physical geography is V. B. Sochava (1963). According to him, a geosystem is a distinct, self-contained, and governable type of system in which all components of nature are interconnected and mutually interacting; furthermore, as a relatively integrated object, it interacts with space and with human society.

Currently, geographical research adheres to systems theory, and the object of study is regarded as a system. The components of the Earth's surface are in systematic interrelations with one another and, as a coherent whole, constitute a space (the spatial envelope) that interacts with human society. The geosystem is regarded as the real living environment of humans—a natural–anthropogenic territorial system in which economic activity exerts a direct influence.

The river basin is recognized as an integral geosystem, a view that brings together other orientations within basin-oriented approaches.

- S. G. Aleksandrov regards river basins as the most convenient units for geographical zonation (regionalization).

- A. D. Armand (1988) considers the basin a geographic information system; the river trunk functions as a communication channel, providing information about the materials entering the river (substances) and about changes at the level of neighboring basins from downstream to upstream.

L. M. Korytniy emphasizes that the basin, as a specialized spatial unit of the biosphere, is the most promising for the multifaceted study of Earth's nature and economy and for environmental management [4]. In addition, the scientist develops the fundamental principles of the basin concept.

Currently, with the rapid development of information technologies, remote sensing of river basins and the use of Geographic Information Technologies (GIS) are employed to study the various characteristics of river basins. In particular, A. G. Narojnya (2021) studied the morphologic characteristics of the Crimean river relief and divided the Dayo Basin into six hierarchically arranged basins, producing a regional map on this basis [5].

Main section

A river basin, spatially, is a portion of the Earth's surface defined by the drainage network of a river system or its main river and by the relief of the terrain. The basin of each river system encompasses both surface-water basins and groundwater basins. However, surface-water and groundwater basins do not generally coincide. Delineating the boundaries of surface-water basins is comparatively straightforward; consequently, in general hydrological, hydrochemical, and geographic studies, the basin area is taken to be the area of the surface-water basin. As a result, the terms "basin" of a river system and "water basin" are regarded as having essentially the same meaning.

The boundary of a river basin is the line that separates it from adjacent basins. The basins of rivers are usually clearly defined in mountainous regions, i.e., they are delineated by the watershed lines along the mountain watershed. In plains, delineating the boundary of water basins is somewhat more complex. River basins, or water basins in general, can change over time under the influence of tectonic processes, regressive erosion, or river incision.

Delimitation of river basins takes into account the hydrography, orography, and the direction of surface-water flow. In addition, delineation is done using large-scale geographic and topographic maps.

In defining the boundaries of the Sangzor river basin, the 1:200 000 scale topographic map of Jizzakh province and GIS technologies were employed. The Sangzor basin is orographically situated within the Syrdarya Basin.

The Syrdarya basin includes areas located between longitudes 61° and 78° E and latitudes 39° to 46° N. The southern mountainous boundary of the Syrdarya basin runs along the Oqshiyroq, Borqol'day, Otboshi, Oloy, Turkiston, and the extending Nurota mountain ranges [7, p. 156].

The basin lies on the southern slopes of Morguzar mountain and the northern slopes of the Chumqor mountain, situated on the mountainous massif. The Sangzor river flows through the central part of the valley, with a length of 123 km and a basin area of 2580 km² [1, p. 114].

The basin's boundaries are described as follows (Figure 1):

- The northernmost point lies at 40°15′33″ N latitude, in the southeastern part of the Qoytosh Mountains.
- The southernmost point coincides with the upper portion of Boyqo'ng'irsoyn in the Chumqor Mountains along the Uzbekistan–Tajikistan border, at 39°33′07″ N latitude.
- The easternmost point lies at 39°38′38″ N latitude, corresponding to the part of Morguzar Mountain that is separated from the Turkiston Mountain.

- The westernmost point crosses through the eastern part of the Go‘bdin Mountain at 39°55′02″ N latitude.

The Sangzor basin extends from the northwest to the southeast, narrowing and rising in elevation along its length. Its broadest part lies in the west, about 40–42 km wide, and in the east about 16–17 km.

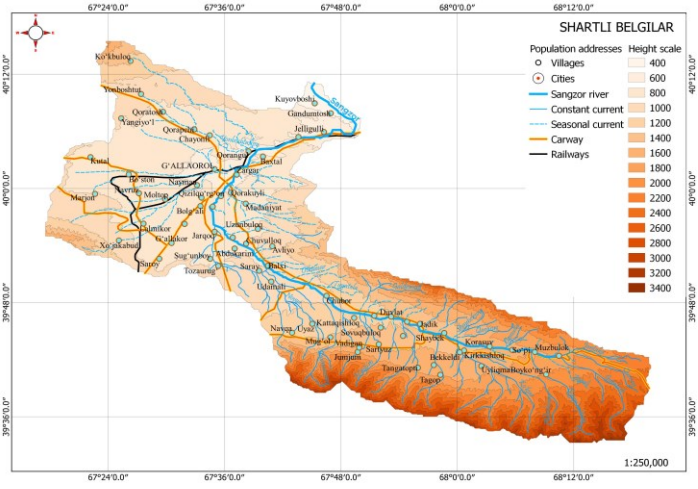


Figure 1. Physical map of the Sangzor River

The basin is named Sangzor directly because a river of the same name flows through it. The Sangzor river is the longest river in Jizzakh province. It originates on the northern slopes of the Chumqor mountains, where elevations average around 3300 m, and it is formed by the confluence, in the Zartepa village area, of the Jontaka rivers that drain the southern slopes of the G‘uralash and Morguzar mountains, where elevations exceed approximately 2100 m. The river’s mean annual discharge near Gulqishloq is about 1.7 m³/s 2.

Within the basin there are more than a hundred rivers and streams. Of these, the right-bank tributaries—those descending from the southern slopes of the Morguzar Mountains—carry little water and reach the Sangzor only during the spring season and during flood events; in other seasons they persist as dry arroyos. The remaining streams, which originate from the northern slopes of the Chumqor Mountains, are well watered, have perennial flow, and are comparatively long, distinguishing themselves by their length (Table 1).

Table 1

The tributaries discharging into the Sangzor River

No	Tributary name	Length (km)	Basin area (km²)	No	Tributary name	Length (km)	Basin area (km²)
Right-bank tributaries				Left-hand tributaries)			
1	Jontaka	14	86	1	Guralashsoy	16,7	67
2	Oqmulla	6	23	2	Boyqo‘ng‘irsoy	22	65
3	Shaybeksoy	7,5	42	3	Ko‘kjar	24	235
4	Yettiqoton	6,7	14	4	Dang‘ara	13,5	-
5	Quduqsoy	-	-	5	Oqqo‘rg‘on	19	48
6	Turgunsoy	-	-	6	Tangatoptisoy	21	65
7	Khojasoy	14	37	7	Sutariqsoy	14	-
8	Tuyatola	9	23	8	Jo‘m-jo‘m	18	45
9	Otkamar	-	14	9	Baxmazorsoy	21	54
10	Uzunbuloqsoy	16,5	40	10	Navqa	24	94

Conclusion

The river basin constitutes a distinctive geosystem and is an important object in natural geographic research. This is because basins are defined by the boundaries of watersheds on the earth's surface, which allows precise delimitation of basins as natural entities.

The Sangzor river is also one of the major rivers in Jizzakh region, primarily meeting the water needs of Baxmal and G'allaorol districts to a certain extent. The tributaries flowing into the river mainly increase its discharge in the spring season. In other seasons, however, the waters of these tributaries are widely used for agricultural sectors—farming and horticulture—and consequently do not reach the Sangzor River.

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ONGNI BOSHQARISH VA AXBOROT TERRORIZMI: ZAMONAVIY JAMIYATDA YOSHLAR ONGINI HIMOYA QILISHNING MA'NAVIY MEXANEZIMLARI

Annotatsiya: *Zamonaviy axborotlashgan jamiyatda inson ongi tobora murakkab ijtimoiy-psixologik va mafkuraviy bosimlar maydoniga aylanib bormoqda. Ayniqsa, yoshlar ongini nishonga olgan sun'iy g'oyaviy konstruksiyalar, radikal mafkuralar va ekstremistik kontentlar axborot makonida keng tarqalmoqda. Mazkur maqolada ongni boshqarishning zamonaviy usullari, axborot terrorizmi xavfi hamda yoshlar ongini himoya qilishning ma'naviy mexanizmlari falsafiy va ijtimoiy nuqtai nazardan tahlil qilinadi.*

Kalit so'zlar: *Ongni boshqarish, axborot terrorizmi, ekstremistik mafkura, yoshlar ongi, ma'naviy immunitet, mafkuraviy xavf, tanqidiy fikrlash.*

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MIND CONTROL AND INFORMATION TERRORISM: SPIRITUAL MECHANISMS FOR PROTECTING YOUTH CONSCIOUSNESS IN MODERN SOCIETY

Abstract: *In today's information-oriented society, human consciousness is increasingly becoming a field of complex socio-psychological and ideological pressures. In particular, artificial ideological constructs, radical doctrines, and extremist content targeting the minds of young people are widely spreading in the information space. This article analyzes the modern methods of mind control, the threat of information terrorism, and the spiritual mechanisms for protecting the consciousness of youth from both philosophical and sociological perspectives.*

Keywords: *Mind control, Information terrorism, Extremist ideology, Youth consciousness, Spiritual immunity, Ideological threat, thinking*

Zamonaviy axborotlashgan jamiyatda inson ongi tobora murakkab ijtimoiy-psixologik va ma'naviy bosimlar maydoniga aylangan. Ayniqsa, ongni boshqarishning psixologik usullari sifatida namoyon bo'ladigan qo'rquv uyg'otish, stereotiplashtirish va tayyor qoliplarga majburiy ergashtirish holatlari bu jarayonda

alohida e’tibor talab etadi. Bu holatlarni ma’naviy mexanezimlar kontekstida falsafiy tahlil qilishni taqqozo etadi

O‘zbekiston Respublikasi Prezidentimiz Shavkat Mirziyoyev 2025-yil 6-7-oktabr kunlari amaliy tashrif bilan Ozorboyjon Respublikasida bo‘lib Turkiy davlatlar tashkiloti sammitidagi so‘zlagan nutqida yoshlarimiz orasida yot va buzg‘unchi g‘oyalar tarqalishining oldini olish maqsadida turkiy davlatlar makonida ekstremistik va radikal mafkuraga qarshi kurashishga qaratilgan Harakatlar rejasini qabul qilishni taklif etishi bugungi globallashuv va axborot ekspluatatsiyasi sharoitida shaxsiyatning, irodaning va erkin tanlovning muqaddasligini chuqur anglashga xizmat qiladi.

Inson psixikasi tabiatan tashqi axborotga nisbatan sezuvchan va himoyasiz holatda shakllanadi. Shu sababli, tashqi axboriy oqimlarning mazmuni, yo‘nalganligi va shakllanish usullari uning ongini, ma’naviy me’yorlarini, qadriyatlar sistemasini ham belgilaydi. Aynan mana shu jihat ongni boshqarishning ma’naviy-psixologik mexanizmlari bilan ishlash zaruratini yuzaga keltiradi. “Zamonaviy sivilizatsiyaning insonni shaxs emas, balki axborot iste’molchisi sifatida ko‘ruvchi paradigmasi, uni boshqarishning turli, ko‘pincha ong ostiga qaratilgan usullarini ishlab chiqdi – deb yozadi A. Xaydarova. Bu holat ayniqsa qo‘rquv uyg‘otish orqali amalga oshiriladigan psixologik dominatsiyalarda yaqqol ko‘zga tashlanadi. Qo‘rquv bu yerda passivlashtiruvchi emotsional reaksiya bo‘lib emas, balki ongli ijtimoiy konstruksiya sifatida namoyon bo‘ladi: u insonning mustaqil tanlovga qodir emasligini "isbotlab", uni oldindan yaratilgan xavfsizlik g‘oyalariga, norma va standartlarga ergashtirishni oqlovchi vositaga aylanadi. Normamatova Maxsuda bu borada shunday ta’kidlaydi: “Inson erkinligi bo‘yicha shakllanayotgan nutqlar aynan xavf timsollarini doimiy ravishda yangilab borishga asoslanadi. Bu esa ongni doimiy qo‘rquv holatida ushlab turadi. Shu yo‘l bilan inson o‘z hayotiy yo‘nalishini o‘zi emas, balki tashqi ongni boshqaruvchilar tomonidan belgilangan xavfsizlik paradigmalariga asoslangan holda tanlaydi. Bu esa faqat ijtimoiy emas, balki ma’naviy sustkashlik, erkinlik tanazzuliga olib keladi. Stereotiplashtirish esa inson tafakkurining abstraktsiyalovchi kuchini o‘ldiradigan, u orqali doimiy ravishda sodda, reduktsiyalangan shakllar orqali dunyoni idrok etishga majburlovchi ongiy strukturadir. Bu borada J. Utegenova shunday yozadi: “Stereotiplar – bu qadriyatlar emas, ular qadriyat timsollari; ular insonni mustaqil fikr emas, ijtimoiy kutilmalarga javob beruvchi mavjudotga aylantiradi”. Bu holat ma’naviy yangilanish jarayoniga zid ravishda ishlaydi, chunki stereotiplar hayotdagi o‘zgaruvchanlik, harakat va tafakkurning murakkab dinamikasini inkor etadi. Oqibatda, jamiyatda doimiy ravishda takrorlanadigan qadriyatlar, tilda va tafakkurda qoliplangan formulalar – ongning real hayot voqeligidan ajralishiga olib keladi.

Tayyor qoliplarga ergashtirish esa ma’naviy muhitda ideologik va texnologik vositalar orqali amalga oshiriladigan eng kuchli manipulyatsion modeldir. “Keng jamoatchilik ongini standart fikr tizimlari orqali boshqarish jarayonida inson o‘zini o‘zi tanqidiy anglay olmaydi, balki ijtimoiy mashinaga aylanishni istaydi” – deb yozadi Shukurov. Bu holatda inson shunchaki axborotni qabul qiluvchi emas, balki

uni passiv tarzda takrorlovchi, tarqatuvchi va himoya qiluvchi vositaga aylanadi. Tayyor qoliplar insonni o‘z ongini muhokama qilishga emas, balki uni ijtimoiy maqbullik mezonlari asosida filtrlashga majbur qiladi. Bu esa, bir qarashda, ijtimoiy tartibni ta’minlagan bo‘lsa-da, aslida shaxsning ongi va ma’naviyatining erkin rivojlanishiga putur yetkazadi. Shunday qilib, ongni boshqarishning bu uch asosiy psixologik usuli – qo‘rquv uyg‘otish, stereotiplashtirish va tayyor qoliplarga ergashtirish – aslida inson ma’naviyatining sun’iy konstruksiyalarga bo‘ysunishini kuchaytiruvchi mexanizmlardir. Bunday jarayonlar nafaqat axborot makonida, balki ma’naviy, ijtimoiy va siyosiy diskurslarda ham faol namoyon bo‘lmoqda. Inson erkinligining ramzi bo‘lgan ongning bunday murakkab psixologik tizimlar bilan boshqarilishi ma’naviy taraqqiyot uchun emas, balki insoniylikning transformatsiyasi – ba’zan esa sun’iy regressiyasi uchun xizmat qilishi mumkin. Yuqoridagi fikrlar asosida shuni xulosa qilish mumkin: ongni boshqarishga qaratilgan psixologik strategiyalar zamonaviy ma’naviy mexanezimlar bilan uyg‘unlashgan holda, insonni avvalo o‘z tanlovining subyekti emas, balki obyekti sifatida shakllantirishga intiladi. Bu holatga qarshi faqat tafakkur erkinligi, mustaqil fikrlash madaniyati va doimiy ma’naviy uyg‘onish ruhidagi faol qarshilik vosita bo‘la oladi.

Ongni boshqarish mexanizmlari zamonaviy ijtimoiy-psixologik va ma’naviy mexanezimlar kontekstida inson ongini chuqur nazorat ostiga olishning eng samarali vositalaridan biri sifatida qaraladi. Qo‘rquv uyg‘otish, stereotiplashtirish va tayyor qoliplarga majburiy ergashtirish usullari zamonaviy ommaviy kommunikatsiya vositalarida keng qo‘llanilmoqda. Stanley Cohen o‘zining “Folk Devils and Moral Panics” asarida jamiyatda qo‘rquv uyg‘otish mexanizmlarini tahlil qilar ekan, “ijtimoiy muammolar ko‘pincha ommaviy axborot vositalarida shunday kuchli dramatizatsiya qilinadiki, ular odamlarda nazoratdan tashqarida qolayotgan xavf-xatar tasavvurini uyg‘otadi” deya ta’kidlaydi. Ushbu fikr ma’naviy jarayonlarda qo‘rquvning texnologik usul sifatida ishlatilishini ko‘rsatadi, chunki insonlar ongida sun’iy ravishda shakllantirilgan xavotir hissi ularga tayyor g‘oyaviy qabulchanlikni singdiradi. Demak, qo‘rquv ongni inert holatga keltirib, shaxsni muayyan siyosiy yoki diniy diskurslarga bo‘ysundirish vositasiga aylanadi.

Shunday qilib, qo‘rquv uyg‘otish, stereotiplashtirish va tayyor qoliplarga ergashtirish bir-biri bilan uzviy bog‘liq bo‘lib, ular ongni nazorat qilishning turli ko‘rinishlarini tashkil etadi. Bu mexanizmlar orqali shaxsiy ma’naviy jarayonlar sun’iy ravishda yo‘naltiriladi, texnologik vositalar esa bu jarayonni tezkor va keng ko‘lamli amalga oshirish imkonini beradi.

Axborot makonining globallashuvi va kommunikatsion texnologiyalarning eksploziv rivojlanishi inson ongi ustidan olib borilayotgan kurashlarning shakl-shamoyilini tubdan o‘zgartirib yubordi. Ayniqsa, bu jarayonlar yoshlar qatlamida sezilarli darajada keskinlik kasb etib, ularning ma’naviy dunyosini nishonga olgan yangi avlod tahdidlarini vujudga keltirdi. Ushbu tahdidlar axborot terrorizmi fenomeni orqali namoyon bo‘lib, u zamonaviy texnologiyalar vositasida shakllanayotgan ongli-maqsadli psixologik, mafkuraviy va ijtimoiy manipulyatsiyalar tizimini tashkil etadi.

Zamonaviy axborot makonida ongni boshqarishning psixologik va mafkuraviy usullari insonning erkin fikrlash, ijtimoiy ong va ma’naviy mustaqilligiga tahdid solmoqda. Ayniqsa, yoshlar ongiga qarshi olib borilayotgan axborot terrorizmi – sun’iy xavotir, qo‘rquv, stereotip va g‘oyaviy manipulyatsiyalar orqali amalga oshirilayotgan ongiy nazorat shakli – bugungi jamiyat uchun jiddiy muammo bo‘lib qolmoqda. Bu holat faqat axborot xavfsizligi emas, balki ma’naviy barqarorlik va shaxsiyat erkinligi nuqtai nazaridan ham o‘ta dolzarbdir.

Yuqoridagi tahlillar zamonaviy axborot makonida yoshlar ongiga ta’sir o‘tkazish, uni boshqarish va nazorat qilish mexanizmlarining tobora murakkablashib borayotganini ko‘rsatadi. Qo‘rquv uyg‘otish, stereotiplashtirish va tayyor qoliplarga ergashtirish kabi psixologik usullar orqali insonning mustaqil fikrlash qobiliyati zaiflashadi, u o‘z tanlovining subyekti emas, balki tashqi kuchlar tomonidan yo‘naltirilayotgan obyekti sifatida shakllanadi. Bunday holat, ayniqsa, yoshlar ongiga tahdid soluvchi “axborot terrorizmi” fenomeni orqali yanada kuchaymoqda. Axborot va kommunikatsiya texnologiyalarining eksploziv rivojlanishi bu manipulyatsion jarayonlarni tezkor, keng ko‘lamli va chuqur ta’sirchan holga keltirgan.

Prezidentimiz Shavkat Mirziyoyev tomonidan Turkiy davlatlar tashkiloti sammitida ilgari surilgan taklif — yoshlar orasida yot va buzg‘unchi g‘oyalar tarqalishining oldini olish, ekstremistik va radikal mafkuralarga qarshi kurashish uchun harakatlar rejasini ishlab chiqish — ana shunday murakkab axboriy va ma’naviy tahdidlarga qarshi tizimli chora sifatida muhim ahamiyat kasb etadi.

Shu boisdan, jamiyatda mustaqil fikrlash, tafakkur erkinligi, tanqidiy ong va ma’naviy uyg‘onish madaniyatini shakllantirish zarur. Faqat ana shunday ongiy immunitet vositalari orqali inson o‘z hayoti va kelajagini ongli ravishda belgilay oladigan, manipulyatsiyalarga qarshi tura oladigan erkin shaxs sifatida shakllanishi mumkin. Bu esa nafaqat axborot xavfsizligi, balki ijtimoiy barqarorlik va milliy ma’naviyatni saqlab qolishning ham asosiy garovi bo‘lib xizmat qiladi.

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OSHQOZON-ICHAK KASALLIKLARI: MIKROBIOMANING INSON SALOMATLIGIGA TA'SIRI VA YALLIG'LANISHLI ICHAK KASALLIGI

ABSTRACT: *Yallig'lanishli ichak kasalligi – bu surunkali va relapsli yallig'lanish jarayoni bo'lib, asosan ichak shilliq qavatini zararlaydi. So'nggi yillarda oshqozon-ichak traktining mikrobiomasi (mikrobiota)ning Yallig'lanishli ichak kasalligi patogenezidagi roli keng o'rganilmoqda. Maqolaning maqsadi ichki floraning (mikrobiomaning) inson salomatligiga umumiy ta'siri va ayniqsa Yallig'lanishli ichak kasalligi rivojlanishidagi o'rni, shuningdek, zamonaviy davolash usullaridagi ahamiyatini tahli qilishdan iborat. Adabiyotlar sharhiga asoslanadi. Mikrobiomaning normal tarkibi va funksiyasining buzilishi (disbioz) immunitet tizimining noto'g'ri javobiga olib keladi, bu esa genetik moyil bo'lgan shaxslarda YIChning rivojlanishiga sabab bo'ladi. Davolashda probiotiklar, prebiotiklar, fekal mikrobiota transplantatsiyasi kabi mikrobiomaga yo'naltirilgan terapiyalarning samaradorligi o'rganilmoqda. Xulosa qilib, mikrobioma Yallig'lanishli ichak kasalligi patogenezining asosiy omillaridan biri bo'lib, uning tuzilishini tiklash yangi davolash strategiyalarining muhim yo'nalishi hisoblanadi.*

Kalit so'zlar: *Mikrobioma, disbioz, Yallig'lanishli ichak kasalligi, Krona kasalligi, yarali ichak koliti, immunitet, fekal mikrobiota transplantatsiyasi*

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GASTROINTESTINAL DISEASES: THE IMPACT OF THE MICROBIOME ON HUMAN HEALTH AND INFLAMMATORY BOWEL DISEASE

Abstract: *Inflammatory bowel disease is a chronic and relapsing inflammatory process that mainly affects the intestinal mucosa. In recent years, the role of the gastrointestinal microbiome (microbiota) in the pathogenesis of inflammatory bowel disease has been widely studied. The aim of the article is to analyze the general impact of the intestinal flora (microbiome) on human health*

and its role in the development of inflammatory bowel disease in particular, as well as its importance in modern treatment methods. Based on a literature review. Disruption of the normal composition and function of the microbiome (dysbiosis) leads to an inappropriate immune response, which contributes to the development of IBD in genetically susceptible individuals. The effectiveness of microbiome-directed therapies, such as probiotics, prebiotics, and fecal microbiota transplantation, is being studied. In conclusion, the microbiome is one of the main factors in the pathogenesis of IBD, and restoring its structure is an important direction for new treatment strategies.

Keywords: *Microbiome, dysbiosis, IBD, Crohn's disease, ulcerative colitis, immunity, fecal microbiota transplantation*

INTRODUCTION

Oshqozon-ichak trakti (OIT) inson organizmidagi mikroorganizmlarning eng katta va eng muhim hamjamiyatiga ega. Ushbu hamjamiyat – mikrobioma – bir necha trillion mikroorganizmdan (bakteriyalar, viruslar, arxeyalar, qo‘ziqorinlar) iborat bo‘lib, uning genetik materialining umumiy hajmi inson genomidan 150 barobar ko‘pdir [1, p. 45]. Mikrobioma organizmning o‘zi bilan mutualistik munosabatda bo‘lib, ovqat hazm qilish, vitaminlar sintezi, patogenlardan himya qilish va immunitet tizimini shakllantirish kabi muhim vazifalarni bajaradi. Yallig‘lanishli ichak kasalligi – Krona kasalligi (CKD) va yarali ichak koliti (YAK) ni o‘z ichiga olgan, noma’lum etiologiyaga ega bo‘lgan surunkali o‘choqli yallig‘lanish kasalliklar guruhidir. *Yallig‘lanishli ichak kasalligi*ning rivojlanishi ko‘p omillilik xususiyatiga ega bo‘lib, genetik moyillik, atrof-muhit omillari, immunitet tizimining buzilishi va OIT mikrobiomasidagi o‘zgarishlar (disbioz) o‘rtasidagi murakkab o‘zaro ta’sir natijasida yuzaga keladi [2, p. 78]. So‘nggi o‘n yilliklarda disbiozning *Yallig‘lanishli ichak kasalligi* patogenezidagi roli ustunlik qilayotgan tadqiqot yo‘nalishlaridan biriga aylangan.

Ushbu maqolaning maqsadi mikrobiomaning inson salomatligidagi ahamiyatini umumlashtirib, uning *Yallig‘lanishli ichak kasalligi* bilan bog‘liqligini, patogenetik mexanizmlarini va mikrobiomaga yo‘naltirilgan zamonaviy davolash usullarining istiqbollarini tahli qilishdan iborat.

LITERATURE REVIEW

1. OIT Mikrobiomasining Normall Funktsiyalari va Disbioz

Normal mikrobioma organizm bilan simbioz holatda yashaydi va uning salomatligini saqlashga xizmat qiladi. Asosiy funktsiyalari quyidagilardan iborat:

- **Metabolik:** Ozqa qiyin hazm bo‘ladigan oqsillar va uglevodlarni parchalash, qisqa zanjirli yog‘ kislotalari (QZYB), masalan, butirat, asetat va propionat ishlab chiqarish. Butirat, ayniqsa, ichak epiteliy hujayralari uchun asosiy energiya manbai bo‘lib, ularning differentsiatsiyasi va hayotiyligini ta’minlaydi [3, p. 112].
- **Himoyaviy:** Mukoz qavatni patogen mikroorganizmlarning kolonizatsiyasidan himoya qilish (kolonizatsiyaga qarshilik) va antimikrob peptidlar ishlab chiqarish.

➢ **Immunomodulyatsion:** Ichak shilliq qavatidagi immunitet tizimining 70-80% joylashgan bo‘lib, mikrobioma uning to‘g‘ri rivojlanishi va homeostazini saqlash uchun muhim ahamiyatga ega [4, p. 201]. U T-regulyator limfotsitlarning faollashuvini rag‘batlantiradi va shu orqali immunitet tolerantligini shakllantiradi.

Disbioz – bu mikrobiomaning tarkibiy va funksional muvozanatining buzilishi bo‘lib, u asosan uch xil ko‘rinishda namoyon bo‘ladi: 1) foydali mikroorganizmlarning yo‘qolishi; 2) zararli (patobiont) mikroorganizmlarning ko‘payishi; 3) mikrobiomaning genetik xilma-xilligining kamayishi [5, p. 34]. YICh bemorlarida, ayniqsa, *Firmicutes* tipidagi, xususan, *Faecalibacterium prausnitzii* (butirat ishlab chiqaruvchi muhim bakteriya) soni keskin kamaygan, *Proteobacteria* va *Bacteroidetes* tipidagi bakteriyalar soni esa oshganligi qayd etilgan [6, p. 156].

2. Mikrobioma va YICh Patogenezi: Bog‘liqlik Mexanizmlari

Disbioz YICh ning dastlabki bosqichlaridan boshlanadi va uning rivojlanishiga quyidagi yo‘llar orqali hissa qo‘shadi:

➢ **Mukoz baryerning buzilishi:** Disbioz shilliq qavatning o‘tkazuvchanligini oshiradi, bu esa bakteriyalar va ularning metabolitlarining ichak devoridan o‘tib, sistemali yallig‘lanish reaktsiyasini kuchaytiradi [7, p. 89].

➢ **Immunitet javobining buzilishi:** Normal mikrobioma immun tolerantlikni ta’minlaydi. Disbioz sharoitida esa immunitet tizimi komensal mikroorganizmlarga nisbatan g‘ayritabiiy javob beradi, bu esa T-yordamchi 1 (Th1) va Th17 hujayralarining haddan tashqari faollashuviga olib keladi, ular yallig‘lanish sitokinlarini (TNF-α, IL-6, IL-17) ko‘p miqdorda ishlab chiqaradi [8, p. 275].

➢ **Yallig‘lanishga qarshi moddalarning ishlab chiqarilishining kamayishi:** *F. prausnitzii* kabi foydali bakteriyalarning kamayishi organizmning yallig‘lanishga qarshi himoya mexanizmlarini zaiflashtiradi, chunki ular yallig‘lanishga qarshi ta’sir ko‘rsatadigan moddalar ishlab chiqaradi [6, p. 158].

3. Mikrobiomaga Yo‘naltirilgan Davolash Usullari

*Yallig‘lanishli ichak kasalligi*ni davolashning an’anaviy usullari (5-aminosalitsilat kislota, immunosupressantlar, biologik terapiya) alomatlarni boshqarishga qaratilgan bo‘lsa, mikrobiomaga ta’sir ko‘rsatsatadigan terapiyalar kasallikning ildiziga ta’sir ko‘rsatish imkoniyatiga ega.

✓ **Probiotiklar:** Ma’lum bir shtammdagi tirik mikroorganizmlar bo‘lib, yetarli miqdorda qabul qilinganda sog‘liqqa foyda keltiradi. *Escherichia coli Nissle 1917* va *VSL#3* (bir nechta bakteriya shtammlarining aralashmasi) preparatlari YAK ni davolashda va remissiyani saqlashda ma’lum darajada samaradorligi isbotlangan [9, p. 412].

✓ **Prebiotiklar:** OITdagi foydali mikroorganizmlarning o‘sishi va faolligini rag‘batlantiradigan ovqat ingredientlari (masalan, inulin, oligofruktoza). Ularni qo‘llash QZYB, xususan, butirat ishlab chiqarishni oshiradi va shilliq qavatni tiklashga yordam beradi [10, p. 99].

✓ **Fekal Mikrobiota Transplantatsiyasi (FMT):** Sog‘lom donorning najasi suspenziyasini bemorning yo‘g‘on ichagiga transplantatsiya qilish. FMT *Clostridium difficile* infeksiyasini davolashda ajoyib samara ko‘rsatgan.

*Yallig‘lanishli ichak kasalligi*da, ayniqsa YAK da, FMT ning samaradorligi tadqiqotlar davomida. Ba’zi tadqiqotlar remissiyaga erishish darajasini sezilarli oshganligini ko‘rsatgan bo‘lsa, boshqalari barqaror natija bermagan, bu kasallikning heterojenligi va donor materialining sifatiga bog‘liqligini ko‘rsatadi [11, p. 501].

DISCUSSION

Mikrobiomaning *Yallig‘lanishli ichak kasalligi* patogenezidagi markaziy rolini ko‘rsatadigan dalillar soni tobora ko‘payib bormoqda. Biroq, savol tug‘iladi: disbioz *Yallig‘lanishli ichak kasalligi*ning sababidir yoki oqibatidir? Ko‘pincha, bu ikki holat o‘zaro bog‘liq bo‘lib, “buzilgan doira”ni hosil qiladi: genetik buzilish va atrof-muhit omillari disbiozni keltir chiqaradi, disbioz esa immunitet javobini buzadi va yallig‘lanishni kuchaytiradi, bu esa o‘z navbatida mikrobiomaning muvozanatini yanada buzadi [12, p. 65]. Mikrobiomaga yo‘naltirilgan davolash usullari, ayniqsa FMT, katta istiqbollarga ega. Biroq, ularning keng qo‘llanilishiga bir qator to‘siqlar yo‘l qo‘yadi. Birinchidan, uzoq muddatli xavfsizlik va samaradorlik ma’lumotlari hali yetarli emas. Ikkinchidan, standartlashtirilgan protokollar (donorlarni tanlash, preparat tayyorlash, transplantatsiya usuli) yo‘q. Uchinchidan, mikrobioma har bir insonda individual bo‘lib, “universal” davolash yondashuvini ishlab chiqish qiyin [13, p. 332].

Kelajakdagi tadqiqotlar individual mikrobioma profiliga asoslangan, maqsadli terapiyalarni, ya’ni muayyan bakteriya shtammlarining konsorsiumlarini (keyingi avlod probiotiklar) yoki ularning metabolitlarini (masalan, butiratning sintez analoglari) qo‘llashni o‘rganishga yo‘naltirilishi kerak [14, p. 178]. Bundan tashqari, mikrobiomani ovqatlanish va hayot tarzini o‘zgartirish orqali boshqarish usullarini chuqur o‘rganish zarur.

RESULTS

Mavzuni o‘rganish natijasida quyidagi xulosalarga erishildi:

1. OIT mikrobiomasi immunitet, metabolizm va himoya funktsiyalari uchun muhim bo‘lgan murakkab ekotizim hisoblanadi.

2. Mikrobiomaning tarkibiy yoki funksional muvozanatining buzilishi (disbioz) YICh ning asosiy patogenetik omillaridan biridir.

3. Disbioz ichak baryerining buzilishiga, immunitet tolerantligining yo‘qolishiga va surunkali yallig‘lanishning rivojlanishiga olib keladi.

4. Probiotiklar, prebiotiklar va FMT kabi mikrobiomani modulyatsiya qilish usullari *Yallig‘lanishli ichak kasalligi*ni davolashda istiqbolli yo‘nalishlar bo‘lib, an’anaviy terapiyalarga qo‘shimcha yoki muqobil vositadir.

CONCLUSION

Xulosa qilib shuni ta'kidlash kerakki, inson mikrobiomasi uning salomatligi va kasalliklarini chuqur tushunish uchun muhim obyektdir. Yallig‘lanishli ichak kasalligining murakkab patogenezida mikrobiomaning roli shubhasizdir. Disbioz nafaqat *Yallig‘lanishli ichak kasalligi*ning alomati, balki uning rivojlanishiga sabab bo‘luvchi omil sifatida ham qaraladi. Shu sababli, mikrobiomani tiklashga qaratilgan davolash usullari – aqlli probiotiklar, prebiotiklar va individuallashtirilgan FMT – kelajakda *Yallig‘lanishli ichak kasalligi*ni samarali

boshqarishning asosiy vositasi bo‘lishi mumkin. Ushbu sohadagi keyingi tadqiqotlar kasallikning turli klinik shakllari va bosqichlari uchun aniq va xavfsiz mikrobiotal terapiya protokollarini ishlab chiqishga yo‘naltirilishi lozim.

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PSYCHIATRIC AND NEUROLOGICAL DISEASES: DEPRESSION, ALZHEIMER'S, PARKINSON'S DISEASE, THEIR PATHOPHYSIOLOGY AND MODERN TREATMENT METHODS

Abstract: *Depression, Alzheimer's disease, Parkinson's disease, pathophysiology, antidepressants, cholinesterase inhibitors, levodopa, neuroplasticity. Introduction: Psychiatric and neurological diseases - depression, Alzheimer's and Parkinson's - are among the most common and disabling diseases in modern society. This article analyzes the main pathophysiological mechanisms of these diseases and modern treatment methods. Literature review: Each of the diseases has its own pathophysiological aspects. In depression, dysfunction of the serotonin, noradrenaline and dopamine systems is the main one [1, 45]. In Alzheimer's disease, neurons die as a result of the accumulation of beta-amyloid and tau proteins [2, 112]. Degeneration of dopaminergic neurons in the nigrostriatal pathway is the main cause of Parkinson's disease [3, 78]. Discussion: A deeper understanding of the pathophysiology of each disease will allow the development of new treatments. In addition to traditional antidepressants, the role of glutamatergic agents such as ketamine in depression is being studied [4, 23]. Anti-amyloid plaque monoclonal antibodies (Aducanumab) have been used in Alzheimer's disease [5, 301]. In addition to levodopa, surgical methods such as deep brain stimulation (DBS) are being used in Parkinson's disease [6, 155]. Conclusion: Understanding the complex pathophysiology of depression, Alzheimer's disease, and Parkinson's disease is the key to effective treatment. While current treatments aim to alleviate symptoms and slow disease progression, future research is focused on developing therapies that target the root cause of the disease.*

Key words: *Depression, Alzheimer's disease, Parkinson's disease, pathophysiology, neurodegeneration, antidepressants, cholinesterase inhibitors, levodopa, neuroplasticity, treatment.*

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PSIXIATRIK VA NEVROLOGIK KASALLIKLAR: DEPRESSIYA, ALZHEIMER, PARKINSON KASALLIKLARI, ULARNING PATOFIZIOLOGIYASI VA ZAMONAVIY DAVOLASH USULLARI

Abstract: *Depressiya, Alzheimer kasalligi, Parkinson kasalligi, patofiziologiya, antidepresanlar, xolinesteraza ingibitorlari, levodopa, neyroplastiklik. Kirish: Psixiatrik va nevrologik kasalliklar – depressiya, Alzheimer va Parkinson – zamonaviy jamiyatda eng keng tarqalgan va nogironlik darajasini oshiruvchi kasalliklardan hisoblanadi. Ushbu maqolada ushbu kasalliklarning asosiy patofiziologik mexanizmlari va zamonaviy davolash usullari tahli qilinadi. Adabiyotlar sharhi: Kasalliklarning har biri uchun o‘ziga xos patofiziologik jihatlar mavjud. Depressiyada serotonin, noradrenalin va dopamin sistemalarining disfunksiyasi asosiy o‘rinda turadi [1, 45]. Alzheimer kasalligida esa beta-amiloid va tau oqsillarining to‘planishi natijasida neyronlar o‘ladi [2, 112]. Parkinson kasalligida nigrostriatal yo‘ldagi dopaminergik neyronlarining degeneratsiyasi asosiy sababdir [3, 78]. Muhokama: Har bir kasallikning patofiziologiyasini chuqur o‘rganish yangi davolash usullarini ishlab chiqishga imkon beradi. Depressiyada an’anaviy antidepresanlar bilan bir qatorda, ketamin kigi glutamatergik moddalarning ro‘li o‘rganilmoqda [4, 23]. Alzheimer kasalligida amiloid plakalarga qarshi monoklonal antikorlar (Aducanumab) qo‘llanila boshlandi [5, 301]. Parkinson kasalligida levodopadan tashqari, chuqur miya stimulyatsiyasi (DBS) kabi jarrohlik usullari qo‘llanilmoqda [6, 155]. Xulosa: Depressiya, Alzheimer va Parkinson kasalliklarining murakkab patofiziologiyasini tushunish ularni samarali davolashning asosiy kalitidir. Zamonaviy davolash usullari kasallikning alomatlarini yengillashtirish va progressiyasini sekinlashtirishga qaratilgan bo‘lsa-da, kelajakdagi tadqiqotlar kasallikning ildiziga ta’sir ko‘rsatadigan terapiyalarni ishlab chiqishga yo‘naltirilgan.*

Key words: *Depressiya, Alzheimer kasalligi, Parkinson kasalligi, patofiziologiya, neyrodegeneratsiya, antidepresanlar, xolinesteraza ingibitorlari, levodopa, neyroplastiklik, davolash.*

INTRODUCTION

Psixiatrik va nevrologik kasalliklar global sog‘liqni saqlash sohasida eng katta muammolardan biriga aylangan. Ushbu kasalliklar nafaqat bemorning hayot sifatini sezilarli darajada pasaytiradi, balki oila va jamiyat uchun ham katta iqtisodiy va ijtimoiy yuk tug‘diradi. Depressiya, Alzheimer kasalligi va Parkinson kasalligi o‘rtasidagi chambarchas bog‘liqliklar mayjud. Masalan, depressiya Alzheimer kasalligi rivojlanish xavfini oshirishi mumkin [7, 90], Parkinson kasalligida esa depressiya tez-tez uchraydigan hamrod kasallik hisoblanadi [8, 432].

Ushbu maqolaning maqsadi – depressiya, Alzheimer kasalligi va Parkinson kasalligining zamonaviy patofiziologik tushunchalari va ularning davolash usullarini tizimli tahli qilishdir. Maqolada har bir kasallikning molekulyar va

hujayraviy mexanizmlari, shuningdek, hozirgi kunda qo‘llaniladigan farmakologik va farmakologik bo‘lmagan davolash usullari ko‘rib chiqiladi.

LITERATURE REVIEW

1. Depressiyaning patofiziologiyasi va davolash usullari

Depressiyaning patofiziologiyasida bir qancha nazariyalar mavjud. Eng keng tarqalgan "monoamin nazariyasi" bo‘lib, unga ko‘ra, depressiya miyadagi serotonin, noradrenalin va dopamin kabi monoamin mediatorlarining yetishmovchiligi bilan bog‘liq [1, 45]. Biroq, so‘nggi yillarda bu nazariya yagona emasligi aniqlandi. "Stress nazariyasi"ga ko‘ra, surunkali stress gipotalamo-gipofiz-buyrak usti o‘qi (HPA o‘qi) faolligini oshiradi, bu esa kortizol darajasining oshishiga olib keladi va gippokampdagi neyronlarning atrofiyasiga sabab bo‘ladi [9, 567]. Neyroplastiklikning pasayishi – ya’ni miyaning o‘zini o‘zgartirish qobiliyatining susayishi – depressiyaning yana bir muhim jihatidir. Brain-derived neurotrophic factor (BDNF) darajasining pasayishi gippokampus va prefrontal qobiqdagj neyrogenez va sinaptik plastiklikni buzadi [10, 234].

Davolash usullari:

- **Farmakoterapiya:** Serotonin qayta qabul qilish ingibitorlari (SSRI) birinchi navbatdagi tanlov hisoblanadi (masalan, fluoksetin, sertralin) [11, 112]. Agar SSRI samara bermasa, serotonin va noradrenalin qayta qabul qilish ingibitorlari (SNRI) qo‘llaniladi.
- **Psixoterapiya:** Kognitiv-xulq-atvor terapiyasi (CBT) eng samarali psixoterapevtik usul hisoblanadi [12, 78].

2. Alzheimer kasalligining patofiziologiyasi va davolash usullari

Alzheimer kasalligi (AK) eng keng tarqalgan demans turi bo‘lib, uning patofiziologiyasida ikkita asosiy hodisa – beta-amiloid plakalari va neyrofibrillar to‘plamlar (tau oqsili) muhim ahamiyatga ega. Beta-amiloidning to‘planishi neyronlar o‘rtasidagi aloqani buzadi va neyrotoksik ta’sir ko‘rsatadi [2, 115]. Tau oqsili esa neyronlar ichida g‘ovaklar hosil qilib, ularning normal funktsiyasini, jumladan, transport tizimini buzadi [14, 200]. Bu jarayonlar ayniqsa xolinerjik neyronlarga zarar yetkazadi, bu esa xotira va kognitiv funksiyalarning pasayishiga olib keladi.

Davolash usullari:

- **Farmakoterapiya:** Xolinesteraza ingibitorlari (donepezil, rivastigmin) xolinergik uzatishni oshiradi va alomatlarni yengillashtiradi [15, 89]. Memantin esa glutamatning patologik ta’sirini (ekzitotoksiklik) kamaytiradi.
- **Amiloidga qarshi terapiya:** Aducanumab kabi monoklonal antikorlar amiloid plakalarni miyadan olib tashlaydi, ammo ularning klinik samaradorligi hali bahs mavzusidir [5, 305].

3. Parkinson kasalligining patofiziologiyasi va davolash usullari

Parkinson kasalligining asosiy patofiziologik jihati miya poyalasidagi substantia nigra zonasidagi dopamin ishlab chiqaruvchi neyronlarning progressiv yo‘qolishidir. Bu yo‘qolish natijasida striatumda dopamin darajasi keskin kamayadi, bu esa tremor, muskul qatqaloqligi va bradikineziya kalami asosiy alomatlariga sabab bo‘ladi [3, 80]. Neyronlarning yo‘qolishida alfa-sinuklein oqsili

to‘plangan Levy tanalari muhim rol o‘ynaydi [16, 122]. Genetik va atrof-muhit omillari ham kasallikning rivojlanishiga hissa qo‘shadi.

Davolash usullari:

➢ **Farmakoterapiya:** Levodopa – dopaminning prekursori – Parkinson kasalligini davolashning "oltin standarti" hisoblanadi [17, 65]. Dopamin agonistlari (pramipeksol, ropinirol) va MAO-B ingibitorlari (selegilin) kabi boshqa dori-darmonlar ham qo‘llaniladi.

➢ **Jarrohlik:** Chuqur miya stimulyatsiyasi (DBS) – miyaning subalamus yadroli yoki globus pallidus ichki qismiga elektrodlar joylashtirish – motor alomatlarni sezilarli darajada yaxshilaydi [6, 160].

DISCUSSION

Ushbu uchta kasallikning patofiziologik mexanizmlari turlicha bo‘lishiga qaramay, ular orasida bir qancha umumiy jihatlar mayjud. Masalan, neyrodegeneratsiya va yallig‘lanish jarayonlari ularning barchasida mavjud. Alzheimer va Parkinson kasalliklarida oqsillarning noto‘g‘ri katlanib to‘planishi (amiloid, tau, alfa-sinuklein) neyronlar o‘limining asosiy sababidir. Depressiyada esa gippokampus kabi ma’lum miya sohalarining hajmi qisqarishi kuzatiladi, bu ham ma’lum darajada neyronlar yo‘qolishini ko‘rsatadi [18, 511].

Davolash strategiyalari ham dastlab alomatlarni yengillashtirishga qaratilgan. Biroq, so‘nggi tadqiqotlar kasallikning progressiyasini sekinlashtirishga, hatto oldini olishga qaratilgan. Masalan, Alzheimer kasalligida amiloidga qarshi terapiya, Parkinson kasalligida neyrotrofik omillar yordamida neyronlarning o‘limini oldini olish usullari o‘rganilmoqda [19, 98]. Depressiyada esa ketamin kigi tezkor ta’sir ko‘rsatadigan moddalar neyroplastiklikni tiklash orqali yangi davolash imkoniyatlarini ochmoqda [4, 25]. Muhim muammo – davolashning nojo‘ya ta’sirlari va terapiyaga chidamlilikning rivojlanishidir. Levodopaning uzoq muddatli qo‘llanilishi motor tebranishlarga olib kelishi mumkin, antidepresanlarning samarasi bir necha haftadan keyin paydo bo‘ladi. Shuning uchun, individual yondashuv va yangi dorilarni izlash dolzarbligicha qolmoqda.

RESULTS

Tahli shuni ko‘rsatdiki, depressiya, Alzheimer va Parkinson kasalliklarining patofiziologiyasi murakkab va ko‘p qirrali bo‘lib, bir qator molekulyar, hujayraviy va tizimli buzilishlarni o‘z ichiga oladi. Har bir kasallik uchun hozirda mavjud bo‘lgan davolash usullari asosan paliativ xarakterga ega – ular kasallikni butunlay davolamaydi, lekin alomatlarni yengillashtiradi va bemorning hayot sifatini yaxshilaydi. Zamonaviy farmakologik va jarrohlik usullarning samaradorligi ko‘plab klinik tadqiqotlar bilan tasdiqlangan. Biroq, terapiyaga chidamlilik va nojo‘ya ta’sirlar dolzarb muammo bo‘lib qolmoqda.

CONCLUSION

Xulosa qilib shuni aytish mumkinki, depressiya, Alzheimer kasalligi va Parkinson kasalligi zamonaviy nevrologiya va psixiatriyaning eng muhim muammolaridan hisoblanadi. Ushbu maqolada ularning patofiziologik asoslari va zamonaviy davolash usullari tahli qilindi. Har bir kasallikning rivojlanish mexanizmini chuqur o‘rganish yangi, samarali va xavfsiz davolash usullarini ishlab

chiqishning asosini tashkil etadi. Kelajakdagi tadqiqotlar kasalliklarning ildiziga ta'sir ko'rsatadigan, neyroprotektiv va hatto regenerativ terapiyalarga, shuningdek, ularni erta tashxislash usullariga qaratilishi kerak. Integrativ yondashuv – farmakoterapiya, psixoterapiya, hayot tarzini o‘zgartirish va ijtimoiy qo‘llab-quvvatlashni birlashtirish – bu kasalliklar bilan kurashishda eng yaxshi natijalarni beradi [20, 77].

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FACTORS INFLUENCING THE ECONOMIC EFFICIENCY OF THE INDUSTRY

Annotation. *In this article, the economic efficiency of the industrial sector is analyzed in terms of its functioning mechanisms within the economic system, intersectoral interaction boundaries, and functional relationships. The study also examines the theoretical foundations and factors influencing industrial efficiency, focusing on innovation, clustering, and state industrial policy as determinants of competitiveness and sustainability.*

Keywords. *industry, resource transformation, economic benefit, industrial efficiency, innovation, industrial policy.*

Introduction.

In the conditions of New Uzbekistan, the advantages of independence and the state's economic policy further enhance the leading role of industry. Today, the main directions of reforms and their solution are being implemented primarily in the industrial sector and are yielding good results. When analyzing the economic efficiency of the industrial sector, it is necessary to theoretically substantiate the mechanisms of its activity in the economic system, the boundaries of intersectoral interaction, and its functions in departmental relations. Industry is not a separate industry, but a system that develops in multifaceted interaction with all sectors of the real sector as a central link in resource transformation. From this point of view, it is necessary to assess economic efficiency not only through indicators of domestic production or financial returns, but also from the point of view of national economic profit [1].

Cluster theory creates a solid scientific basis for deepening this systematic approach. According to the clustering concept put forward by M. Porter, industrial efficiency occurs in the unity of collective innovation, infrastructure flexibility, and human resource potential. This view systematically theorizes the functional relationships between industrial entities, technological distribution, and the local competitive environment. As a result of the cluster's activities, the scale of production expands, costs decrease, and synergy is formed based on local innovations. This situation indicates the need to assess industrial efficiency not at the domestic level, but at the regional and intersectoral levels [2].

At the same time, theories of industrial policy interpret industrial efficiency at the intersection of state and market relations. In this case, the practice of forming

efficiency as a norm based on the role and powers of the state, intersectoral subsidies, tax benefits, and regulatory mechanisms is scientifically substantiated. It should be noted that the elements of industrial policy for industrial sectors serve not only as a methodological basis for increasing efficiency, but also for ensuring technological disruptions and the potential of international competitiveness [2,3].

Another theoretical point is the need to use comparative advantage theories. In the industrial economy, targeted strategies should be directed precisely at those segments in which products are resource-efficient, technologically export-oriented, and potentially competitive in terms of market coverage. The theory of comparative advantage justifies this based on the rational allocation of resources. This approach emphasizes the optimality of each decision from the point of view of economic efficiency, from industry selection to technological modernization.

Methods

Scientific and methodological analysis shows that when assessing industrial efficiency, it is a big scientific mistake to limit oneself to a single indicator or only to financial analysis. On the contrary, the interrelation of efficiency with intersectoral diversification, the level of clustering, technological adaptation, and labor productivity requires an integrated approach. Through such system modeling, not only the internal capabilities of the industrial sector are fully revealed, but also its transmission function in the modernization of the economy [4,5].

The diversity of theoretical approaches to determining economic efficiency, intersectoral relations in the economy, and the multidimensional nature of resource use make it difficult to assess this concept using a universal model. Therefore, in determining the parameters of economic efficiency in the context of industrial economics, a system of models based on different theoretical schools, differing in functional purpose and calculation method, but harmonized, is used. The following table systematizes the scientifically based models widely used in assessing efficiency in industry and their specific theoretical foundations, evaluation criteria, and possibilities of practical application. These models allow analyzing the efficiency of industry activities not only on the basis of performance indicators, but also taking into account innovative, social, environmental, and strategic aspects [6,7].

Table 1.1

Theoretical models for assessing economic efficiency

No	Model name	Theoretical basis	Main classification criteria	Area of application	Industrial significance
1.	Cobb-Douglas production function	Neoclassical growth theory (Solow, Romer)	Capital, labor, total factor productivity (TFP)	Production process modeling	Industry links production efficiency with resources.
2.	AHP - Hierarchical Analysis Method	Set decision theory	Multi-criteria ratings, expert assessments	Integral evaluation, selection sorting	Multifactorial analysis affecting industrial efficiency
3.	TOPSIS - A method of approaching efficiency	Content Distance Analysis (Hwang & Yoon, 1981)	Distance from ideal point, normalized rating	Multi-parameter estimation	Convenient for comparison and ranking of industrial enterprises
4.	DEA - Informative Performance Analysis	Linear programming, effective boundary theory	Technical efficiency, economies of scale	Micro-level Performance Analysis	Opportunity to evaluate enterprises in comparison with "the most effective"
5.	ESG index models	Sustainable development theory	Environmental, social, management indicators	Green industry, corporate strategies	Assessment of industrial efficiency through sustainable development criteria
6.	ROI/ROA - Classic Financial Models	Traditional finance theory	Return on investment, return on assets	Financial efficiency of the enterprise	Assessment of economic results in relation to capital
7.	TFP - Total Factor Performance Index	Endogenous growth theory	Productivity of innovation taking into account labor and capital	Macro and meso level	Measures the impact of technological efficiency and innovation
8.	SWOT-Effectiveness Analysis	Theory of economic strategic analysis	Internal and external opportunities and risks	Industry development, competitive advantage	Identify strategic directions for enterprise or industry performance

The issue of assessing economic efficiency is one of the most important and methodologically complex areas of industrial economics. When defining and analyzing this category, it is inappropriate to limit oneself to simple financial or production indicators and requires a systematic and scientific approach. Various models have been developed by theoretical schools for assessing economic efficiency, which can be conditionally divided into two categories: classical static models and modern dynamic models.

Results and Discussion.

Classical static models were widely used, especially in the second half of the 20th century, where the main focus was on the "resource-result" ratio. In such approaches, indicators such as labor productivity, resource return, profitability, *ROI*, and *ROA* are assessed as the main expressions of economic efficiency. Although they can be used in various fields, in dynamically and technologically active industries, such as industry, these models have imperfect points. For this reason, dynamic modeling methods were developed, that is, models that take into account such factors as time, innovation, scale, and intersectoral interaction [8].

Among such modern models, the Cobb-Douglas production function occupies an important place. It allows modeling the influence of capital and labor factors on production results based on a logarithmic function. This model also covers technological changes through total factor productivity (*TFP*), which is important in assessing industrial efficiency from the perspective of innovative development.

Another important model is integral assessment methods, such as *AHP-TOPSIS*, which are widely used in the analysis of economic processes with multi-criteria and subjective components. While the *AHP* (Analytical Hierarchy Process) method modulates decision-making through a hierarchical system, TOPSIS (Technique for Order of Preference by Similarity to Ideal Solution) allows ranking objects based on proximity to the ideal. These models allow comparing industrial enterprises by the level of efficiency, identifying strong and weak links within the industry, as well as making optimal decisions in the distribution of investment resources [8,9].

One of the most modern and methodologically complex models in the industrial economy is *DEA* (Data Envelopment Analysis). This model measures technical efficiency based on linear programming and effective boundary theory. The *DEA* model allows for the division of enterprises into "effective" and "ineffective" groups based on data and evaluates each object in relation to a conditional standard. This model is very suitable for use in the context of industrial enterprises and allows for an objective comparison of the activities of entities with different production scale and technological base.

Modern approaches to determining efficiency, accordingly, require a combination of macro (national economy), meso (sector level), and micro (enterprise level) analysis. At the macro level, efficiency is assessed through the share of industry in *GDP*, export volumes, and intersectoral transmission mechanisms. At the meso level, industries within the industry - such as chemistry, textiles, and mechanical engineering - are studied separately. At the micro level, the level of capacity utilization of enterprises, investments in technological renewal, resource consumption, and labor productivity are taken as a basis [9].

In general, the main task of scientific analysis is the harmonious and purposeful use of various theoretical models in assessing economic efficiency, their adaptation to real industrial conditions. Within the framework of our scientific research, the creation of a comprehensive approach using several models creates the

basis for the development of proposals and recommendations that can be applied in practice to increase the competitiveness of the industry and the efficient allocation of resources.

Conclusion.

The assessment of industrial efficiency is a multidimensional process requiring integration of classical and modern theoretical approaches. Industrial policy, innovation dynamics, and intersectoral interactions play a decisive role in improving economic outcomes.

Key conclusions include:

- Industrial efficiency must be assessed not only in terms of financial results but also through innovation, sustainability, and competitiveness factors.
- Cluster-based and dynamic models such as *DEA* and *Cobb–Douglas* provide more accurate reflections of real industrial performance.
- Integrating macro, meso, and micro approaches ensures a more objective evaluation of the sector's contribution to economic growth.
- Sustainable industrial policy based on innovation, efficient resource use, and comparative advantages strengthens long-term national competitiveness.

The harmonized use of theoretical models and empirical analysis forms a scientific basis for developing practical recommendations to enhance the industrial sector's efficiency and its role in the modernization of Uzbekistan's economy.

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CLINICAL AND GENDER DIFFERENCES IN STROKE MORBIDITY IN THE REPUBLIC OF KARAKALPAKSTAN

Abstract: *This study analyzes the dynamics of stroke incidence in the ecologically crisis-affected Aral Sea (Priaralye) region of Uzbekistan, focusing on four districts - Nukus, Kegeyli, Amudarya, and Muynoq. A total of 2,658 patients were registered, of whom 54.6% were men and 44.5% were women. Ischemic stroke accounted for 44.8% of cases, hemorrhagic stroke for 38.6%, and undifferentiated stroke for 16.6%. The most affected age groups were between 50 and 79 years, with the highest incidence observed among those aged 60-69 years (35.9% in men and 29.7% in women). The analysis revealed regional differences in disease dynamics: in the Amudarya and Muynoq districts, stroke was more prevalent among women, particularly in the 60-69 age group (35.3% and 32.0%, respectively). Statistical analysis showed that ischemic stroke predominated among men, while women over 70 years of age exhibited a higher incidence of stroke overall. The results of this study confirm that the high proportion of hemorrhagic strokes in the region is associated with insufficient control of hypertension and other vascular risk factors.*

Keywords: *ischemic stroke, hemorrhagic stroke, stroke registry, epidemiology, age characteristics, sex differences, regional features.*

1. Introduction

Stroke is one of the leading causes of death and disability worldwide and holds a significant place among global public health challenges. According to the World Health Organization (WHO), stroke ranks second after cardiovascular diseases, with nearly 13 million new cases recorded annually, of which about 6.2 million result in death. This disease is critical not only because of its high mortality rate but also due to its long-term disabling consequences. Each year, more than 80 million people around the world are forced to live with varying degrees of disability caused by stroke [1].

In the United States alone, approximately 795,000 people suffer a stroke annually, and more than 140,000 of them die as a result. Statistical data indicate that up to 80% of stroke cases are preventable, yet the prevalence remains high due to unhealthy lifestyles, arterial hypertension, and other risk factors [2].

Global data confirm that stroke poses a major threat not only in developed countries but also in low- and middle-income nations. In developing regions, the high incidence of stroke combined with limited treatment opportunities leads to significantly higher mortality rates. For instance, African and Asian countries show

considerably higher stroke-related mortality compared to Europe and North America. Moreover, in recent years, the incidence of stroke has been increasing among younger populations and women, making prevention, early diagnosis, and improvement of medical care quality urgent priorities on a global scale [3, 4].

In Uzbekistan, particularly in the Aral Sea (Priaralye) region, the study of stroke epidemiology deserves special attention due to the influence of socioeconomic and ecological factors. The region's ecological crisis and social-economic difficulties have a direct impact on public health, making the analysis of stroke distribution and risk factors especially relevant [5, 6].

2. Study Area and Methods

The object of this study consists of patients diagnosed with stroke in the Republic of Karakalpakstan, specifically in the districts of Nukus, Kegeyli, Amudarya, and Muynoq, during the period from 2019 to 2024. The subject of the research is the epidemiological characteristics of stroke, including the distribution of morbidity by age, sex, and district, the ratio of stroke types (ischemic and hemorrhagic), and their relationship with regional factors.

The aim of the study is to determine the prevalence and structural features of stroke in the Karakalpakstan region based on registry data, to identify risk groups, and to develop scientifically grounded preventive and organizational recommendations for the regional healthcare system.

In the study, epidemiological analysis, descriptive-statistical methods, spatial comparison, and percentage analysis techniques were applied. The data were obtained from the stroke registry database and categorized according to age, sex, district, and stroke type. Using statistical analysis, the main patterns of morbidity, risk groups, and predominant demographic factors in the region were identified.

3. Results and Discussion

The results show clear gender and type-based differences in stroke incidence. These findings highlight the importance of regional health monitoring and preventive strategies. (Fig. 1 and 2). Based on registry data, a total of 2,658 stroke patients were recorded in the Priaralye (Republic of Karakalpakstan) region during the period 2019-2024. Among them, 54.6% were men and 44.5% were women. In the overall structure of stroke cases, the ischemic type was the most common, accounting for 44.8%, followed by the hemorrhagic type (38.6%) and the undifferentiated type (16.6%).

Regional analysis shows that the Nukus district leads in the number of registered patients, with 985 cases identified. In comparison, Kegeyli (166 cases), Amudarya (113 cases), and Muynak (65 cases) reported relatively fewer cases. However, in the Amudarya and Muynak districts, the incidence of stroke among women was higher, comprising 51.3% and 52.3% of the total, respectively. This indicates that social and healthcare-related factors may have a stronger impact on women's health in these areas.

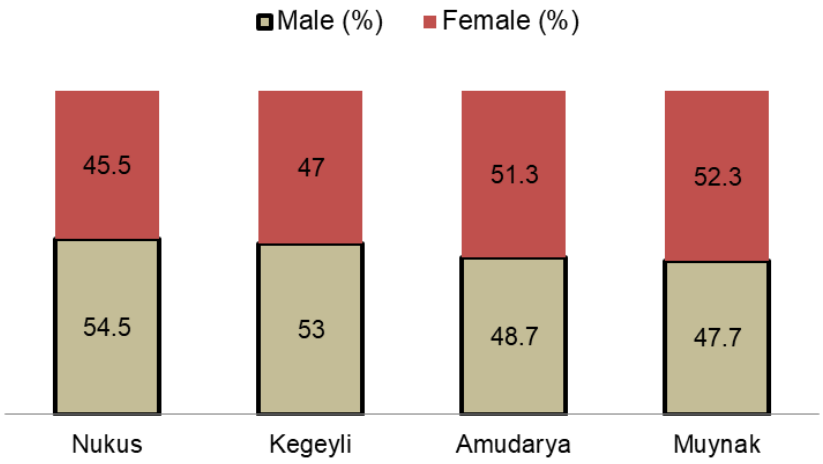


Fig. 1. Sex-based distribution of stroke patients in four districts

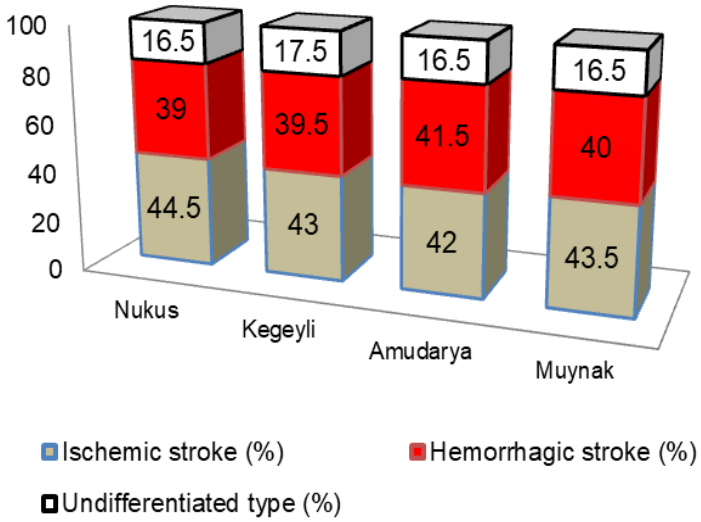


Fig. 2. Distribution of stroke types by districts

The study revealed that stroke occurred most frequently in the 50-79 age range, with the 60-69 age group identified as the most vulnerable period. Within this age group, stroke was observed in 35.9% of men and 29.7% of women. The higher incidence in this range is primarily associated with the progression of chronic cardiovascular diseases, arterial hypertension, diabetes, and metabolic syndrome, which are recognized as major contributing factors to stroke risk. Although ischemic stroke predominates in the region, the high proportion of hemorrhagic stroke cases (38.6%) suggests that arterial hypertension, vascular wall fragility, and limitations in emergency medical response systems remain significant problems.

In general, the data demonstrate regional disparities, gender differences, and age-related risk groups in stroke distribution across the Priaralye region. These findings provide an essential epidemiological basis for developing targeted prevention strategies, improving early diagnosis, and enhancing public health programs aimed at reducing stroke incidence in the region.

4. Conclusion

1. The results indicate that in the Priaralye (Republic of Karakalpakstan)

region, stroke incidence shows significant variation by sex and age. The 50–79 age group, particularly individuals aged 60–69, represents the highest-risk category, largely due to chronic cardiovascular diseases and arterial hypertension.

2. Regional analysis revealed that stroke incidence was highest in Nukus district, while in the Amudarya and Muynak districts, women exhibited a relatively higher prevalence. This suggests that social and healthcare-related factors may have a greater impact on women's health in these areas.

3. The high proportion of hemorrhagic strokes (38.6%) demonstrates insufficient control of arterial hypertension and vascular fragility in the region. These findings underscore the need to strengthen prevention strategies, improve early diagnosis, and enhance rehabilitation and public health programs to reduce stroke incidence.

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QARSHI SHAHRINING IJTIMOIY IQTISODIY RIVOJLANTIRISHDA TABIIY OMILLARNING ROLI VA AHAMIYATI

Annotatsiya: *Qarshi shahrining ijtimoiy iqtisodiy rivojlantirishda tabiiy omillar orqali yuzaga keladigan muammolar va ularni shahar atrof muhiti va infrastrukturasiga ta'siri o'rganilgan hamda Qarshi shahri atrofida sanoat korxonalarini joylashtirishda ahamiyat berish lozim bo'lgan tabiiy omillar o'rganilgan.*

Kalit so'zlar: *sanoat, urbanizatsiya,relief, aholi, shelter, shahar, qishloq, sanoat zonalari*

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THE ROLE AND IMPORTANCE OF NATURAL FACTORS IN THE SOCIO-ECONOMIC DEVELOPMENT OF THE CITY OF KARSHI

Abstract: *The problems arising from natural factors in the socio-economic development of the city of Karshi and their impact on the city's environment and infrastructure were studied, and the natural factors that should be considered when locating industrial enterprises around the city of Karshi were studied.*

Keywords: *industry, urbanization, relief, population, shelter, city, village, industrial zones*

Qarshi shahri O‘zbekiston Respublikasining janubiy qismida, Qashqadaryo viloyatining markazida joylashgan bo‘lib, geografik koordinatalari 38°51′ shimoliy kenglik va 65°47′ sharqiy uzunlikda joylashgan. Shaharning balandligi dengiz sathidan o‘rtacha 374 metrni tashkil qiladi. Qarshi shahri o‘zining qulay geografik joylashuvi sababli qadimdan muhim strategik va iqtisodiy ahamiyatga ega bo‘lgan. U tarixan Buyuk Ipak yo‘lining muhim chorrahalaridan biri sifatida tanilgan.[1;45]

Qarshi shahri atrofida joylashgan sanoat korxonalarining joylashuviga tabiiy omillar juda katta ta'sir ko‘rsatgan. Quyida Qarshi atrofidagi sanoat korxonalariga tabiiy omillar asosida berilgan tahliliy tavsif keltirishimiz mumkun.

Qarshi shahri Qashqadaryo viloyatining sanoat yuragi hisoblanadi. Bu yerda sanoat korxonalari ko‘p va xilma-xildir. Ayniqsa “Qavali” kichik sanoat zonasi hududida faoliyat yuritayotgan korxonalar yangi texnologiyalar va eksport

salohiyatiga ega. Shuningdek, avtomobil ehtiyot qismlari ishlab chiqaruvchi yirik korxonalar (Avtotraktorradiator, Karshi Radiator) ham shaharning iqtisodiy hayotida muhim o‘rin tutadi.

Suv resurslarining chegaralanganligi bu omillarning asosiy jihatlardan biridir. Qarshi shahri tabiiy suv manbalariga boy emas. Asosiy suv manbai Qarshi magistral kanali, hamda Qashqadaryo daryosidir. Iqlim issiq va qurg‘oqchil bo‘lgani uchun suvdan foydalanish bosimi yuqori, shu bilan birgalikda qishloq xo‘jaligi, aholi va sanoat ehtiyoji o‘sib bormoqda.

Yana bir asosiy tabiiy omillardan biri iqlimning haddan tashqari quruq va issiq bo‘lishi. Yozda havo harorati +40°C va undan yuqori bo‘lishi, atmosfera namligi past, chang ko‘p, shamollar tez-tez esadi. Buning natijasida issiq havoda uskunalar tez isiydi, sovitish tizimlariga ehtiyoj ortadi. Ishchilar uchun mehnat sharoiti og‘irlashadi, bu esa mehnat unumdorligiga ta’sir qiladi.

Shamol tezligi va chang ko‘tarilishi.Qarshi vohasi ochiq dasht va cho‘l hududiga yaqin joylashgan. Bahor va kuz oylarida changli shamollar tez-tez kuzatiladi. Natijada ochiq havoda joylashgan ishlab chiqarish liniyalariga chang kirishi texnologik jarayonlarga xalaqit beradi hamda atrof-muhit ifloslanishi ortadi,natijada ekologik xavf kuchayadi.

Chang va atmosfera ifloslanishining tabiiy ko‘payishi. Tabiiy chang va quruq shamollar sabab atmosfera sifatini saqlash mushkul. Tashqi havoning allaqachon quruq va iflos bo‘lishi sanoat chiqindilari bilan birikib salomatlik va ekologiyaga salbiy ta’sir ko‘rsatadi. Natijada Ekologik nazorat kuchaytiriladi.Filtratsiya va chiqindi gazlarni tozalash texnologiyalariga sarmoya oshadi. Sanitar-gigiena zonalari kengaytirilishi kerak bo‘ladi.[2;84]

Xulosa qilib aytganda, Qarshi shahri atrofida barpo etilayotgan hamda qurilishi rejalashtirilayotgan sanoat korxonalarini joylashtirishda tabiiy omillar xavf tug‘dirmasligi uchun oldindan rejalashtirilgan, ilmiy va texnologik asoslangan choralar ko‘rilishi kerak. Bunish uchun quyidagicha taklif va tafsiyalar berish mumkun.

1. Suv tanqisligiga qarshi chora-tadbirlar. Suvni tejovchi texnologiyalar joriy etish (masalan, yopiq suv aylanish tizimlari, tomchilatib sug‘orish). Sanoat chiqindilarini tozalab qayta ishlash texnik suvni qayta foydalanish. Zavodlar joylashuvi suv manbaiga yaqin, ammo ekologik xavfsiz masofada belgilanishi lozim. Suv balansini monitoring qilish uchun raqamli nazorat tizimlari o‘rnatish.

2. Issiq va quruq iqlimga moslashtirish.

Ishlab chiqarish binolarini issiqni qaytaruvchi materiallar bilan qurish.Korxonalarda ventilyatsiya va sovutish tizimlarini joriy qilish. Ishchilarga mos ish va dam olish rejimi, issiqda xavfsiz mehnat muhitini yaratish.

3. Shamol va changga qarshi choralar.Tez-tez esuvchi shamollar va tabiiy chang sanoat jarayonlariga xalaqit beradi. Korxona atrofida yashil himoya zonalari tashkil qilish (daraxtlar, butazorlar). Changni filtrlaydigan maxsus texnik vositalar (filtrlar, havo tozalagichlar) o‘rnatish. Ochiq havoda ishlovchi uskunalarni shelter yoki yopiq maydonlarga o‘tkazish. Binolarda chang va havoni avtomatik nazorat qilish tizimlarini o‘rnatish.

4.Ekologik xavf va havoning ifloslanishiga qarshi choralar.Har bir korxona uchun atmosfera chiqindilarini tozalash tizimi (filtr, gaz tozalagich) majburiy bo‘lishi kerak.Ekologik monitoring va audit muntazam o‘tkazilishi shart. Sanoat zonalari orasida sanitar himoya zonalari (500–1000 metr) ajratilishi kerak. Ekologik talablarni buzgan korxonalar uchun qat’iy javobgarlik belgilanishi zarur.

6. Hududiy rejalashtirish va sanoatni muvozanatli rivojlantirish Sanoat korxonalarini joylashtirishda geologik, gidrologik, ekologik va iqlimiy sharoitlar oldindan ilmiy asosda o‘rganilishi kerak. Qarshi shahri atrofida klaster asosida sanoat zonalarini tashkil etish — yaqin yo‘nalishdagi korxonalarni bir joyda to‘plab, resurslardan samarali foydalanish.Har bir yangi loyiha uchun atrof-muhitga ta’sir baholovi (OVOS) majburiy bo‘lishi lozim.

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MORPHOLOGICAL AND LEXICAL-SEMANTIC FEATURES OF MILITARY TERMS IN ENGLISH, UZBEK, AND RUSSIAN

Abstract. *This article investigates the morphological structures and lexical-semantic characteristics of military terminology in English, Uzbek, and Russian. The comparative analysis highlights the influence of linguistic typology, historical development, and socio-cultural factors on term formation and semantic categorization. The study reveals that while English military terminology demonstrates productive compounding and borrowing, Uzbek terms exhibit agglutinative derivation and Russian terms display a high degree of affixation and semantic polysemy. The findings contribute to contrastive linguistics and military lexicography by clarifying cross-linguistic mechanisms of term creation and meaning development.*

Keywords: *morphology, lexical semantics, military terminology, English, Uzbek, Russian, word-formation, typology.*

Introduction

The study of military terminology is a crucial field within applied linguistics and translation studies, as the precision of such terms often determines the effectiveness of communication in defense, strategy, and international cooperation. Each language system forms and categorizes military vocabulary according to its grammatical and cultural norms.

This article aims to identify and analyze the morphological and lexical-semantic features of military terms in three typologically distinct languages: English (analytic), Uzbek (agglutinative), and Russian (synthetic). Through comparative analysis, we uncover the structural and semantic strategies used to conceptualize military notions, ranging from weaponry and tactics to command and hierarchy.

Morphological Characteristics of Military Terms. English Military Terminology.

English military terminology is characterized by a complex and flexible morphological system that primarily relies on **compounding**, **affixation**, and **lexical borrowing**. These processes collectively reflect the analytical nature of the English language and its historical openness to external linguistic influence. The dynamic interplay of native and borrowed elements contributes to the richness, precision, and international comprehensibility of English military vocabulary.

The most productive mechanism of word formation in English military discourse is **compounding**, which allows the integration of two or more lexical units into a single semantically unified term. Compounds such as *battlefield*, *warship*, *airstrike*, and *command post* illustrate this structural process, in which the

first element typically serves a modifying role, while the second denotes the head or core concept. Such combinations result in highly informative terms that encapsulate complex military operations, locations, or equipment within concise lexical forms. The transparency and compactness of compounds make them particularly suited to the communicative demands of military contexts, where brevity and clarity are essential.

Affixation also plays a significant role in the development of English military terminology. Both **prefixation** and **suffixation** contribute to semantic diversification and hierarchical specification. Prefixes such as *pre-* and *anti-* serve to express temporal or oppositional relationships, as in *pre-emptive strike* and *anti-tank missile*, denoting strategic sequencing and counteraction, respectively. Suffixation processes produce nouns and abstract concepts that denote roles, status, or institutional features: *soldier-ship* (the quality or state of being a soldier), *leadership* (the act or position of leading), and *combatant* (one who engages in battle). The high productivity of affixation in English allows for the continuous expansion of the military lexicon in response to technological and tactical innovations.

Uzbek Military Terminology.

Uzbek, as an **agglutinative language**, demonstrates a highly productive and transparent system of word formation that relies primarily on **derivational suffixes** and **semantic extension** of native lexical roots. This morphological structure enables a systematic and precise formation of military terminology, where affixation plays a crucial role in denoting rank, function, specialization, and relational meaning within the armed forces.

The **productive use of derivational suffixes** such as *-chi*, *-lik*, and *-kor* allows for the creation of a wide range of professional and functional terms. For instance, *jangchi* (“fighter”), *hujumchi* (“attacker”), and *himoyachi* (“protector”) illustrate the suffix *-chi* as an agentive morpheme, designating individuals engaged in specific military activities. Similarly, *mudofaa* (“defense”) and *himoya* (“protection”) represent nominal derivatives with abstract meanings, denoting strategic or institutional concepts rather than individual actors. This morphological regularity contributes to both clarity and productivity in terminology formation.

Compound terms such as *jang maydoni* (“battlefield”) and *havo hujumi* (“air attack”) exhibit high **structural transparency** and **semantic predictability**, characteristic of agglutinative typology. Each component retains an identifiable meaning, and their combination results in a clearly interpretable term. This compositional structure reflects the cognitive tendency in Uzbek to conceptualize military notions through concrete, image-based expressions that link physical space (*maydon* – “field”) and action (*hujum* – “attack”). As a result, compound constructions in Uzbek military vocabulary tend to be semantically motivated and accessible to speakers, promoting lexical stability.

The **lexical-semantic system** of Uzbek military terminology also displays evidence of **semantic extension** of native roots. Words that originally referred to general concepts such as *jang* (“fight”) or *himoya* (“protection”) have broadened

their meanings in military contexts, coming to represent technical and institutionalized notions. This process shows the dynamic interplay between linguistic creativity and socio-historical necessity in the evolution of military discourse.

Russian Military Terminology

Russian military terminology exhibits a complex system of word formation characterized by both **prefixal-suffixal derivation** and **semantic derivation**, reflecting the morphological richness of the Russian language. The productivity of these processes illustrates the dynamic nature of Slavic word-building traditions, which allow for the creation of nuanced and hierarchical terms within the military lexicon.

One of the most distinctive features is the extensive use of **prefixation**, which conveys spatial, temporal, and logical relationships within the military domain. For example, the term *подполковник* ("lieutenant colonel") includes the prefix *под-* indicating subordination or rank below another officer (*полковник* – "colonel"). Similarly, *контратака* ("counterattack") employs the prefix *контр-* of foreign origin to denote opposition or reversal of action. Prefixation in Russian military terminology thus performs not only a grammatical but also a semantic function, marking tactical direction, hierarchy, and opposition.

Conclusion.

Military terminology in English, Uzbek, and Russian embodies both linguistic and cultural dimensions. English tends toward analytical precision and international standardization; Uzbek reflects agglutinative creativity and historical layering; Russian combines structural flexibility with a sense of institutional authority. Understanding the morphological and semantic systems of these languages not only enhances translation accuracy but also deepens cross-cultural comprehension of military discourse. Further research could focus on corpus-based analysis of neologisms, multilingual terminography, and pragmatic functions of military vocabulary in media and diplomacy.

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GAMES IN DEVELOPING CULTURE THROUGH SOCIAL COMPETENCE IN PRESCHOOL CHILDREN

Abstract: *One of the main ideas of modern specialists in pedagogical sciences is the need to study new methods of conducting educational work, fully reflecting trends, optimal needs, cognitive needs of parents. Innovations in preschool education The problem of "pseudo-nuclear" is acute, characterized by the uniqueness of the form and the uniqueness of the form, sought everywhere in terms of experimental and creative understanding of established educational traditions.*

Keywords *: preschool education system, child psychology, development, education, upbringing, innovative technologies.*

Just as play is important in the life of adults, it is also important for preschoolers. It is customary to call the game "the companion of childhood." It is the most important type of activity for a child's life. Children perceive many things happening around them as a game. In the process of play, all the characteristics and qualities of a child are revealed. The child regularly moves, speaks, thinks, and moral qualities are formed.

Since ancient times, people have been instilling their lifestyle and national values in the process of play.

Other activities also contribute to the socialization process of the individual according to their specific characteristics and therefore we use them together.

At the younger school age, the following tasks are set: to form in children a loving attitude towards loved ones; to awaken an emotional response to the state of close people, peers, fairy-tale characters, etc.

The next direction in the implementation of the educational direction "Socio-communicative development" is the formation of the foundations of safe behavior in everyday life, in society and in nature [34]. A preschool child is a person who plays, therefore, the study of the State Educational Standard determines that the child enters his life through the doors of children's play.

Role-playing games and dramatization centers are a very convenient situation for children to reveal their talents and demonstrate their abilities. This center can also be called a center for forming the child's "I". All exhibits in the center are equipment that is found in children's lives, and the child learns how to use this equipment during the game and has the opportunity to get acquainted with professions. The educator, through this game, has the opportunity to study the

[34]http://new.samdu.uz/images/ilmiyjurnal/3K7ruS6lCp_ilmiy_jurnal.pdf

family environment of each child being raised. The uniqueness of the content of role-playing games is one of its most important features. Although role-playing games are considered a team game by their nature, one should not be mistaken in thinking that they cannot be played alone. The following stages are carried out in the management of role-playing games .

Stage 1. The main means of developing a child's interests through story-based games are:

- the child watches the games being played in the centers with interest.
- the content of the game, the main directions of the development of the theme of the game, the development of children's relationships with each other during the game process, the theme of the game, the content of the game, the development of the child's game activity, the development of relationships in the game.
- setting a clear goal when managing the game.

Stage 2. The educator influences the children's play process:

- organizing purposeful walks suitable for the game;
- conduct proper conversations;
-reading fairy tales and stories;
- conducting various activities on the topics being discussed;

Step 3. Prepare a special place and toys necessary for the game.

-Be able to choose comfortable toys for the child;
- use of finger theater tools

Stage 4. Preparing children for play activities.

- study the effects of the toy being played with and its substitutes;

Stage 5. Influence on moral relations in the game, formation of a game culture in the children's team, behavior, culture , game activities:

- to arouse certain feelings in children towards a particular game;
- teach children to make a game plan before they play;
- to teach children to share their roles and toys with their friends in a reasonable way during play;
- to form a culture of playing in a friendly manner with peers;

Role-playing game with plot:

"Zoo"

Goal: to develop interest in role-playing games with a plot. to create a game with a plot.

Equipment and materials: building materials. lego, wild. animal set. truck. toy substitute. white coat, for veterinarian Type of activity

- .a conversation about the appearance of animals in the zoo "Finder"

Let's complete the sentence:

Legs…horns,…hooves…which animal has them? (cow).

He has a hair in his ear - ….(almanac).

The body is prickly - ..... (hedgehog).

"Name the cow": We name the cow after her babies.

- distribution of roles.

-additional: describing actions,

- loving and caring for animals. **Story-based role-playing game**

" **Army demonstration** "

Purpose: To provide information about the military professions of border guard, sailor, pilot, and intelligence officer.

-Conversation: "We are proud of our Motherland"

-watch a film about the army's involvement;

-poems about soldiers;

-knowing concepts about the army;

-distribution of roles as participants in the army.

-they held a demonstration.

Additional: review and reading literature about the military.

Attention: Distribution of roles according to the wishes of the children

Plot - role-playing game:

Toy store

Purpose: develops a sense of helping each other, increases vocabulary, toys, furniture, food products. dishes, vendor Equipment and exhibits: products that can be purchased in the store, paper money;

Progress of the activity:

- a conversation about types of stores;

-distribution of roles (seller, buyer);

-play based on the presented roles;

-analysis of products sold and purchased;

Additional: trips to the store;

Attention is paid to: increasing knowledge about professions, cultivating the seller's attitude towards customers, and the culture of communication.

The development of social skills in preschool children has a positive effect on their life activities. Scientists studying the adaptation of children to the community have emphasized the importance of upbringing in the child's adaptation to social life, and the participation of a number of methods and tools in their culturalization. The acquisition of social competencies in older preschool children in the process of achieving culturalization is becoming one of the most pressing problems today. Since any person lives in a social environment, that social environment affects his socialization.

When the educator verbally presents knowledge, children listen to it; when the educator assigns independent work, children perform it. The social competence of the child is formed through the centers. The role of the family and the preschool educational organization in the process of forming cultural competence through competencies in preschool children is very large. The importance and role of plot-role-playing games in the process of forming cultural competence through competencies in preschool children is of primary importance. In plot-role-playing games, the impressions of children from the environment are reflected. In game activities, culture is formed in the child. In addition, in the process of forming cultural competence in children, it is necessary to carry out activities in modern methods without negatively affecting the child's personality.

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ONA TILI O'QITISHDA INSHO YOZISH KO'NIKMALARINI RIVOJLANTIRISH (ZAMONAVIY METODLAR ASOSIDA)

Annotatsiya.*Ushbu maqolada ona tili o'qitishda insho yozish ko'nikmalarini rivojlantirish masalalari tadqiq etilgan. Zamonaviy ta'lim sharoitida o'quvchilarning yozma nutq ko'nikmalarini takomillashtirish muammosi, xususan insho yozish mahoratini oshirish usullari o'rganilgan. Tadqiqot davomida o'qituvchilar tomonidan qo'llaniladigan samarali metodlar, innovatsion yondashuvlar va o'quvchilarning yozma nutqini rivojlantirishda duch kelinadigan qiyinchiliklarni bartaraf etish yo'llari tahlil qilingan. Maqolada insho yozish jarayonini bosqichma-bosqich tashkil etish, mavzuni tanlashdan tortib to yakuniy tahrirlashgacha bo'lgan barcha bosqichlarni samarali amalga oshirish bo'yicha tavsiyalar berilgan. Shuningdek, ona tili darslari jarayonida o'quvchilarning mustaqil fikrlash, ijodiy yondashuv va o'z fikrini aniq ifodalash ko'nikmalarini shakllantirishning ahamiyati ko'rsatilgan. Tadqiqot natijalari umumiy o'rta ta'lim maktablari, oliy ta'limning ona tili o'qituvchilari uchun amaliy qo'llanma sifatida xizmat qilishi mumkin.*

Kalit so'zlar. *Insho, ta'limiy insholar, ko`rik-tanlov insholari, nazoratga qaratilgan insholar, interfaol metodlar, "Fikrlar xaritasi" metodi*

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DEVELOPING ESSAY WRITING SKILLS IN MOTHER TONGUE TEACHING (BASED ON MODERN METHODS

Abstract. *This article investigates the issues of developing essay writing skills in mother tongue teaching. It examines the problem of improving students' written communication skills, particularly methods for enhancing essay writing proficiency, under modern educational conditions. The research analyzed effective methods employed by teachers, innovative approaches, and strategies to overcome difficulties encountered in developing students' written communication. The article provides recommendations for organizing the essay writing process step-by-step, effectively implementing all stages from topic selection to final editing. Furthermore, the importance of fostering students' independent thinking, creative approach, and ability to clearly express their ideas during mother tongue lessons is highlighted. The research findings can serve as a practical guide for mother tongue teachers in general secondary education schools and higher education institutions.*

Keywords: *Essay, educational essays, competition essays, assessment-oriented essays, interactive methods, "Mind Map" method.*

Kirish.

Bugungi globallashuv davri yoshlardan yuqori darajadagi kommunikativ ko'nikmalarni, xususan, yozma nutq madaniyatini talab etmoqda. O'quvchilarning fikrlash doirasini kengaytirish, tafakkurini o'stirish va ijodiy salohiyatini rivojlantirishda insho yozish alohida o'rin tutadi. Yozma nutq - bu shaxsning intellektual salohiyati, dunyoqarashi va ma'naviy kamolotining ko'zgusidir. Respublikamizda ta'lim sohasida amalga oshirilayotgan islohotlar, xususan, "2022-2026- yillarga mo'ljallangan "Yangi O'zbekistonning taraqqiyot strategiyasi" doirasidagi vazifalar ham o'quvchilarning nutqiy kompetensiyasini rivojlantirishga alohida e'tibor qaratish zarurligini ko'rsatmoqda. Bu borada ona tili ta'limining roli beqiyosdir.

Insho - bu o'quvchilarning mustaqil fikrlash, tizimli tahlil qilish va o'z fikrini izchil bayon etish ko'nikmalarini rivojlantiruvchi muhim vositadir. Biroq, bugungi kunda ko'plab o'quvchilar insho yozishda qator qiyinchiliklarga duch kelmoqdalar: fikrlarni mantiqiy bog'lay olmaslik, orfografik va stilistik xatolarga yo'l qo'yish, o'z nuqtai nazarini asoslash va isbotlashda qiynalish kabi muammolar kuzatilmoqda.

Ushbu tadqiqotning dolzarbligi ona tili o'qitish jarayonida o'quvchilarning insho yozish ko'nikmalarini takomillashtirish bo'yicha ilmiy asoslangan, zamonaviy pedagogik texnologiyalarga asoslangan metodikani ishlab chiqish zarurati bilan belgilanadi. Bugungi kun o'qituvchisi an'anaviy mashg'ulotlardan tashqari, interfaol metodlar, axborot-kommunikatsiya texnologiyalari va innovatsion yondashuvlardan foydalanishi zarur.

Tadqiqotning maqsadi ona tili o'qitish jarayonida o'quvchilarning insho yozish ko'nikmalarini rivojlantirishning nazariy-metodologik asoslarini o'rganish va amaliy tavsiyalar ishlab chiqishdan iborat. Ushbu maqsadga erishish uchun quyidagi vazifalar belgilangan:

1. Insho yozish ko'nikmalarini rivojlantirish bo'yicha mavjud ilmiy-metodologik adabiyotlarni tahlil qilish;
2. O'quvchilarning yozma nutqini rivojlantirishga ta'sir etuvchi omillarni aniqlash;
3. Insho yozish ko'nikmalarini shakllantirish metodikasini takomillashtirish;
4. Ona tili darslarida insho yozish ko'nikmalarini rivojlantiruvchi innovatsion usullarni joriy etishga doir tavsiyalar ishlab chiqish.

Adabiyotlar tahlili va metodologiyasi.

Bugungi kunda tilshunos olimlarimiz tomonidan insho yozish ko`nikmalarini rivojlantirish borasida ko`plab ilmiy-amaliy tatqiqodlar ishlab chiqilmoqda. Quyida ushbu izlanishlar bo`yicha o`z fikr, mulohazalarimizni bildirib o`tamiz. Ustoz olimlarimiz . O.Madayev, A.Sobirov, Z.Xolmanova, Sh.Toshmirzayeva, G.Ziyodullayeva, M.Shamsiyevalarning "Yozma ish turlari: insho, bayon, diktant"

metodik qo`llanmasida insho yozishning tartib, qoidalari hamda metodikasi batafsil yoritilgan. Mazkur qo`llanmada :

“Pedagogik maqsadiga ko’ra insholar shartli ravishda uch guruhga ajratiladi:

1. Ta’limiy insholar.
2. Nazoratga qaratilgan insholar.
3. Ko’rik-tanlov insholari” [1; 21]

kabi insho turlarini keltirib o`tadi.

Insholarning asosiy qismini ta’limiy insholar egallaydi. Ta’limiy insholar – bu o’quv jarayonida o’quvchilarning yozma nutqini, fikrlash doirasini, mantiqiy tafakkurini, mustaqil fikrlash va o’z fikrini ifodalash qobiliyatini rivojlantirishga qaratilgan yozma mashqlardir.Ta’limiy insholarning qoralama va oq nusxalari bo’lmaydi va sinfda yoki uyda yozilib, ijodiy fikr yuritishga, mavzuni tushunishga e’tibor qaratiladi. Insho orqali o’quvchi berilgan mavzu asosida o’z qarashlarini bayon etadi, dalillar keltiradi va xulosaga keladi.

Ta’limiy inshoning asosiy maqsadi:

- O’quvchilarning fikrlash qobiliyatini rivojlantirish.
- Til boyligini oshirish.
- Mustaqil fikrlashga o’rgatish.
- O’z fikrini izchil, mantiqli va adabiy tilda ifodalashga yo’naltirish.

Ta’limiy insholarning afzalliklari: Nutqni rivojlantiradi: Insho yozish o’quvchini o’z fikrlarini mantiqiy tartibda ifodalashga, adabiy tilda yozishga undaydi. Ijodkorlikni oshiradi: O’quvchi insho yozishda o’z qarashlarini, his-tuyg’ularini ifoda etib, ijodiy yondashishni o’rganadi. Mustaqil fikrlashni shakllantiradi: Tayyor shablonlardan voz kechib, o’quvchi mavzuni o’zicha tahlil qiladi va shaxsiy yondashuv bildiradi. Adabiy til normalarini o’rganishga yordam beradi: So’z boyligini oshirish, to’g’ri imlo, uslubiy va grammatik normalarni mustahkamlashga xizmat qiladi. Analitik va mantiqiy tafakkurni kuchaytiradi: O’quvchi fikr yuritish, dalillash va xulosa chiqarish ko’nikmalarini shakllantiradi. Fanlararo bog‘liqlikni kuchaytiradi: Tarix, adabiyot, ma’naviyat, jamiyatshunoslik kabi fanlar bilan uzviy bog‘liq bo’lib, kompleks bilimlar beradi.

Ta’limiy insho nafaqat yozma nutqni rivojlantirish, balki o’quvchini mustaqil, teran va izchil fikrlovchi shaxs sifatida shakllantirishda muhim vositadir. Bu jarayon o’quvchini nutq madaniyatiga, fikr erkinligiga, mantiqiy va dalillarga asoslangan fikrlashga yo’naltiradi.

Insho yozishni o’rgatishda zamonaviy metodlarning ahamiyati nihoyatda katta. Bu jarayonni samarali tashkil etish esa bevosita qo’llanilayotgan o’qitish metodlariga bog’liq. An’anaviy yondashuvlar bilan bir qatorda, zamonaviy metodlarning joriy etilishi insho yozishga bo’lgan qiziqishni oshiradi, o’quvchilarni faol ishtirokga jalb etadi va ularning shaxsiy fikrini mustaqil ifodalashiga zamin yaratadi. O’qituvchining vazifasi esa bu metodlarni o’rinli va samarali qo’llashdan iborat. Bu borada Toshkent Davlat Sharqshunoslik Universiteti G’arb tillari kafedrasi katta o’qituvchisi Akramxodjayeva Dilfuza Adug’aniyevnaning “Talabalarning insho yozish ko’nikmalarini rivojlantirish uchun samarali metod va

texniklar” nomli maqolasida insho yozish jarayonida zamonaviy metod va usullarning ahamiyatini quyidagicha sharhlaydi: “1. Kichik guruhlarda ishlash Guruhiy ishlash usuli talabalarni o’zaro fikr almashishga undaydi. Guruhlarda ishlash talabalarning hamkorlikda ishlash va boshqa talabalarning g’oyalaridan ilhom olish imkonini beradi.

2. Venn diagramma va zanjirli fikrlar usuli. Bu metodlar talabalarni fikrlarini vizualizatsiya qilish va ularni mantiqiy tarzda bog’lashga o’rgatadi. Ayniqsa, qarama-qarshi g’oyalarni taqqoslash va zanjirli aloqalarni yaratish orqali talabalar o’z insholarini yanada aniqroq ifoda etadilar” [2;128]

Shu o’rinda keltirib o’tish joizki, Toshkent viloyati Chirchiq shahar 7-sonli umumiy o’rta ta’lim maktabi ona tili va adabiyoti fani o’qituvchisi Qizilgul Turdimetovna Karbayevaning “Maktab adabiy ta’limida insho yozdirish, uni tekshirish va baholashning ilmiy-metodik asoslari” maqolasida “Inshoni mazmunli yozish va berilgan mavzuni chuqur yoritishga erishish uchun o’quvchi oldin inshoga tegishli bo’lgan **mavzu, epigraf, reja, tezis, dalil, kirish, asosiy qism, xulosa** kabi tushunchalarni puxta o’zlashtirib olishi zarur” [3; 1247] kabi izoh keltirib o’tiladi. Biz ushbu maqolada yuqoridagi tushunchalarni o’quvchilar oson va samarali o’zlashtirishi uchun qanday metodlarni qo’llasak, yuqori natijaga erishish mumkinligi haqida mulohaza yuritamiz.

Muhokama va natijalar.

Ta’limiy insho turlarini o’quvchiga o’rgatishda zamonaviy metodlar qo’llanilishi, darsni faollashtiradi, o’quvchilarning qiziqishini oshiradi hamda ularning mustaqil fikrlash va yozma nutq ko’nikmalarini shakllantirishga yordam beradi. **Zamonaviy metodlar** – bu:

- shaxsga yo’naltirilgan ta’lim,
- o’quvchini faol ishtirokchiga aylantirish,
- bilimni mustaqil izlash va yaratishga yo’naltirilgan uslublardir.

Bu metodlar asosida o’quvchi:

- erkin fikr bildiradi,
- fikrini asoslaydi,
- tajriba orttiradi,
- tahlil qiladi,
- ijod qiladi.

Insho mavzusini tanlash jarayonida “Erkin mikrofon” metodini qo`llash, ko`zlangan natijaga erishishda yordam beradi. Ushbu metodning amalga oshirilishini quyida amaliy jihatdan yoritib beramiz:

“Erkin mikrofon” metodi – bu o’quvchilarga dars vaqtida o’z fikrini erkin ifoda etish imkonini beradigan interfaol metoddir. Unda o’quvchilar navbat bilan sinf oldiga chiqib, belgilangan yoki o’zlari tanlagan mavzu haqida erkin suhbatlashadilar, his-tuyg’ularini ifoda etadilar.

O’qituvchi dars boshida umumiy bir savol beradi yoki mavzu yo’nalishini belgilaydi (masalan: “Menga ta’sir qilgan voqea”, “Yoz fasli sizga nimani eslatadi?”, “O’zingiz faxrlangan bir holatni eslang”). Sinfda erkinlik muhiti yaratiladi. O’quvchilar navbat bilan sinf oldiga chiqib yoki joyida turib, shu

mavzuda 1-2 daqiqa erkin gapiradilar. Gapirishda mikrofon o'rnini bajaruvchi narsa (qalam, mikrofon, tayoqcha) berilishi mumkin — bu usul o'yin tusini oladi va ishtiyoqni oshiradi. O'quvchilar bir-birining chiqishlarini tinglaydi. So'ng o'z chiqishidan kelib chiqib **insho mavzusini** tanlaydi (masalan, "Maktabdagi unutilmas kun", "Do'stimning yordamidan minnatdorman", "Qishloqdagi yozgi ta'tillar" va hokazo).

Amaliy misol:

O'qituvchi: "Erkin mikrofon: bugun har biringiz hayotingizdagi bir quvonchli yoki ta'sirli lahzani ayting."

Dilnoza: "Onam meni maktabga birinchi olib kelgan kunimni hech qachon unutmayman."

Jasur: "Men bu yil ilk bor futbol musobaqasida g'olib bo'ldim."

Shundan so'ng Dilnoza "Maktab — mening ikkinchi uyim",- degan mavzuni tanlashi mumkin, Jasur esa "G'alabaga eltgan yo'l" mavzusida insho yozadi.

Ushbu metodning afzalliklari quyidagicha: o'quvchilarni shaxsiy fikr bildirishga rag'batlantiradi; mavzu tanlashda ichki ehtiyoj va kechinmalarga tayanadi; nutq madaniyati, ijodiy fikrlash va xotirani faollashtirishga xizmat qiladi; darsda interaktivlik va emotsional aloqani kuchaytiradi.

Insho **rejasini** tuzishda quyidagi interfaol metoddan foydalanish, samaradorlikka erishishda yordam beradi. **"Fikrlar xaritasi"** metodidan foydalanish, reja tuzishdan oldin asosiy g'oyalarni ko'rib chiqish imkonini beradi; fikrlar tartiblanadi va asosiy mazmun ajralib chiqadi. "Fikrlar xaritasi — bu mavzuga oid barcha fikrlar, g'oyalar, tushunchalarni vizual tarzda ko'rsatish usulidir. Markazda mavzu bo'ladi, undan esa bog'liq fikrlar tarqaladi. Quyida ushbu metodni amaliy jihatdan ko`rib chiqamiz:

O'quvchilar 3–4 kishidan iborat guruhlarga bo'linadi. Har bir guruhga bitta mavzu beriladi (yoki o'zi tanlaydi). O'quvchilar mavzuni markazga yozadi. Tarqalgan asosiy fikrlarni yozadi va xarita asosida rejani tuzadi.

Masalan, "Ona" mavzusini olaylik, ona haqida umumiy tushuncha beriladi. Asosiy tushunchalar doskaga yoziladi, masalan, mehr, tarbiya, xizmatlari, qadrlash, onani asrash, minnatdorchilik kabi. So'ngra yuqoridagi tushunchalarni birlashtirgan holda insho rejasi tuziladi. Insho rejasi quyidagicha bo`lishi mumkin:

1. Ona – hayotimizning muhim shaxsidir
2. Onaning oiladagi mehnati va xizmatlari
3. Onani qadrlash va hurmat qilishning ahamiyati
4. Onaning sog'ligiga e'tibor berish va uning hayot sifatini yaxshilash

"Fikrlar xaritasi" metodining qulayliklari va afzalliklarini quyidagicha ifodalash mumkin:

❖ O'quvchi yoki yozuvchi boshida to'plangan fikrlarni tartib bilan joylashtiradi.

❖ Har bir g'oya asosiy va ikkinchi darajali bo'lib ajraladi.

❖ Murakkab mavzularni qismlarga ajratib, tushunishni osonlashtiradi.

❖ Bir asosiy g'oyadan ko'plab kichik fikrlarni ishlab chiqishga yordam beradi (ijodkorlikni rivojlantiradi).

❖ Vizual shakl tufayli o’quvchilar ma’lumotni tez va uzoq muddatga yodlab qoladilar.

❖ Dars yoki insho yozishda vaqtni tejaydi, chiroyli va puxta reja tuzishga yordam beradi.

❖ Kichik yoshdagi o’quvchilardan tortib, talabalar va pedagoglargacha foydalanishi mumkin.

Xulosa.

Insho yozish o’quvchilarning mustaqil fikrlashini, nutq madaniyatini va ijodiy yondashuvini shakllantirishda muhim ahamiyat kasb etadi. Unda interfaol metodlardan foydalanish esa jarayonni yanada samarali va qiziqarli qiladi. Xususan, “Aqliy hujum”, “Fikrlar xaritasi”, “Klaster usuli”, “Sinkveyn”, “Venn diagrammasi” kabi metodlar o’quvchilarda mavzuni chuqur anglash, asosiy g’oyalarni aniqlash va ularni mantiqiy bayon qilish ko’nikmasini rivojlantiradi. Interfaol metodlar yordamida inshoni rejalashtirish, matnni tahlil qilish va baholash bosqichlari ham samarali tashkil etiladi. Shu bois, insho yozishga o’rgatishda interfaol yondashuvlarni qo’llash nafaqat o’quvchilar bilimini oshiradi, balki ularni ijodiy fikrlashga ham undaydi.

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KUCH SIFATLARINI TAKOMILLASHTIRISH ASOSIDA SAMBODA TEXNIK TAYYORGARLIGINI RIVOJLANTIRISH

Annotatsiya. *Tadqiqotlar natijasida sambochilarning tezkor-kuch sifatlarini rivojlantirish uchun maxsus tanlangan mashqlar to‘plamlari ishlab chiqildi va amaliy sinovdan o‘tkazildi: Zarba usuli bilan umumiy rivojlantiruvchi mashqlar to‘plami; maxsus mashqlar to‘plami va harakatli o‘yinlar majmuasi. Sambo yo‘nalishida mashg‘ulotlar paytida maxsus tanlangan mashqlar to‘plamidan foydalanish tezlik va kuch sifatlarini yanada samarali rivojlantirishga imkon beradi.*

Kalit so‘zlar*: sambo, tezkor-kuch, mashg‘ulot, usul, yuklama, maxsus mashqlar, texnika.*

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DEVELOPMENT OF TECHNICAL TRAINING IN SAMBO BASED ON IMPROVING STRENGTH QUALITIES

Abstract. *As a result of the research, specially selected sets of exercises were developed and tested in practice to develop the speed and strength qualities of sambo fighters: a set of general developmental exercises using the striking method; a set of special exercises and a set of movement games. The use of a specially selected set of exercises during training in the sambo discipline allows for more effective development of speed and strength qualities.*

Keywords: *sambo, speed-strength, training, method, load, special exercises, technique.*

Tadqiqot dolzarbligi.

Hozirgi kunda ko‘plab tadqiqotchilar sambo bo‘yicha sport texnologiyalarini rivojlantirish muammolari ustida ishlamoqda. Kurashning sambo kabi yo‘nalishini rivojlantirishda o‘ziga xos islohotlar mavjud. Bunday tadqiqotlarga V.A.Koleda, F.A.Kerimov, B.M.Ribalko, B.S.Tumanyan,Sh.Sh.Gaziyev va boshqalarning sambo bo‘yicha fundamental izlanishlari kiradi. [1-3]. Ushbu tadqiqotlar zamonaviy sambochilar va kurashchilarning sportga tayyorgarligining turli jihatlarini yoritib beradi. Mualliflar sambochilarning jismoniy tayyorgarligiga alohida e’tibor berishadi, chunki sport natijasi asosan uning rivojlanish darajasiga

bog‘liq. Sambochini tayyorlashda turli jismoniy sifatlar orasida tezkor-kuch qobiliyatlari muhim o‘rin tutadi. Bir qator mualliflarning tadqiqotlarida [2; 3] turli malakadagi sambochilarning tezkor-kuch qobiliyatlarini rivojlantirishning turli jihatlarini ko‘rib chiqilgan. Sambichilarni texnik-taktik harakatlarga o‘rgatish samaradorligi ko‘p jihatdan sport mashg‘ulotlari davomida sambochilarning harakat sifatlarini rivojlantirishga bog‘liqligi aniqlandi [3].

Sambochini tayyorlashda jismoniy sifatlar orasida tezkor-kuch qobiliyatlari muhim o‘rin tutadi. Bir qator mualliflarning tadqiqotlarida [1; 2] turli malakadagi sambochilarning tezkor-kuch qobiliyatlarini rivojlantirishning turli jihatlarini ko‘rib chiqilgan. Sambochi uchun tezkor-kuch sifatlarining yuqori darajada rivojlanishi zarur, chunki hujum, qarshi hujum va qarshi-hujum harakatlari bevosita shiddatli va ekstremal sharoitida amalga oshiriladi. Ko‘p hollarda texnikani bajarish raqibni muvozanatdan chiqarish bilan birga keladi. Raqibdan soniyaning yuzdan bir qismiga tezroq harakat qilish orqali hujumchi muhim ustunlikka ega bo‘lishi mumkin. Hujum harakatlarini muvaffaqiyatli bajarish uchun sambochi imkon qadar tez va kuchli harakat qilishi kerak. Bunday hollarda texnik harakatlarning samaradorligi sambochining zarur harakatlarini portlovchi tarzda namoyish etish qobiliyatiga bog‘liq. Shunday qilib, sambochi nafaqat katta kuchga TGa bo‘lishi, balki uni eng qisqa vaqt ichida namoyish eta olishi kerak. Bizning tadqiqotimiz sambo amaliyotida mamlakatning yuqori malakali sportchilarga bo‘lgan ehtiyoji va sambochilarni tayyorlashda zamonaviy sport mashg‘ulotlari usullarining yetarli darajada rivojlanmaganligi o‘rtasidagi ziddiyatni hal qilishga qaratilgan [1]. Yuqorida aytilganlarning barchasi sportchilar uchun eng qisqa vaqt ichida katta kuch sarflash qobiliyatini oshirish muhimligini ko‘rsatadi. Shu bilan birga, ushbu masalani o‘rganish shuni ko‘rsatadiki, sambochilarda tezkor-kuch qobiliyatlarini rivojlantirish metodikasi hozirgi kunda pedagogika yo‘nalishining zamonaviy nuqtai nazaridan to‘liq va to‘liq ishlab chiqilmagan.

Tadqiqot maqsadi – sambochilarning tezkor-kuch qobiliyatini rivojlantirish usullarini ilmiy asoslash, ishlab chiqish va samaradorligini aniqlash.

Kurashchilarning ko'p yillik tayyorgarligi dasturi

Tayyorgarlik tizimi tarkibi	Boshlang'ich tayyorgarlik guruhlari	O'quv-trenirovka takomillashuvi	Sport takomillashuvi guruhlari	Oliy mahorat guruhlari
1	2	3	4	5
Tayyorgarlik bosqichi	Boshlang'ich tayyorgarlik bosqichi	Chuqurlashtirilgan sport ixtisoslashuvi bosqichi	Sport takomillashuvi bosqichi	Oliy sport mahorati bosqichi
Sportchilar	10-17 yosh, kurash bilan shug'ullanishga qiziquv-chilar, matabda yaxshi o'zlashtiruvchi, vrach tomonidan ruxsat olgan o'quvchilar.	10-17 yosh, yangi shug'ullanuvchilar, II o'smirlar, III katta razryadi, sport kurashida keyingi tayyorgarlikka ega, yetarli darajada har tomonlama rivojlanganlar	16-18 yosh, I kattalar, SUN, yuqori darajada texnik-taktik va jis-moniy tayyorgarlikka ega, ruhiy mustahkam kurashchilar.	O'ta qobiliyatlilar, 19 yosh va katta. SU, yuqori darajada texnik-taktik va jismoniy tayyorgarlikka ega
Trenerlar	Dastlabki saralash, bosh-lang'ich tayyorgarlik va kurash bilan shug'ul-lanish sabablarini shakl-lantirish uslublarini egallagan trenerlar	Trenirovkani rejalashtirish tamoyillari va razryadchilar bilan guruhli mashg'ulot-larni o'tkazish uslubiyatini yaxshi biladigan trenerlar	Kurashchilar tayyorlash usuliyati va sport tashkilotchisi malakasiga ega, guruh bilan va alohida ishlash uslublarni egallagan trenerlar	Kurashchilar alohida tayyorgarligi usuliyati va yuqori malakali sportchilar tayyorgarligini ilmiy ta'minlash usuliyatini yaxshi biladigan trenerlar
Tayyorgarlik maqsadlari	Kurash bilan shug'ul-lanish sababini shakllan-tirish va mustahkamlash, jismoniy rivojlanishni oshirish	Har tomonlama rivojla-nish va kurash asoslarini chuqur egallashga yor-dam berish	Sport natijalarini keyinchalik ham oshirish hamda terma jamoalarga qabul qilinish uchun shart-sharoitlar yaratish	Mumkin qadar yuqori natijalarga erishish va ko'p yillar davomida xalqaro maydonda yetakchi sportchi holatini ushlab turish
Sport tayyorgarligi bo'yicha asosiy vazifalar	Saralash va sifati jihatdan to'laqonli guruhlarni tashkil qilish	II o'smirlar, I o'smirlar va II kattalar razryadi me'yorlarini bajarish	I sport razryadi, SUN me'yorlarini bajarish va ularni tasdiqlash	SU va XTSU me'yor-larini bajarish
O'quv-trenirovka jarayoni: a) Maxsus-ruhiy tayyorgarlik	Kurash bilan shugullanish sabablarini shakllantirish	Sabab, javobgarlik, onglilik va mustaqillik darajasini oshirish, musobaqa sharoitlariga ruhiy mustahkalikni tarbiyalash	Ijtimoiy-foydali shaxsga xos bo'lgan sifatlarni shakllantirish musobaqa sharoitlariga ruhiy mustahkamlikni oshirish, yuqori natijalarga erishish	Yuqori natijalarga erishish sabablarini shakllantirish. Favqu-lodda vaziyatlarda ruhiy holatni o'zi boshqarish qobiliyatini tarbiyalash
b) Texnik tayyorgarlik	Kurash texnikasi asoslarini	Texnikani egallashni	Hujum, himoya va qarshi hujum	"Yaxshi ko'rgan" hu-jum, himoya va

	o’zlashtirish (ushlab olishlar, harakatlanish, kurashning oddiy usullari, oddiy hujum harakatlari)	chukurlashtirish, himoya, hujum va qarshi hujum harakatlarini egllash	bazaviy harakatlarini takomillashtirish “yaxshi ko’rgan” harakatlar shakllantirish	qarshi hujum harakatlari samadorligini oshirish
g) Jismoniy tayyor-garlik	UJT vositalaridan foydalangan holda har tomonlama jismoniy rivojlanish asosini yaratish	Kurashchi maxsus mashqlaridan foydalanish yo’li bilan keyinchalik UJT ni oshirish asosida maxsus jismoniy tayyor-garlik asosini yaratish	“Yaxshi ko’rgan” hujum, himoya, qarshi hujum ha-rakatlarini amalga oshirishda ishtirok etadigan mushak guruhlarini ko’proq rivojlantirish	Yetakchi sifatlarni keyin-chalik rivojlantirish va qoloq sifatlarni yetishtirib olishga qaratilgan holda UJT va MJT ni individuallashtirish
d) Musobaqa faoliyati	Guruh va maktab muso-baqalarida qatnashish	Maktab, shahar, viloyat, respublika musobaqalarida qatnashish	Shahar, respublika va xalqaro musobaqalarda qatnashish	Respublika va xalqaro musobaqalarda qatnashish
Trenirovka jarayonini tashkil qilish	O’qitish va trenirovkaning yalpi uslubi	O’qitish va trenirovkaning yalpi hamda guruhli uslubi	O’qitish va takomillashtirishn ing guruhli va alohida uslubi	Takomillashtirishnin g asosan alohida uslubi
Tiklanish vositalari	Dush, hammom	Dush, hammom, o’z-o’zini massaj qilish, faol dam olish	Dush, hammom, massaj, fizioterapiya va ruhiy-gigienik vositalar, faol dam olish	Dush, hammom, massaj, fizioterapiya, ruhiy-gigiyenik, kimyofarmakologik vositalar, faol dam olish

Tadqiqot natijalari. Malakali sambochilarning tezkor-kuch qobiliyatini rivojlantirishning maxsus metodologiyasini ishlab chiqishda zamonaviy sport mashg‘ulotlarini loyihalashning asosiy nazariy va uslubiy tamoyillari hisobga olingan:

- portlovchi kuchni rivojlantirishga yordam beradigan maxsus mashqlarni tanlashning maqsadga muvofiqligi mashg‘ulotning dastlabki bosqichlaridayoq ayon bo‘ladi [2; 3]. Mushaklarning portlovchi harakatlarini namoyish qilish qobiliyatini rivojlantirishda uzoq muddatli tizimli mashg‘ulotlar talab etiladi. Shu maqsadda maxsus mashqlar texnik harakatlar tuzilishiga mos keladigan tarzda tanlanishi kerak. Ushbu qoida vosita fazilatlari va ko‘nikmalarining organik munosabatlariga asoslangan ta’sir qilish usulining asosini tashkil qiladi [3];

Yo‘nalishli jamlangan harakatlarni namoyish etish qobiliyatini rivojlantirishning samarali vositasi bu xarakterli kurash holatlarida bajariladigan izometrik mashqlardir [1]. Izometrik mashqlarni qo‘llashda shuni hisobga olish kerakki, katta qarshiliklarni yengib o‘tish harakat tezligi maksimal kuch sarflash kerak bo‘lgan tana holatida mushaklar kuchini izometrik mashq qilish bilan sezilarli darajada oshadi. Kichkina tashqi qarshiliklarni yengib o‘tish bilan harakatlar tezligi,

harakatning boshlanishiga mos keladigan tana holati bilan izometrik kuch mashqlari bajarilganda tezroq oshadi.

Sambochining tezkor-kuch sifatlarini rivojlantirishning asosiy vositalaridan biri uch guruhga bo‘linadigan mashqlar bo‘lishi kerak: birinchi guruh – katta, maksimalga yaqin og‘irlikdagi mashqlar (maksimaldan 80-90%); ikkinchi guruh - yuqori tezlikda bajariladigan engil vaznli mashqlar (maksimaldan 30%); uchinchi guruh - maksimal tezlikda bajariladigan raqobatbardosh og‘ritish usullariga bog‘liq mashqlar. Tezlik va kuch sifatlarini rivojlantirishda og‘ritish usullarini o‘zgartirishdan foydalanish tavsiya etiladi. Treningda biz oog‘ritish usullarini quyidagi tarzda almashtirishni tavsiya qilishimiz mumkin: vazn miqdori dastlab kamroq, keyin esa o‘rtacha qiymatidan ko‘proq; vazn miqdori dastlab kattaroq, keyin esa o‘rtacha qiymatdan kamroq; vazn miqdori dastlab kattaroq, keyin esa o‘rtacha qiymatga teng; vazn miqdori dastlab kamroq, keyin o‘rtacha qiymatga teng;

- maxsus mashqlar nafaqat umumiy kuchni oshirishga, balki minimal vaqt ichida mumkin bo‘lgan maksimal kuchni rivojlantirish qobiliyatini yaxshilashga yordam berishi kerak. Shundan kelib chiqib, tezkor-kuch sifatlarini shakllantirishda irodaviy va jismoniy kuchlarni bir zumda safarbar etish malakalarini shakllantirishga jiddiy e’tibor qaratish lozim. Bunga yuqori shiddatli maxsus mashqlarni bajarish, harakatlar tezligini oshirish va texnik harakatlarni takomillashtirishda turli xil vazifalarni bajarish orqali erishish mumkin [1; 3];

- kurashda vaziyatlar doimo o‘zgarib turadi va bu borada boshqa xarakterdagi mushak harakatlari talab etiladi [2; 3]. Usul bajarish qobiliyati sportchining harakatini nazorat qilish qobiliyatini tavsiflaydi, bu ham mushaklar kuchini maksimal darajada namoyon bo‘lishini ta’minlaydigan eng muhim shartlardan biridir. Shu munosabat bilan mushak ishining bir rejimidan boshqasiga tezda o‘tish qobiliyatini rivojlantiruvchi maxsus mashqlardan foydalanish zarurati ayon bo‘ladi [3]

- tezkor-kuch sifatlarining muvaffaqiyatli namoyon bo‘lishining muhim omili sportchining kerakli mushaklarini o‘z vaqtida ishlatish qobiliyatidir;

- samarali usullar: usuli, o‘zgaruvchan yuklama usuli, ta’sir usuli, mashg‘ulot va yuklama o‘zgarishi, sxema bo‘yicha o‘rgatish usuli va boshqalar.

Ishlab chiqilgan metodikaning samaradorligini aniqlash uchun pedagogik tadqiqot usulidan foydalandik. “O‘zbekiston davlat jismoniy tarbiya va sport universiteti” ta’lim muassasasi negizida sambochi-talabalar ishtirokida o‘tkazildi. Tadqiqotda jami 32 kishi ishtirok etdi: tajriba guruhdan (TG) 16 kishi va nazorat guruhidan (KG) 16 kishi. Sinflarning mazmuni NGda ham, TGda ham bir xil edi. Asosiy farq TGda mashq qilganlar uchun maxsus tanlangan mashqlar komplekslaridan foydalanish edi. Shuni ta’kidlash kerakki, ushbu komplekslar ulardan foydalanishi sport mashg‘ulotlari paytida vosita ko‘nikmalarini o‘zlashtirish muammolarini hal etishda xalaqit bermasligi uchun ishlatilgan. Sambochilarda tezkor-kuch qobiliyatlarining rivojlanishini kuzatish uchun quyidagi testlardan foydalanildi: tik turgan holatda uzunlikka sakrash, skameykadan 20 soniyada tezlikda sakrash, 20 soniyada tezlikda surish, 20 soniyada tezlikda tortish;

20 soniyada tezlik uchun o‘tirgan holatda (qo‘llar boshning orqasida) tanani moyil holatdan ko‘tarish, tezlik uchun o‘quv qo‘lbolasini uloqtirish 20 soniya, tezlik uchun burilish uloqtirish 20 soniya, tezlikni oshirish uchun 20 soniya. Sambochilarning tezkor-kuch sifatlarining rivojlanishi darajasi bo‘yicha NG va TG o‘rtasidagi statistik farqlarni aniqlash uchun parametrik bo‘lmagan Student t-qiymatidan foydalanildi.

Olingan ma’lumotlarning tahlili shuni ko‘rsatdiki, o‘rtacha TGda natijalarning o‘sishi deyarli barcha testlarda NGga qaraganda sezilarli darajada yuqori . Student t-qiymatini hisoblash NG va TGda tajribadan so‘ng olingan barcha ko‘rsatkichlar o‘rtasida TG foydasiga sezilarli statistik farqlar mavjudligini aniqlashga imkon berdi. Pedagogik tadqiqot natijalariga ko‘ra, sambochilarda tezkor-kuch sifatlarini rivojlantirish bo‘yicha taklif qilingan usulimiz markaziy asab tizimida (MSS) ijobiy oqibatlarga olib keldi va asab-mushak tizimining funktsional holatlarini yaxshiladi, TGan xulosaga kelishimiz mumkin. mushak-skelet tizimiga umumiy tonik ta’sir ko‘rsatadi va tezlik va kuch ko‘rsatkichlarini yaxshilaydi. Xulosa qilib aytishimiz mumkinki, tadqiqot natijasida olingan barcha ma’lumotlar taklif etilayotgan metodologiyaning amaliyligi va samaradorligini ko‘rsatadilar.

Xulosa.

Ilmiy-metodik adabiyotlar tahlili shuni ko‘rsatadiki, hozirgi vaqtda sambochilarning sport tayyorgarligida jismoniy tarbiya muhim o‘rin tutadi. Sambochi uchun barcha jismoniy sifatlari orasida tezkorlik va kuch sifatlari asosiy hisoblanadi. Biroq, ularni ishlab chiqish metodologiyasi yetarlicha ishlab chiqilmagan. Bu sportchilarning maxsus jismoniy tayyorgarligiga sezilarli ta’sir qiladi.

Tadqiqotlar natijasida sambochilarning tezkor-kuch sifatlarini rivojlantirish uchun maxsus tanlangan mashqlar to‘plamlari ishlab chiqildi va amaliy sinovdan o‘tkazildi: zarba usuli bilan umumiy rivojlantiruvchi mashqlar to‘plami; maxsus mashqlar to‘plami va harakatli o‘yinlar majmuasi. Tezkor-kuch sifatlarini rivojlantirishning eng samarali vositasi bu maxsus tayyorlangan mashqlar va tezkor bajariladigan mashqlar ekanligi aniqlangan. Sambo yo‘nalishida mashg‘ulotlar paytida maxsus tanlangan mashqlar to‘plamidan foydalanish tezlik va kuch sifatlarini juda xam samarali rivojlantirishga imkon beradi. Tajribalar shuni ko‘rsatadiki, natijalarning o‘sishi TGda NGga qaraganda sezilarli darajada yuqori bo‘lgan.

Foydalanilgan adabiyotlar:

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3 Sadullayev F.A Tanlangan sport turi bo‘yicha mutaxassislikka kirish (sambo). O‘quv qo’llanma 2024-yil 142-b.

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14-16 YOSHLI SAMBOCHILARNING “YELKALARDAN OSHIRIB TASHLASH” TEXNIK USULINI BAJARISHDAGI KINEMATIKSINING INDIVIDUAL KO‘RSATKICHLARI

Annotatsiya. *Ushbu maqolada sambochilar o‘rtasida “Yelkalardan oshirib tashlash” texnikasining har tomonlama kinematik tahlili keltirilgan. Metodologiya texnika davomida ishtirokchilarning oyoq-qo‘llarining burchak tezligi, traektoriyalari va kuch hosil bo‘lishini ushlashga qaratilgan. Natijalar yangi boshlanuvchilar va tajribali amaliyotchilar o'rtasidagi kinematik mashqlarda sezilarli o‘zgarishlarni aniqladilar, ikkinchisi esa samaraliroq energiya uzatish va yuqori zarba tezligini namoyish etdi.*

Kalit so‘zlar. *texnika, sambo, usul, kuch, yosh sambochi, tadqiqot, kinematika, sportchi, texnik usul.*

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INDIVIDUAL INDICATORS OF KINEMATICS OF SAMBO PLAYERS AGE 14-16 IN PERFORMING THE “SHOULDERS’ THROW” TECHNICAL METHOD

Abstract. *This article presents a comprehensive kinematic analysis of the “Shoulder Throw” technique among sambo wrestlers. The methodology aimed to capture the angular velocities, trajectories, and force generation of the participants’ limbs during the technique. The results revealed significant differences in the kinematics of the exercise between novice and experienced practitioners, with the latter demonstrating more efficient energy transfer and higher impact velocity.*

Keywords: *technique, sambo, method, strength, young sambo wrestler, research, kinematics, athlete, technical method.*

Dolzarbligi.

Respublikamizda sportchilarning harakat tayyorgarligini rivojlantirish, yoshlar orasidan professional sportga iqtidorli sportchilarni jalb etish borasida muhim ishlar amalga oshirilmoqda. O‘zbekiston sportchilarini kompleks tayyorlash to‘g‘risidagi Qarori va O‘zbekiston Respublikasi Prezidentining 2022-yil 29-iyuldagi PQ-336-sonli “Sport kurashlarining olimpiya turlarini yanada rivojlantirish chora-tadbirlari to‘g‘risida”gi qarori shular jumlasidandir [1].

Shu bois, vatanimizda yakkakurash sport turlarini ommaviylashtirish va bog‘chadan kurash turlari bilan shug‘ullantirish bo‘yicha keng qamrovli ishlar olib borilmoqda. Sambo texnikasi sportchi mahoratining asosi hisoblanadi va ko‘p jihatdan uning imkoniyatlarini belgilab beradi. Bugungi kunda, amalga oshirilgan ilmiy izlanishlarda kurashchilar tomonidan musobaqa mashqlarini texnik mahorat bilan amalga oshirishni takomillashtirishda majmuaviy yondashuv uslublaridan foydalanish tavsiya etilgan.

Sambochilarning harakat ko‘rsatgichlarini shakllantirishda asosiy omillardan biri sifatida kinematic tahlillar olib borish, James L.P. (2016) texnik usullarning kinematik tahlili haqida batafsil tasvirlangan, shuningdek himoya qilish usullarini hal qiluvchi qarshi hujumlar bilan birlashtirish bo‘yicha ko‘rsatmalar bergan [2,3,4,5].

Mashg‘ulot jarayonida “Yelkalardan oshirib tashlash” texnikasini takomillashtirish hamda hujum texnikasi kinematikasining asosiy qonuniyatlarini bilish lozim. Buning natijasida hujum harakatining kinematik ko‘rsatkichlari to‘g‘risidagi ma’lumotlarga ega bo‘lish murabbiyda “Yelkalardan oshirib tashlash” texnikasini takomillashtirishda vosita va metodlarni to‘g‘ri tanlashga yordam beradi [2,5,6].

Kurashchilarning “Yelkalardan oshirib tashlash” texnikasini kinematik tahlil qilish muhim ahamiyatga ega sanalib, bunday tahrirlar bizga hujum texnikasi samaradorligi haqida muhim ma’lumotlarni taqdim etishi mumkin va shu boisdan biz tanlagan “Yelkalardan oshirib tashlash” texnikasining kinematik xususiyatlari mavzusi bugungi kunda dolzarb mavzulardan biri hisoblanadi.

Tadqiqotning maqsadi sport ustaligiga nomzod bo‘lgan talabalarning “Yelkalardan oshirib tashlash” zarbasi texnikasining kinematik xususiyatlarini aniqlash.

Tadqiqotning vazifasi:

- sport ustaligiga nomzod kurashchilarning “Yelkalardan oshirib tashlash” texnikasining harakatlarining kinematik ko‘rsatkichlarini aniqlash.

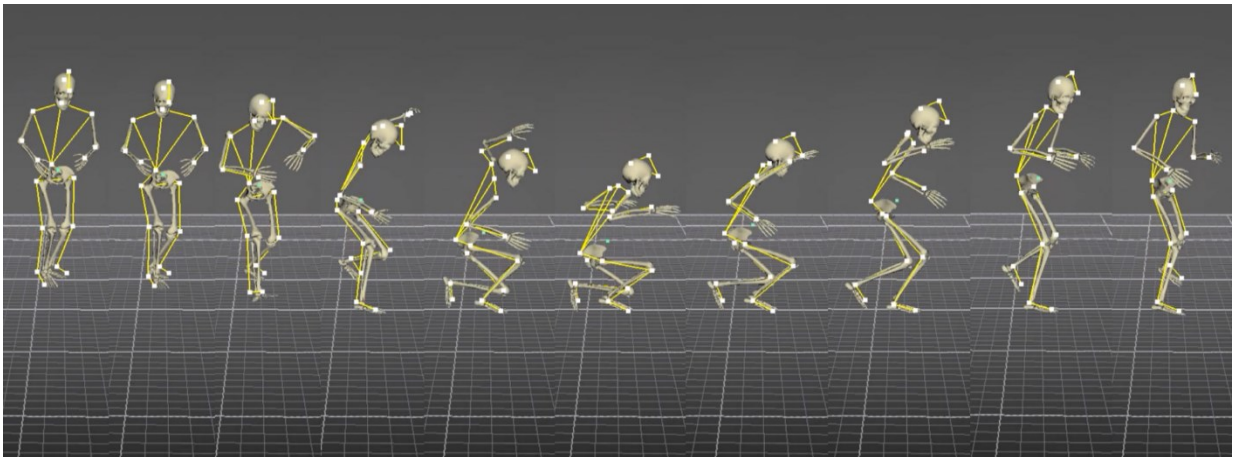
- sport ustaligiga nomzod bo‘lgan kurashchilarning “Yelkalardan oshirib tashlash” texnikasining harakatlarining kinematik xususiyatlarini solishtirish.

Tadqiqot usullari va uning tashkil etish. Tadqiqot ishi O‘zbekiston davlat jismoniy tarbiya va sport univeritetida joylashgan “SPORT 360° 3D MA biomexanik labaratoriya”da olib borildi.

Tadqiqot ishida sambo sport turi bilan shug‘ullanib kelayotgan sport ustaligiga nomzod bo‘lgan sambochilar ishtirok etdi. Tadqiqot davomida sambochilarga 15 daqiqa chigal yozdi mashqlardan so‘ng qanday tarzda “Yelkalardan oshirib tashlash” texnikasi va 3D tahlil xususiyatlari to‘g‘risida tushunchalar berildi. Sinaluvchilarga imkon qadar “Yelkalardan oshirib tashlash” texnikasining aniqligi va to‘g‘ri bajarish to‘g‘risida ko‘rsatma berildi.

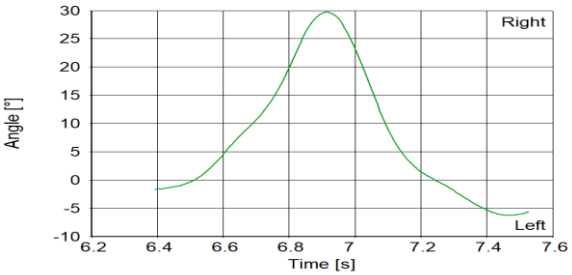
O‘tkazilgan tadqiqot natijalari tahlili. tadqiqot ishimizda sport ustaligiga nomzod hamda sport ustasi bo‘lgan sambochilarning Yelkalardan oshirib tashlash texnikasini bajarish davomida umurtqa pog‘onasining sagittal o‘q bo‘ylab oldinga va orqaga egilishi bilan bog‘liq 3D biomexanik tahlil natijalari aks ettirilgan

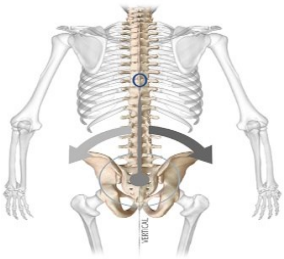
(2-rasm). A- sport ustasining harakatlar kinematikasi. B - sport ustaligiga nomzod sambochilarning harakatlari kinematikasi.



1-rasm. ***Sambochilarning oyoqlar oldidan chalish texnik usulining kinematik bajarilish tartibi***

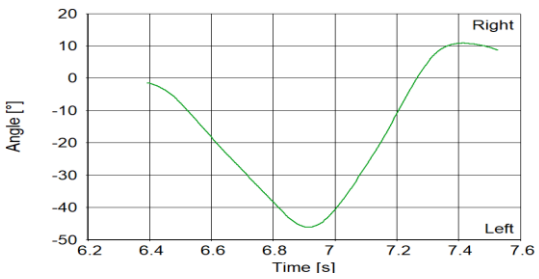
YONGA EGILISH
O‘ngga [+]/Chapga[-]
Min 0º
Mak 29 º
Diapazon 29 º





Sambochilarning yelkalardan oshirib tashlash texnik harakatini bajarish davomida umurtqa pog‘onasining sagital o‘q bo‘ylab oldinga va orqaga egilishi bilan bog‘liq 3D kinematik tahlil natijalari shuni ko‘rsatdiki, harakatning boshlang‘ich nuqtasida umurtqa pog‘onasi sagital o‘q bo‘ylab 0° burchak ostida joylashgan, harakat davomida ushbu ko‘rsatkich sagital o‘q bo‘ylab oldinga 29° dan 29° burchak osti oralig‘ida egilgan.

Yonga egilish
O‘ngga [+]/Chapga[-]
Min -46 º
Mak 10 º
Diapazon 56 º



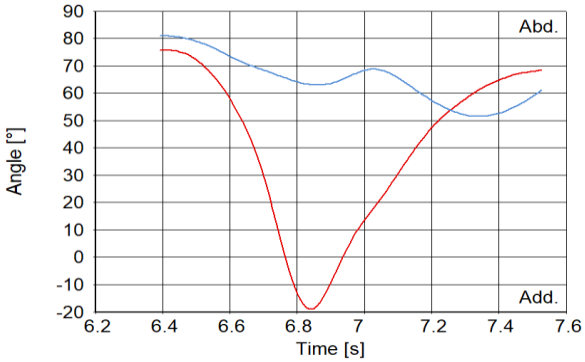


Sambochilarning yelkalardan oshirib tashlash texnik harakatini bajarish davomida bosh suyagining sagital o‘q bo‘ylab oldinga va orqaga egilishi bilan bog‘liq 3D kinematik tahlil natijalari shuni ko‘rsatdiki, harakatning boshlang‘ich nuqtasida umurtqa pog‘onasi sagital o‘q bo‘ylab -46° burchak ostida joylashgan, harakat davomida ushbu ko‘rsatkich sagital o‘q bo‘ylab oldinga 10° dan 56° burchak osti oralig‘ida egilgan.

YELKALARNI YON TOMONGA SILJISHI

Tashqariga[+]/Ichkariga[-]

	CHAP	O‘NG
Min	-19º	51º
Mak	69º …	61º
Diapazon	89º	10º



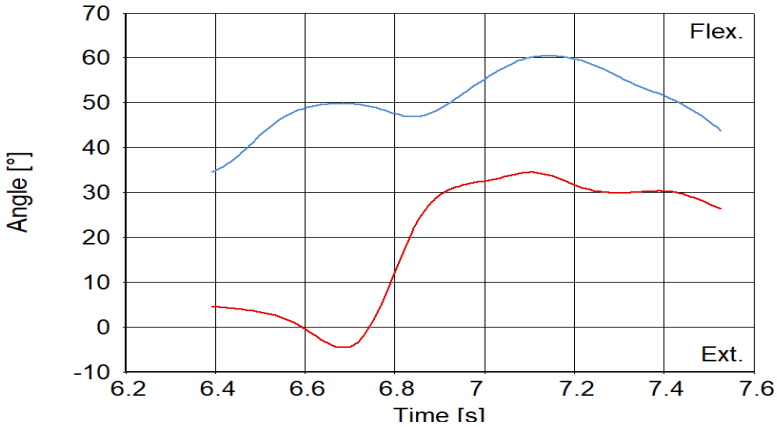


Sambochilarning yelkalardan oshirib tashlash texnik harakatini bajarish davomida o‘ng va chap qo‘llar yelka suyaklari sagital o‘q bo‘ylab oldinga va orqaga burulishi bilan bog‘liq 3D kinematik tahlil natijalari shuni ko‘rsatdiki, harakatning boshlang‘ich nuqtasida o‘ng qo‘l yelka suyaklari sagital o‘q bo‘ylab old tomonga -19° burchak ostida joylashgan, harakat davomida ushbu ko‘rsatkich 69° dan 89° burchak osti oralig‘ida burilgan, chap qo‘l yelka suyaklari esa sagital o‘q bo‘ylab old tomonga 51° burchak ostida joylashgan, harakat davomida ushbu ko‘rsatkich 61° dan 10° burchak osti oralig‘ida ko‘rinishiga kelgan.

SON BUKULISH

Bukish[+]/Yozish[-]

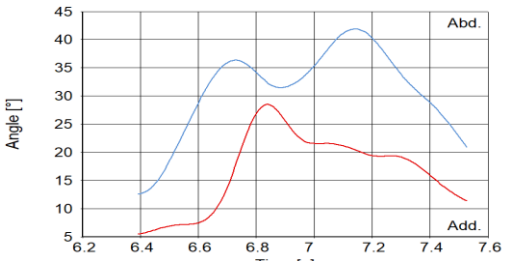
	CHAP	O‘NG
Min	-5º	46º
Mak	34º	60º
Diapazon	39º	14º

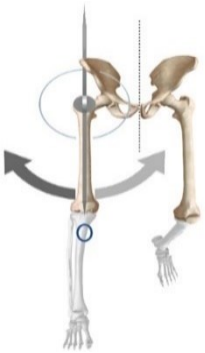


Sambochilarning yelkalardan oshirib tashlash texnik harakatini bajarish davomida o‘ng va chap son suyaklari sagital o‘q bo‘ylab oldinga va orqaga burulishi bilan bog‘liq 3D kinematik tahlil natijalari shuni ko‘rsatdiki, harakatning boshlang‘ich nuqtasida o‘ng son suyaklari sagital o‘q bo‘ylab old tomonga -5° burchak ostida joylashgan, harakat davomida ushbu ko‘rsatkich 34° dan 39° burchak osti oralig‘ida burilgan, chap son suyaklari esa sagital o‘q bo‘ylab old tomonga 46° burchak ostida joylashgan, harakat davomida ushbu ko‘rsatkich 60° dan 14° burchak osti oralig‘ida ko‘rinishiga kelgan.

Sonning yon tomonga siljishi
Tashqariga[+]/Ichkariga

	CHAP	O‘NG
Min	0º	31º
Mak	28º	41º
Diapazon	28º	10º

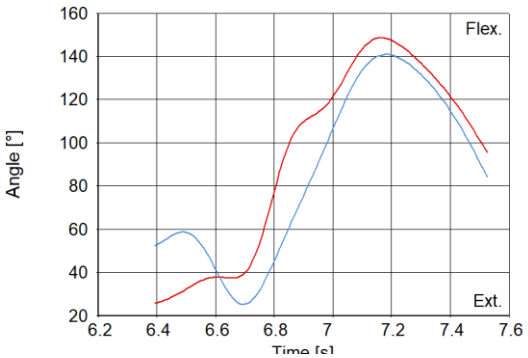


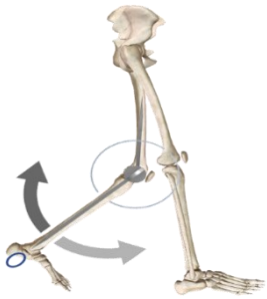


Sambochilarning yelkalardan oshirib tashlash texnik harakatini bajarish davomida o‘ng va chap son suyaklarining yon tomonga siljish ko‘rsatgichi bilan bog‘liq 3D kinematik tahlil natijalari shuni ko‘rsatdiki, harakatning boshlang‘ich nuqtasida o‘ng son suyaklarining yon tomonga siljish 0° burchak ostida joylashgan, harakat davomida ushbu ko‘rsatkich 28° dan 28° burchak osti oralig‘ida burilgan, chap son suyaklarining yon tomonga siljish 31° burchak ostida joylashgan, harakat davomida ushbu ko‘rsatkich 41° dan 10° burchak osti oraliq ko‘rinishga kelgan.

TIZZALAR BUKULISH
Bukish[+]/Yozish[-]

	CHAP	O‘NG
Min	0º	25º
Mak	148º	140º
Diapazon	48º	115º



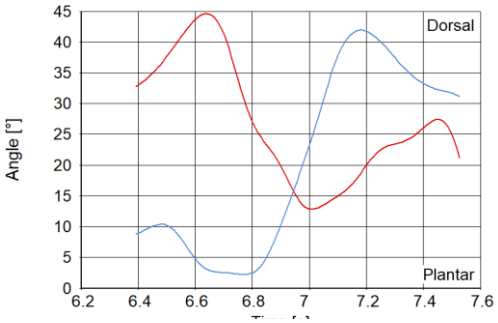


Sambochilarning yelkalardan oshirib tashlash texnik harakatini bajarish davomida o‘ng va chap tizza suyaklari sagital o‘q bo‘ylab orqaga bukilishi bilan bog‘liq 3D kinematik tahlil natijalari shuni ko‘rsatdiki, harakatning boshlang‘ich nuqtasida o‘ng tizza suyaklari orqaqa bukilish ko‘rsatgichi 0° burchak ostida joylashgan, harakat davomida ushbu ko‘rsatkich 148° dan 148° burchak osti oralig‘ida bukilgan, chap tizza suyaklari orqaqa bukilish ko‘rsatgichi 25° burchak ostida joylashgan, harakat davomida ushbu ko‘rsatkich 140° dan 115° burchak osti oraliq ko‘rinishga kelgan.

TO‘PIQLAR BUKILISH

Yuqoriga[+]/Pastga[-]

	CHAP	O‘NG
Min	12º	2º
Mak	44º	41º
Diapazon	31º	39º





Sambochilarning yelkalardan oshirib tashlash texnik harakatini bajarish davomida o‘ng va chap to‘piq suyaklari sagital o‘q bo‘ylab oldinga va orqaga burulishi bilan bog‘liq 3D kinematik tahlil natijalari shuni ko‘rsatdiki, harakatning boshlang‘ich nuqtasida o‘ng to‘piq suyaklari sagital o‘q bo‘ylab old tomonga 8° burchak ostida joylashgan, harakat davomida ushbu ko‘rsatkich 25° dan 17° burchak osti oralig‘ida burilgan, chap to‘piq suyaklari esa sagital o‘q bo‘ylab old tomonga -11° burchak ostida joylashgan, harakat davomida ushbu ko‘rsatkich 7° dan 18° burchak osti oraliq ko‘rinishga kelgan.

Xulosa.

Tadqiqot ishimiz bo‘yicha sambochilar hujum texnikasining 3D biomexanik tahlil asosida tadqiqot mavzusi bo‘yicha mamlakatimiz va chet el olimlarining o‘tkazgan tadqiqotlari tahlili bizga turli sport toifasidagi sambochilarning hujum texnik harakatlarini kinematik tahlil qilish zaruriyatini ochib berdi.

Sport ustaligiga nomzod bo‘lgan sambochilarning harakati davomida o‘ng va chap tizza suyaklari sagital o‘q bo‘ylab oldinga va orqaga burulishi bilan bog‘liq 3D kinematik tahlil natijalari shuni ko‘rsatdiki, harakatning boshlang‘ich nuqtasida o‘ng tizza suyaklari orqaqa bukilish ko‘rsatgichi 0° burchak ostida joylashgan, harakat davomida ushbu ko‘rsatkich 145° dan 145° burchak osti oralig‘ida bukilgan, chap tizza suyaklari orqaqa bukilish ko‘rsatgichi 24° burchak ostida joylashgan, harakat davomida ushbu ko‘rsatkich 130° dan 105° burchak osti oraliq ko‘rinishga kelgan.

Yuqoridagilarni inobatga olgan holda ayta olamizki hujum texnikasini takomillashtirish uchun turli sport toifasiga ega bo‘lgan kurashchilarning harakatlarini kinematik tahlil qilish texnik harakatlarning optimal modelini yaratishga imkon beradi va bu natijalardan kurash bo‘yicha mutaxasislar foydalanish imkoniga ega bo‘ladilar.

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KURASHCHILAR MASHG‘ULOT JARAYONIDA TEXNIK TAYYORGARLIK

Annotatsiya. *Ushbu maqolada sambochi talabalar o‘quvchilari o‘rtasida “Kurashchilar mashg‘ulot jarayonida tehnik tayyorgarlik” texnikasining har tomonlama kinematik tahlili keltirilgan. Metodologiya texnika davomida ishtirokchilarning oyoq-qo‘llarining burchak tezligi, traektoriyalari va kuch hosil bo‘lishini ushlashga qaratilgan. Natijalar yangi boshlanuvchilar va tajribali amaliyotchilar o‘rtasidagi kinematik mashqlarda sezilarli o‘zgarishlarni aniqladilar, ikkinchisi esa samaraliroq energiya uzatish va yuqori zarba tezligini namoyish etdi.*

Kalit so‘zlar. *texnika, kurash, mashg‘ulot, kurash, tadqiqot, tayyorgarlik, nazorat, musobaqa.*

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TECHNICAL TRAINING IN THE PROCESS OF TRAINING OF WRESTLERS

Abstract. *This article presents a comprehensive kinematic analysis of the technique “Technical preparation of wrestlers during training” among sambo students. The methodology aimed to capture the angular velocities, trajectories, and force generation of participants’ limbs during the technique. The results revealed significant differences in kinematics between novice and experienced practitioners, with the latter demonstrating more efficient energy transfer and higher impact velocity.*

Keywords: *technique, wrestling, training, wrestling, research, preparation, control, competition.*

Dolzarbligi.

Kurashning texnik tayyorgarligi sportchi tomonidan yuqori sport natijalariga erishishni ta’minlovchi harakatlar tizimining egallaganlik darajasi bilan tavsiflanadi.

Kurashchining umumiy va maxsus texnik tayyorgarligi ajratiladi. Umumiy texnik tayyorgarlik yordamchi sport turlaridagi har xil harakat malakalari hamda

ko‘nikmalarini egallashga, maxsus texnik tayyorgarlik sport kurashida texnik mahoratga erishishga qaratilgan.

Sport kurashida texnik tayyorgarlik bir qator murakkab vazifalarni hal etishga yo‘naltirilgan:

- maksimal kuchlanishdan foydalanish samaradorligini oshirish;
- ish kuchlanishini tejash;
- musobaqa faoliyatini o‘zgaruvchan holat sharoitlarida harakatlanish tezligi, aniqligini oshirish.

Sport texnikasini takomillashtirish kurashchilarning ko‘p yillik tayyorgarligi davomida amalga oshiriladi va u tanlangan kurash turida texnik mahoratni oshirishga qaratiladi.

Texnik mahorat deganda keskin sport kurashi sharoitlarida eng oqilona harakat texnikasini mukammal egallash tushuniladi.

Texnik mahoratni takomillashtirishning uchta bosqichi ajratiladi;

1. Izlanish.
2. Barqarorlashtirish.
3. Moslashishni takomillashtirish.

Birinchi bosqichda texnik tayyorgarlik musobaqa harakatlarining yangi texnikasini shakllantirishga, uni amaliyotda egallash shartsharoitlarini yaxshilashga, musobaqa harakatlari tizimiga kiruvchi ayrim harakatlarni o‘rganishga (yoki qayta o‘rganishga) qaratilgan.

Ikkinchi bosqichda texnik tayyorgarlik musobaqa harakatlarining butun malakalarini chuqur o‘zlashtirish va mustahkamlashga qaratilgan.

Uchinchi bosqichda texnik tayyorgarlik shakllangan malakallarni takomillashtirish, ularning asosiy musobaqalar sharoitlariga mos holda maqsadga muvofiq variantliligi, barqarorligi, ishonchliligi chegaralarini kengaytirishga qaratilgan.

Har bir texnik tayyorgarlik bosqichining asosiy vazifalari quyidagilardan iborat:

1. Kurash texnikasi asosini tashkil etadigan harakat malakalarining yuqori barqarorligi hamda oqilona variantivligiga erishish, musobaqa sharoitlarida ularning samaradorligini oshirish.
2. Harakat malakalarini qisman qayta qurish, musobaqa faoliyati talablarini hisobga olgan holda usullarning ayrim qismlarini takomillashtirish.

Birinchi vazifani hal etish uchun tashqi vaziyatni murakkablashtirish uslubi, organizmning turli holatlarida mashqlarni bajarish uslubi qo‘llaniladi. Ikkinchi vazifani hal etish uchun - texnik harakatlarni bajarish sharoitlarini yengillashtirish uslubi, birga (sopryajenny) ta’sir ko‘rsatish uslubi qo‘llaniladi.

Texnik usullarni bajarishda tashqi vaziyatni murakkablashtirish uslubi quyidagi bir qator usullarda amalga oshiriladi:

1. Shartli raqib qarshiligining uslubiy usuli sportchiga texnik harakatni bajarish tuzilmasi va maromini takomillashtirishga, barqarorlik va natijalilikka tezroq erishishga yordam beradi.

2. Qiyin dastlabki holatlar va tayyorgarlik harakatlarining uslubiy usuli. Masalan, egilab tashlashni takomillashtirshda ushlab olish joyi va kurashchilar o‘rtasidagi masofani o‘zgartirish lozim.

3. Usullarni bajarish uchun joyni cheklash uslubi malakani takomillashtirishda mo‘ljallangan shartlarini murakablashtirishga yordam beradi. Kurashda, kichraytirilgan o‘lchamdagi gilamlar qo‘llaniladi.

Texnik harakatlarning bajarilishini qiynlashtiruvchi sportchi organizmining turli holatlarida mashklarni bajarish uslubi ham turli xildagi usullarda amalga oshiriladi:

Harakatni ancha toliqqan holda bajarishning uslubiy usuli. Bu holda katta hajm va shiddatdagi jismoniy nagruzkadan keyin sportchiga texnikani rivojlantirishga qaratilgan mashqlar taklif qilinadi.

Nazorat o‘quv-trenirovka bellashuvlari o‘tkazilgandan so‘ng katta emotsional zo‘riqish holatida harakatrlarni bajarishning uslubiy usuli.

Vaqti-vaqti bilan ko‘rishni ta’qiqlash yoki cheklashishning uslubiy usuli harakatlanish malakasining retseptorli-analizatorli tarkibiga tanlab ta’sir ko‘rsatishga yordam beradi.

Musobaqa vaziyatida ayrim usullar yoki harakatlarni majburan bajarish usuli malakani takomillashtirish jarayonida kurashchi faolligini rag‘batlantiradi. O‘quv-trenirovka bellashuvlarida kurashchi himoyaning texnik usullari, yoki aksincha, hujum usullariga ko‘proq diqqatni to‘plashga ko‘rsatma oladi.

Texnik harakatlarni bajarish shartlarini yengillashtirish uslubi bir qator uslubiy usullardan iborat:

1. Harakat elementini ajratish uslubiy usuli. Masalan, erkin kurashda - beldan yuqori qismdan ushlab olishni amalga oshirish.

2. Mushak zo‘riqishini pasaytirish uslubiy usuli kurashchiga harakatlanish malakasidagi ayrim harakatlarga yanada aniq tuzatishlarni kiritishga yordam beradi. Texnik harakatlarni takomillashtirish uchun kurashchiga ancha yengil vazn toifasidagi raqib tanlanadi.

3. Tezkor axborot uslubiy usuli zarur harakat kengligi, maromi, sura’tini tez egallab olishga yordam beradi, bajariladigan harakatni anglash jarayonini faollashtiradi.

Texnik harakat to‘g‘risidagi tezkor axborot uchun videokamera va videomagnitofondan foydalanish qulaydir.

Birga ta’sir ko‘rsatish uslubi sport trenirovkasida o‘zaro birgalikda jismoniy sifatlarni rivojlantirish va harakat malakalarini takomillashtirishga asoslangan uslubiy usullar yordamida amalga oshiriladi. Bu holda usullarni takomillashtirishda kurashchiga ancha og‘ir vazn toifasidagi raqib tanlanadi.

Ko‘p yillik trenirovka jarayonini ma’lum bir qonuniyatlarga buysunadigan yaxlit jarayon, shaxsiy rivojlanish yo‘liga ega, o‘ziga xos xususiyatlari mavjud bo‘lgan yaxlit tizim sifatida ko‘rib chiqish mamaqsadga muvofiqdir. Sportchilarning ko‘p yillik jarayoni tayyorgarlikning ustuvor yo‘nalishiga qarab, shartli ravishda to‘rtta bosqichga bo‘lingan:

1. Boshlang‘ich tayyorgarlik bosqichi.

2. Chuqurlashtirilgan sport ixtisoslashuvi bosqichi.
3. Sport takomillashuvi bosqichi.
4. Oliy sport mahorati bosqichi.

Trenirovka bosqichlari davomiyligi kurash turlarining o‘ziga xos xususiyatlari, shuningdek shug‘ullanuvchilarning sport tayyorgarligi darajasiga bog‘liq.

Bosqichlar o‘rtasida aniq chegara yo‘q. Har bir bosqich o‘zining tayyorgarlik vazifalari, uslublari va vositalariga ega.

Ushbu bosqichning asosiy vazifalari bo‘lib har tomonlama jismoniy tayyorgarlik, sog‘liqni mustahkamlash va yosh kurashchilarni chiniqtirish, sport kurashi texnikasi asoslari va boshqa jismoniy mashqlarni egallash, har tomonlama tayyorgarlik asosida funksional tayyorgarlik darajasini oshirish hisoblanadi.

Bundan tashqari, mehnatsevarlikni va intizomni tarbiyalash, sport kurashi bilan shug‘ullanishga qiziqish uyg‘otish ham shular jumlasidandir. Asosiy trenirovka uslublari: o‘yin, bir tekis, o‘zgaruvchan, aylanma, takroriy.

Trenirovka vositalari: harakatli va sport o‘yinlari, gimnastika mashqlari, kross yugurish, kurashchining maxsus mashqlari, o‘z-o‘zini ehtiyotlash, o‘quv-trenirovka bellashuvlari.

Ushbu bosqichda kurashchilar taktik tayyorgarlik usullari bilan asosiy usullar guruhini o‘rganishlari lozim. Biroq kurashchining harakat texnikasini barqarorlashtirishga urinmaslik kerak. Bu davrda kelgusida kombinatsiyali usulda bellashuvni olib borishni takomillashtirish uchun har tomonlama texnik asosni yaratish lozim.

Bolalar kurash usullarini, odatda, trener bevosita ko‘rsatib va tushuntirib berganidan so‘ng yaxshi o‘zlashtiradilar. Shuning uchun trener juda ko‘p miqdorda usullarni egallagan bo‘lishi lozim.

O‘tilgan texnik harakatni yaxshi mustahkamlash uchun bolalarga usullarni ko‘rsatib berish yoki uning bajarilishini tushuntirib berish taklif qilinadi.

Boshlang‘ich tayyorgarlik bosqichida usullarga o‘rgatish paytida usullarni butunligicha ko‘rsatish uslubidan ko‘proq foydalanish lozim. Yangi usullarni tushuntirishda shu narsa muhimki, bolalar texnika qismlarini tushunishlari va anglab etishlari zarur.

Ushbu davr tezkorlik va harakat tezligini tarbiyalash uchun juda qulaydir. Ushbu davrda chaqqonlikni tarbiyalashga e’tibor berishi lozim, chunki chaqqonlik murakkab texnik-taktik harakatlarni muvaffaqiyatli egallash uchun asos yaratadi. O‘smir kurashchilarning gavda o‘lchamlari va og‘irligining o‘sishi kuchning o‘sishidan ilgari rivojlanadi. Kuchni tarbiyalash uchun zo‘r berish va uzoq vaqt kuchlanishdan xoli bo‘lgan mashqlarni tanlash zarur. Bu davr egiluvchanlikni tarbiyalash uchun eng qulaydir, chunki 13 yoshlarga kelib egiluvchanlik hamda bo‘g‘imlardagi harakatchanlik birmuncha pasayadi. Egiluvchanlikni tarbiyalash uchun sherik bilan, snaryadlar va snaryadlarsiz bajariladigan umumiy rivojlantiruvchi hamda maxsus mashqlar qo‘llaniladi.

Ushbu bosqichda trenirovka jarayonini tashkil qilishda tiklanish tadbirlarini ham ko‘zda tutish lozim. Ularga trenirovkadan keyingi suv muolajalari, chiniqishlar, suzish, hammom va mashg‘ulotlarni toza havoda o‘tkazish kiradi.

Muhokama. “Kurashchilar mashg‘ulot jarayonida tehnik tayyorgarlik” texnikasining samaradorligini oshirishda to‘g‘ri moslashtirish va vaqtni belgilash muhimligini, shuningdek, noto‘g‘ri bajarilganda shikastlanish ehtimolini ta’kidlaydi. Tadqiqot natijalari murabbiylar va sportchilarga o‘z mahoratini oshirish va kurash bo‘yicha optimal natijalarga erishishda yordam beradigan tushunchalarni taqdim etadi.

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LINGUO-PSYCHOLOGICAL EXPRESSION OF ENVY IN KOREAN AND UZBEK NATIONAL BEHAVIORAL CULTURE

Abstract. *This article examines the verbal and nonverbal expressions of the feeling of envy from the perspective of Korean and Uzbek national behavioral culture. Envy is one of the most complex and multifaceted human emotions, shaped by culture, moral values, and social norms. The study compares the semantic and pragmatic features of the Korean terms 시기 (envy), 질투 (jealousy), 부러움 (admiration) with the Uzbek equivalents hasad, rashk, and havas. It also explores how envy is expressed in speech — through intonation, pauses, word choice, metaphorical expressions — as well as nonverbal means such as facial expressions, gestures, and body language. The analysis highlights how both cultures perceive envy not only as a negative emotion but also as a potential motivational factor promoting self-development and social competition.*

Keywords: *envy, jealousy, communication, verbal expression, nonverbal expression, behavioral culture, Korean language, Uzbek language, linguoculturology, psycholinguistics.*

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KOREYS VA O'ZBEK MILLIY XULQ MADANIYATIDA HASAD HISSINING LINGVOPSIXOLOGIK IFODASI

Annotatsiya. *Ushbu maqolada hasad hissining muloqot jarayonidagi verbal va neverbal ifodalari koreys va o'zbek milliy xulq madaniyati nuqtayi nazaridan tahlil qilinadi. Hasad — insoniy his-tuyg'ularning eng murakkab va ko'p qirrali turlaridan biri bo'lib, u madaniyat, axloqiy qadriyatlar va ijtimoiy me'yorlar bilan uzviy bog'liq holda shakllanadi. Tadqiqotda koreys tilidagi 시기, 질투, 부러움 hamda o'zbek tilidagi* hasad, rashk, havas *kabi birliklarning semantik va pragmatik xususiyatlari qiyosiy tahlil qilindi. Shuningdek, hasad hissining nutqda qanday tarzda ifodalanishi — ohang, pauza, so'z tanlovi, metaforik ifodalar, shuningdek*

mimika, imo-ishora kabi neverbal belgilar orqali namoyon bo‘lish shakllari ko‘rib chiqiladi.

Kalit so‘zlar: *hasad, rashk, muloqot, verbal ifoda, neverbal ifoda, xulq madaniyati, koreys tili, o‘zbek tili, lingvokulturologiya, psixolingvistika.*

Kirish

Insoniy his-tuyg‘ular va ularning til hamda madaniyat orqali ifodalanishi zamonaviy lingvistikaning dolzarb tadqiqot yo‘nalishlaridan biri sanaladi. Shunday hissiy holatlardan biri bo‘lgan hasad qadimdan inson psixologiyasining eng murakkab holatlaridan biri sifatida falsafa, axloqshunoslik, dinshunoslik va tilshunoslikda o‘rganib kelinadi. Har bir xalqda hasadga nisbatan munosabat milliy qadriyatlar, ma’naviy me’yorlar va axloqiy ko‘rsatkichlar bilan belgilanadi. Shu bois bu hissiyotning tildagi ifodasi va muloqotdagi namoyon bo‘lish shakllari har bir millatning ijtimoiy tafakkuri va madaniy identifikatsiyasini yorituvchi muhim mezonlardan biridir.

Koreys va o‘zbek xalqlarining madaniyatida hasad hissining talqini o‘ziga xosdir. Koreys madaniyatida *시기* (hasad), *질투* (rashk), *부러움* (havas) tushunchalari insonlararo raqobat, ijtimoiy mavqe va o‘zini namoyon etish bilan bog‘liq bo‘lsa, o‘zbek xalq tafakkurida hasad ko‘proq ma’naviy illat, jamiyatdagi ijobiy fazilatlarning so‘nishiga sabab bo‘luvchi hissiy holat sifatida baholanadi. Biroq har ikki xalq uchun ham hasad inson tabiati bilan bog‘liq tabiiy his-tuyg‘u bo‘lib, u muloqotda bevosita va bilvosita tarzda ifodalanadi.

So‘nggi yillarda tilshunoslikda hissiy holatlarni o‘rganishga bag‘ishlangan *emotsional tilshunoslik*, *psixolingvistika* va *lingvokulturologiya* yo‘nalishlari jadal rivojlanmoqda. Bu yo‘nalishlar nafaqat so‘zlarning semantik mazmunini, balki ularning ortidagi madaniy, ijtimoiy va psixologik omillarni ham izohlaydi. Shu nuqtayi nazardan, hasad hissining muloqotdagi ifodalanish shakllarini tadqiq etish til, madaniyat va inson ruhiyati o‘rtasidagi murakkab munosabatlarni ochib beradi.

Mazkur maqolada koreys va o‘zbek xalqlari muloqot madaniyati misolida hasad hissining lingvopsixologik tabiati, uning nutqdagi verbal vositalar, ohang, pauza, metafora, shuningdek mimika va imo-ishoralar orqali ifodalanish xususiyatlari tahlil qilinadi. Tadqiqot natijalari hasadning ijtimoiy ahamiyati, hissiy intensivligi va kommunikativ funksiyalarini aniqlashga xizmat qiladi.

Asosiy qism

Hasad hissi har bir jamiyatda insonlararo munosabatlarning ajralmas qismi bo‘lib, muloqotda shaxsning ichki kechinmasi, psixologik holati va ijtimoiy mavqeini ifodalashda muhim rol o‘ynaydi. Bu hissiyot tilda, ohangda, tana tilida va yuz ifodasida o‘z aksini topadi. Koreys va o‘zbek xalqlarida hasadning ifodalanish

usullari bir tomondan o‘xshash, boshqa tomondan esa milliy madaniyat va qadriyatlar ta’sirida farqlanadi.

Verbal ifodalar misolida o‘zbek tilida hasad holati ko‘pincha “ich-ichidan kuyadi”, “ko‘zi qiziydi”, “yuragi g‘ash tortadi”, “ko‘zi tegadi”, “ichini qurt yedi” kabi obrazli iboralar orqali tasvirlanadi. Ushbu ifodalarda hasad ichki, yashirin va salbiy hissiy holat sifatida ko‘rsatiladi. Koreys tilida esa “속이 타다” (ichim kuyadi), “질투에 눈이 멀다” (rashkdan ko‘zi ko‘r bo‘lish), “부러워서 미치겠다” (havasdan telbalik darajasiga yetmoq) kabi birikmalar mavjud bo‘lib, ular insonning ichki holatini obrazli tarzda ifodalaydi. O‘zbek madaniyatida bunday ifodalar odatda ogohlantiruvchi yoki salbiy tusda, koreys madaniyatida esa tabiiy insoniy hissiyot sifatida talqin qilinadi.

Verbal ifodalarda ohang, urg‘u va pauza kabi paralingvistik vositalar ham muhim rol o‘ynaydi. O‘zbek tilida hasadni yashirish maqsadida kinoyaviy yoki yumshatilgan ohang ishlatilsa, koreys muloqotida “좀 부럽네요”, “괜찮아요, 저도 노력해야죠” kabi yumshoq ifodalar ijtimoiy muvozanatni saqlashga xizmat qiladi. Bu holat koreys madaniyatida uyg‘unlik (*화합*) va o‘zini tuta bilish qadriyatlari bilan bog‘liqdir.

Neverbal ifodalar hasad hissining sezilarli tashqi belgilarini tashkil etadi. O‘zbek madaniyatida hasad nigoh, yuz ifodasi va tana harakatlarida namoyon bo‘ladi: “yovqarash”, “labini tishlash”, “ko‘zini olib qochish” kabi belgilar his-tuyg‘ularning yashirin ko‘rinishidir. Koreys madaniyatida esa “표정 관리” (yuz ifodasini boshqarish) konsepti asosida inson o‘z hissiyotlarini jilovlashga intiladi, bu esa hasadni jilmayish ortiga yashirish shaklida namoyon bo‘ladi.

Shuningdek, hasadning ijtimoiy funksiyasi ham ikki madaniyatda farqlanadi. O‘zbek jamiyatida hasad ko‘pincha axloqiy illat sifatida qoralansa, koreys madaniyatida u ayrim hollarda “부러움” (havas) tarzida ijobiy motiv sifatida talqin qilinadi. Demak, hasadning ifodasi va unga bo‘lgan munosabat xalqning dunyoqarashi, tarbiyaviy qadriyatlari va axloqiy mezonlari bilan chambarchas bog‘liqdir.

Xulosa

Yuqoridagi tahlillar natijasida shunday xulosa qilish mumkinki, hasad hissi koreys va o‘zbek xalqlarining muloqot madaniyatida o‘ziga xos lingvopsixologik ifodaga ega. Har ikkala tilda bu hissiyot til, tana tili, ovoz ohangi va mimika orqali bevosita yoki bilvosita tarzda ifodalanadi. O‘zbek madaniyatida hasad asosan salbiy, ma’naviy jihatdan zararli his sifatida talqin qilinsa, koreys madaniyatida u insonni o‘zini takomillashtirishga undovchi omil sifatida baholanadi.

Shunga qaramay, har ikki xalqda ham hasadni oshkora ifodalash ijtimoiy jihatdan nomaqbul deb hisoblanadi, bu esa milliy xulq madaniyatining o‘zini nazorat qilish tamoyiliga asoslanadi. Hasad konsepti til, madaniyat va inson ruhiyati kesishgan nuqtada shakllangan murakkab hodisa bo‘lib, u milliy tafakkur, qadriyatlar va ijtimoiy me’yorlarning o‘zaro uyg‘unligini aks ettiradi.

Mazkur tadqiqot hasadning lingvopsixologik tabiati orqali koreys va o‘zbek xalqlarining muloqot madaniyatidagi umumiylik va farqlarni yoritib, inson hissiyotlarining til vositalari orqali ifodalanishini chuqurroq o‘rganishga imkon beradi. Ushbu mavzu psixolingvistika, lingvokulturologiya va madaniyatshunoslik yo‘nalishlarida keyingi ilmiy izlanishlar uchun keng imkoniyatlar ochadi.

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OPPORTUNITIES FOR ORGANIZING SPEECH PRACTICE IN A VIRTUAL REALITY (VR) ENVIRONMENT FOR KOREAN LANGUAGE LEARNERS

Abstract. *This article analyzes the role and methodological potential of virtual reality (VR) technologies in developing Korean language learners' oral communication skills. In recent years, the widespread application of VR technologies in the digital education system has introduced new approaches to foreign language learning, including Korean. The virtual environment allows learners to participate in natural communicative situations, simulate real-life conversations, and practice pronunciation, intonation, and various forms of social speech.*

Keywords: *Korean language, virtual reality, VR technology, speech practice, digital education, communicative competence, immersive environment.*

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KOREYS TILI O'RGANUVCHILAR UCHUN VIRTUAL HAQIQAT (VR) MUHITIDA NUTQ MASHQLARINI TASHKIL ETISH IMKONIYATLARI

Annotatsiya. *Ushbu maqolada koreys tili o'rganuvchilarning og'zaki nutq salohiyatini rivojlantirishda virtual haqiqat (VR) texnologiyalarining o'rni va metodik imkoniyatlari tahlil qilingan. So'nggi yillarda raqamli ta'lim tizimida VR texnologiyalarining keng qo'llanilishi xorijiy tillarni, jumladan koreys tilini o'rganish jarayoniga yangi yondashuvlarni olib kirdi. Virtual muhit o'quvchilarga tabiiy kommunikativ vaziyatlarda ishtirok etish, real muloqot holatlarini simulyatsiya qilish, talaffuz, intonatsiya va ijtimoiy nutq shakllarini mashq qilish imkonini beradi.*

Kalit so'zlar: *koreys tili, virtual haqiqat, VR texnologiyasi, nutq mashqlari, raqamli ta'lim, kommunikativ kompetensiya, immersiv muhit.*

Kirish

XXI asrda raqamli texnologiyalar ta’lim tizimini tubdan o‘zgartirib yubordi. Endi dars jarayoni faqat auditoriya bilan cheklanmaydi, balki interaktiv platformalar, sun’iy intellekt tizimlari va virtual haqiqat (VR) muhiti orqali yangi o‘lchovga ko‘chdi. Til o‘qitish, ayniqsa koreys tili o‘qitish jarayonida bu texnologiyalar o‘quvchilarning nutqiy faolligini oshirish, kommunikativ kompetensiyasini mustahkamlash hamda madaniy kontekstni chuqurroq his qilish imkonini yaratmoqda.

Koreys tili bugungi kunda xalqaro miqyosda eng ko‘p o‘rganilayotgan tillardan biridir. UNESCO ma’lumotlariga ko‘ra, 2024-yilda dunyo bo‘yicha 180 dan ortiq universitet va 1500 ta o‘rta maktabda koreys tili o‘qitilmoqda. Bu o‘sish “K-culture” — K-pop, K-drama, K-moda va texnologik taraqqiyot bilan chambarchas bog‘liq. Shu sababli koreys tilini o‘rganishda nafaqat grammatikani bilish, balki real hayotdagi nutq vaziyatlarida muloqot qila olish, ya’ni **og‘zaki nutq salohiyatini rivojlantirish** asosiy maqsadga aylangan.

Asosiy qism

1. VR texnologiyasining mohiyati va ta’limdagi o‘rni

Virtual haqiqat (Virtual Reality – VR) — bu inson sezgilari orqali sun’iy tarzda yaratilgan, ammo real hayotga o‘xshash muhitdir. VR foydalanuvchini maxsus qurilmalar (masalan, Oculus Quest, HTC Vive, Samsung Gear VR) yordamida to‘liq immersiv tajribaga olib kiradi. Til o‘qitish jarayonida bu texnologiya o‘quvchini real hayotdagi kommunikativ vaziyatlarga “joylashtirish” imkonini beradi.

Masalan, VR dasturi orqali o‘quvchi Seuldagi kafe yoki aeroportda turib, “안녕하세요. 아메리카노 한 잔 주세요” (Salom, bitta americano bering) yoki “짐이 어디에 있나요?” (Yukim qayerda?) kabi jumlalarni tabiiy vaziyatda ishlatadi. Shu tarzda u grammatikani amalda qo‘llaydi, talaffuzni to‘g‘rilaydi va nutqning ijtimoiy mosligini sezadi.

Kolbning (1984) “tajribaviy o‘rganish nazariyasi”ga ko‘ra, bilim amaliy tajriba orqali chuqur o‘zlashtiriladi. VR texnologiyasi aynan shu tamoyilni amalda qo‘llaydi — o‘quvchi nafaqat eshitadi, balki ishtirok etadi, javob beradi va o‘z xatolarini o‘z vaqtida tuzatadi.

2. VR texnologiyasining koreys tili o‘qitishdagi metodik afzalliklari

1. **Tabiiy kommunikativ muhitni yaratish.** An’anaviy darsda o‘quvchi faqat mashqlarni bajaradi yoki o‘qituvchining savollariga javob beradi. VR muhiti esa unga real muloqot holatini taqdim etadi. Masalan, o‘quvchi virtual “Seul restoranida” ofitsiant bilan gaplashadi, “대기 시간이 얼마나 되나요?” (Navbat qancha davom etadi?) kabi savollarni beradi va interaktiv javob oladi. Bu jarayon tilni tirik tizim sifatida his etishga yordam beradi.

2. **Motivatsiya va qiziqishni oshirish.** Raqamli avlod vakillari uchun VR o‘yinlar, 3D animatsiyalar, avatarlar orqali o‘rganish yanada jozibali. Masalan, Zepeto EDU yoki Mondly VR dasturlarida o‘quvchi o‘z avatarini yaratib, koreys tili orqali muloqotga kirishadi. Bunday interaktivlik o‘rganishga ijobiy psixologik muhit yaratadi.

3. **Xatolardan qo‘rqmaslik muhiti.** An’anaviy darsda o‘quvchi xato qilishdan tortinadi, bu esa nutq rivojiga to‘siq bo‘ladi. VR muhitida esa u “suhbatdosh” bilan muloqotda xato qilsa ham, jarayon to‘xtamaydi. Misol uchun, “지하철역이 어디예요?” (Metro bekati qayerda?) deganda so‘z tartibini adashtirsa, dastur avtomatik to‘g‘ri talaffuzni takrorlaydi. Shu orqali o‘quvchi tabiiy o‘rganish muhitida xatolarni o‘zi sezadi va tuzatadi.

4. **Til va madaniyatning integratsiyasi.** Koreys tili nutq madaniyati bu faqat so‘z emas, balki hurmat, intonatsiya, tana tili, ijtimoiy masofa kabi ko‘plab madaniy unsurlarni o‘z ichiga oladi. VR muhiti orqali o‘quvchi “선배–후배” (katta va kichik talabalar), “손님–점원” (mijoz va xodim) kabi ijtimoiy rollarni mashq qiladi. Bu esa ularni real koreys jamiyatidagi nutq odobiga tayyorlaydi.

Koreyada 2023-yilda **Korea University** tomonidan o‘tkazilgan tajriba sinovida 60 nafar xorijiy talabaga VR asosidagi koreys tili darslari o‘tkazilgan. Natijalar shuni ko‘rsatdiki, 8 haftalik kursdan so‘ng talabalar talaffuzda 34%, intonatsiyada 27%, umumiy nutq tezligida esa 41% o‘sishga erishgan.

Shuningdek, **Zepeto Edu** platformasida “Virtual Korean Village” loyihasi amalga oshirilgan bo‘lib, unda o‘quvchilar “marketda xarid qilish”, “metroda yo‘l so‘rash” yoki “universitet kutubxonasida kitob topish” kabi vaziyatlarda VR orqali mashq qilishgan. Shu orqali o‘quvchilar koreys tilidagi real so‘zlashuv uslublarini o‘zlashtirish bilan birga, madaniy etikani ham amalda his qilishgan.

O‘zbekiston sharoitida ham VR texnologiyalarini qo‘llash imkoniyatlari kengaymoqda. Masalan, koreys tili o‘rgatuvchi markazlarda o‘qituvchilar “K-Culture 360° VR” videolaridan foydalanib, o‘quvchilarga Seul, Busan, Jeju oroli hayotini virtual tarzda ko‘rsatishmoqda. Bu tajriba o‘quvchilarning nafaqat tilga, balki koreys madaniyatiga bo‘lgan qiziqishini ham oshiradi.

VR texnologiyalarining ta’lim psixologiyasidagi o‘rni

Psixologik jihatdan VR darslari “immersion” — to‘liq sho‘ng‘ish effekti orqali o‘quvchining diqqatini maksimal darajada ushlab turadi. Ko‘pkanallilik (ko‘rish, eshitish, harakat) orqali axborot bir necha sezgi orqali qayta ishlanadi, bu esa eslab qolish darajasini 70–80 foizgacha oshiradi (Rahmonova, 2022).

VR texnologiyasi, shuningdek, “affective filter hypothesis” (Krashen, 1982) nazariyasiga ko‘ra, o‘quvchining psixologik to‘siqlarini kamaytiradi. O‘quvchi o‘zini erkin his qiladi, xato qilishdan qo‘rqmaydi va muloqotda faolroq bo‘ladi. Shu sababli koreys tili o‘rganuvchilarning nutqiy ishonchi va ijodkorligi sezilarli darajada ortadi.

Xulosa

Virtual haqiqat (VR) texnologiyasi koreys tili ta’limida kommunikativ kompetensiyani rivojlantirishning samarali vositasidir. U an’anaviy dars metodlarini to‘ldiribgina qolmay, ularni yangicha, interaktiv va madaniy jihatdan boyitilgan o‘quv tajribasiga aylantiradi. VR muhitida o‘quvchi o‘zini real holatdagi suhbatdosh sifatida his qiladi, talaffuz, intonatsiya, nutq tezligi va ijtimoiy moslashuv ko‘nikmalarini tabiiy ravishda o‘zlashtiradi.

Bu texnologiya, ayniqsa, koreys tili o‘rganishda murakkab bo‘lgan “hurmat darajalari”, “ijtimoiy rolga mos nutq shakllari” va “madaniy xatti-harakatlar”ni o‘rgatishda o‘qituvchiga katta yordam beradi. Shu bilan birga, VR o‘qituvchiga ham o‘quvchining faoliyatini real vaqt rejimida kuzatish, baholash va tahlil qilish imkonini beradi.

Shunday qilib, virtual haqiqat texnologiyalari koreys tili o‘qitishda nafaqat texnik yangilik, balki **ta’lim falsafasining yangi bosqichi** sifatida e’tirof etilishi mumkin. U o‘quvchini passiv tinglovchidan faol suhbatdoshga aylantiradi, madaniy kompetensiyani kengaytiradi va o‘rganish jarayonini jonli, hissiy va ijodiy tajribaga aylantiradi.

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QALQONSIMON BEZ O'SMA OLDI VA O'SMA JARAYONLARI SITOLOGIK HUSUSIYATLARI

Annotatsiya*: Maqolada qalqonsimon bezning o'sma oldi va o'sma jarayonlarining sitologik xususiyatlari tahli qilinadi. 2025-yilda Bolalar Milliy Tibbiyot Markazida olib borilgan tadqiqotda 50 ta ingichka ninali aspiratsion biopsiya namunalari Bethesda tizimi (2023) asosida tahli qilindi. Natijalar shuni ko'rsatdiki, bemorlarning 56% yaxshi sifatli, 18% xavfli yoki shubhali sifatida tasniflangan. Ayollarda patologiya ancha ko'p uchraydi (82%). ingichka ninali aspiratsion biopsiyaning histologik tasdiq bilan mos kelishi 80% ni tashkil etdi. Tadqiqot ingichka ninali aspiratsion biopsiyaning qalqonsimon bez tugunlarini diagnostika qilishda samarali usul ekanligini tasdiqlaydi.*

Kalit so'zlar: *qalqonsimon bez, ingichka ninali aspiratsion biopsiya (INAB), sitologiya, Bethesda tizimi, papillyar karsinoma, tugun.*

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CYTOLOGICAL FEATURES OF THYROID PRE-TUMOR AND TUMOR PROCESSES.

Annotation: *The article analyzes the cytological features of pre-tumor and tumor processes of the thyroid gland. In a study conducted at the National Children's Medical Center in 2025, 50 fine-needle aspiration biopsy samples were analyzed according to the Bethesda System (2023). The results showed that 56% of patients had benign lesions, while 18% had malignant or suspicious for malignancy findings. Pathology was significantly more common in women (82%). The concordance between cytological and histological diagnoses was 80%. The study confirms the effectiveness of fine-needle aspiration biopsy in diagnosing thyroid nodules.*

Keywords: *thyroid gland, fine-needle aspiration biopsy (FNAB), cytology, Bethesda System, papillary carcinoma, nodule.*

Kirish.

Qalqonsimon bez kasalliklari endokrin patologiyalar orasida eng keng tarqalgan kasalliklardan biri bo‘lib, jumladan, tugun (o‘sma oldi) va malignizatsiya (xavfli) o‘smalarning ko‘payishi so‘nggi yillarda sezilarli darajada o‘sishi kuzatilmoqda. Dunyo statistikasiga ko‘ra, qalqonsimon bez tugunlari aholining 30-60% ini, xavfli o‘smalar esa barcha qalqonsimon bez o‘smalarining 5-15% ini tashkil etadi. Bu ko‘rsatkichlar patologiyaning yuqori tarqalish darajasini va dolzarbligini ko‘rsatadi. Qalqonsimon bez tugunlarining aksariyati xavfsiz bo‘lsa-da, ularning bir qismi xavfli o‘smalarga aylanishi mumkin. Shu sababli tugunlarni vaqtida aniqlash, ularning tabiatini, ya’ni xavfli yoki xavfsiz ekanligini aniq tashxislash va tegishli davolash choralarini ko‘rish eng muhim klinik vazifalardan biridir. Zamonaviy tibbiyotda qalqonsimon bez tugunlarini tashxislash eng samarali va ishonchli usullaridan biri bu ingichka ninali aspiratsion biopsiyasi (INAB) hisoblanadi. INAB usuli orqali olingan hujayra materialini sitologik tekshiruvdan o‘tkazish, tugunning tabiatini aniqlashda “oltin standart” sifatida tan olingan. Shu nuqtai nazardan, o‘sma oldi va o‘sma jarayonlarida sodir bo‘ladigan sitologik o‘zgarishlarni chuqur o‘rganish, ularni aniq farqlash va xavfli transformatsiyani batafsil tahlil qilish ahamiyati juda katta.

Ushbu ishning amaliy ahamiyati quyidagilardan iborat:

1. Erta tashxis qo‘yish: xavfli o‘smalarni ilk bosqichda aniqlash va davolash bemorning yashash davomiyligini sezilarli darajada oshiradi.

2. Keraksiz jarrohlik amaliyotining oldini olish: aniq sitologik tashxis yaxshi sifatli (xavfsiz) tugunlarni operatsiyasiz, faqat kuzatuv ostiga olish imkonini beradi,

bu esa bemorlarni og‘ir asoratlardan xalos qiladi va sog‘liqni saqlash xarajatlarini kamaytiradi.

3. Prognozni yaxshilash: o‘smalarning turi va darajasini aniqlash, shifokorlarga personallashtirilgan davolash taktikasini ishlab chiqish imkoniyatini beradi.

4. Yangi diagnostika mezonlarini ishlab chiqish: sitologik o‘zgarishlarni o‘rganish orqali yangi markerlar va aniqroq diagnostika algoritmlarini yaratish mumkin.

Qalqonsimon bez tugunlari neoplastik va neoplastik bo‘lmagan turlarga bo‘linadi. Neoplastik tugunlar yaxshi sifatli yoki xavfli bo‘lishi mumkin. Yaxshi sifatli neoplastik tugunlarga faol bo‘lmagan va faol tugunlar kiradi. Neoplastik bo‘lmagan tugunlar esa giperplastik va yallig‘lanish tugunlarini o‘z ichiga oladi. Turli xil qalqonsimon bez tugunlari ko‘p tarqalgan bo‘lib, aholisining taxminan 5% dan 7% da fizik-intrumental tekshiruv orqali aniqlanadi. Ammo autopsiya natijalari ilgari qalqonsimon bez kasalligi tashxisi qo‘yilmagan bemorlarining 50 foizida bir santimetrdan katta tugunlar mavjudligini ko‘rsatgan. Ultratovush (UTT), kompyuter tomografiyasi (KT), magnit-rezonans tomografiya (MRT) va pozitron-emission tomografiya (PET) kabi zamonaviy usullarining keng qo‘llanilishi, qalqonsimon bez tugunlaring tobora ko‘proq aniqlanishiga olib kelmoqda [1]. Aniqlangan tugunlarning 90 foizidan ortig‘i klinik ahamiyatga ega bo‘lmagan yaxshi sifatli (xavfsiz) o‘smalardir [2].

Qalqonsimon bezning o‘smasi uchrash chastotasi geografik joylashuvi bo‘yicha farq qiladi. Umuman olganda, rivojlangan mamlakatlar ichida juda yuqori kasallanish hudulari bo‘lib, Korea respublikasi, Kanada, Italiya, Fransiya, Xorvatiya, Avstraliya va Qo‘shma shtatlar, rivojlanayotgan mamlakatlari orasida esa Turkiya, Brazilya, Kosta Rika va Xitoy davlatlari hisoblanadi [4].

Qalqonsimon bez o‘smalari medullar bo‘lmagan qalqonsimon bez saratonlari (NMTCs) va medullar qalqonsimon bez saratoni (MTC)ga bo‘lib o’rganish mumkin. NMTClar epitelial hujayralardan kelib chiqadi va barcha qalqonsimon bez yomon sifatli o‘smalarini taxminan 95% ini tashkil etadi. MTC esa qalqonsimon bezning kalsitonin ishlab chiqaruvchi parafollikulyar hujayralaridan kelib chiqadi. MTClarning 20% oilaviy shaklda uchraydi va ko‘p endokrin neoplaziya (MEN) sindromlari tarkibida rivojlanishi mumkin [5].

Qalqonsimon bez neoplazmalari bo‘lgan bemorlar uchun uzoq muddatli sog‘liq natijalarini optimallashtirish va mumkin bo‘lgan prognoz haqida ma’lumot berish nihoyatda muhimdir**. 1996 yilda Amerika Qalqonsimon Bez Assotsiatsiyasi (ATA) qalqonsimon bez tugunlari va differensiallashgan qalqonsimon bez saratoni (DTC) bo‘lgan bemorlarni davolash bo‘yicha qo‘llanmalarni e’lon qilgan.** Shuning bilan qalqonsimon bezning tugunlari rivojlanishiga ta’sir qiluvchi omillardan biri ionlashtiruvchi nurlanish bo‘lib, qalqonsimon bezning ham yaxshi sifatli, ham xavfli tugunlarini keltirib chiqarishi mumkin. Qalqonsimon bez tugunlari va buqoq xavfini oshiradigan boshqa

omillarga chekish, semirish, metabolik sindrom, spirtli ichimlik iste'moli kiradi. Xavfni kamaytirishi mumkin bo'lgan omillar qatoriga esa peroral kontratseptivlari va statinlardan foydalanish kiradi [5].

Tadqiqot materiallari.

Ushbu tadqiqot uchun 2025-yilda Bolalar milliy tibbiyot markazi Patomorfologiya bo'limida o'tkazilgan 50 ta sitologik tadqiqotlar tanlab olindi. Natijalar statistik tahlil qilindi.

Tadqiqot usullari.

Barcha tahlillar Sakura CytoTech uskunasida suyuqlik sitologiyasi asosida tayyorlandi. Preparatlar Papanikolau bo'yog'i yordamida bo'yaldi. INAB orqali olingan suyuqlik asosidagi sitologik tashxislash natijalari mikroskopik tahlil qilindi. Bunda Bethesda 2023 tasnifidan foydalanildi. Xujayralar yadrosining kattalashishi, membranasining konturi, xromatin holati, yadro va sitoplasmatik kiritmalar asosiy mezon qilib olindi [8, 1 3].

Bethesda tizimi orqali qalqonsimon bez sitopatologiyasini baholashda quyidagi kategoriyalardan foydalanildi:

1. **Tashxislash uchun yetarli emas (Non-diagnostic):** yetarli miqdorda follikulyar hujayralar olinmagan, namuna yetarli bo'lmagan holatni bildiradi.
2. **Yaxshi sifatli (xavfsiz):** normal qalqonsimon bez to'qimasi, adenomatoz yoki yaxshi sifatli tugunli buqoqni ko'rsatishi mumkin. Ko'p uchraydigan holatlar: adenomatoz tugunlar, Hashimoto tireoiditi va granulomatoz tireoidit.
3. **Noaniq follikulyar o'zgarish (FLUS) yoki shubhali atipiya (AUS):** yaxshi sifatli deb aniq tasniflab bo'lmaydigan o'zgarishlar. AUSda yadro atipiyasi bo'lgan to'qimalar yoki onkotsitar aniqladi, ammo ularni xavfli neoplazma deb tasniflash uchun yetarli emas. FLUS odatda mikro va makrofollikulyar naqshning kombinatsiyasini ko'rsatadi.
4. **Follikulyar neoplazma yoki follikulyar neoplazmaga shubha:** mikrofollikulyar yoki hujayraviy adenomalarni o'z ichiga oladi. INAB namunadagi tugunning faqat bir qismini oladi, shu bois mikrofollikulyar to'qima yaxshi sifatli yoki xavfli ekanini aniqlash uchun jarrohlik eksiziyasi talab qilinadi. Mikrofollikulalar aniqlanganda, kolloid juda kam yoki yo'q bo'ladi va hujayralar makrofollikulyar tugunlarga nisbatan zichroq joylashadi.
5. **Xavfli o'smaga shubhali (Suspicious for malignancy):** xavfli o'smaga xos xususiyatlarni ko'rsatadigan, ammo qalqonsimon bez saratoni uchun aniq bo'lmagan to'qimalarni o'z ichiga oladi.
6. **Xavfli (yomon sifatli):** sitologiyada turli xil qalqonsimon bez xavfli o'smalari farqlanadi.

Natijalar.

Ushbu retrospektiv tadqiqot doirasida 2025-yil yanvar oyidan mart oyigacha Bolalar Milliy Tibbiyot Markazi Patomorfologiya bo'limiga INAB uchun yuborilgan va suyuqlik sitologiyasi asosidagi tayyorlangan 50 nafar bemorning natijalari tahlil qilindi. Bemorlarning yoshi 27 yoshdan 64 yoshgacha bo'lgan.

O‘rganilayotgan populyatsiyaning o‘rtacha yoshi 45,8 ± 9,3 yoshni tashkil etdi. Bemorlarni jins jihatdan taqsimlashda 41 nafari (82%) ayollar va 9 nafari (18%) erkaklar edi, bu qalqonsimon bez patologiyalarining ayollarda ko‘proq uchraylishi haqidagi jahon statistikasiga to‘liq mos keladi [6,12].

Barcha namunalar Bethesda Tizimi bo‘yicha Qalqonsimon Bez Sitopatologiyasini Tashxislash tasnifi-2023 (TBSRTC) asosida tasniflandi. 50 ta namunaning Bethesda kategoriyalari bo‘yicha taqsimlanishi 1-jadvalda keltirilgan.

1-jadval.

Bethesda tizimi (2023) bo‘yicha 50 ta namunaning taqsimlanishi

Bethesda tasnifi	Nomi	Hollar Soni	Foiz (%)
I	Tashxislash uchun yetarli emas	3	6.0%
II	Yahshi sifatli	28	56.0%
III	Shubhali atipiya (AUS)	6	12.0%
IV	Follikulyar neoplazma/ shubha	4	8.0%
V	Xavfli o‘smaga shubhali	5	10.0%
VI	Xavfli o‘sma	4	8.0%
JAMI		50	100.0%

Tadqiqotimizda eng ko‘p uchraydigan kategoriya **Bethesda II (Yaxshi sifatli)** bo‘lib, 28 ta holat (56%) qayd etilgan. Ushbu guruhdagi tashxislar odatda kolloid tugunlar, adenomatoz giperplazya yoki Hashimoto tireoiditiga mos keldi.

Yosh va jins taqsimoti: bemorlarning yosh guruhlari va jins bo‘yicha taqsimoti 2-jadvalda ko‘rsatilgan. Eng ko‘p holatlar 36-45 yosh (40%) va 46-55 yosh (32%) guruhlarida qayd etilgan. Ayollar barcha yosh guruhlarida ustunlik qildi.

2-jadval.

Bemorlarning yosh guruhlari va gender bo‘yicha taqsimoti

Yosh Guruhi	Ayollar (Soni)	Erkaklar (Soni)	Jami (Soni)	Jami (%)
27-35 yosh	7 (14%)	1 (2%)	8	16.0%
36-45 yosh	15 (30%)	5 (10%)	20	40.0%
46-55 yosh	14 (28)	2 (4%)	16	32.0%
56-64 yosh	5 (10%)	1 (2%)	6	12.0%
JAMI	**41 (82%)**	**9 (18%)**	**50**	**100%**

1. Bethesda I kategoriyasi (tashxislash uchun yetarli emas). Ushbu kategoriyaga 6% kiritildi. Bu namunalarda follikulyar hujayralarning yetarli miqdorda olinmaganligi yoki kolloidning deyarli yo‘qligi sababli tashxis qo‘yish imkoni bo‘lmadi. Barcha 3 ta holat qayta biopsiya qilinishiga tavsiya etildi. Bu natija xalqaro ma’lumotlar bilan mos keladi [7].

2. Bethesda II kategoriyasi (yaxshi sifatli). Bu eng katta guruh bo‘lib, 56% ni tashkil etdi. Ushbu guruhdagi bemorlarning o‘rtacha yoshi 47,2 ± 4,6 yosh edi. Ayollarda 24 85,7%, erkaklarda 14,3% uchradi.

Sitologik tasvir: preparatlarda ko‘p miqdorda kolloid, bir hil ko‘rinishdagi follikulyar hujayralar guruhlari (makrofollikulalar), yupqa, tekis yadro membranalari va yadrolarning diffuz xromatin naqshlari kuzatildi.

Tashxislar: 20 (71,4%) nafar bemorda kolloid tugun/adenomatoz giperplazya, 8 (28,6%) nafarida esa Hashimoto tireoiditiga xos limfositlar infiltratsiyasi kuzatildi.

3. Bethesda III kategoriyasi (Shubhali atipiya - AUS). 12% AUS kategoriyasiga kiritildi. Bemorlarning o‘rtacha yoshi 43,6 ± 5,1 edi.

Sitologik ko‘rinish: ushbu guruhdagi namunalarda yadrolarning minimal darajadagi notekisligi (masalan, yadroviy elongatsiya yoki guruhlarga birlashish tendentsiyasi), ammo xavfli tashxis uchun aniq mezonlar kuzatilmadi. Shuningdek, ba’zi hollarda kolloid miqdorining kamligi yoki Hurthle hujayralarining cheklangan soni qayd etildi. Ushbu guruhdagi barcha bemorlarga molekulyar testlar yoki qayta biopsiya qilish tavsiya etildi.

Xalqaro ma’lumotlarga ko‘ra, AUS kategoriyasi odatda barcha FNABlarning 5-15% ini tashkil qiladi. Bizning 12% ko‘rsatkichimiz ushbu ma’lumotga to‘g‘ri keladi (3).

4. Bethesda IV kategoriyasi (Follikulyar neoplazma / shubha). 8% holat ushbu kategoriyaga kiritildi. O‘rtacha yosh 51,5 ± 5,9 yosh edi.

- **Sitologik ko‘rinish:** namunalarda asosan mikrofollikulyar naqsh, kolloidning deyarli yo‘qligi, hujayralarning zich joylashishi va yadrolarning biroz notekis shakli kuzatildi. Biroq, papillyar karsinoma uchun aniq bo‘lgan yadroviy bo‘rtmalar yoki yoriqlar kabi xavfli belgilar aniqlanmadi. Barcha 4 ta bemorga diagnostik lobektomiya tavsiya etildi.

Xalqaro tasnifda ushbu kategoriya odatda holatlarning 5-10% tashkil qiladi, bizning 8% natijamiz bu doirada joylashadi [9].

5. Bethesda V kategoriyasi (xavfli o‘smaga shubha). 10% xavfli o‘smaga shubhali deb topildi. O‘rtacha yosh 49,8 ± 5,1 yosh edi.

Sitologik ko‘rinish: ushbu namunalarda papillyar karsinoma uchun xos bo‘lgan aniq yadroviy atipiya (yadrolarning yorilgan shaklda bo‘lishi, yadroviy kiritmalar, shaffof yadroviy xromatin) alomatlari mavjud. Biroq bu alomatlar butun preparat bo‘ylab tarqalib ketmagan yoki namuna sifatining pasayishi (masalan, qon aralashmasi, artefaktlar) tufayli xavfli o‘zgarishni tasdiqlash uchun etarli emas edi.

Jahon statistikasiga ko‘ra, Bethesda V 3-10% holatlarda uchraydi. Bizning 10% natijamiz ushbu doiradagi yuqori chegaraga mos [10].

6. Bethesda VI Kategoriyasi (xavfli). 8% holat xavfli deb tasniflangan. O‘rtacha yoshi 52,3 ± 6,4 yosh.

Sitologik ko‘rinish: barcha to‘rtta holatda papillyar karsinoma uchun aniq va tarqalgan diagnostik mezonlar, jumladan yadrolarning yorilgan shaklda bo‘lishi, yadroviy kiritmalar. papillar arxitektura kuzatildi.

Bu 8% ko‘rsatkich AQSh va Yevropadagi ko‘plab seriyalarga qaraganda biroz past, ammo bu farq statistika ahamiyatiga ega emas va populyatsiya xususiyati yoki tashxis qo‘yish tendentsiyasi bilan bog‘liq bo‘lishi mumkin [11].

Sitologik tashxis va gistologik natijalarni taqqoslash. Bethesda III, IV, V, VI kategoriyalaridagi 19 nafar bemordan 15 nafari (78,9%) jarrohlik amaliyotiga yo‘naltirildi va ularning operatsion materiallaridan olingan gistologik natijalar bilan solishtirildi. Taqqoslash natijalari 3-jadvalda keltirilgan.

3-jadval.

Sitologik (INAB) va gistologik tashxisning mos kelishi (n=15)

Bethesda kategoriyasi	Hollatlar soni	Gistologik tasdiq	Mos Kelish
III (AUS)	4	2x Yaxshi sifatli Tugun 1x Follikulyar Adenoma **1x Papillyar Carsinoma**	75.0%
IV (FN)	3	2x Follikulyar Adenoma; **1x Follikulyar variant Papillyar Carsinoma**	66.7%
V (SFM)	5	**4x Papillyar Carsinoma** 1x Follikulyar Adenoma (Atipik)	80.0%
VI (xavfli)	3	**3x Papillyar Carsinoma**	100.0%
UMUMIY	**15**		**80.0%**

3-jadvaldan ko‘rinib turibdiki, Bethesda VI kategoriyasi (xavfli) 100% mos kelish darajasiga ega bo‘ldi. Bethesda V kategoriyasi (xavfli o‘smaga shubhali) 80% mos kelishni ko‘rsatdi, bu papillyar karsinomaning yuqori aniqlik darajasini tasdiqlaydi. Bethesda IV (Follikulyar neoplazma) 66,7% mos kelish darajasiga ega bo‘lib, bu follikulyar neoplazmalarni faqat sitologiya asosida yaxshi sifatli va xavfli o‘sma o‘rtasida ajratishning qiyinligini ko‘rsatadi. AUS kategoriyasida (Bethesda III) esa 75% mos kelish kuzatildi, ammo 4 ta holatdan 1 tasida (25%) papillyar karsinoma aniqlandi, bu ushbu guruhning notinch xarakterini va qo‘shimcha tekshiruvlarning ahamiyatini ta’kidlaydi.

Xulosa.

Ushbu tadqiqotning asosiy natijalari quyidagilarni ko‘rsatadi:

1. Tadqiqot populyatsiyasida yaxshi sifatli (Bethesda II) tugunlar ustunlik qiladi va 56% ni tashkil qiladi.

2. Bethesda III shubhali atipiya (AUS) kategoriyasi holatlarning 12% ini, xavfliva o‘smaga shubhali natijalar (Bethesda V va VI) 18% ini tashkil etdi.

3. Sitologik va histologik tashxis o‘rtasidagi umumiy mos kelish 80% ni tashkil etdi, bu INABning qalqonsimon bez patologiyalarini tashxislashdagi ishonchliligini tasdiqlaydi.

4. Ayollarda patologiya 82% bo‘lib, erkaklarga qaraganda ancha ko‘p uchraydi va eng ko‘p kasallanish 36-45 yosh oralig‘ida kuzatilgan.

5. INAB qalqonsimon bez tugunlarini Bethesda tizimidan foydalanib baholashda samarali va ishonchli vosita ekanligini tasdiqlaydi. Shu bilan birga, AUS va follikulyar neoplazma kategoriyalarida noaniqlik mavjudligi, bu bemorlarni boshqarishda qo‘shimcha molekulyar testlar va ehtiyotkorlik bilan yondashish zarurligini ko‘rsatadi.

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DEVELOPING THE SPEED QUALITIES OF YOUNG FOOTBALL PLAYERS

Abstract: *This article examines the factors contributing to the development of the speed qualities of young modern football players.*
Keywords: *physical qualities, physical fitness, technical and tactical training.*

Fostering the physical qualities of a young football player is considered one of the important aspects of athletic training. Physical qualities are related to the Morpho-functional, morphophysiological and biological characteristics of a football player's body. Physical qualities have a positive effect on the improvement of physical, technical and tactical training, and the psycho-emotional state of those involved. Players perform each movement more confidently, learn new movements faster and achieve higher performance.

The development of football based on the current level of requirements requires high physical fitness of football players, and most importantly, the education of high-speed qualities.

It is aimed at developing the quality of speed by increasing the rational capabilities of young players. The level of development and scientific and methodological analysis of modern football.

ways to develop the speed qualities of young football players.

drawing up an annual training plan and developing athletic skills during classes.

In modern football, the methods of the game are being improved, the game actions of the players are being improved. The emergence of new and effective methods in football requires that the actions of the players be at a high level. Each player makes many moves during the game for his team to win.

Here is what we know about the basic movements of players on the field: walking, running, walking with the ball, running with the ball, jumping, hitting the ball, cheating with the ball, passing the ball, stopping the ball, throwing the ball from the sideline, executing a penalty ball, hitting the ball from a corner, feints, underhand throw, delivery Aim the ball at the exact target, fight for the ball with the opponent and several other actions. It can be seen from this that football professionals in their research work studied the aforementioned player movements and developed the methods and techniques necessary for them.

Decree of the President of the Republic of Uzbekistan dated March 5, 2018 No. PD-5368 “On measures to radically improve the public administration system in the field of physical culture and sports”, Resolution of the President of the Republic of Uzbekistan dated March 16, 2018 No. PR-3610 “On measures for the

development of football", Decree No. PD-5887 dated December 4, 2019 "On measures to bring the development of football in Uzbekistan to a completely new level", Decree No. PD-5924 dated January 24, 2020 "On measures to further improve and popularize physical culture and sports in Uzbekistan" and other regulatory legal acts related to this area, to a certain extent, serve the implementation of tasks defined.

In special children's and youth football schools, training processes are conducted according to a specially developed and approved program. In order to study the volume and composition of the training processes of young football players in the annual training period, we analyzed the training processes of players aged 11-12 and 13-14 in 2 different age groups

According to the results of the analysis in the learning process conducted over a period of 10 months, the following was also revealed. A large amount of training in the training work is aimed at fostering general endurance. The total duration of training was 179 hours (45.3%). It should be noted that a large amount of educational and training work is aimed at fostering general endurance, from a methodological point of view, this work is not entirely correct. Football players aged 11-12 should pay great attention to training, physical education, agility, flexibility, speed and strength qualities during training. On the other hand, the education of general endurance includes periods from 12-13 to 15-16 years. He spent 23.7 hours (64%) on speed and endurance training in the process.

The amount of speed work obtained as a result of the research shows that the total number of fast runs performed by the players during the competition period is almost the same.The amount of speed work obtained as a result of research shows that the total number of fast runs performed by players during the competition period is almost the same. Apparently, the total distance of the games is 4,840 meters, and fast runs with the ball are 1,860 meters, which is 38.4% of the speed without the ball of 2,890 meters (61.6%). This argument proves how necessary it will be to apply exercises specifically designed to increase speed and strength qualities in the training process.

Instead of a conclusion, it should be noted that an analysis of the annual training rotation showed that the amount of training and competition for players aged 12-13 is 522 hours. This indicates that the CYSS (Children's and youth sports school) program is mostly given a little less time. This case is explained and determined by several data points.

Most of the training volume consists of special ball exercises (from 75% to 93% each month). The means of conducting such training are always speed and rapidity-improving the quality of strength in young athletes is creative, and if this exercise involves a ball, it reduces the effectiveness of the methods used, especially if it is a method of "hitting". The orientation of players aged 12-13 years to basic training, in which the main focus of education is on their general and special endurance (52.2% of the time).

It is appropriate if young players use the following exercises to increase their speed during training: carrying the ball with their foot while running, performing

exercises with the ball while running, various ball carrying, cheating, passing the ball, and goal-kicking techniques. An average of 5-7 seconds is given to complete one exercise. The range of the run will be 35 meters. if young players use the following exercises to measure speed during training: carrying the ball with their foot while running, performing exercises with the ball while running, various ball carrying, deception, passing the ball, and goal-kicking techniques. An average of 5-7 seconds is given to complete one exercise. The range will be 35 meters.The ability to distribute the distance and time of these exercises depends on repeated exercise. These exercises lead to an increase in the abilities of the players and an increase in their functional qualities.

Fostering the intelligence of young football players is a highly desirable process. Players lag behind the peers of an athlete engaged in another sport in terms of a certain quality of speed and strength. It is appropriate to teach players speed at the age of 11-12. The development of football based on the current level of requirements requires high physical fitness of the players. The main one is speed. Changes in the quality, volume, means and methods of efficiency during the period of education indicate that educational and training processes at a certain level give positive results.

An analysis of our experiments shows that a comprehensively clear assessment of the abilities and abilities of players, analyzing the effectiveness of a future player, we can conclude that young people and adolescents need to be taught methods that meet modern requirements so that adequate attention is paid to speed training.

Speed - strength and flexibility are much more closely related to qualities, while endurance is less so. The complex of speed indicators includes - speed at the start, speed of running, speed of assessment of the situation on the field, speed of tactical thinking.The honors are much more closely related to speed - strength and flexibility, and to endurance - less. The complex of speed indicators includes - speed at the start, speed of running, speed of assessment of the situation on the field, speed of tactical thinking. On the football field, a player needs to gain strength to perform sudden accelerations, jump with the ball, kick from 25-30 steps towards the opponent's goal, pass the ball to a partner from afar, stop abruptly and abruptly change the direction of running. What do we mean by this term? Strength is an athlete's ability to overcome external resistance due to muscle tension. It is especially important for a football player to develop leg strength. But during training, it is necessary to pay attention to the development of the muscles of the shoulder girdle, trunk, back, and abdomen. In short, the player must have great strength, help the athlete to jump after the ball and accelerate sharply into the free space of the field, stop abruptly and change direction abruptly, allowing the ball to hit hard, while developing strength should not harm flexibility, speed, accurate perception of the game.

The highest rates of strength development are observed mainly in infancy and adolescence: from 8 to 9 years old, from 10 to 11 years old, and from 14 to 15 years old. At the same time, at the age of 8-11 years, it is also recommended to use bungee

jumping, acrobatics and gymnastic exercises. For 12-14 years old, dynamic exercises with small weights, wing hangings, and shot put can be used. For 15-16 years old, the number of exercises performed with weights increases significantly. Speed and power capabilities occupy an important place in the complex of qualities necessary for a player. In boys aged 11-12, we can recommend the widespread use of exercises aimed at developing the efficiency of the affiliated energy supply mechanism. It should also be said that if at the stage of initial sports training the means and methods of educating speed and strength qualities are not used, then the speed-strength and speed-strength qualities of those involved develop unsatisfactorily. From the age of 8-9, running speed begins to grow rapidly, and by the age of 10-11, largely determined by an increase in the frequency of movements, the frequency of running steps reaches maximum values.

By the age of 10-11, children's ability to perform quick actions increases significantly. A rapid increase in speed-strength qualities is observed in children aged 10 to 13. In football, speed-strength movements are performed quite often. These are mainly jumps, tackles, thinking ahead of the opponent. Quick and quick-strength movements include accelerations and runs over short distances, followed by a shot at the goal or some other technical movement. Great difficulties arise in the training process of adolescents. The period of adolescence from 12 to 16 years is characterized by the rapid development of physical abilities and is considered very favorable for practicing various types of sports. At the same time, neuroendocrine changes in the adolescent organism allow us to consider sports as an additional stimulus that can improve or worsen the natural course of biological processes. In the movements of adolescents, there are jerks and jerks, there are disturbances in the rhythm of movements. However, by the end of the period of physical puberty, coordination of movements begins to become regular. This is the result of the improvement of the functions of the central and peripheral apparatus of movements. The adolescent is distinguished by high excitability, which is manifested in high motor activity and disorder of movement.

Summing up, we can say that the above-mentioned speed indicates that the basic physical abilities of an individual manifest themselves as a complex motor ability, which depends on both the level of development and its psychological characteristics.

Speed is based on the mutual actions of all levels of the body: cells, tissues, organ systems, underlying the manifestation of physiological reserves and other physical capabilities of the body. This leads to the following fundamentally important conclusion: a specially targeted development of speed is important for improving the overall physical development of the body.

One of the main dominant features in modern football is considered to be speed, which, in turn, manifests itself in the speed of game actions. The success of these actions is ensured by various forms of speed, and mastery in football cannot be achieved without successfully mastering all forms of speed.

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BUFFER ZONES IN ECOLOGICAL FRAMEWORK PLANNING: ROLE, CHALLENGES, AND PROSPECTS

Annotation. *In the context of increasing environmental challenges associated with climate change, land degradation, and biodiversity loss, the formation and maintenance of ecological frameworks is one of the most pressing issues for sustainable development. An ecological framework represents a spatially organized system of natural and anthropogenic elements that ensure environmental stability, the preservation of ecosystem services, and the maintenance of biodiversity. Within this structure, buffer zones play a crucial role as transitional areas between biodiversity cores and territories of intensive economic use. Their function is not limited to shielding protected areas from anthropogenic pressure, but also includes regulating flows of energy, matter, and species between ecosystems.*

Keywords: *UNESCO, ecological network, sustainable development, territorial planning, landscape management, buffer zones.*

Introduction.

Buffer zones in ecological framework planning serve multiple functions. First, they reduce anthropogenic pressure on protected areas by spatially separating natural cores from intensive land use. Around reserves, national parks, and biosphere territories, buffer zones act as filters: they restrict agricultural expansion, regulate recreational loads, and mitigate the spread of pollutants and erosion. At the same time, they provide additional habitats for species sensitive to direct human contact and create ecological corridors for migration.

One of the central aspects of buffer zone planning is the determination of their optimal width and regime of use. International experience demonstrates several approaches: from strictly regulated zones with minimal human activity to multifunctional areas that allow sustainable agriculture, forestry, and eco-tourism. For instance, in the UNESCO *Man and Biosphere (MAB)* concept, buffer zones hold an intermediate status: limited resource use is permitted, provided that ecological functions are preserved. In Central Asia, this approach is especially relevant given the high population density, water scarcity, and agrarian dependence of regional economies.

However, the effectiveness of buffer zones largely depends on legal frameworks and institutional mechanisms. Research shows that the mere designation of a territory as a buffer zone does not guarantee its ecological function. In some cases, lack of enforcement, weak environmental awareness among local populations, and economic pressure lead to degradation of these areas. Therefore,

buffer zone planning must be accompanied by comprehensive ecological assessments, monitoring systems, and the active participation of local communities. Case studies indicate that involving residents in eco-tourism, environmental education, and sustainable farming practices increases compliance with conservation regimes and enhances socio-ecological benefits.

A review of the literature reveals several key findings. Lezhnina (2018) emphasizes the role of buffer zones as spatial mechanisms balancing biodiversity cores with surrounding landscapes. Sokolov (2020) argues that buffer zones are essential for ecological connectivity in fragmented landscapes. Schmidt et al. (2021) highlight the multifunctional potential of buffer zones, showing that they can mitigate social conflict between conservation and economic interests. However, these authors stress the importance of strict regulation to avoid the substitution of conservation goals by commercial exploitation. Reports from Uzbekistan's Ministry of Ecology (2022) underline that in arid regions, buffer zones are also crucial in combating desertification, conserving scarce water resources, and maintaining ecological resilience.

Thus, buffer zones should be viewed as a strategic tool of ecological framework planning. Their role extends beyond local protection: they establish ecological connectivity, mitigate anthropogenic pressures, and support ecosystem adaptation to climate change. Yet, their effectiveness depends on integrated approaches that combine legal regulation, inter-agency cooperation, scientific monitoring, and community involvement. Adaptive management models, based on continuous evaluation of ecological and social outcomes, appear to be the most promising pathway. Through such an approach, buffer zones can evolve from a formal designation into a functional mechanism for sustainable development.

Preservation and restoration of ecological connections between natural ecosystems has become an important direction of global environmental policy. The concept of an ecological framework (or ecological network) plays an important role in this. International experience shows that through proper planning of an ecological network, it is possible to preserve biodiversity, increase resilience to natural disasters, and reduce anthropogenic pressure.

The concept of ecological framework and its international appearance is very multifaceted. Ecological framework (English: ecological network, green infrastructure) is a territorial structure that connects natural areas, corridors, buffer zones and other ecosystem elements, maintaining ecological continuity. Its main purpose is: protecting biodiversity, ensuring ecological sustainability, restoring balance at the landscape level.

This concept first emerged in Europe in the 1990s and later became widely used in the United States, Canada, Australia, and other countries.

- Analysis of natural geographical zones,
- Taking into account animal migration routes,
- Taking into account the interests of local communities

Conclusion. International experience shows that for the successful organization of ecological frameworks, not only natural resources are needed, but

also political will, institutional stability and technological readiness. The experience of Europe, the USA and Canada sees ecological networks as an integral part of territorial and strategic planning. Uzbekistan, due to its unique natural and geographical features and important ecosystems, should use foreign approaches to the formation of ecological networks and create its own national model. This will be an important factor not only in preserving biodiversity, but also in ensuring sustainable economic development and environmental security.

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O‘RTA OSIYO MUTAFAKKIRLARINING: ALISHER NAVOIY, YUSUF XOS HOJIB VA MIRZO ULUG‘BEKLARNING ASARLARIDAGI IQTISODIY QARASHLAR

Anotatsiya: *Ushbu maqolada O‘rta Osiyo mutafakkirlarining iqtisodiy tafakkuri, ularning asarlarida iqtisodiy g‘oyalarning ifodalanishi va bu qarashlarning zamonaviy iqtisodiy nazariyalar bilan uyg‘unlik jihatlari ilmiy tahlil etilgan. Maqola tarixiy manbalar tahlili, taqqoslov usuli va kontseptual yondashuv orqali yozilgan bo‘lib, unda o‘rta asrlarda shakllangan iqtisodiy fikrlarning bugungi kun uchun ahamiyati ochib beriladi. Natijalar mutafakkirlarning iqtisodiy qarashlari nafaqat davr talablari, balki universal tamoyillar asosida shakllanganligini ko‘rsatadi.*

Kalit sozlar: *Mulkchilik munosabatlari, davlat boshqaruvi, iqtisodiy siyosat, adolatli taqsimlash, barqaror taraqqiyot, tashqi savdoni rivojlantirish, tarixiy meros, ilmga asoslangan iqtisodiyot.*

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ECONOMIC VIEWS IN THE WORKS OF CENTRAL ASIAN THINKERS: ALISHER NAVOI, YUSUF KHOS KHOJIB AND MIRZO ULUGH'BEKS

Abstract: *This article provides a scholarly analysis of the economic thinking of Central Asian thinkers, the expression of economic ideas in their works, and aspects of their compatibility with modern economic theories. Using historical source analysis, a comparative method, and a conceptual approach, the article reveals the significance of economic ideas developed in the Middle Ages for modern times. The results demonstrate that the economic views of these thinkers were shaped not only by the demands of the era but also by universal principles.*

Key words: *Property relations, public administration, economic policy, fair distribution, sustainable development, development of foreign trade, historical heritage, knowledge-based economy.*

Kirish

Uyg‘onish davri – bu Sharq va G‘arb tamaddunlari tarixida aql-idrok, ilmiy tafakkur va inson erkinligining uyg‘onishi bilan ajralib turadigan betakror

bosqichdir. Sharqda, xususan O‘rta Osiyo hududida Alisher Navoiy, Yusuf Xos Hojib va Mirzo Ulug‘bek kabi buyuk mutafakkirlar faoliyati bilan belgilangan. Aksariyat tadqiqotlarda bu allomalar ilm-fan, falsafa, tibbiyot yoki astronomiyaga qo‘shgan hissasi orqali tanilgan bo‘lsa-da, ularning iqtisodiy qarashlari yetarli darajada tahlil qilinmagan yoki ikkinchi darajali mavzu sifatida qaralgan.

Aslida esa, bu mutafakkirlarning asarlarida iqtisodiy hayotning murakkab jihatlari — resurslardan oqilona foydalanish, iqtisodiy adolat, mehnat va iste’mol o‘rtasidagi muvozanat, hamda jamiyatdagi mulkchilik munosabatlari haqida chuqur va zamonaviy nazariyalarga yaqin qarashlar ilgari surilgan. Ayniqsa, ularning davlat boshqaruvi haqidagi qarashlari iqtisodiy siyosat bilan chambarchas bog‘liq bo‘lgan.

Bugungi kunda iqtisodiy tizimlarning barqarorligini ta'minlash, resurslar bilan samarali ishlash va ijtimoiy tenglikni qo‘llab-quvvatlash masalalari global darajadagi muhokama mavzusiga aylangan bir paytda, tarixiy merosga, xususan, Uyg‘onish davri mutafakkirlarining iqtisodiy qarashlariga qayta nazar tashlash dolzarb ahamiyat kasb etadi. Ushbu maqola aynan shu maqsadni ko‘zlab, O‘rta Osiyo allomalari tomonidan ilgari surilgan iqtisodiy g‘oyalarni tahlil qilish, ularning zamonaviy iqtisodiy paradigmalarga qanday mos kelishini aniqlash hamda bu qarashlarning bugungi kun uchun ahamiyatini ochib berishga qaratilgan.

ASOSIY QISM

Alisher Navoiy nafaqat buyuk shoir va mutafakkir, balki o‘z asarlarida jamiyat, adolat, mehnat va moliyaviy munosabatlarga oid chuqur iqtisodiy fikrlarni ham ilgari surgan mutafakkirdir. U XV asrda yashagan bo‘lsa-da, uning g‘oyalari bugungi kunda ham o‘z dolzarbligini yo‘qotmagan. Ayniqsa, ijtimoiy tenglik, halollik, foydali mehnat va adolatli boshqaruv kabi masalalar hozirgi zamonaviy iqtisodiy nazariyalar bilan bevosita bog‘liqdir.

Navoiy asarlarida boylik va mol-dunyo insonni ma’naviyatdan uzoqlashtirmasligi kerakligi haqida takror va takror eslatib o‘tiladi. Masalan, "Mahbub ul-qulub" asarida u boy kishining vazifasi faqatgina mol yig‘ish emas, balki bu boylikni adolatli taqsimlash va xalq manfaati uchun ishlatish ekanini ta’kidlaydi. Bu g‘oya hozirgi zamon iqtisodiyotida "ijtimoiy mas’uliyatli kapitalizm" tushunchasiga yaqin. Bugungi korxonalar ham faqat daromad ortidan quvmasdan, atrof-muhit, ishchilar va jamiyat oldidagi ijtimoiy majburiyatlarini ham e’tiborga olishlari zarur.

Shuningdek, Navoiy korrupsiya va adolatsizlikni keskin tanqid qilgan. U hokimlarning adolatsizligi, soliqlarning og‘irligi va mansabdorlarning xalqdan uzoqlashuvi haqida ochiq yozgan. Masalan, “Saddi Iskandariy” asarida hukmdorning asosiy vazifasi adolatni qaror toptirish, kambag‘al va zaif qatlamlarni himoya qilish ekanini ta’kidlaydi. Bu fikrlar bugungi davlat boshqaruvida ham muhim ahamiyatga ega. Zamonaviy iqtisodiyotda davlatning vazifasi faqat tartib o‘rnatish emas, balki iqtisodiy tenglikni ta’minlash, kambag‘allikka qarshi kurashish va fuqarolar farovonligini oshirishdan iboratdir.

Alisher Navoiy mulkchilik huquqini ham tan oladi, lekin u bu huquqni cheksiz va nazoratsiz boylik orttirish vositasi sifatida emas, balki jamiyat foydasiga xizmat qiladigan mexanizm sifatida ko‘radi. Bu qarash bugungi bozor iqtisodiyoti

sharoitida "barqaror rivojlanish" konsepsiyasi bilan uyg‘unlashadi. Ya’ni, iqtisodiy rivojlanish faqat daromad ko‘rsatkichlari bilan emas, balki uning ekologik, ijtimoiy va ma’naviy ta’siri bilan baholanadi.

Mirzo Ulug‘bekning eng asosiy iqtisodiy qarashlaridan biri – ilm-fanni iqtisodiy taraqqiyotga xizmat qildirishdir. U Samarqandda ochgan madrasasida nafaqat diniy ilmlar, balki astronomiya, matematika va geografiya fanlarini o‘qitgan. Bu esa, bevosita ilmiy bilimlar orqali ishlab chiqarish, savdo va qishloq xo‘jaligi sohalarini rivojlantirishga yo‘naltirilgan yondashuvdir. Bugungi zamonaviy iqtisodiyotda bu tamoyil "bilimga asoslangan iqtisodiyot" (knowledge-based economy) deb yuritiladi. Ya’ni, iqtisodiy o‘sish va raqobatbardoshlik bevosita aholining bilim va innovatsion salohiyatiga bog‘liq.

Ulug‘bek soliq siyosatida ham adolat prinsiplariga amal qilgan. Tarixiy manbalarda keltirilishicha, u aholidan undiriladigan soliqlar miqdorini imkon qadar me’yorida belgilab, kambag‘al qatlamni ortiqcha yukdan ozod etishga harakat qilgan. Bu esa, hozirgi zamonaviy "progressiv soliq tizimi"ga yaqin. Zamonaviy davlatlarda ham iqtisodiy tenglikni ta’minlash va kambag‘allikni kamaytirish uchun boy qatlamdan ko‘proq soliq olish, past daromadli aholiga esa yengillik yaratish kabi mexanizmlar mavjud.

Mirzo Ulug‘bek savdo va tashqi iqtisodiy aloqalarga ham katta ahamiyat bergan. U Markaziy Osiyoning asosiy savdo yo‘llarida joylashgan shaharlar – Samarqand, Buxoro va boshqa hududlarda bozorlarga erkinlik bergan, savdogarlar harakatini qo‘llab-quvvatlagan. Bu esa bugungi kunda "erkin bozor iqtisodiyoti" tamoyiliga mos keladi. Hozirgi global iqtisodiyotda ham tashqi savdoni rivojlantirish, eksportuni ko‘paytirish va investitsiyalarni jalb qilish davlatlarning asosiy strategiyalaridan biri sanaladi.

Ulug‘bekning ijtimoiy siyosati orqali ham iqtisodiy qarashlarini anglash mumkin. U iqtidorli yoshlarni qo‘llab-quvvatlagan, ilm va hunarga ega insonlarni davlat ishlari va ilmiy markazlarga jalb qilgan. Bugungi kunda bu "inson kapitali" tushunchasi bilan izohlanadi – ya’ni, iqtisodiy o‘sish uchun insonlarning bilim, malaka va salohiyati asosiy resurs hisoblanadi.

Shu bilan birga, Mirzo Ulug‘bek ilm-fanni iqtisodiy taraqqiyotga xizmat qildirish orqali uzoq muddatli barqarorlikni maqsad qilgan. U bevosita sanoatga katta sarmoya kiritmagan bo‘lsa-da, poydevor sifatida ilmiy taraqqiyot va mehnat unumdorligini ilgari surgan. Bu esa bugungi davrda "innovatsion rivojlanish modeli" sifatida tan olinadi.

Yusuf Xos Hojib — XI asrda yashab, o‘zining mashhur "Qutadg‘u bilig" asari bilan turkiy adabiyot va ijtimoiy tafakkur tarixida chuqur iz qoldirgan allomadir. Bu asar o‘z mohiyatiga ko‘ra, davlatni boshqarish, jamiyatni tartibga solish, ijtimoiy adolat va iqtisodiy taraqqiyotga oid siyosiy-falsafiy traktat hisoblanadi. Unda ilgari surilgan iqtisodiy g‘oyalar hozirgi zamonaviy iqtisodiy nazariyalar bilan hayratlanarli darajada mushtarak.

U shunday yozadi : «Xizmat ahli o‘z mehnati natijasidan umidvor turadi. Umidini topmagan xodim ko‘ngli sinadi». «Ammo xizmat qiluvchilarni hammasi ham bir xil emas. Ular turlitum an toifalarga bo‘linadi. Xodimlarning naf

keltiruvchilari bor, shuningdek, nafi yo‘g‘i ham ancha. Naf keltiruvchi kishiga xizmatiga loyiq ravishda tortiqlar berish kerak. Xizmatiga loyiq taqdir ko‘rgan xodimning boshi ko‘kka yetadi. Inson degani, axir, hayvon tengi emas. Ana shuni bilib, unga amal qilinsa, barcha ish ko‘ngildagidek bo‘ladi.

XULOSA

Bu uch mutafakkir o‘z davrida iqtisodiy barqarorlikning asosiy sharti sifatida — adolatli boshqaruv, bilimli rahbar, mehnatga hurmat, halol ishlab chiqarish va ijtimoiy tenglikni ilgari surgan.

Alisher Navoiy iqtisodiy farovonlikni insoniy qadriyatlar, halollik va saxovat bilan bog‘lab, bugungi inklyuziv iqtisodiy o‘sish va ijtimoiy kapital konsepsiyalariga zamin bo‘lgan g‘oyalarni ilgari surdi. U adolatli jamiyatni iqtisodiy taraqqiyotning poydevori sifatida ko‘radi.

Mirzo Ulug‘bek ilm-fan va ta’lim orqali iqtisodiy rivojlanishni rag‘batlantirish g‘oyasini ilgari surib, bugungi bilimga asoslangan iqtisodiyot — “knowledge economy” tushunchasiga asos soluvchi qarashlarni bayon etgan. Uning fikricha, taraqqiyot faqat moddiy omillarga emas, balki aqliy salohiyat va ilmiy tafakkurga tayanishi zarur.

Yusuf Xos Hojib esa iqtisodiy barqarorlikni davlat boshqaruvi, halol mehnat, soliqlarning adolatli yig‘ilishi va moliyaviy intizom orqali ta'minlash mumkinligini asoslab bergan. Bu qarashlar zamonaviy davlat moliyasi, fiskal siyosat va iqtisodiy islohotlarning negiziga to‘liq mos keladi.

Zamonaviy iqtisodiy yondashuvlar ushbu tarixiy mutafakkirlar g‘oyalarining chuqur ildizlarga ega ekanini ko‘rsatadi. Ularning asarlari nafaqat adabiy, balki iqtisodiy tafakkur, siyosiy boshqaruv va barqaror taraqqiyot yo‘lida ham qimmatli nazariy asos bo‘lib xizmat qilishi mumkin. Bugungi iqtisodiy islohotlar jarayonida bu mulohazalar milliy model yaratishda bebaho manba bo‘lib xizmat qilishi zarur.

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PILLA QURTINING OZIQLANISHI VA MINERAL MODDALARNING ALMASHINUVI XUSUSIYATLARI

Annotatsiya:*Ushbu maqolada sifatli ipak olish uchun pillani parvarishlash. Ipak qurti iviriqlari tut bargini iste'mol qilish jarayonida undan selektiv tarzda tanlab olib o'zining mineral moddalarga bo'lgan ehtiyojini to'liq qondirish jarayoni haqida ma'lumotlr berilgan.*

Kalit so'zlar: *Tut bargi, pilla qurti, Qurt ekstremetnlari, Ipak qurti iviriqlari, kaliy ionlari.*

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FEATURES OF NUTRITION AND MINERAL METABOLISM IN THE SILKWORM

Abstract: *This article provides information about the process by which silkworm larvae selectively consume mulberry leaves to fully meet their mineral needs, which is essential for quality silk production and silkworm rearing.*

Keywords: *Mulberry leaves, silkworm, silkworm excrements, silkworm larvae, potassium ions.*

Tabiat tut bargiga pilla qurtining o'sishi, rivojlanishi, nasl qoldirishi uchun zarur bo'lgan barcha moddalar assortimentini to'plagan unda oqsillar,yog'lar, uglevodlar, vitaminlar, mineral elementlar va suv yetarligi mavjud. Ammo qurt tomonidan barg tarkibida bo'lgan bu qimmatbaho moddalarning hammasi hazm qilinmaydi. Muallif A.Z.Zlotin [6]ma'lumotiga qaraganda pilla qurti tomonidan oqsillarning 62%, yog'larning 50%, uglevodlarning 40%igina o'zlashtirilar ekan. Pilla qurti o'zining 1 gr tana massasi hisobini 53,1 dan to 2g DJ energiyani yutib, shundan qurt 43,15% energiyani eksperimentlar bilan yo'qotar ekan, o'zlashtirilgan energiyaning 1,5% harakati uchun, 20% mo'tadil hayotiy faoliyatini saqlab turish uchun 35% qurt massasining o'sishi uchun sarflanar ekan.

Qurt o'sishining besh bosqichida (istimol qilish bosqichma-bosqich ortib boradi) ovqatni hazm qilish koeffisiyenti 20 dan 47% gacha bo'ladi [1]. Qurtning yoshi ortgan sayin bu koeffisiyent 43-46% gacha kamayib boradi.Qurt yoshi o'tgan sayin bargning faqat yumshoq (parenxima) qismini yeb qolmasdan balkim uning dag'al tolali to'qimalarni ham iste'mol qiladi, bu esa ozuqaning hazm bo'lish koeffisiyentini pasaytiradi, shu sabab qurt katta yoshida ozuqani o'ta ko'p miqdorda istimol qiladi. Bu o'z navbatida u chiqarayotgan ekskrement yoshga qarab o'zining kattaligi va tarkibi bilan farqlanishiga sabab bo'ladi.

PQCH asosan kletkachadan, xlorofilll qoldiradigan tut bargining hazm bo‘lmay qolgan to‘qimalaridantashkil topgan bo‘ladi deb hisoblanar edi. 1954 yili Yapon olimlari Obara va Nouzakilar PQCHxlorofilll manbai bo‘lishiligi to‘g‘risida xabar berdilar [2].

Tabiiyki,PQCH o‘zida ko‘p foydali mahsulotlar aminokislotalar, lipidlar, karotin va boshqa vitamin o‘tmishdoshlarini saqlashi mumkinligini va uni kapalak qayta ishlab bu tabiiy moddalarni olish usullari to‘g‘risida taxmin qilish mumkin. Pilla qurtini parvarishlash davrida pillaxonalarda ko‘plabchiqindilar hosil bo‘ladi va uning asosiy qismini PQCH tashkil qiladi.Pillachilik chiqitlari faqat O‘zbekistonning o‘zidagina yiliga 25-30 tonnadan ortiqni tashkil qiladi, bu PQCHning elementar tarkibini qurt organizmining kimyoviy tuzilishini va iste’mol qiladigan tut bargi tarkibini o‘zaro bog‘liq holda o‘rganishni taqozo qiladi. Qurt ekstremetnlari (PQCH) kattaligi tariq donasicha bo‘lgan silindsimon, qoramtir-ko‘k rangli, ko‘k choyning kuchsiz eritmasi hidini eslatuvchi tabiiy donachalari shaklida bo‘ladi. Tukilish zichligi 0,43-0,45 g/sm uni pilla parvarish qilinayotgan va pillaxonalarni tozalash davrida olish mumkin.

Bir quti pilla urug‘idan uni boqish jarayonida 50-60 kg quruq PQCHolish mumkin, uni zaxira hamda saqlash uchun oddiy yo‘l bilan hovlida quritib olinadi.Pilla qurtining mineral elementlarga bo‘lgan ehtiyoji ko‘p tekshirishlar predmeti bo‘lib kelmoqda.

O‘tgan asrning boshlarida pilla qurti o‘zining ekskrimentlari bilan kremnazion, sulfat va kalsiy karbonat, temir oksidlarni chiqarishi, ozuqadan esa K, Mg, P, S ni o‘zlashtirishi aniqlangan [3]. Keyingi yillarda [4,5] tut bargida va qurt ekskrimentlarida fosfor, kaliy, kalsiy, magniy, rux, kumush borligi ham aniqlangan. Biroq, pilla qurti organizmida bu elementlarning miqdorini aniqlash yetarlicha tekshirilmagan. Shu nuqtai nazardan tut bargining, PQCHning, pillaning va kapalakdan mineral moddalar balansining 5-yoshida o‘rganish qiziqish uyg‘otish mumkin. Dastlabki tekshirishlar chog‘ida pilla qurtining malpigi tomirlari azotsaqlovchi chiqitlarida ko‘p miqdorda 85,8% siydik kislotasi (siydikdagi barcha azot miqdoriga nisbatan) va uning neytral va kislotali tuzlari (asosan natriy va ammoniy) borligi aniqlangani ma’lum. Shuningdek, chiqitlar o‘zida ko‘p miqdorda kalsiy oksalat ham saqlaydi. Yosh qurtlarida uning miqdori siydik kislotasidan ham birmuncha ko‘p bo‘lgan chiqit tarkibida anorganik birikmalardan karbonatlar, xloridlar vanatriy, kalsiy, kaliy, magniy fosfatlar va ammoniylar ham bo‘ladi.

Modda almashinuvi jarayonida assimilyasiya bo‘lmagan oziq moddalardan xalos bo‘lishi faqat chiqit moddalar chiqarish yo‘li bilan emas balki ularni munosabatdan chiqarib faol bo‘lmagan holatga o‘tkazish yo‘li bilan ham amalga oshiriladi. Bu jarayon turli to‘kima elementlari yoki ayrim hujayralar tomonidan amalga oshiriladi. Siydik kislotasi, mochevina, organik va anorganik kislota tuzlarining hashorati tanada, ichki organlar va hujayralarda, teri qoplamasida to‘planishi aniqlangan [6-7]. Mineral elementlar hashoratlar rasionida sezilarli ahamiyatga ega. Sintetik rasion tarkibida uglerod, vodorod, azot, kislorod, oltingugurt va fosfordan tashqari temir va magniy bo‘lishi zarur. Ko‘pchilik hasharotlar uchun esa kaliy, rux, mis va kalsiy, hamda kobalt, marganes, natriy va

xlorning bo‘lishi kerak, o‘rganilgan pilla qurti navlarning birortasida ham vanadiy, molibden, stronsiy, kremniy, selen, rubidiy, galliy, ftor, brom, mishyak va alyuminiy kerak ekanligi aniqlangan emas. Pilla qurti kapalagi organizmida mineral moddalardan kaliy, fosfor va magniy miqdori nisbatan ko‘p uchraydi. Ona hashorat qo‘ygan tuxum (gren) 3,6% kuldan tashkil topgan bo‘lib uning tarkibida fosfor (58,8%), kaliy (29,5%), magniy (10,3%) va kalsiy (6,7%) bo‘ladi.Bu elementlardan tashqari u ancha miqdorda kremniy va temir, hamda unchalik ko‘p miqdorda bo‘lmagan bor, rux, titan va marganes [8] elementlarini ham saqlaydi. Qurt organizmi mineral moddalar asosan o‘zining I-IV yoshlarida to‘playdi. Kichik yoshdagi qurtlar **tanasining suli** 9-11%, g‘umbak davridan oldin esa to 4%-gacha bo‘ladi; katta yoshdagi qurtlarning magniy fosfatga boy bo‘ladi, kaliy miqdori esa kamayadi. PQCH-da kulning umumiy miqdori V-yoshining oxirida 13% to 24% gacha bo‘ladi.G‘umbakda 5,8% kul bo‘ladi. Kapalak siydigida hali ancha miqdorda tuzlar (erkak qurtlarda 3,3% va ona qurtlarda 4,3%) bo‘ladi.

Ipak qurti iviriqlari tut bargini iste’mol qilish jarayonida undan selektiv tarzda tanlab olib o‘zining mineral moddalarga bo‘lgan ehtiyojini to‘liq qondiradi, qurt organizmi tut bargida bo‘ladigan ortiqcha elementlarni tez chiqib yuborishga harakat qiladi. Masalan kremniy kislota va kalsiy shular jumlasi kiradi. Fosfor, oltingugurt va kali boshqa elementlarga qaraganda yaxshi o‘zlashtiriladi [9]. Ipak qurtining hayotiy muhim funksiyalarini bajarishda kaliyni roli o‘ta muhim hisoblanadi u ozuqadagi oqsillarni o‘zlashtirishda qurt ichagi shirasi karbonatlarining sintezida asosiy rolni bajaradi. V yoshdagi qurtlarning izolyasiyalangan o‘rta ichagida kaliy ionlarining tung‘ag‘ichsimon kletkalar orqali ichak bo‘shlig‘i gemolimfalari tomon harakatlanishi kuzatiladi [10]. Kaliyning tut bargidagi miqdori quruq modda hisobiga 1,5%dan kam bo‘lmasligi kerak.

Kalsiy qurt tomonidan azotli moddalarni o‘zlashtirishga ta’sir ko‘rsatadi, bundan tashqari u ekskrementlarning chiqarilishiga mu’tadil yo‘l ochadi. Bu elementning ozuqa tarkibida yetishmasligi ham, ortiqcha bo‘lishi ham pilla qurti uchun zararlidir. Qurt ozuqasi tarkibida kalsiy miqdorining 2,5-3,0% bo‘lishi optimal miqdor hisoblanadi.

Hayoti zarur mikroelementlar biologik jarayonlarida avvalo kofermentlar vazifasini bajaradi, ularning muhimlarifermentlar va vitaminlar tarkibida kiradi. Masalan kobalt V_{12} vitaminning tarkibiy qismi temir-katalaza, perokidaza, sitoxramoksidaza, mis-askorbinoksidaza, tirozinaza; rux-karbondigidraza nafas fosfatazalari tarkibiga kiradi [11].

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IDENTIFYING THE ADVANTAGES AND DISADVANTAGES OF AI-ENRICHED TEACHING METHODOLOGIES (A CASE STUDY OF MEDICAL EDUCATION)

Abstract: *The rapid development of Artificial Intelligence (AI) technologies has profoundly influenced modern education, providing new methods for teaching and learning. In medical education, AI-enriched teaching methodologies are increasingly being used to develop students' professional skills, analytical thinking, and clinical reasoning abilities. This paper aims to identify the advantages and disadvantages of AI-based teaching methods in medical universities. It presents a pedagogical and analytical perspective on how AI integration transforms the educational process, its contribution to learning quality, and the emerging challenges related to ethics, teacher readiness, and human interaction.*

Keywords: *Artificial Intelligence, medical education, AI-based learning, digital pedagogy, teaching methodology.*

Introduction

Artificial Intelligence is one of the most influential forces shaping higher education in the 21st century. The use of AI technologies has introduced innovative ways of teaching, learning, and assessment, significantly altering the traditional pedagogical framework. In medical education, AI plays a vital role in bridging the gap between theoretical knowledge and practical application. Through simulation platforms, intelligent tutoring systems, and adaptive learning technologies, medical students gain opportunities for independent practice, problem-solving, and critical thinking development.

However, while the integration of AI provides numerous opportunities for improving teaching efficiency and student engagement, it also raises important questions about the limits of automation, the loss of human interaction, and the ethical implications of digital learning environments. Therefore, identifying both the advantages and disadvantages of AI-enriched teaching methodologies is

essential to understand how these technologies can be effectively and responsibly used in medical education.

Theoretical Background

AI-enriched teaching methodologies are based on the concept of using intelligent systems that can analyze, predict, and adapt to individual learners' needs. Pedagogically, these methods are grounded in constructivist and experiential learning theories, which emphasize that knowledge is best acquired through active participation, reflection, and experience. In this sense, AI supports self-directed learning and enhances student motivation by creating interactive, adaptive, and data-driven learning environments.

In medical education, AI is used to simulate patient cases, interpret medical images, and analyze laboratory results, allowing students to gain practical experience in a controlled digital environment. Such intelligent systems help to develop diagnostic reasoning and decision-making skills before students enter real clinical practice. Nevertheless, the pedagogical effectiveness of AI depends on proper instructional design and teacher involvement, ensuring that technology complements, rather than replaces, human teaching.

Advantages of AI-Enriched Teaching Methodologies

One of the most significant advantages of AI in education is its ability to personalize the learning process. By analyzing students' performance data, AI systems can adapt the pace and complexity of learning materials to each individual's capabilities. This flexibility enhances motivation and learning outcomes, especially in complex subjects such as medicine. AI-based simulations also offer realistic practice environments where students can repeatedly perform procedures and correct mistakes without risk, thus strengthening their clinical confidence and competence.

In addition, AI technologies provide continuous assessment and instant feedback, allowing students to identify weaknesses and improve their knowledge in real time. Teachers benefit from these systems as well, since AI automates routine tasks such as grading and attendance tracking, giving them more time to focus on mentoring and academic guidance. Furthermore, AI facilitates accessibility and inclusivity, as students can learn independently, at their own pace, and from any location. As a result, learning becomes more student-centered, dynamic, and adaptive to the diverse needs of learners.

Disadvantages and Challenges of AI Integration

Despite these advantages, the implementation of AI in teaching also presents a number of disadvantages and challenges that must be addressed. The first issue concerns the potential reduction of human interaction. Medical education requires empathy, communication, and ethical sensitivity — qualities that cannot be fully replicated by machines. Overreliance on AI systems can therefore weaken the essential teacher-student relationship and reduce opportunities for interpersonal learning.

Another concern is technological dependence, where students and teachers may become too reliant on AI tools for problem-solving, leading to a decline in

critical thinking and creativity. Ethical and privacy issues are also significant, as AI systems collect large volumes of personal data, raising questions about security, confidentiality, and fairness. In addition, AI integration requires considerable financial investment and technical infrastructure, which may not be available in all institutions. Teachers, in turn, often face difficulties adapting to new technologies due to a lack of digital competence or methodological support.

Finally, AI algorithms may contain biases based on the data used to train them, resulting in unfair evaluations or unequal access to resources. These issues highlight the importance of ethical governance, transparency, and teacher involvement in every stage of AI deployment in education.

Discussion

The introduction of AI-enriched teaching methodologies in medical education demonstrates both great potential and important limitations. On one hand, such technologies enhance motivation, engagement, and knowledge retention by creating personalized and interactive learning experiences. On the other hand, the absence of adequate human interaction and the complexity of ethical issues can undermine the educational process if not properly managed.

Practical experience shows that AI is most effective when used as a supportive instrument rather than a substitute for human teaching. Simulation-based learning, adaptive feedback, and digital assessment are powerful tools, but they must be integrated within a pedagogical framework that values collaboration, reflection, and professional ethics. The balanced combination of technological innovation and traditional mentoring ensures that students not only gain technical skills but also develop the humanistic qualities necessary for medical practice.

Therefore, the challenge for modern educators is not simply to adopt AI but to use it wisely, maintaining the essential role of teachers as facilitators, motivators, and ethical guides.

Conclusion

AI-enriched teaching methodologies represent a major step toward the modernization of medical education. They enable the creation of personalized, flexible, and interactive learning environments that help students develop professional competence and clinical reasoning. However, the success of these innovations depends on thoughtful integration, teacher preparedness, and ethical awareness.

While the advantages of AI—such as personalization, efficiency, and accessibility—are clear, they must be balanced against challenges including human disconnection, technological dependency, and data privacy. The key to sustainable success lies in maintaining harmony between digital intelligence and human pedagogy.

Ultimately, AI should not replace teachers but empower them, transforming medical education into a more dynamic, inclusive, and forward-looking system that prepares students for the realities of digital healthcare.

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IMPROVING STUDENTS' PRACTICAL ENGAGEMENT THROUGH THE APPLICATION OF ARTIFICIAL INTELLIGENCE TECHNOLOGIES

Abstract: *The rapid development of Artificial Intelligence (AI) technologies has transformed many sectors, including education. In medical education, AI has become an effective tool to enhance students' practical engagement and professional competencies. This article examines the role of AI technologies in improving the practical activity of medical university students. It focuses on pedagogical and technological approaches that promote active learning, problem-solving, and clinical reasoning through AI-based applications. The paper also explores how AI tools support students' independent learning, simulation-based training, and assessment, contributing to the quality of medical education and future healthcare outcomes.*

Keywords: *Artificial Intelligence, medical education, students' engagement, digital learning, simulation technologies.*

Introduction

In the 21st century, the integration of Artificial Intelligence (AI) into the educational process has become one of the key priorities for modern universities. The use of AI in medical education opens new opportunities to make the learning process more interactive, practice-oriented, and effective. Medical students are required not only to acquire theoretical knowledge but also to develop strong clinical and practical skills that enable them to apply theory in real situations. Traditional methods of teaching often lack the flexibility and interactivity needed for developing such skills. Therefore, the implementation of AI-based technologies — such as virtual patients, diagnostic simulators, chatbots, and adaptive learning systems — plays an important role in enhancing students' practical engagement.

Theoretical Background

Artificial Intelligence can be defined as a branch of computer science that simulates human cognitive processes such as learning, reasoning, and decision-making. In pedagogy, AI provides the foundation for intelligent tutoring systems, automated assessment, and personalized learning environments. According to recent studies, AI helps to individualize the learning process, offering feedback that matches students' pace and learning styles. This approach increases motivation, self-efficacy, and engagement. In medical education, these technologies are particularly valuable because they allow students to practice clinical procedures and diagnostic reasoning in a safe, controlled environment. Pedagogically, the integration of AI aligns with constructivist learning theories, where knowledge is actively constructed by learners through experience and reflection. Thus, AI serves as a bridge between theoretical instruction and hands-on practice.

The Role of AI in Enhancing Practical Engagement of Medical Students

AI technologies are increasingly used to strengthen the practical component of medical education. Simulation platforms powered by AI enable students to work with virtual patients who present realistic symptoms and reactions. Such systems allow learners to practice diagnosis, treatment planning, and communication with patients without risk.For example, AI-based diagnostic assistants can help students interpret medical images, analyze laboratory data, and evaluate patient histories. These systems not only improve analytical thinking but also prepare students for the decision-making challenges of real clinical practice.Furthermore, AI chatbots are used as interactive mentors that guide students through problem-solving tasks, provide hints, or assess their understanding. In anatomy and physiology, AI-driven 3D visualization tools enhance comprehension of complex human body structures.Through these technologies, medical students become more active participants in their education exploring, experimenting, and reflecting on their learning outcomes.

Pedagogical and Technological Approaches

The effective use of AI in medical education requires a well-designed pedagogical framework. Teachers must redefine their roles as facilitators and mentors rather than sole transmitters of information.Some of the key pedagogical approaches include:

1. Blended Learning: Combining traditional lectures with AI-supported practical sessions ensures balance between theory and application.
2. Problem-Based Learning (PBL): AI tools can generate clinical scenarios that challenge students to apply their knowledge in real-life contexts.
3. Adaptive Learning: AI systems monitor students' progress and automatically adjust the complexity of tasks, promoting continuous development.
4. Feedback and Assessment: Intelligent systems analyze students' responses and provide detailed feedback, identifying areas that require improvement.

5. Simulation-Based Training: Virtual reality and AI simulation labs help students develop psychomotor and decision-making skills before encountering real patients.

Instructors must also receive adequate training to integrate AI tools effectively, ensuring they complement — not replace — human interaction and ethical teaching principles.

Discussion and Results

The implementation of AI in medical universities has demonstrated positive outcomes in several aspects. Students show higher motivation, deeper understanding, and improved problem-solving abilities. AI-assisted simulations increase confidence and reduce anxiety during clinical practice. Moreover, research shows that students who use AI tools for self-learning perform better in diagnostic reasoning and patient interaction. For example, AI-based feedback systems have been shown to enhance students' ability to detect and correct clinical errors.However, challenges remain. These include high implementation costs, limited teacher readiness, and ethical considerations related to data privacy and algorithmic bias. Despite these issues, the long-term benefits of AI integration outweigh the drawbacks, especially in fostering independent learning and practical competency.

Conclusion

Artificial Intelligence technologies offer enormous potential for improving the practical engagement of medical students. By integrating AI into educational processes, medical universities can create dynamic, adaptive, and student-centered learning environments. AI-based simulations, adaptive feedback, and digital assessment tools make learning more interactive and practice-oriented. The pedagogical shift toward AI-supported education not only enhances students' practical skills but also contributes to the formation of professional thinking and clinical competence.

In the future, further research and innovation are needed to ensure the ethical, effective, and sustainable integration of AI technologies in medical education.

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PLACE AND ROLE OF THE "SUDOCHYE-AKPETKI" STATE RESERVE IN THE FAUNA OF OUR COUNTRY

Annotation. *This article discusses specially protected areas in our country and the attention paid to them in our country. Special attention is also paid to the fauna of this territory, their number and species. We support and further develop biodiversity both domestically and globally.*

Keywords: *reserve, protected area, reserve, biodiversity, Sudochye-Akpetki.*

Currently, the most important task in nature conservation is to combine the use of natural resources with ensuring their protection. Protection, improvement, and rational use of the natural environment is one of the most important scientific and practical problems of our time. Optimization of the relationship between society and the natural environment should be carried out on the basis of a solid scientific theory. Nature conservation, in essence, means the protection of landscapes. From this point of view, environmental protection measures, to a certain extent, serve the protection of landscapes. Accordingly, nature conservation is aimed at preserving the integrity of landscapes and their natural balance.

In some areas, nature conservation also requires the protection of the natural complex itself with a special regime. Territories protected by such a special regime are protected natural objects that are directly separated from economic development.

In recent years, both the area and the number of protected natural complexes have been increasing. According to the UN, in the 1970s there were 1204 reserves and national parks in the world, but 1/3 of them were created after 1960. Currently, the number of specially protected natural areas in the world exceeds several hundred thousand. For example, in Russia alone (2016), the number of specially protected natural areas was 103. Currently, the total number of protected natural objects on Earth exceeds 20,000.

According to the biological diversity conservation strategy adopted in Uzbekistan, it is planned to turn 10% of the country's territory into protected natural areas in the coming decades. Based on this strategy, a number of works are being carried out to increase the number of natural reserves in Uzbekistan and expand the territories of existing ones. In particular, the Resolution of the Cabinet of Ministers of the Republic of Uzbekistan dated February 8, 2021, No. 58 "On the Establishment of the Sudoche-Akpetki State Reserve in the Republic of Karakalpakstan" was adopted.

The territory of the Sudochye-Akpetki State Reserve consists of such natural territories as the Sudochye Lake System section and the Akpetki section, with a total land area of 280,507 hectares, including: the Sudochye Lake System section - 84,702 hectares, the Akpetki section - 195,805 hectares. The total area of the protected zone of the reserve is 442,223 hectares, including: 52,938 hectares on the "Sudochye Lake System" section, 389,285 hectares on the "Akpetki" section, located in the territory of the Muynak, Kungrad, and Takhtakupyr districts of the Republic of Karakalpakstan.

Land plots provided to the Sudoche-Akpetki State Reserve on the basis of the right of permanent use

AREA

Territory name	Previous land users	Area of allocated land plots (hectares)	Categories of allocated lands
I. "Sudochye Lake System" section			
Muynak district	Reserve lands	84 702	Lands not used in agriculture
Total:		**84 702**	
II. "Akpetki" section			
Takhtakupyr district	Reserve lands	195 805	Lands not used in agriculture
Total:		**195 805**	
Total land area:		**280 507**	

Protected zones of the Sudochye-Akpetki State Reserve

AREA.

Territory name	Area of allocated land plots (hectares)
I. "Sudochye Lake System" section	
Muynak district	45 178
Kungrad district	7 760
Total:	**52 938**
II. "Akpetki" section	
Muynak district	335 484
Takhtakupyr district	53 801
Total:	389 285
Total land area	442 223

"Sudochye Lake System" section. This object is a typical delta lake. The lake's water area and the Ustyurt Plateau to its west determine the high biodiversity of the region and ensure its unique beauty. The preservation of Lake Sudoche and the adjacent plains contributes to the preservation of landscape diversity in the territory of the now desertified Amu Darya delta.

There are 2 main types of ecosystems in the region, consisting of wetlands and desert areas characteristic of natural faunistic complexes. This territory, adjacent to the Ustyurt plateau, consists of large shallow fresh and salt lakes, dense reed beds and shrubs, saline lands, marshy areas, planted saxaul, canals, deserts and semi-deserts in the Chink ravines, and is considered a habitat for plants and animals.

117 species of birds nest here. The area serves as an important nesting and gathering place for migratory bird species that are at global risk. Birds living on the lake and in the foothills of the Ustyurt Plateau are listed in the Red Book of the Republic of Uzbekistan and the International Red List. Among them are the white-headed duck, steppe bustard, red goose, curly pelican, saker falcon, jerboa and others, Among the endemic fish listed in the Red Book, one can mention the Turkestan mustached fish, the white-eyed fish, the gray monitor lizard, the Central Asian desert tortoise, and other animal species.

"Akpetki" section.

The area has a complex of lakes and tugai forests and desert ecosystems. There are 10 species of mammals and 19 species of birds characteristic of the lake-tugai fauna complex. The desert ecosystem (sandy and saline desert) is home to 26 species of mammals, 21 species of birds, and 22 species of reptiles. According to preliminary estimates, 18 rare and globally endangered species of vertebrates have been recorded in the region.

The following bird species included in the Red Book of Uzbekistan and the International Red List are found in the territory; curly owl, red owl, red goose, blackbird, whistling swan, and other birds and mammals can be observed.

In 2022, a tourist attraction for tourists was created on the Sudochye section of the reserve. To attract local and foreign tourists, viewing platforms, terraces, yurts, and others have been built on the shores of Lake Sudoche. At the tourist destination, tourists can observe the surrounding environment and admire the ancient buildings of Urga and the amazing flamingo birds on the lake.

Flamingo birds use Lake Sudoche for flying and feeding before long journeys. The main food for flamingos is small red artemia and its eggs. In addition, flamingos feed on mollusks, insect larvae, and insects. They search for food in the shallow parts of the water. Flamingos arrive in March in spring and leave in November in autumn. During these 9 months, tourists will see flamingos. In areas adjacent to the territory of the reserve, the village of Raushan is located 75 km and the village of Karajar is 70 km from large settlements.

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QADAMJOYLAR VA ZIYORATGOHLARNI GEOGRAFIK O‘RGANISHNING O‘ZIGA XOS XUSUSIYATLARI.

Annotatsiya: *Mazkur maqolada sakral landshaft, muqaddas yer, muqaddas makon tushunchalarining mazmun mohiyati hamda qadamjolar va ziyoratgohlarning diniy, madaniy va tabiiy-geografik omillar bilan bog‘liqligi tahlil etilgan. Sakral landshaftlarning tabiat bilan bo‘lgan ruhiy-madaniy aloqalari yoritilgan. Muqaddas joylarning shakllanishi, hududiy joylashuvi, hamda ularning barqaror rivojlanish va madaniy merosni saqlashdagi roli yoritib berilgan. Qadamjo va ziyoratgohlarning mahalliy urf-odatlar bilan uyg‘unligi ilmiy-metodik asosda tahlil qilingan.*

Kalit so‘zlar: *Qadamjo, ziyoratgoh, sakral landshaft, sakral makon, diniy geografiya, madaniy landshaft, diniy e’tiqod, geografik joylashuv, madaniyat, turizm.*

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FEATURES OF GEOGRAPHICAL STUDY OF SACRED PLACES AND PILGRIMAGE SITES.

Abstract: *The article analyzes the essence of the concepts of "sacred landscape", "sacred land", "sacred space", as well as the relationship of sacred places and places of pilgrimage with religious, cultural and natural-geographical factors. The spiritual and cultural connection of sacred landscapes with nature is revealed. The formation, territorial location of sacred places, their role in sustainable development and preservation of cultural heritage are considered. The harmony of sacred places and places of pilgrimage with local traditions is analyzed on a scientific and methodological basis.*

Keywords: *Pilgrimage site, sacred landscape, sacred space, religious geography, cultural landscape, religious beliefs, geographical location, culture, tourism.*

Inson ma’naviyati va o‘zligini shakllantiradigan eng qudratli kuchlardan biri, shubhasiz, diniy e’tiqoddir. Shuning uchun ham odamlar nafaqat o‘zining dini, balki umuman dinlar bilan bog‘liq qadamjolar va ziyoratgohlarni shaxsan ko‘rishga barcha davrlarda katta ishtiyoq bilan intilib kelgan.

Turizm tarixida qadimgi dunyoda va ayniqsa o‘rta asrlarda sodir bo‘lgan sayohatlarning birinchi ko‘rib chiqilgan shakllari diniy motivatsiyaga ega edi.

Ammo aynan shunday sayohatlar tajribasi sayohatlarning birlamchi infratuzilmasini, mehmonxona korxonalarining prototiplarini (yashash joylari va mehmonxona uylari - ksenodoxiyalar) va xizmat ko‘rsatish sanoatining dastlabki formatlarini (boylar do‘konlari, kasalxonalar, hunarmandchilik va savdo rastalari va boshqalar) shakllantirdi. Hatto zamonaviy uyushgan turizm sanoatining asoschisi - baptist ruhoniysi Tomas Kuk ham o‘zining birinchi sayyohlik sayohatini hushyor turmush tarzini targ‘ib qilish maqsadida uyushtirgan, "alkogolsiz sayohatlar"ni reklama qilgan va tashkil qilgan, keyinchalik monarx shaxslarning Quddusga sayohatlarini uyushtirgan. Shunday qilib, diniy motivlar dunyoda turizm industriyasining vujudga kelishi va yanada rivojlanishida sabab-oqibat omillari bo‘lib xizmat qilgan, deb hisoblash mumkin [3].

Sakral geografiyada muqaddas joylar alohida ahamiyat kasb etadi. O‘zining maqomi tufayli muqaddas hudud alohida o‘zgacha, “ilohiy” xususiyatli makon sifatida qaraladi. Muayyan vaqt davomida oddiy, odatiy bo‘lgan makon ancha yuqori, sakral maqom oladi. Hozirgi fanda keng foydalaniladigan “sakral makon” tushunchasi ko‘proq din bilan bog‘lanadi. Sakral makon deganda odatda butun diniy jabha tushuniladi. Sakral makon muayyan hududning o‘zgarishi g‘oyasini nazarda tutadi, unga alohida mazmun beradi, boshqacha aytganda atrof odatiy makondan ajralishiga olib keladi. Bu joy energiyaning tugamaydigan manbaiga aylanadi, unga kira olsa, uni tushunib yetsa, bu kuchdan foydalana olsa, muqaddaslik – ma’naviylikka kirishga imkon beradi.

Muqaddas (sakral) yer yoki hudud tushunchasi qadimdan mavjud. Bu tushuncha tabiat-jamiyat-inson munosabatlarining shakillanishi hamda insonning tabiatga ta’sir doirasini kengayib borishi bilan chambarchas bog‘liq. Tabiat obyektlari yoki hodisalarini muqaddaslashtirish hamda bunday tasavvurlar makro- va mikrokosm birligini izlab topish maqsadida juda qadim davrlardayoq vujudga kela boshlagan. Ajdodlarimizning ongi muqaddas landshaft, “kuch joyi” oldida sajda qilishdan olamni bir butun tushunishga tomon tadrijiy rivojlanib borgan. Tabiat bilan hamjihatlikda yashagan inson tabiat hodisalarini ilohiylashtirgan, unga sig‘ina boshlagan, turli marosimlar o‘tkaza boshlagan va shunda sayyoramizda energetik jihatdan ahamiyatli bo‘lgan muqaddas joylar yuzaga kelgan [2].

Ayrim sakral joylar xususiyatlari hozirgi paytga qadar olimlar tomonidan o‘z izohini topganicha yo‘q. Ularning vujudga kelishi va qay maqsadda bunyod qilinganligi to‘g‘risida faqat gipotezalar va turli afsonalar mavjud (Pasxa orollarning butlari, Naska cho‘lidagi rasmlar, Angliyadagi Stounxenj ulkan tosh bo‘laklari va boshqalar). Ular ilohiy kuch irodasi bilan biror-bir hodisa sodir bo‘lgan joylar, turli kultlarning buyuk avliyolari va ularning safdoshlari dafn qilingan joylar, yo‘qolgan dinlarning muqaddas maskanlari, shuningdek, joylarda tabiatning ko‘rinmas kuchlari yaratgan noyob landshaftlardir.

Diniy jihatdan e’zozlanadigan muqaddas joylar va obyektlar majmuasi xalq qadimiy madaniyatining muhim qismi bo‘lib, bunday obyektlar madaniy geografik adabiyotlarda sakral landshaftlar deb nomlanadi. Sakral landshaftlarga muqaddas (ilohiy) deb hisoblanadigan va qadrlanadigan barcha hududiy komplekslar kiritiladi.

Ular muayyan diniy marosimlarni o‘tkazish, diniy amallarning rivojlanishi, ibodat marosimlarini bajarish tufayli shakllangan va shu maqsadlar uchun mo‘ljallangan.

Hududiy etnik madaniyat ta’siri ostida sakral landshaftlarning hosil bo‘lishi iyerotopiyada (muqaddas joyda) – sakral makonda kechadi. Sakral makon tor (diniy) va keng (aslsakral) mazmunda qaraladi. Diniy makon etnik - madaniy regionni va kult landshaftlarini shakllantiradigan ritual obyektlardan iborat. Etnos va salral o‘zaro ta’sirda bo‘ladigan joy etnik – madaniy landshaftning shakllanishi uchun dastlabki asos bo‘ladi. Keng mazmunda sakral makon sakral landshaftlardan iborat. Sakral landshaft ham antropogen, ham tabiiy obyektlarni o‘z ichiga oladi. Turli muqaddas va tabarruk joylar, ibodatxonalar va boshqa diniy dargohlar, nekropollar va boshqa tafal landshaftlar (dafn qilish joylari), diniy marosimlar o‘tkaziladigan joylar sakral landshaftlardir. Sakral landshaftni etnosning diniy faoliyati va madaniy merosi (sakral yodgorliklar, majmualar va ansambillar) bilan bog‘liq bo‘lgan etnik-madaniy landshaftning bir qismi sifatida qarash lozim. An’anaviy sakral landshaftlar jumlasiga kult obyektlari va ritual joylar (asl sakral landshaftlar) va tafal landshaftlar kiritiladi.

Sakral joylar (Sacred Site) sakral landshaftning strukturaviy elementi va turli davrlar va dinlarning kult inshoatlari bo‘lgan joylari bo‘lib, unga xos ko‘rinishni (konfiguratsiyani) shakllantiradi. Muqaddas joylar sakral landshaft hududini butunlay yoki qisman band etishi mumkin. Faoliyatning bu turlarining ta’siri nuqtali sakral joylarning mavjudligi bilan cheklanadi va butun kompleksni band etmaydi. Boshqa hollarda sakral landshaft sakral joyga o‘xshash yoki sakral joylar bunday landshaftning semantik markazlari bo‘lib xizmat qilishi mumkin. Madaniy landshaftdan farq qilgan holda sakral joy hududiy kompleks bo‘lmasligi mumkin va u nuqtasimon obyekt – sakral funksiyaga ega bo‘lgan tosh, daraxt, buloq va boshqa obyektlar bo‘lishi mumkin. Butun geografik topos–tog‘ni, vodiyni, daraxtzorni, orollarni, ko‘llarni va boshqa shunga o‘xshash obyektlarni qamrab olgan sakral joylar sakral landshaftlarga aynan o‘xshash bo‘ladi.

Sakral landshaftlarni muhim jihatlaridan biri tabiiy-tarixiy genetik xususiyatlariga ko‘ra kelib chiqishi, shakllanishi, rivojlanishining makoniy xususiyatlarga ega ekanligidir. Sakral xududlarning muhim funksiyasi ma’naviy ehtiyojlarga xizmat qilishdir. Sakral landshaftlarni tadqiq etishda ularning xududiy joylanishi, kelib chiqishi, funksiyalari muhim ahamiyatga egadir [4].

Sakral landshaftlarni tadqiq etishda sakral xududlarni madaniy landshaftlarning bir qismi sifatida, muayyan funksiyalarni bajaruvchi obyekt sifatida qarash katta ahamiyat kasb etadi. Dunyo miqyosida sakral landshaft tushunchasi mukammal ishlangan ilmiy kategoriya sifatida [Tuan, 1975; Tuan, 1976; Carlson, 1982] e’tirof etiladi.

V.L.Kaginskiy [2001] tushunchasiga ko‘ra etnik urf –odatlar va madaniyatiga ko‘ga xududlarni semantik va simbolik (ramziy) o‘zlashtirish sakral landshaftlarni o‘ziga xos xususiyatlarini ko‘rsatib beradi.

M.V.Ragulina [2007-2013] sakral landshaftlarni madaniy landshaftlarni bir qismi sifatida tadqiq etishda uning o‘zaro bog‘liq bo‘lgan ma’naviy, obrazli, ramziy va makoniy semantik jihatlarini asosiy jihatlar deb qaraydi. Sakral xududlardagi

sakral obyektlarni o‘ziga xos funksiyalarini va ular negizida shakllangan etnomadaniy urf – odatlar va madaniyatlarni o‘rganish, sakral landshaftlarni tadqiq etishda muhim bosqich hisoblanadi.

V.K.Volovikning e’tirof etishiga ko‘ra sakral landshaftlar hududida sakral va profan makonlar mavjud. Uning fikriga ko‘ra etnomadaniy landshaftlarni shakllanishida etnoslarning faoliyati birlamchi manba bo‘lib xizmat qiladi. [2013,c.4]

Sakral landshaftlarni tadqiq etishda xududiy genetik belgilariga ko‘ra tabaqalashtirish ham muhim ahamiyatga egadir. B.S.Gomboyev [2006] sakral xududlarni tipologik tabaqalashtirishda: etnik, tabiiy geografik (tog‘, dasht, suv manbalari va boshqalar), mavsumiy belgilarini hisobga olish zarurligini ko‘rsatib beradi.

M.YE.Kuleshova [Kuleshova, 2002] sakral landshaftlarni yirik ijtimoiy madaniy hosila sifatida kishilarning birmuncha katta guruhlari yashaydigan makon, hayot muhiti deb tushuntiradi. Sakral landshaftlar tabiiy – tarixiy va madaniy xududlarni o‘zaro bog‘liqligi ta’siri va aloqalari doirasida shakllanadi.

Madaniy landshaftdan farq qilgan holda sakral obyektlar hududiy kompleks bo‘lmasligi ham mumkin va u sakral funksiyaga ega bo‘lgan tosh, daraxt, buloq va boshqa nuqtasimon obyektlar bo‘lishi ham mumkin. Madaniy landshaft maydonining asosiy nuqtalari bo‘lgan sakral joylar odatda kult amallarining va diniy faollikning markazlaridan iborat bo‘ladi va ular butun landshaft rivojlanishini va uning morfologik xususiyatlarini belgilaydi [6].

Har bir xalqning tarixida, dinida va madaniyatida muqaddas hisoblangan joylar – ya’ni qadamjolar va ziyoratgohlar muhim o‘rin egallaydi. Odamlar asrlar davomida bunday joylarga borib, ibodat qilgan, duolar o‘qigan, ruhiy orom topgan. Bugungi kunda ham bunday joylar ahamiyatini yo‘qotmagan. “Qadamjo” va “ziyoratgoh” tushunchalari nafaqat diniy-ma’rifiy ahamiyatga ega, lekin ularni geografik jihatdan o‘rganilishi ham muhim hisoblanadi. Bu turdagi obyektlar din, madaniyat va tabiiy geografiya kesishmasida yotadi. Ularning joylashuvi, inson oqimi, iqtisodiy va ekologik jihatlar — bularning barchasi o‘ziga xos tarzda birlashadi. Shuning uchun geografik nuqtai nazardan muqaddas joylarni o‘rganish – hududning maxsus xarakteristikasini ochish, barqaror rivojlanish va ularni asrash choralarini aniqlashda muhim o’rin tutadi.

“Qadamjo” – asosan islom dinida keng tarqalgan tushuncha bo‘lib, payg‘ambarning yoki marhum diniy shaxsning biror joyda bo‘lgani, u yerda izlari, marosimlar o‘tkazilgani bog‘liq manzil sifatida qaraladi. “

Ziyoratgohlar esa — tarixiy, diniy va madaniy jihatdan muqaddas sanalgan, muayyan shaxslar bilan bog‘liq yoki diniy e’tiqodlar asosida shakllangan hududlar bo‘lib, ular avlodlar xotirasida muqaddaslik darajasiga ko‘tarilgan. Ziyoratgohlar qadimiy xalq an’analari, tarixiy voqealar va diniy urf-odatlarni o‘zida mujassam etgan bo‘lib, ularni o‘rganish keng qamrovli kompleks yondashuvni talab etadi. Ular nafaqat diniy-ma’naviy markaz, balki antropologik, etnologik, arxeologik va madaniy-geografik obyektlar sifatida ham ahamiyatga ega.

Xulosa.

Qadamjolar va ziyoratgohlarning geografik jihatdan joylashuvi ko‘plab omillarga, jumladan, diniy e'tiqodlar, tarixiy voqealar va tabiiy sharoitlarga bog‘liq bo‘ladi. Diniy e'tiqodlar bunday joylarning muqaddasligini ta'kidlaydi, bu joylarga ziyoratga borganlar o‘z maqsadlariga erishish uchun ko‘pincha ushbu joylarni to‘g‘ri va qadrlangan joy sifatida tanlaydilar. Ko‘plab ziyoratgohlar baland tog‘lar, qulay iqlim sharoitlari yoki tabiatning boshqa alohida xususiyatlari bilan ajralib turadi. Tabiatning ulug‘vorligi va uning muqaddasligi odamlar uchun ilohiy bir narsa sifatida qabul qilinadi. Bu esa ularning ekologik jihatdan tadqiq etishga alohida e'tibor qaratishni talab qiladi.

Bundan tashqari, ba'zi ziyoratgohlar qadimgi shaharlarda, qadimiy savdo yo‘llarining kesishgan joylarida yoki xalq uchun tarixiy ahamiyatga ega bo‘lgan hududlarda joylashgan bo‘ladi. Bu joylarning o‘ziga xos geografik jihatlari ularga qo‘shimcha tarixiy va madaniy qiymat beradi. Tarixiy joylashuv ko‘plab ziyoratgohlar uchun muhim ahamiyatga ega, chunki bu joylar har doim insoniyat tarixining o‘ziga xos sahifalarini o‘z ichiga olgan.

Qadamjolar va ziyoratgohlarni geografik o‘rganish faqatgina ularning joylashuvi va tabiiy xususiyatlari bilan cheklanmaydi. O‘rganish jarayonida ko‘plab boshqa omillar ham muhim ahamiyatga ega. Masalan, ziyoratgohlar va qadamjolar ko‘pincha hududning tabiiy holda saqlanishiga, madaniy va diniy rivojlanishiga katta ta'sir ko‘rsatadi. Bu joylar aholining diniy e'tiqodlarini, marosimlarini va an'analarini shakllantiradi. Diniy amallarni bajarish, tasavvurlarni mustahkamlash va o‘zligini izlash kabi jarayonlar ko‘pincha bunday joylarda amalga oshiriladi.

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MAKTABGACHA TA'LIM TASHKILOTLARIDA MEDIA VOSITALARIDAN FOYDALANISH METODIKASINI SHAKLLANTIRISH

Annotatsiya *Ushbu maqolada maktabgacha ta'lim jarayonida media vositalaridan samarali foydalanishning metodik asoslari, pedagogik ahamiyati hamda tarbiyachilarning media madaniyatini rivojlantirish zaruriyati haqida fikr yuritiladi. Shuningdek, bolalar yosh xususiyatlariga mos interfaol media vositalarni tanlash va qo'llash yo'llari tahlil qilinadi.*

Kalit so'zlar: *Media vositalar, axborot texnologiyalari, interfaol metod, vizual materiallar, maktabgacha ta'lim, media savodxonlik, ta'lim jarayoni.*

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FORMATION OF METHODOLOGY FOR USING MEDIA TOOLS IN PRESCHOOL EDUCATIONAL INSTITUTIONS

Annotation *In this article, the methodological foundations and pedagogical significance of the effective use of media tools in preschool education are discussed. The necessity of developing educators' media culture is emphasized. In addition, ways of selecting and applying interactive media tools appropriate to the age characteristics of children are analyzed.*

Keywords: *Media tools, information technologies, interactive method, visual materials, preschool education, media literacy, educational process.*

Zamonaviy ta'lim tizimida raqamli texnologiyalar va media vositalarining roli kun sayin ortib bormoqda. Maktabgacha ta'lim bosqichi esa bolaning tafakkuri, nutqi, estetik didi va ijodiy qobiliyatlari shakllanadigan muhim davrdir. Shu bois, bu jarayonda media vositalarini maqsadga muvofiq qo'llash ta'lim samaradorligini oshiradi, bolalarda mustaqil fikrlash va kuzatuvchanlikni rivojlantiradi.

Bugungi kunda ta'lim tizimi raqamli texnologiyalar bilan chambarchas bog'liq. Maktabgacha yoshdagi bolalar ham axborot texnologiyalari bilan tezda tanishmoqda. Shuning uchun tarbiyachilarning vazifasi — bu vositalardan to'g'ri, maqsadli va tarbiyaviy jihatdan toza foydalanishni o'rganishdir.Ta'lim sohasida

ham yangi axborot texnologiyalaridan keng foydalanish, an'anaviy o'qitish usullariga nisbatan samarali va yuqori natijalarga olib kelmoqda. Hozirda ta'lim tizimida zamonaviy axborot texnologiyalari, kompyuterlashtirish va kompyuter tarmoqlari ta'lim jarayonining muhim negizi bo'lib, yoshlarning yangi axborotlarga bo'lgan talablarini qondirishga xizmat qilmoqda. Maktabgacha ta'lim muassasalarida ta'lim-tarbiya olayotgan katta va maktabga tayyorlov guruhlarida aynan 5–7 yoshli bolalar tarbiyalanadi. Ulardagi intellektual salohiyatni shakllantirishning boshlang'ich davri ham xuddi shu yoshdan boshlanadi aynan shu sababli hozirgi kunda maktabgacha ta'limda multimedia ta'limiga alohida e'tibor qaratilmoqda.

Barkamol avlodni voyaga yetkazishda zamonaviy o'qitish metodlari, innovatsion texnologiyalar, multimedia vositalarining o'rni va roli benihoya kattadir. Pedagogik texnologiya va pedagog mahorati va pedagog tajriba bilan bir qatorda, interfaol metodlar, multimedia vositalari barkamol avlodni bilimli, yetuk malakaga ega bo'lishlarini ta'minlaydi.

Multimedia ta'lim vostitasining afzaliklari qanday va biz multimedia ta'limni qanday qilib maktabgacha ta'lim muassasalarida qo'lashimiz mumkin degan savol paydo bo'lishi tabiiydir. Maktabgacha ta'lim muassasalarida multimediani turli xil mashg'ulotlarda qo'lash mumkin. Masalan, tabiat bilan tanishtirishda, elementar matematik ta'savurlarini shakilantirishda hamda xorijiy tilda mashg'ulotlarini tashkil etishda multimedia vositalari yuqori natijalar beradi. Mashg'ulot jarayoni bolalarni zeriktirib qo'ymaydi va ularni mashg'ulotga bo'lgan qiziqishlarini yanada ham ko'proq oshirishda keng imkoniyatlarni yaratib beradi. Maktabgacha ta'lim muassasalarida multimediani qo'llashdan ko'zlangan maqsad bolalarga qisqa vaqt ichida ko'proq va samarali ta'lim berishdan iboratdur. Hozirgi vaqtda bolalarning kompyuter va gadjetlarga qiziqishlari juda yuqori.

Shu tufayli pedagoglar ulardan tog'ri va unumli foydalanib, bolalarni yo'naltiri, qiziqishlaridan kelib chiqan holda ta'lim tashkil etilsa, bolalarning qiziqishlari yanada ham ortadi. Masalan, bolalarga multimedia ta'limidan foydalanib ularga til o'rgatish mashg'ulotlarni qiziqarli qilib tashkil etish mumkun. Ayniqsa, turli ranglardan foydalangan holda bolalarning ta'savuri kengaytirib, ularning diqqatini tortish, ularning tilga bo'lgan qiziqishlarini yanada ortirish mumkin. Jumladan, bolalarda fasilar to'grisida tasavvurlarini shakllantirishda qo'l keladi. Bolalarda bahor fasli haqidagi tushunchalarni shakllantirishda bahor faslinini ko'rsatish bilan birgalikda undagi yashilik, daraxtlar va gularning rangi, bahor faslida nishonlanadigan bayramlarni havola qilish imkoniyati mavjud.

Maktabgacha ta'lim tashkilotkarida tayyorlov guruhida multimediali mashg'ulotlarni olib borish maktabga tayyorlash jarayonida tasavvurlarini boyitadi, ularning talim faoliyati to'g'risidagi tasavvurlarini shakilantiradi natijada ta'lim jarayonidagi qiyinchiliklarni yengib o'tishlari uchun zamin tayyorlaydi, shu bilan birga bolalarning inovatsion texnologiyalar bilan ishlash ko'nikmasi multimedia ta'limini tashkil qilish orqali shakilantirib boriladi.

Shunungdek, multimedia ta'limidan zamonaviy, inovatsion ta'limning bir shakli sifatida mashg'ulotlar jarayonida to'g'ri foydalanish maktabgacha ta'limda

faoliyat olib borayotgan tarbiyachilarning ham inovatsion texnologyalardan foydalanish bo'yicha ko'nikma va malakalarini shakilantirishga xizmat qiladi.

Multimedia va gipermedia texnologiyalari kuchli taqsimlangan ta'lim resurslarini birlashtiradi, ular bolani idroki shakllanishi va namoyon bo'lishi uchun muhitni ta'minlaydi. Multimedia va telekommunikatsiya texnologiyalari tizimda prinsipial jihatdan yangi uslubiy yondashuvlarni ochadi. Multimedia - zamonaviy texnik va dasturiy vositalardan foydalangan holda interaktiv dasturiy ta'minot nazorati ostida vizual va audio effektlarning o'zaro ta'siri, ular matn, ovoz, grafik, fotosuratlar, videolarni bitta raqamli tasvirda birlashtiradi. Multimedia vositalarini tayyorlash va bolalarning kompyuter savodxonligini shakllantirish metodikasi shaxsiy kompyuterlar multimedia texnologiyasining asosiy texnik vositasi hisoblanadi. MTTlarning ta'lim-tarbiya jarayonida foydalanishda qo'shimcha vositalar - kompakt disklar, turli xil taqdimotlar, slaydlar va hokazolar talab etiladi. Multimedia vositalaridagi ta'lim-tarbiya materiallari dinamik xarakterga ega bo'lib, ular animatsiya bilan berilgan bo'ladi.

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ANALYSIS OF THE ROLE OF CATERING SERVICES AND GASTRONOMIC OPPORTUNITIES IN TOURISM

Abstract. *The article analyzes the development of gastronomic tourism in Uzbekistan, the economic and cultural significance of catering services, and the role of gastronomic potential in the growth of the tourism sector. Catering services, as an essential part of the tourism infrastructure, directly influence tourists' overall impressions, cultural experiences, and perceptions of the country. The study examines the practical state of gastronomic services through the case of the "Karimbek" restaurant and compares it with international experiences. In addition, recommendations are proposed to further develop gastronomic tourism in Uzbekistan, strengthen the national culinary brand, and improve service quality and digital technologies in the hospitality sector.*

Keywords: *gastronomic tourism, catering services, tourism infrastructure, national cuisine, digital service, "Karimbek" restaurant, cultural heritage, tourist satisfaction, gastronomic brand.*

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OVQATLANISH XIZMATLARINING TURIZMDA O'RNI VA GASTRONOMIK IMKONIYATLAR TAHLILI

Annotatsiya. *Maqolada O'zbekiston turizm sohasida gastronomik turizmning shakllanishi, ovqatlanish xizmatlarining iqtisodiy va madaniy ahamiyati hamda gastronomik imkoniyatlarning turizm rivojidagi o'rni tahlil qilinadi. Ovqatlanish xizmatlari turizm infratuzilmasining muhim bo'g'ini sifatida turistlarning umumiy taassuroti, madaniy tajribasi va mamlakat haqidagi fikriga bevosita ta'sir ko'rsatadi. Tadqiqotda "Karimbek" restoranining faoliyati misolida gastronomik xizmatlarning amaliy holati o'rganilib, xorijiy tajribalar bilan qiyosiy tahlil o'tkazilgan. Shuningdek, O'zbekistonda gastronomik turizmni yanada rivojlantirish, milliy oshxona brendini kuchaytirish hamda xizmat sifati va raqamli servisni takomillashtirish bo'yicha takliflar ilgari surilgan.*

Kalit so‘zlar: *gastronomik turizm, ovqatlanish xizmati, turistik infratuzilma, milliy oshxona, raqamli servis, “Karimbek” restorani, madaniy meros, turist qoniqishi, gastronomik brend.*

Kirish

Bugungi kunda turizm sohasi insoniyat madaniy aloqalarini mustahkamlovchi, iqtisodiy taraqqiyotga kuchli turtki beruvchi muhim tarmoqlardan biri sifatida e’tirof etilmoqda. Turizmning gastronomik yo‘nalishi esa so‘nggi yillarda jadal sur’atlar bilan rivojlanib, dunyo mamlakatlari uchun madaniy diplomatiya va iqtisodiy daromad manbaiga aylanmoqda. Milliy taomlar, oshxona an’analari, pishirish uslublari va mahsulotlarning o‘ziga xosligi sayyohlarda mamlakat haqidagi birinchi ijobiy taassurotni shakllantiradi. Shu jihatdan, ovqatlanish xizmati turizm infratuzilmasining ajralmas bo‘g‘ini bo‘lib, u turistlarning qoniqish darajasi, tajriba sifati va qayta tashrif buyurish istagiga bevosita ta’sir ko‘rsatadi.

O‘zbekistonning milliy oshxonasi — palov, somsa, norin, shashlik, manti, lag‘mon, chuchvara, ko‘k somsa, turli non va shirinliklar kabi nafaqat boy taom madaniyatini, balki xalqimizning mehmondo‘stlik va bag‘rikenglik an’analarini ham ifodalaydi. Shu bois, milliy taomlar orqali O‘zbekiston turistik jozibadorligini yanada oshirish, gastronomik yo‘nalishdagi xizmatlarni takomillashtirish hozirgi davrning dolzarb vazifasiga aylanmoqda.

Asosiy qism

Gastronomik turizm mohiyatan sayohatchining nafaqat taom iste’mol qilish, balki millat madaniyatini, qadriyatlarini va turmush tarzini his etish istagiga asoslanadi. Har bir millatning oshxonasi ularning tarixini, urf-odatlarini va estetik qarashlarini ifodalovchi madaniy koddir. Shu sababli, gastronomik tajriba sayyoh uchun shunchaki taom emas, balki madaniyatni tatib ko‘rish vositasidir.

Gastronomik turizm ijtimoiy va iqtisodiy jihatdan muhim ahamiyatga ega. U mahalliy ishlab chiqaruvchilar va fermer xo‘jaliklarini qo‘llab-quvvatlaydi, hududiy brendlarni shakllantiradi, xizmatlar sektorida ayollar va yoshlarning bandligini oshiradi hamda milliy merosni targ‘ib qiladi. Dunyoda bu yo‘nalish bo‘yicha tajribalar ko‘p: masalan, Fransiyada “Michelin Guide”, Italiyada “Slow Food”, Janubiy Koreyada “Hansik” dasturlari milliy oshxona orqali turizmni rivojlantirishning muvaffaqiyatli namunalaridir. O‘zbekiston ham bu tajribalarni milliy sharoitga moslashtirgan holda gastronomik turizmni strategik yo‘nalish sifatida shakllantirib bormoqda.

Ovqatlanish korxonalarining faoliyati turistik xizmat sifatini belgilovchi asosiy omillardan biridir. Xalqaro standartlarga ko‘ra, bunday korxonalarda gigiyena va xavfsizlik talablariga qat’iy rioya qilinadi, menyular bir nechta tillarda tuziladi, allergenlar, mahsulot manbasi va kaloriyasi haqida ma’lumot beriladi. Zamonaviy xizmatlarda QR-menyular, onlayn buyurtmalar, elektron to‘lov tizimlari va mijoz fikrlarini tahlil qilish dasturlari keng qo‘llanilmoqda. Bu yondashuv xizmatni nafaqat qulay va tez, balki shaffof va madaniy jihatdan mos qiladi.

Samarqand shahridagi “Karimbek” restorani misolida o‘tkazilgan tahlil gastronomik xizmatlarning amaliy ahvolini ko‘rsatib beradi. Restoran milliy taomlarning avtentik shaklini saqlab qolgan, palov, somsa, manti, qovurma lag‘mon kabi taomlar turistlar orasida mashhur. Uning kuchli jihatlaridan biri - milliy ruhdagi xizmat madaniyati, markaziy joylashuvi va tajribali oshpazlarga ega bo‘lishidir. Biroq ayrim kamchiliklar ham mavjud: menyular xorijiy tillarda to‘liq tarjima qilinmagan, QR-menyu va onlayn bron tizimi to‘liq joriy etilmagan, raqamli marketing yo‘nalishida sustlik kuzatiladi.

Bunday holatni bartaraf etish uchun restoranlar raqamli texnologiyalarni faol tatbiq etishlari, xorijiy tillarda xizmatni kengaytirishlari va gastro-festivallarni tashkil etish orqali o‘z brendini targ‘ib etishlari lozim. Shuningdek, mahalliy mahsulotlar asosida tayyorlangan ekologik toza taomlar, sog‘lom ovqatlanish konsepsiyasiga asoslangan menyular turistlar orasida katta qiziqish uyg‘otadi.

O‘zbekiston gastronomik turizm sohasini yanada rivojlantirish uchun milliy taom festivallarini (“Palov Fest”, “Street Food Samarkand” kabi) muntazam o‘tkazish, viloyatlar kesimida “gastro-marshrutlar”ni joriy etish, oshpazlik maktablari va sertifikatlashtirilgan dasturlarni yo‘lga qo‘yish, raqamli marketingni kuchaytirish muhimdir. Bunday yondashuv orqali har bir hudud o‘ziga xos oshxona an’analarini milliy brend darajasiga ko‘tarishi, turistlar uchun yangi tajriba makonlarini yaratishi mumkin.

O‘zbekiston oshxona madaniyati xalqaro maydonda targ‘ib qilinayotgan bugungi kunda gastronomik turizm nafaqat iqtisodiy, balki diplomatik, madaniy va ijtimoiy ahamiyat kasb etmoqda. Shu bois, mamlakatimizda gastronomik turizmning ilmiy-nazariy asoslarini chuqur o‘rganish, xizmat sifati va standartlarini xalqaro darajaga ko‘tarish strategik ahamiyatga ega vazifadir.

Xulosa

O‘zbekistonda gastronomik turizm turizm sanoatining eng istiqbolli tarmoqlaridan biri sifatida shakllanmoqda. Ovqatlanish xizmatlari sifati, xizmat madaniyati, raqamli servisning mavjudligi, xodimlar malakasi va milliy an’analar uyg‘unligi turistlarning qoniqish darajasini belgilovchi asosiy omillardir. “Karimbek” restorani misolida olib borilgan tahlil shuni ko‘rsatadiki, raqamli texnologiyalarni joriy etish, xorijiy tillarda xizmat ko‘rsatishni kengaytirish, gastronomik brendlarni rivojlantirish va madaniy tajriba dizaynini yaratish O‘zbekiston gastronomik turizmini yangi bosqichga olib chiqadi.

Gastronomik turizmni kompleks rivojlantirish mamlakatning xalqaro imijini mustahkamlaydi, iqtisodiy o‘sishga xizmat qiladi va milliy merosni butun dunyoga tanitishning eng samarali vositalaridan biriga aylanadi.

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EKOTURIZM XARITALARINI GIS VA MASOFADAN ZONDSHLASH ASOSIDA YARATISH (JIZZAX VILOYATI MISOLIDA)

Annotatsiya. *Mazkur tadqiqotda Jizzax viloyatining tabiiy-geografik sharoitlaridan kelib chiqib, ekoturizm resurslarini aniqlash, ularni baholash va xaritaga olishda geoinformatsion tizimlar (GIS) hamda masofadan zondlash (MZ) texnologiyalaridan foydalanish imkoniyatlari tahlil qilindi. Sentinel-2 sun'iy yo'ldoshi tasvirlari, raqamli relyef modeli (DEM) va OpenStreetMap manbalaridan olingan ma'lumotlar asosida viloyatdagi ekoturizm salohiyati yuqori bo'lgan tabiiy hududlar aniqlanib, ularning landshaft, iqlim va vegetatsion xususiyatlari tahlil qilindi. Natijada GIS–MZ integratsiyasi asosida Jizzax viloyati uchun barqaror ekoturizmni rivojlantirishga yo'naltirilgan ilmiy asoslangan kartografik model ishlab chiqildi.*

Kalit so'zlar: *ekoturizm, GIS, masofadan zondlash, Sentinel-2, DEM, landshaft tahlili, barqaror turizm, kartografik model, geoinformatsion tizim.*

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CREATION OF ECOTOURISM MAPS BASED ON GIS AND REMOTE SENSING (ON THE EXAMPLE OF JIZAKH REGION)

Abstract. *This study analyzes the possibilities of using Geographic Information Systems (GIS) and Remote Sensing (RS) technologies for identifying, evaluating, and mapping ecotourism resources in the Jizzakh region of Uzbekistan. Based on Sentinel-2 satellite imagery, Digital Elevation Model (DEM), and OpenStreetMap datasets, areas with high ecotourism potential were identified and*

analyzed in terms of landscape, climate, and vegetation characteristics. As a result, an integrated GIS–RS-based cartographic model was developed to support sustainable ecotourism development in the Jizzakh region.

Keywords: *ecotourism, GIS, remote sensing, Sentinel-2, DEM, landscape analysis, sustainable tourism, cartographic modeling, geospatial analysis.*

Kirish

So‘nggi yillarda ekoturizm inson va tabiat o‘rtasidagi uyg‘unlikni ta’minlash, tabiiy resurslardan oqilona foydalanish hamda mahalliy iqtisodiyotni rivojlantirishda muhim o‘rin tutuvchi yo‘nalishlardan biriga aylandi. O‘zbekiston Respublikasida ekoturizm sohasi izchil rivojlanmoqda, xususan, Jizzax viloyatida joylashgan Zomin milliy tabiat bog‘i, Forish tumanidagi Oqtosh tog‘ tizmalari, Mirzacho‘l dasht zonasi va Sangzor daryosi vodiysi kabi tabiiy hududlar ekoturizm salohiyatiga boy maskanlar hisoblanadi. Bu hududlarda o‘rmonzorlar, tog‘li relyeflar, boy flora va fauna majmuasi hamda toza havo sharoitlari mavjud bo‘lib, ular ekologik jihatdan jozibali turizm obyektlarini tashkil etadi [1-4].

Shunga qaramay, Jizzax viloyatining tabiiy resurslari, turizm obyektlari va ekologik barqarorligi haqidagi ma’lumotlar yetarlicha tizimlashtirilmagan. Mavjud kartografik ma’lumotlar ko‘p hollarda fragmentar yoki eskirgan bo‘lib, turizmni hududiy rejalashtirish jarayonida to‘liq geotahliliy asos yaratmaydi. Shu sababli, geoinformatsion tizimlar (GIS) va masofadan zondlash (MZ) texnologiyalarini qo‘llash orqali ekoturizm resurslarini aniqlash, ularni baholash va fazoviy modellashtirish muhim ilmiy-amaliy ahamiyat kasb etadi [5-7].

Tadqiqotning asosiy maqsadi — Jizzax viloyatida ekoturizm salohiyatiga ega tabiiy hududlarni aniqlash, ularni ekologik, landshaft va iqlimiy omillar asosida baholash hamda GIS texnologiyalari yordamida kartografik modellashtirish orqali turizmni barqaror rivojlantirishga xizmat qiluvchi ilmiy asos yaratishdan iborat [3-5].

Ma’lumotlar va usullar

Tadqiqot jarayonida Jizzax viloyatining tabiiy sharoitini tahlil qilish uchun masofadan zondlash, iqlimiy va topografik ma’lumotlar kompleksidan foydalanildi. Asosiy ma’lumotlar manbalari quyidagilardan iborat: Sentinel-2 sun’iy yo‘ldoshi tasvirlari (2024-yil vegetatsiya mavsumiga oid) — ular yordamida NDVI (Normalized Difference Vegetation Index) va NDWI (Normalized Difference Water Index) hisoblab chiqildi. Ushbu indekslar viloyat hududidagi o‘simlik qoplami zichligi hamda suv obyektlarining fazoviy taqsimotini aniqlash imkonini berdi.

Relyef xususiyatlarini o‘rganish uchun SRTM (Shuttle Radar Topography Mission) ma’lumotlaridan olingan raqamli relyef modeli (DEM) asosida nishablik (slope) va balandlik (elevation) xaritalari yaratildi. Shuningdek, ERA5 iqlim ma’lumotlari yordamida Jizzax viloyatining o‘rtacha yillik harorati va yog‘in miqdori tahlil qilindi, bu esa ekoturizm faoliyati uchun qulay iqlimiy sharoitlarni baholash imkonini berdi.

OpenStreetMap (OSM) ma’lumotlar bazasidan avtomobil yo‘llari, dam olish maskanlari, mehmonxonalar, o‘rmon chegaralari va turistik obyektlarning

joylashuvi haqida qatlamlar olindi. Ma’lumotlar QGIS 3.40, Google Earth Engine (GEE) va ArcGIS Pro dasturlarida qayta ishlanib, fazoviy tahlil uchun tayyor holatga keltirildi.

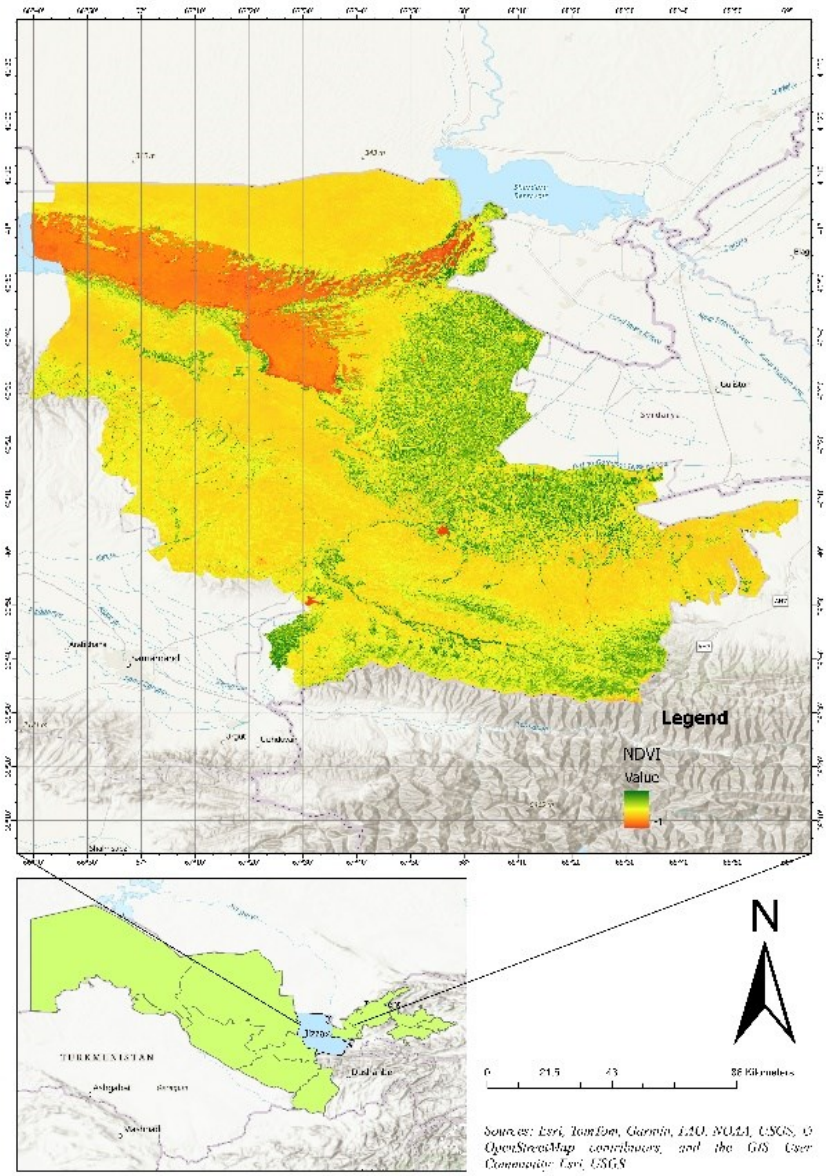
Tadqiqot metodik asosini “Multi-Criteria Evaluation (MCE)” yondashuvi tashkil etdi. Bu yondashuvda ekoturizm salohiyatini aniqlash uchun bir nechta fazoviy omillar integratsiya qilindi. Asosiy indikatorlar sifatida quyidagi mezonlar tanlab olindi: vegetatsiya zichligi (NDVI asosida), suv manbalariga yaqinlik, relyefning tiklik darajasi (slope), yo‘l infratuzilmasiga masofa hamda tabiiy landshaft tiplari (o‘rmon, tog‘, dasht zonalari). Har bir indikator 1 dan 5 gacha bo‘lgan ballik shkalada baholandi va ularning ekoturizmga ta’sir darajasiga qarab og‘irlik (weight) koeffitsientlari berildi.

Barcha indikatorlar GIS muhitida “Weighted Overlay Analysis” usuli yordamida birlashtirildi. Natijada, Jizzax viloyatining “ekoturizm salohiyati xaritasi” shakllantirilib, yuqori, o‘rta va past darajadagi potensial zonalar aniqlangan. Ushbu model viloyatda ekoturizmni barqaror rivojlantirish, tabiiy hududlarni muhofaza qilish hamda turistik infratuzilmani ilmiy asosda rejalashtirish uchun samarali vosita bo‘lib xizmat qiladi.

Natijalar va tahlil

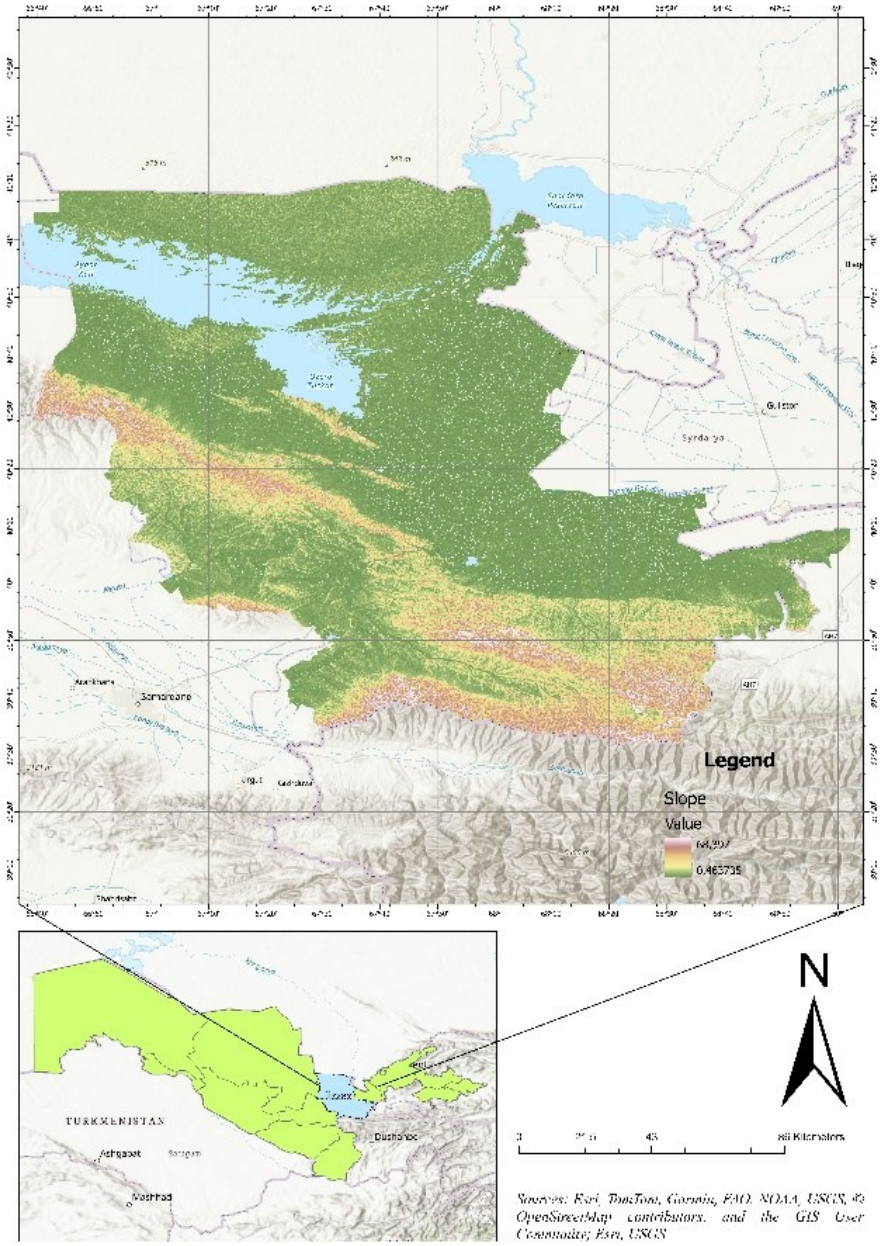
Jizzax viloyati tabiiy-geografik jihatdan O‘zbekistonning markaziy qismida joylashgan bo‘lib, tog‘li va dasht landshaftlari bilan farqlanadi. Tadqiqot davomida GIS va MZ ma’lumotlari asosida viloyatning ekoturizm salohiyati tahlil qilindi. Asosiy tahlil parametrlari sifatida vegetatsiya zichligi (NDVI), suv obyektlariga yaqinlik (NDWI), relyefning tiklik darajasi (Slope) va yo‘l infratuzilmasiga masofa ko‘rsatkichlari hisobga olindi.

Sentinel-2 tasvirlari asosida hisoblangan NDVI xaritasi Jizzax viloyatining o‘simlik qoplami zichligini ko‘rsatdi. Olingan natijalarga ko‘ra, Zomin milliy tabiat bog‘i, Forish tumanining shimoliy-g‘arbiy qismi hamda Sangzor vodiysi atrofida NDVI qiymatlari 0.55 dan 0.75 gacha bo‘lib, bu joylarda o‘rmonzorlar va tabiiy yaylovlar ekoturizm uchun qulay muhit yaratishini bildiradi. Past NDVI qiymatlar (0.1–0.3) esa Mirzacho‘lning quruq dasht zonalarida kuzatildi, bu hududlarda ekoturizm salohiyati cheklanganligi aniqlandi.



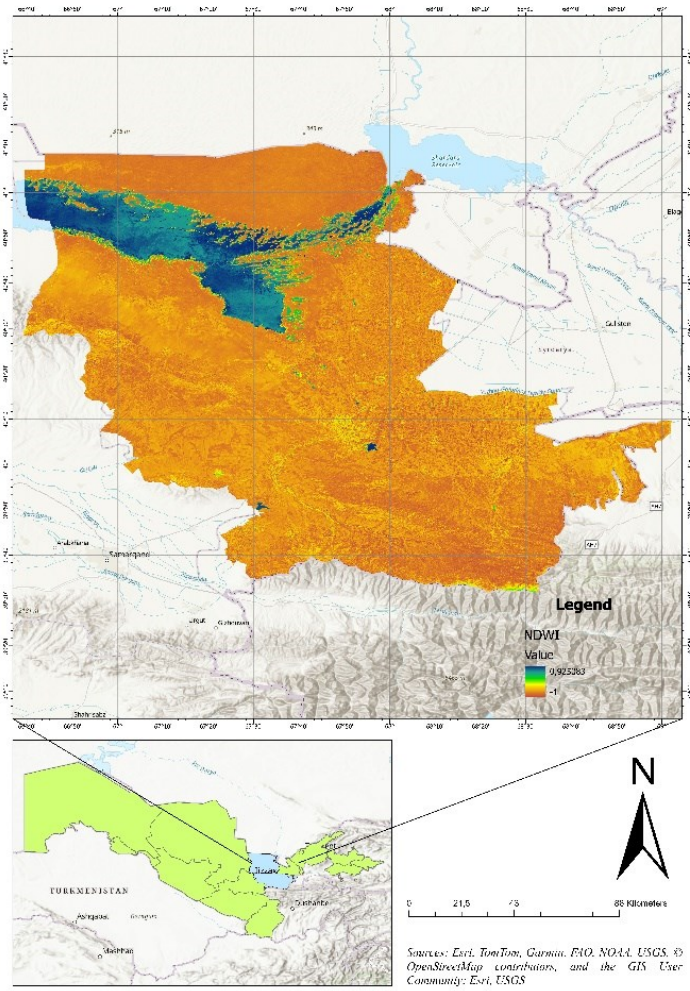
1-Rasm. Jizzax viloyati bo‘yicha NDVI (vegetatsiya zichligi) xaritasi
Manba: Sentinel-2, 2024-yil yoz mavsumi, Google Earth Engine muhitida hisoblangan.

DEM ma’lumotlari asosida tuzilgan nishablik (slope) xaritasi Jizzax viloyatining relyef jihatdan ancha farqlanishini ko‘rsatdi. Zomin milliy tabiat bog‘ining markaziy qismida nishablik darajasi 15–35° oralig‘ida bo‘lib, bu joylar sayyohlik yo‘nalishlari uchun qiziqarli, ammo piyoda yoki ekotrekking turlariga mo‘ljallangan hududlar ekanini ko‘rsatadi. Past nishablikli (<5°) maydonlar esa Mirzacho‘l platosida joylashgan bo‘lib, ular avtomobil yo‘llari bilan qulay bog‘langan va ekoagroturizm turlarini rivojlantirish uchun mos hisoblanadi.



Rasm 2. Jizzax viloyati bo‘yicha relyef nishablik darajasi (Slope) xaritasi
Manba: SRTM DEM ma’lumotlari asosida, 30 m aniqlikda hisoblangan.

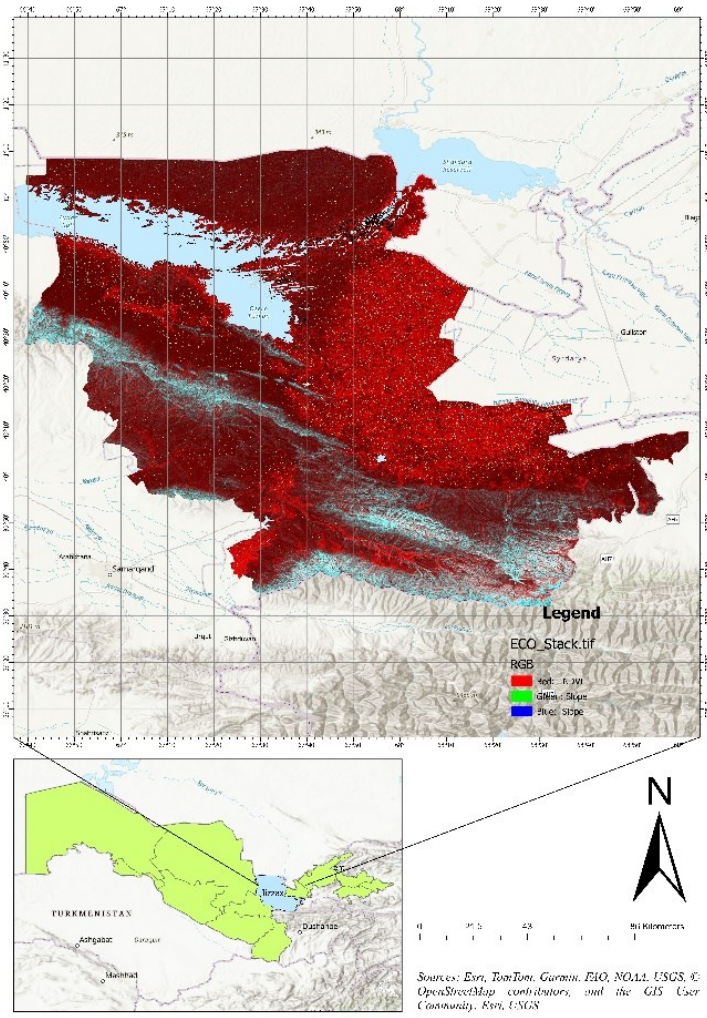
Suv manbalariga yaqinlik tahlili (NDWI asosida) Sangzor daryosi vodiysi va Guralashsoy havzalarida suv obyektlari ekoturizm uchun muhim rekreatsion resurs sifatida xizmat qilishini ko‘rsatdi. Ayniqsa, suv oqimlari yaqinidagi landshaftlar (daryo bo‘yidagi o‘rmonzorlar va tog‘ etaklari) ekologik dam olish, piknik va yengil turizm turlarini tashkil etish uchun eng qulay joylar hisoblanadi.



Rasm 3. Suv obyektlari va gidrografik tarmoq bo‘yicha NDWI xaritasi (Jizzax viloyati). *Manba: Sentinel-2 (B3/B11 kanallari asosida), 2024-yil.*

GIS muhiti orqali Multi-Criteria Evaluation (MCE) yondashuvi asosida barcha indikatorlar birlashtirilib, “Weighted Overlay” tahlili bajarildi. Har bir qatlamga ularning ekoturizmga ta’sir darajasiga qarab og‘irlik koeffitsienti berildi: NDVI – 0.35, NDWI – 0.25, Slope – 0.25, Roads distance – 0.15. Yakuniy baholash natijalariga ko‘ra, Jizzax viloyatining 22,7 % maydoni “yuqori ekoturizm salohiyati”, 41,3 % “o‘rta”, 36,0 % “past” salohiyatli zonalar sifatida ajratildi.

Yuqori ekoturizm salohiyatiga ega hududlar asosan Zomin milliy tabiat bog‘i, Guralashsoy va Sangzor vodiysi atrofida, shuningdek, Forish tumanining tog‘ oldi mintaqalarida joylashgan. O‘rta salohiyatli zonalar ko‘proq qishloq atrofidagi o‘rmonzorlar va dasht landshaftlari bo‘lib, ular agroturizm uchun istiqbolli yo‘nalish hisoblanadi. Past salohiyatli hududlar esa asosan Mirzacho‘l platosining quruq, vegetatsiya zichligi past bo‘lgan maydonlariga to‘g‘ri keladi.



Rasm 4. Jizzax viloyatining ekoturizm salohiyati bo‘yicha integratsion xaritasi (Weighted Overlay Analysis natijasi). *Manba: GIS tahlil natijasi (ArcGIS Pro, 2024-yil).*

Yakuniy xarita viloyatdagi ekoturizmni barqaror rivojlantirish bo‘yicha rejalashtirish uchun amaliy asos yaratadi. Ayniqsa, Zomin milliy bog‘ida ekoturizm yo‘nalishlarini (eko-trekking, tog‘ sayohatlari, qushlarni kuzatish, botanika marshrutlari) rejalashtirishda mazkur kartografik modeldan foydalanish tavsiya etiladi. Shuningdek, Jizzax viloyatining janubiy va sharqiy qismidagi tog‘li relyeflar ekologik dam olish zonalarini tashkil etish uchun katta salohiyatga ega ekani aniqlandi.

Xulosa

Tadqiqot natijalari shuni ko‘rsatdiki, GIS va masofadan zondlash texnologiyalari asosida ekoturizm salohiyatini baholash Jizzax viloyatida mavjud tabiiy resurslardan oqilona foydalanish va barqaror turizmni rivojlantirishda samarali vosita hisoblanadi. Sentinel-2 ma’lumotlaridan olingan NDVI va NDWI indekslari o‘simlik qoplami va suv resurslarini aniq fazoviy baholash imkonini berdi, SRTM DEM esa relyef va landshaft turlarining tahliliga yordam berdi.

GIS muhitida amalga oshirilgan Weighted Overlay Analysis natijasida viloyatning yuqori ekoturizm salohiyatiga ega hududlari aniqlandi. Jumladan, Zomin milliy tabiat bog‘i, Sangzor vodiysi, Guralashsoy va Forish tog‘ oldi zonalari ekoturizmni rivojlantirish uchun eng istiqbolli hududlar sifatida baholandi. Ushbu yondashuv kelgusida O‘zbekistonning boshqa tabiiy hududlarida ham qo‘llanilishi mumkin bo‘lib, ekoturizmni rejalashtirish, ekologik monitoring, landshaft tahlili va barqaror rivojlanish strategiyalarini ishlab chiqishda keng imkoniyatlar yaratadi.

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TOSHKENT VILOYATIDA BALIQCHILIK XO‘JALIKLARINING RIVOJLANISHIGA TA’SIR KO‘RSATUVCHI TABIIY, IQTISODIY VA IJTIMOIY GEOGRAFIK OMILLARNING TAHLILI

Annotatsiya: *Ushbu maqolada Toshkent viloyatida baliqchilik xo‘jaliklarini rivojlantirishga ta’sir etuvchi iqtisodiy, ijtimoiy va tabiiy geografik omillar tahlil qilingan. Tadqiqotda suv resurslari va iqlim sharoiti kabi tabiiy omillar hamda bozorga kirish qulayligi, infratuzilma, davlat siyosati kabi iqtisodiy-ijtimoiy omillarning o‘zaro ta’siri o‘rganilgan. Geografik, kartografik, statistik va qiyosiy tahlil usullari asosida Toshkent viloyatida baliqchilikni kengaytirish uchun qulay sharoitlar mavjudligi aniqlangan. Shu bilan birga, ekologik muammolar va eskirgan texnologiyalar rivojlanishga to‘sqinlik qilayotgan omillar sifatida qayd etilgan. Maqola yakunida suv resurslaridan samarali foydalanish, innovatsion texnologiyalarni joriy etish va ekologik monitoringni kuchaytirish bo‘yicha tavsiyalar berilgan.*

Kalit so‘zlar: *Baliqchilik, Toshkent viloyati, iqtisodiy geografiya, ijtimoiy omillar, tabiiy sharoit, akvakultura, barqaror rivojlanish, suv resurslari.*

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ANALYSIS OF NATURAL, ECONOMIC, AND SOCIO-GEOGRAPHICAL FACTORS INFLUENCING THE DEVELOPMENT OF FISHERIES IN TASHKENT REGION

Abstract: *This article examines the economic, social, and natural geographic factors influencing the development of fisheries in the Tashkent region. The study identifies the interaction between natural conditions such as water resources and climate, and socio-economic elements including market accessibility, infrastructure, and state policy. Using geographic, cartographic, statistical, and comparative analysis methods, the research highlights that Tashkent region possesses highly favorable conditions for the expansion of fish farming. However, ecological challenges and outdated technologies remain constraints. The paper concludes with recommendations for improving water resource management, adopting innovative technologies, and strengthening ecological monitoring to ensure sustainable growth in the fisheries sector.*

Keywords: *fisheries, Tashkent region, economic geography, social factors, natural conditions, aquaculture development, sustainability, water resources.*

KIRISH

O‘zbekiston Respublikasi oziq-ovqat xavfsizligini ta’minlashda qishloq xo‘jaligining turli tarmoqlari qatorida baliqchilik sohasi tobora muhim ahamiyat kasb etmoqda. Baliqchilik xo‘jaliklari nafaqat aholini oqsilli oziq-ovqat bilan ta’minlashda, balki yangi ish o‘rinlari yaratishda, eksport salohiyatini oshirishda ham katta rol o‘ynaydi.

O‘zbekiston Respublikasi Prezidenti qarorlari bilan so‘nggi yillarda baliqchilikni rivojlantirishga alohida e’tibor qaratilib, “Baliqchilikni rivojlantirish dasturi” asosida ko‘plab imtiyoz va yengilliklar joriy etildi [7]. Toshkent viloyati bu jarayonda yetakchi hududlardan biri bo‘lib, ayniqsa Chinoz, Quyi Chirchiq, Bo‘ka, Bekobod va Ohangaron tumanlarida baliqchilik xo‘jaliklari keng rivojlanmoqda [9].

Mazkur maqolaning maqsadi – Toshkent viloyatida baliqchilik xo‘jaliklarini rivojlantirishda tabiiy, iqtisodiy, ijtimoiy va ekologik omillarning geografik asoslarini tahlil qilish, ularning o‘zaro ta’sirini ochib berish va rivojlantirish istiqbollarini belgilashdan iborat.

ADABIYOTLAR TAHLILI VA METODOLOGIYA

Baliqchilikning rivojlanishi ko‘plab omillar bilan chambarchas bog‘liq bo‘lib, ular orasida tabiiy resurslar (suv havzalari, iqlim sharoiti), bozorga kirish qulayligi, infratuzilma rivoji, davlat siyosati va aholi talabining o‘rni alohida ta’kidlanadi.

Xalqaro tajriba shuni ko‘rsatadiki, Xitoy, Vyetnam, Norvegiya, Turkiya kabi davlatlarda baliqchilik xo‘jaliklari samaradorligini oshirishda quyidagi omillar muhim rol o‘ynaydi [2]:

- tabiiy resurslardan oqilona foydalanish;
- zamonaviy texnologiyalar joriy etilishi;
- bozor talablariga mos mahsulot yetishtirish;
- davlat tomonidan subsidiyalar va kreditlar berilishi;
- ekologik muhofaza choralari.

Toshkent viloyati baliqchilikni rivojlantirish uchun eng qulay hududlardan biri bo‘lib, bu yerda suv omborlari va daryolar, shuningdek, yirik iste’mol bozori – Toshkent shahri mavjudligi katta afzallik hisoblanadi.

Tadqiqot jarayonida bir qator ilmiy usullar majmuasi qo‘llanilidi.

✓ **Geografik tahlil usuli** yordamida Toshkent viloyatining tabiiy, iqtisodiy va ijtimoiy sharoitlari chuqur o‘rganildi. Ushbu yondashuv orqali baliqchilik xo‘jaliklarining joylashuvi va rivojlanishiga ta’sir etuvchi hududiy omillar aniqlab chiqildi.

✓ **Kartografik usul**dan foydalanilib, baliqchilik xo‘jaliklarining hududiy taqsimoti xaritalar orqali tasvirlandi. Bu usul tarmoqqa oid geografik ma’lumotlarni vizual shaklda ifodalash hamda joylashuvning fazoviy xususiyatlarini aniqlash imkonini berdi.

✓ **Statistik tahlil usuli** asosida rasmiy manbalardan olingan ma’lumotlar tahlil qilindi. Jumladan, baliq yetishtirish hajmlari, iste’mol darajasi va iqtisodiy ko‘rsatkichlar o‘rganilib, ularning o‘zgarish dinamikasi aniqlab chiqildi.

✓ **Qiyosiy tahlil usuli** orqali Toshkent viloyatidagi baliqchilik xo‘jaliklarining rivojlanish darajasi boshqa viloyatlar tajribasi bilan solishtirildi. Bu yondashuv hududiy farqlarni aniqlash hamda ilg‘or tajribalarni aniqlash imkonini berdi.

NATIJA

Ushbu usullar o‘zaro bir – biri bilan bog‘liq holda qo‘llanilganligi tadqiqotning ilmiy ishonchliligini oshiradi va Toshkent viloyatida baliqchilik xo‘jaliklarini rivojlantirish omillarini kompleks baholash imkonini yaratadi.

Quyida baliqchilik xo‘jaliklarini rivojlantirish uchun ta’sir ko‘rsatuvchi bir qator geografik va ekologik omillar keltirib o‘tilgan.

Tabiiy geografik omillar. Toshkent viloyati tabiiy sharoit jihatidan baliqchilikni rivojlantirish uchun eng qulay hududlardan biri hisoblanadi. Viloyat suv resurslariga boy bo‘lib, uning hududidan Chirchiq, Ohangaron va Bo‘zsuv kabi yirik daryolar oqib o‘tadi. Shuningdek, Chorvoq, Tuyabug‘iz va Qodriya suv omborlari mavjud bo‘lib, ular baliqchilik xo‘jaliklari uchun asosiy tabiiy manba vazifasini bajaradi [1].

Hududning iqlimi kontinental bo‘lib, yoz fasli issiq, qish esa sovuq kechadi. Suv haroratining fasliy o‘zgarishlari 6–28 °C oralig‘ida bo‘ladi. Bu harorat sharoiti karp, sazan, amur, tolstolob kabi baliq turlarini yetishtirish uchun juda mosdir [6]. Shunday qilib, tabiiy-geografik omillar Toshkent viloyatida baliqchilikning barqaror rivojlanishida muhim ahamiyat kasb etadi.

Iqtisodiy omillar. Toshkent viloyatida baliqchilikni rivojlantirishda iqtisodiy omillar hal qiluvchi o‘rin tutadi.

Birinchidan, **bozorga kirish qulayligi** mavjud: Toshkent shahri aholisi 3 milliondan ortiq bo‘lib, baliq mahsulotlariga bo‘lgan talab yuqori [8]. Shu boisdan, viloyat baliqchiligi uchun bu shahar yirik ichki bozor vazifasini bajaradi.

Ikkinchidan, **qishloq xo‘jaligi va sanoatning rivoji** baliqchilikni qo‘llab-quvvatlovchi omillardandir. Hududda yetishtiriladigan don, makkajo‘xori va boshqa yem-xashak mahsulotlari baliqlar uchun ozuqa sifatida ishlatiladi. Shu bilan birga, sanoat sektori baliq yetishtirishda zarur bo‘lgan texnologiyalar va uskunalar bilan ta’minlaydi.

Uchinchidan, **sarmoya va texnologiyalar** sohasida sezilarli o‘sish kuzatilmoqda. So‘nggi yillarda davlat va xususiy sektor hamkorligida yangi baliqchilik xo‘jaliklari tashkil etildi. Ularning faoliyatida aeratsiya tizimlari, intensiv ozuqa berish texnologiyalari hamda sun’iy inkubatsiya uskunalari joriy qilinmoqda.

To‘rtinchidan, **transport infratuzilmasining rivojlanganligi** ham muhim omil hisoblanadi. Toshkent viloyati O‘zbekistonning transport markazlaridan biri bo‘lib, avtomobil yo‘llari, temiryo‘l tarmoqlari va logistika infratuzilmasi baliq mahsulotlarini bozorlarga tez yetkazib berishga imkon yaratadi.

Beshinchidan, **davlat siyosati** baliqchilik tarmog‘iga kuchli turtki bermoqda. O‘zbekiston Respublikasi Prezidentining baliqchilikni rivojlantirishga oid qarorlari asosida soha subyektlariga kreditlar, soliq imtiyozlari hamda subsidiyalar ajratilmoqda.

Ijtimoiy omillar ham viloyatda baliqchilikning taraqqiyotida muhim o‘rin tutadi.

Birinchidan, **ishchi kuchining yetarliligi** – Toshkent viloyatida baliqchilik bilan shug‘ullanuvchi malakali mutaxassislar soni yetarli. Toshkent davlat agrar universiteti va boshqa ta’lim muassasalari baliqchilik sohasi uchun zarur kadrlarni tayyorlamoqda.

Ikkinchidan, **aholining iste’mol odatlari** o‘zgarib, baliq mahsulotlariga bo‘lgan talab ortmoqda. Sog‘lom turmush tarzi, oqsilli oziq-ovqatga bo‘lgan ehtiyojning ortishi bu sohaning iqtisodiy ahamiyatini yanada oshirmoqda.

Ekologik omillar. Viloyatda suv havzalarining ekologik holati baliqchilik barqarorligiga bevosita ta’sir ko‘rsatadi. Sanoat chiqindilari, qishloq xo‘jaligida o‘g‘it va pestitsidlardan ortiqcha foydalanish oqibatida suv resurslarining ifloslanishi kuzatilmoqda [5]. Bu esa suv ekotizimlarining barqarorligiga tahdid solmoqda. Shu sababli, ekologik nazoratni kuchaytirish, suv resurslaridan oqilona foydalanish va bioxilma-xillikni saqlash baliqchilik xo‘jaliklarining kelgusi rivoji uchun zaruriy shart hisoblanadi.

MUHOKAMA

Tahlillardan ko‘rinadiki, Toshkent viloyatida baliqchilikni rivojlantirish uchun tabiiy va iqtisodiy sharoitlar nihoyatda qulay. Aholining katta bozor talabi, transport infratuzilmasi va davlat qo‘llab-quvvatlashi bu tarmoqni strategik darajada rivojlantirish imkonini bermoqda.

Biroq, ekologik muammolar, suv resurslaridan noto‘g‘ri foydalanish, ayrim xo‘jaliklarda texnologiyalarning eskiligi hali ham muhim cheklovlar sifatida qolmoqda [4]. Shuningdek, innovatsion texnologiyalar va yuqori darajada malakali mutaxassislar yetishmasligi tarmoqning tezkor rivojlanishiga to‘siq bo‘lishi mumkin.

Ushbu omillarni hisobga olgan holda biz quyidagi xulosa va takliflarni ilgari surganmiz;

- Suv resurslaridan samarali foydalanish va ularni muhofaza qilish.
- Innovatsion texnologiyalarni keng joriy etish.
- Baliqchilik infratuzilmasini rivojlantirish (logistika, qayta ishlash zavodlari).
- Malakali kadrlar tayyorlashni kuchaytirish.
- Davlat tomonidan qo‘llab-quvvatlash siyosatini davom ettirish.
- Ekologik monitoring tizimini kuchaytirish.

XULOSA

Mazkur tabiiy, iqtisodiy va ijtimoiy-geografik omillar o‘zaro uyg‘unlikda va tizimli yondashuv asosida amalga oshirilgan taqdirda, Toshkent viloyatida baliqchilik xo‘jaliklarining ishlab chiqarish samaradorligi, ekologik barqarorligi hamda resurslardan oqilona foydalanish darajasi sezilarli darajada ortadi. Natijada, mintaqada oziq-ovqat xavfsizligi mustahkamlanadi, aholining oqsilli mahsulotlarga bo‘lgan ehtiyoji yanada to‘liqroq qondiriladi va baliqchilik tarmog‘i viloyat iqtisodiyotining muhim tarmoqlaridan biriga aylanadi. Shu bilan birga, mazkur

jarayon hududning ijtimoiy-iqtisodiy rivojlanishiga, bandlik darajasining oshishiga hamda ichki bozorni mahalliy mahsulotlar bilan ta’minlashga ijobiy ta’sir ko‘rsatadi.

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ZAMONAVIY GEOINFORMATSION TEXNOLOGIYALAR BILAN ISHLASH (FJD TRION S1 3D LIDAR SCANNER MISOLIDA)

Anotatsiya: *Ushbu maqolada Zamonaviy geoinformatsion texnologiyalar bilan ishlash (fjd trion s1 3d lidar scanner misolida) murakkab muhitlarda skanerlash bo‘yicha bosqichma-bosqich tavsiyalar berilgan. Maqolada skanerlashga tayyorgarlik, loyiha rejalashtirish, yo‘nalish tanlash, xususiyatli joylarni aniqlash, loop closure tamoyilini qo‘llash, harakatlanuvchi obyektlar ta’sirini kamaytirish, va nuqta buluti sifatini nazorat qilish bo‘yicha muhim metodlar bayon etilgan.*

Kalit so‘zlar: *FJD Trion S1, 3D LiDAR skaner, murakkab muhit, skanerlash strategiyasi, loop closure, aniqlik, ko‘p qavatli binolarni skanerlash.*

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SCANNING COMPLEX ENVIRONMENTS USING THE FJD TRION S1 3D LIDAR SCANNER

Annotation: *The article provides step-by-step recommendations for scanning in challenging conditions using modern geoinformation technologies (based on the example of the FJD Trion S1 3D LiDAR scanner). The article describes important methods for preparing for scanning, project planning, route selection, object location determination, application of the loop closure principle, reducing the impact of moving objects, and quality control of the point cloud.*

Keywords: *FJD Trion S1, 3D LiDAR scanner, complex environment, scanning strategy, loop closure, accuracy, multi-storey building scanning.*

Kirish

Zamonaviy geoinformatsion texnologiyalarning jadal rivojlanishi murakkab muhitlarda aniq va samarali fazoviy ma’lumotlarni yig‘ishni talab etmoqda. FJD Trion S1 3D LiDAR skaneri yuqori aniqlikdagi uch o‘lchamli skanerlash imkoniyatlarini taqdim etib, arxitektura, qurilish va muhandislik sohalarida keng qo‘llanilmoqda. Ushbu maqolada murakkab muhitlarda skanerlash jarayonini to‘g‘ri rejalashtirish, bajarish va ma’lumotlarni sifatli qayta ishlash bo‘yicha uslubiy tavsiyalar keltiriladi.

Skanerlashni boshlashdan oldin, batareyaning to‘liq zaryadlanganligiga va barcha ulanishlar to‘g‘ri ishlayotganiga ishonch hosil qiling. Qurilmaning ma’lumotlarni yig‘ish va uzatish funksiyalari to‘liq ishlayotganini tasdiqlang. Skanerlashdan oldingi tekshiruvlar ishlashdagi muammolarni oldini oladi. Agar biron-bir muammo yuzaga kelsa, qurilmadan foydalanishdan oldin texnik yordam xizmatiga murojaat qiling.

Skanerlash ishlarini rejalashtirish tartibi. Umumiy ish hajmini kichik, boshqarilishi mumkin bo‘lgan loyihalarga ajrating. Hududni skanerlashni qavatlar bo‘yicha, yoki ichki va tashqi joylarga ajratgan holda tashkil etish tavsiya etiladi. Bu yondashuv ish samaradorligini oshiradi va ma’lumotlarni boshqarishni yengillashtiradi.

Skanerlash marshrutlarini oldindan rejalashtiring.

Harakatlanishni cheklovchi elementlar, vaqtincha to‘siqlar yoki muhitdagi murakkabliklar (masalan, tor joylar, ko‘tarilishlar) skanerlash sifati va aniqligiga ta’sir qilishi mumkin. Ushbu omillarni hisobga olib, optimal yo‘nalish belgilanadi.

Murakkab skanerlash sohalarini mustaqil tarzda ko‘rib chiqing yoki zarur hollarda chiqarib tashlang.

Xususiyatlar soni kam bo‘lgan yoki juda bir xil tuzilishga ega bo‘lgan hududlar (masalan, uzun bir xil devorlar yoki bo‘sh koridorlar) skanerlashda aniqlikni kamaytirishi mumkin. Bunday joylar alohida loyiha sifatida ajratilishi yoki skanerlashdan chiqarib tashlanishi mumkin.

Har bir loyiha boshlanishi va yakuni skanerlash yo‘nalishining yopiq aylana (loop closure) tamoyiliga mos bo‘lishi lozim.

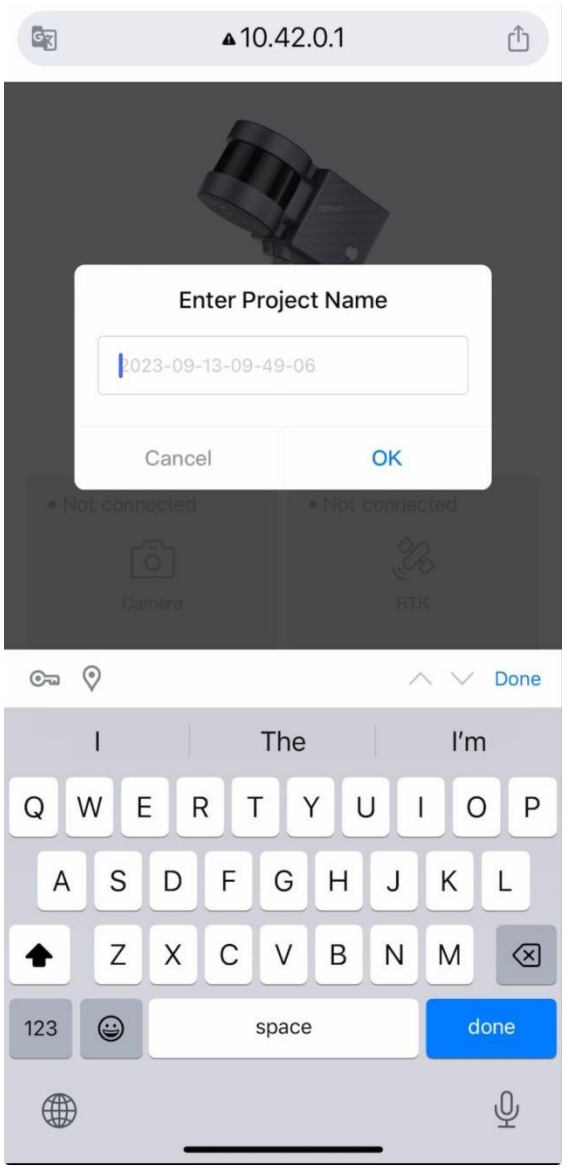
Bu, skanlash jarayonida to‘plangan ma’lumotlarning bir-biri bilan to‘g‘ri va aniq moslashishini (registratsiyasini) ta’minlaydi hamda qo‘shni loyihalar bilan uzluksiz integratsiyalash imkonini beradi.

Har bir loyiha doirasida bir nechta kichik yopiq aylana (loop) yaratish tavsiya etiladi.

Bu uslub umumiy aniqlikni oshiradi. Loyihalar o‘rtasidagi ustma-ust (overlapping) hududlarda etarlicha aniqlikdagi va aniq farqlanadigan nuqta bulutlari bo‘lishi kerak. Bu registratsiya va hizalanish jarayonini soddalashtiradi.

Zarurat tug‘ilganda skanerlash muhiti bilan manipulyatsiya qiling. Ma’lumot sifatini oshirish maqsadida ba’zi elementlar (masalan, ochiladigan

eshiklar, harakatchan mebellar) vaqtincha mahkamlanishi yoki boshqa joyga ko‘chirilishi mumkin. Bu skanerlash uchun ko‘proq xususiyatli obyektlarni hosil qilishga yordam beradi.



Skanerlash.

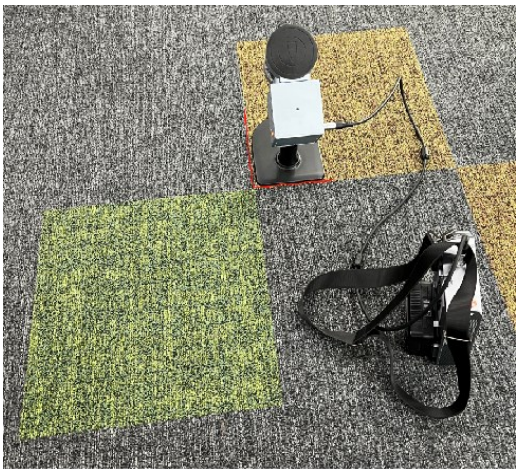
Skanerlash jarayonini tartibli tashkil etish uchun loyihalarga nom berishda o‘z shaxsiy nomlash qoidalaringizga rioya qiling.

Bu skanerlash ma’lumotlarini boshqarish va tahlil qilishni osonlashtiradi. Masalan, har bir kichik topshiriqni umumiy loyiha nomi va sana asosida nomlash mumkin; 6-Noyabr – Oydin ko‘chasi binosi – Podval, 6-Noyabr – Paxtazor ko‘chasi binosi – Kirish qismi, 6-Noyabr – Xonabod shox ko‘chasi binosi – 1-qavat.

Qurilmani ishga tushirishda uni barqaror va tekis sirtga joylashtiring hamda skanerlash jarayoni davomida unga tegmang yoki siljitmang. Boshlang‘ich nuqtada quyidagicha harakat qiling; Skanerni ko‘plab aniqlanadigan xususiyatlarga ega hududga qaratib joylashtiring. Bu skanerlashning boshida yuqori aniqlikdagi xaritalashni ta’minlaydi va keyingi skanerlash bosqichlari uchun barqaror asos yaratadi.

Qurilmani ishga tushirish vaqtida uni ko‘plab harakatlanayotgan obyektlar yoki odamlar bo‘lgan joylardan uzoqroqda joylashtiring. Atrofda yurib yurgan odamlar qurilmaning yetarli darajadagi xususiyatlarni aniqlashiga xalaqit qilishi mumkin, harakatlanuvchi obyektlar esa registratsiya (moslashtirish) xatoliklariga olib kelishi ehtimoli bor.

Boshlang‘ich nuqtani belgilab qo‘ying, shunda umumiy yopiq aylana uchun yo‘lni rejalashtirish osonlashadi. Boshlang‘ich nuqtani belgilash skanerlashdan so‘ng ma’lumot sifatini tekshirishda ham yordam beradi. Ya’ni, loyiha yakunida boshlang‘ich nuqtaga qaytib, aylana yopilish arafasida boshlang‘ich va tugash nuqtalari orasidagi masofani baholang. Masofa qancha katta bo‘lsa, yig‘ilgan xatolik shuncha ko‘p bo‘ladi va aniqlik kamayadi.



Skanerlash jarayoni: Oldindan e’tibor berilishi zarur bo‘lgan masalalar Har bir individual loyiha doirasida skanerlash davomiyligini 15 daqiqa bilan cheklash tavsiya etiladi. Bu vaqt chegarasi ma’lumot sifatining optimal darajada saqlanishi va qurilmaning barqaror ishlashi uchun muhimdir. Uzoq davom etgan skanerlash jarayonlari ma’lumotlardagi xatoliklar yig‘ilishiga va aniqlik pasayishiga olib kelishi mumkin.

1. Skanerlash jarayonida qurilmaning ko‘z o‘ngida harakatlanayotgan obyektlar sonini maksimal darajada kamaytirish lozim. Ko‘plab harakatlanuvchi obyektlar, jumladan insonlar, skaner sensorlarining ma’lumot to‘plash jarayonida noaniqlik va xatoliklarni keltirib chiqarishi ehtimoli yuqori. Shu sababli, skanerlash paytida boshqa operatorlar oldida harakat qilishdan saqlanish kerak. Agar harakatlanuvchi obyektlardan to‘liq qochish imkoni bo‘lmasa, skaner qurilmasini harakatlanmaydigan, xususiyatlari aniq va barqaror hududga yo‘naltirish yoki skanerlash aylanasini imkon qadar tezroq yopib, jarayonni yakunlash tavsiya etiladi. Bu usul ma’lumotlar registratsiyasidagi xatoliklarni minimallashtirishga xizmat qiladi.

2. Skanerlash paytida skaner qurilmasini haddan tashqari silkitishdan saqlaning. SLAM (Simultaneous Localization and Mapping) xaritalash IMU (Inertial Measurement Unit) sensoridan olingan ma’lumotlarga asoslangan bo‘lib, keskin harakatlar IMU ma’lumotlarida xatoliklarga olib keladi va xaritaning aniqligiga salbiy ta’sir ko‘rsatadi.

3. Skanerni maqsad qilingan hududga masofadan yo‘naltiring, shunda qurilmaning ko‘rish maydoni hudud haqidagi maksimal ma’lumotni qamrab oladi.

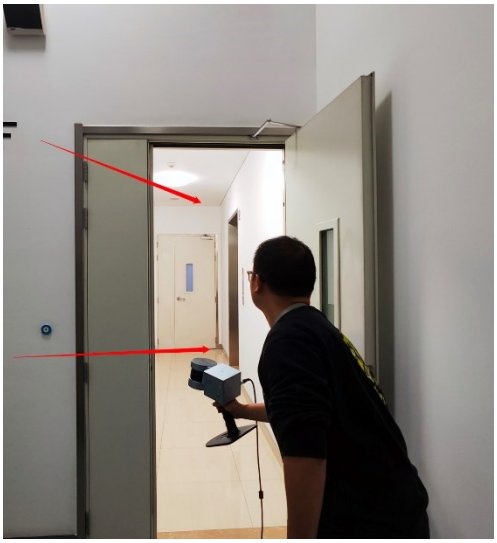
Skanerlash usuli: Skanerni imkon qadar ko‘p xususiyatlarga ega bo‘lgan hududlarga yo‘naltiring. Tuzilma qancha aniq va farqlanuvchi bo‘lsa, shuncha yaxshi, ammo tuzilma juda murakkab bo‘lishi shart emas. Masalan, xona burchagi sodda tuzilishga ega bo‘lsa-da, u uch o‘lchamli bo‘lib, turli vaqtlarda olingan ma’lumotlarning registratsiyasini osonlashtiradi.

Xonaga kirishdan oldin, uning sharoitlari va skanerlash davomiyligini hisobga olib, skanerlashni amalga oshirish yoki o‘tkazib yuborish qarorini qabul qiling. Agar skanerlash uzoq davom etayotgan bo‘lsa va xona kichik hamda qiyin kiriladigan bo‘lsa, uni o‘tkazib yuboring va joriy loyihani imkon qadar tezroq yakunlash uchun aylani yoping. Bunday xonalarni keyingi skanerlash loyihasida skanerlash mumkin yoki ular butunlay kirib bo‘lmas bo‘lsa, to‘liq chiqarib tashlanishi mumkin.

Soddalashtirilgan xonalarda, faqat devorlarni skanerlash kerak bo‘lsa, xona ichiga kirish shart emas. Buning o‘rniga skaner qurilmasini xonaning ichiga yarim yo‘lga kiritib, bir vaqtning o‘zida xona ichidan va tashqarisidan nuqta bulutlari ma’lumotlarini yig‘ish mumkin. Bu usul ichki va tashqi registratsiya aniqligini oshiradi. Agar skaner to‘liq xona ichida joylashsa, tashqaridan ma’lumot yig‘a olmaydi, bu esa kutilmagan omillar ta’sirida skanerlash yo‘lining sifatiga salbiy ta’sir ko‘rsatishi mumkin.

Agar xona to‘liq va batafsil skanerlashi zarur bo‘lsa, xona ichiga asta-sekin kirish lozim. Eshik oldida skanerni bir necha soniya harakatsiz ushlab turing, shunda skaner yetarli xususiyatlarni aniqlay oladi va registratsiya aniqligi oshadi.

Eshik oldida turgan paytda, skanerni shunday ushlangki, u xona ichidagi va tashqarisidagi xususiyatlarga boy hududlarni maksimal darajada qamrab olsin. Rasmlarda ko‘rsatilganidek, skanerni balandroq ushlaganda faqat burchakning bitta qismi skanerlanadi, pastroqda ushlaganda esa ikki burchak qamrab olinadi, bu esa xona registratsiyasining aniqligini sezilarli darajada oshiradi.



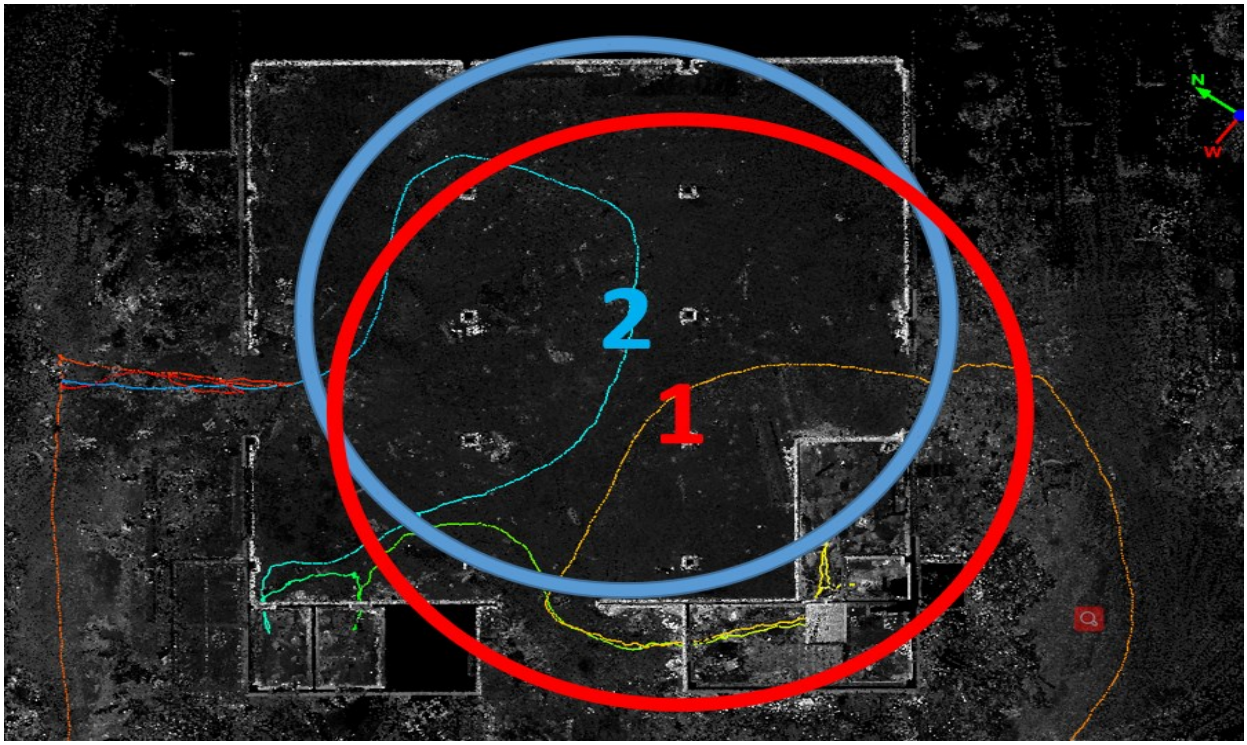
Ikkala tomonida tekis devorlar va kam xususiyatlarga ega uzun koridorlar skanerlash aniqligining pasayishiga olib kelishi mumkin. Xaritalash aniqligini oshirish uchun quyidagi tavsiyalarni bajaring:

Skanerlash loyihasini boshlash va tugatish bir xil hududda amalga oshirilishi lozim, bu umumiy yopiq aylana (loop closure) ni to‘liq bajarishga imkon beradi. Skanerlash jarayonida imkon qadar ko‘proq yopiq aylana hosil qilish tavsiya etiladi.

Aylanani yopish uchun yo‘lning ustma-ust keluvchi qismlari 5 dan 10 metrgacha bo‘lishini ta’minlang. Bu bir xil muhitning yetarli nuqta bulutlari ma’lumotlarini registratsiya jarayonida ishlatishga imkon beradi va xaritalashdagi kuzatuv (tracking) xatoliklarini minimallashtiradi.

Uzun koridorlarda SLAM algoritmi asosida aylanani yopish aniqligini oshirish uchun skaner qurilmasining yo‘nalishini takroriy o‘tilishlar davomida izchil saqlash muhimdir. Bu skanerlangan ma’lumotlarda ustma-ustlikni oshiradi, ayniqsa tor joylarda devorlarga yaqinlik ma’lumot yig‘ilishida yon yo‘nalishdagi ma’lumotlarning ko‘payishiga olib kelishi mumkin. Yaqqol yopiq devorlar yon tomonlardan yo‘nalishli ma’lumotlarni beradi va registratsiyadagi

nomuvofiqliklarni oshiradi, holbuki katta masofalar skanerning old qismidan ma’lumot yig‘ilishiga imkon yaratib, yo‘nalishli xatoliklarni kamaytiradi va aniq registratsiyani ta’minlaydi.



Skanerlash jarayonida aylanani yopish deganda ma’lum vaqt skanerlash o‘tkazilgandan so‘ng, oldingi muhitga qaytish tushuniladi. Oldingi nuqta bulutlari ma’lumotlarini hozirgi ma’lumotlar bilan bog‘lash orqali ma’lumotlarni to‘g‘rilash va yig‘ilgan xatoliklarni kamaytirish mumkin. Aylanani yopish uchun haqiqiy aylana shaklidagi yurish yo‘li talab qilinmaydi. Masalan, quyida ko‘rsatilgan 1-chi va 2-chi chiziqlar ustma-ust keluvchi ko‘p miqdordagi ma’lumotga ega bo‘lib, ularni aylanani yopish va yo‘lni to‘g‘rilashda ishlatish mumkin.

Loyihalar ustma-ustligi

Bir qavatdagi turli skanerlash loyihalari imkon qadar ko‘proq ustma-ust kelishi kerak va ustma-ust keluvchi hududlarda imkon qadar ko‘p xususiyatlar mavjud bo‘lishi zarur.

Yangi loyihani boshqa qavatda boshlashdan oldin, skaner qurilmasini oldingi qavatdagi keng hududda ishga tushiring va oldingi qavatga oid iloji boricha ko‘p ma’lumot to‘plang. Hudud qancha katta va ma’lumotlar shuncha ko‘p bo‘lsa, qavatlararo registratsiya shuncha aniqlik bilan amalga oshadi.

Turli qavatlarga oid ma’lumotlarning ikki yoki undan ortiq nuqtalarda bog‘lanishini ta’minlang, shunda yagona nuqtadagi registratsiyadan kelib chiqadigan qavat ma’lumotlarining noto‘g‘ri hizalanishlari oldini olish mumkin.

Skanerlashni yakunlash

FJD Trion Scan dasturida **Complete** tugmasini bosing, saqlash joyini tekshiring va yangi loyihalar uchun bo‘sh joy yaratish maqsadida keraksiz ma’lumotlarni o‘chirib tashlang.

Loyiha tugagach; FJD Trion Scan dasturida natijalarni quyidagi nuqtalarda tekshiring, mos kelmaslik, uzilishlar;

Chalg‘ish yoki deformatsiya. Agar hech qanday muammo aniqlanmasa, keyingi loyihani boshlashingiz mumkin. Aks holda, yo‘l va loyiha rejasini qayta ko‘rib chiqib, skanerlashni takrorlang.

Ma’lumotlarni har yarim kunda yuklab oling va joyida post-protsess dasturi yordamida tekshirishni amalga oshiring. Ba’zi muammolar faqat nuqta bulutlarini bo‘laklarga ajratib ko‘rilganda aniqlanadi. Quyidagilarni tekshiring:

Bo‘laklarga ajratilgandan keyingi nuqta buluti qalinligi;

Nuqta bulutlarida alohida qatlamlar mavjudligi yoki ma’lumotlarning siljishi;

Har qanday ma’lumotlarning yetishmasligi.

Xulosa

Yuqoridagi barcha bosqichlarni to‘liq bajarilsa, sifatli va to‘liq nuqta bulutlarini olish mumkin bo‘ladi. Keyingi bosqichda ma’lumotlarni post-protsess dasturlarida, masalan, FJD Trion Modelda, registratsiya, koordinatalarni o‘zgartirish va aniqlikni tekshirish orqali qayta ishlash tavsiya etiladi. Ish joyini oldindan ko‘zdan kechirish va rejalashtirish, sifatli nuqta bulutlarini imkon qadar tezroq olish imkoniyatini oshiradi.

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SHO‘RLANGAN YERLAR MELIORATSIYASI VA ULARDAN FOYDALANISH BO‘YICHA XALQARO TAJRIBA TAHLILI

Anotatsiya: *Ushbu maqolada sho‘rlangan yerlar muammosi va ularni melioratsiya qilish bo‘yicha dunyo miqyosida olib borilgan ilg‘or tadqiqotlar tahlil qilinadi. Turli mintaqalarda sinovdan o‘tkazilgan melioratsion usullar, ularning samaradorligi, afzalliklari va cheklovlari ko‘rib chiqiladi.*

Kalit so‘zlar: *sho‘rlangan yerlar, melioratsiya, fitoremediasiya, drenaj, reclamatsiya, xalqaro tajriba*

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SCANNING COMPLEX ENVIRONMENTS USING THE FJD TRION S1 3D LIDAR SCANNER

Annotation: *This article analyzes the problem of saline soils and reviews advanced international research aimed at their reclamation. Various land reclamation methods tested in different regions are examined in terms of their effectiveness, advantages, and limitations.*

Keywords: *Saline soils, land reclamation, phytoremediation, drainage, reclamation (of land), international experience.*

Kirish

Zamonaviy davrda yer resurslaridan oqilona va samarali foydalanish masalasi global ekologik xavfsizlik va oziq-ovqat barqarorligini ta‘minlashning asosiy omillaridan biriga aylangan. Afsuski, intensiv qishloq xo‘jaligi faoliyati, noto‘g‘ri sug‘orish amaliyoti, suv resurslaridan samarasiz foydalanish va iqlim o‘zgarishi tufayli yerlarning degradatsiyasi, xususan sho‘rlanish jarayoni tobora avj olib bormoqda. Sho‘rlanish, ya‘ni tuproqda ortiqcha miqdorda eruvchan tuzlarning

to‘planishi, ayniqsa yarim qurg‘oqchil va qurg‘oqchil mintaqalarda keng tarqalgan bo‘lib, bu holat eng avvalo qishloq xo‘jaligi faoliyatining salohiyatini cheklaydi va agroekotizimlarning beqarorlashuviga olib keladi.

Sho‘rlanish nafaqat hosildorlikka salbiy ta‘sir ko‘rsatadi, balki tuproqning fizik-kimyoviy xossalarini buzadi, suvning o‘tkazuvchanligi va havoning aylanishiga to‘sqinlik qiladi, tuproq strukturasi yemiriladi, mikrobiologik faollik pasayadi. Bundan tashqari, ortiqcha sho‘rlar yer osti suvlariga o‘tib, ularni ham ifloslantiradi. Natijada, tuproqning tabiiy tiklanish qobiliyati susayadi va meliorativ chora-tadbirlar zarurati yuzaga keladi. Aynan shuning uchun sho‘rlangan yerlarni melioratsiya qilish va ularni qayta foydalanishga yaroqli holatga keltirish zamonaviy tuproqshunoslik, agromelioratsiya va agrotexnologiyalar oldida turgan dolzarb ilmiy va amaliy muammolardan biridir.

Xitoyning Yellow River Delta (Sariq daryo del’tasi) mintaqasi mamlakatning yirik sug‘oriladigan hududlaridan biri bo‘lib, bu yerda sho‘rlanishga uchragan yerlar salmog‘i yildan-yilga ortib bormoqda. Ushbu mintaqa, tabiiy-geografik va gidrogeologik sharoitlari jihatidan yerlarning sho‘rlanishiga juda moyil bo‘lib, tuproq qatlamida eruvchan tuzlarning to‘planishi, suvning yuqori darajadagi minerallashuvi va notekis gidromeliorativ boshqaruv tufayli katta miqdordagi qishloq xo‘jaligiga yaroqsiz yerlar vujudga kelgan. Xitoylik tadqiqotchilar bu hududda sho‘rlanishga qarshi kurashda agrobiologik melioratsiya usullaridan samarali foydalangan.

So‘nggi yillarda olib borilgan eksperimental tadqiqotlar shuni ko‘rsatdiki, **uzoq muddatli ekin almashinuvi tizimi,** xususan**, bug‘doy (Triticum aestivum), paxta (Gossypium hirsutum) va araxish (Arachis hypogaea)** ekinlarining almashlab yetishtirilishi tuproqning fizik-kimyoviy xossalarini sezilarli darajada yaxshilagan. Tadqiqotlar davomida 4 yil mobaynida sho‘rlangan maydonlarda ushbu ekinlar izchil ekilib, har yili tuproqdan namunalar olingan va tahlil qilingan.

Tajriba natijalariga ko‘ra: **Tuproqdagi umumiy sho‘rlik darajasi (Total Soluble Salts)** dastlabki 4,52 g/kg ko‘rsatkichdan 1,44 g/kg gacha kamaygan. Bu esa sho‘rlanish darajasining "kuchli" toifasidan “kuchsiz” toifasiga tushishini anglatadi.

Tuproqdagi nitrat azoti (NO_3^--N) va mavjud fosfor (P_2O_5) miqdori sezilarli darajada ortgan. Bunday o‘zgarishlar, o‘z navbatida, o‘simliklarning oziqlanish imkoniyatlarini oshirib, ularning biologik hosildorligini ta‘minlagan.

Ushbu ilmiy izlanishlar shuni ko‘rsatmoqdaki, **sho‘r yerlarning melioratsiyasi faqat mexanik yoki kimyoviy choralar bilan emas, balki biologik yondashuvlar orqali ham samarali amalga oshirilishi mumkin.** Xususan, sho‘rga nisbatan chidamli ekinlarning ketma-ket va almashlab ekilishi orqali:

Mazkur tajriba nafaqat tuproqning agrobiologik sifatini tiklash, balki **sho‘rlangan yerlarni iqtisodiy oborotga qayta kiritishning ekologik barqaror yo‘li** sifatida ham alohida ilmiy-ijtimoiy ahamiyat kasb etadi. Ayniqsa, agroekotizimlar muvozanatini saqlab qolishda bu kabi biologik yondashuvlar o‘zining iqtisodiy tejamkorligi, uzoq muddatli samaradorligi va ekologik xavfsizligi bilan ajralib turadi.

Qozog‘istonning janubiy hududlarida sho‘rlanish muammosini bartaraf etishda fitoremediasiya - biologik yondashuv keng qo‘llanilgan. Glycyrrhiza glabra (shirinmiya) o‘simligining uch yil davomida sho‘rlangan yerlarga ekilishi orqali kuchsiz sho‘rlangan tuproqlarda sho‘rlik darajasi 50% gacha kamaygani qayd etilgan (Tursunov et al., 2023). Ushbu o‘simlik tuproq tarkibidagi tuzlarni o‘zlashtirishi va strukturasini yaxshilashi bilan ajralib turadi. Ammo o‘rta va kuchli sho‘rlangan tuproqlarda uning samarasi sezilarli darajada pasaygan. Shu bois, fitoremediasiyani boshqa melioratsion usullar bilan uyg‘unlashtirish zarurati vujudga keladi.

Misrning qurg‘oqchil hududlarida olib borilgan tajribalarda kompost va mineral kükürt asosidagi aralashmalar sho‘rlanishni kamaytirishda muhim rol o‘ynagan. Ular tuproqning gidrofizik xossalarini yaxshilab, suvni ushlab qolish qobiliyatini oshirgan, o‘simliklarning oziqlanish darajasini yaxshilagan hamda hosildorlikka ijobiy ta’sir ko‘rsatgan (Hassan et al., 2024). Bunday qo‘shimchalar ayniqsa suv tanqisligi sharoitida qishloq xo‘jaligi yerlaridan barqaror foydalanish imkonini yaratadi.

Turkmanistonning Dushak tumanida olib borilgan tadqiqotlar sho‘rlanish va sodirlanish darajalarining fazoviy o‘zgaruvchanligini aniqlashga qaratilgan. Tadqiqotchilar GIS texnologiyalari yordamida tuproqning sho‘rlanish xaritasini ishlab chiqqan va reclamatsiya choralarini zonal asosda taklif qilgan (Saparov et al., 2023). Bu yondashuv har bir yer maydonining o‘ziga xos xususiyatlarini inobatga olib, melioratsion xarajatlarni optimallashtirish imkonini beradi.

Xulosa

Yuqorida tahlil qilingan xalqaro tajribalar sho‘rlangan yerlarni melioratsiya qilish va ulardan foydali foydalanish masalasi global miqyosda murakkab, ko‘p omilli va ko‘p darajali yondashuvlarni talab etuvchi agroekologik muammo ekanligini yana bir bor tasdiqlaydi. Tajribalar shuni ko‘rsatadiki, bunday degradatsiyalangan yerlarni qayta tiklashda yagona va universal metod mavjud emas; aksincha, muammoning tabiati, sho‘rlanish darajasi, tuproq-tabiiy sharoitlar, iqlim zonasi, mavjud texnik va iqtisodiy resurslar, aholi zichligi kabi omillarni chuqur hisobga olgan holda kompleks, zonal va integratsiyalashgan yondashuvlarni shakllantirish zarur.

Xulosa qilib aytganda, sho‘rlangan yerlarni melioratsiya qilish - bu faqat texnik yoki agronomik masala emas, balki resurslardan oqilona foydalanish, ekologik xavfsizlikni ta'minlash, qishloq xo‘jaligi barqarorligini mustahkamlash

bilan chambarchas bog‘liq bo‘lgan strategik yo‘nalishdir. Mintaqaviy va xalqaro ilmiy yondashuvlarni o‘zaro uyg‘unlashtirish, innovatsion va ekologik yondashuvlar asosida mahalliy sharoitga mos kompleks texnologiyalarni ishlab chiqish esa bu boradagi asosiy yo‘nalish bo‘lib qolmoqda.

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PROBLEMS OF FORMING THE MOVEMENT ACTIVITY OF PRIMARY GRADE STUDENTS THROUGH PHYSICAL MEANS

Abstract*: This article presents information on the improvement of students' activities based on modern approaches to the process of forming motor activity of primary school students in our country through physical means.*

Keywords: *physical education, primary school, student, means, form, movement, muscle, sport, time, teacher, education.*

Introduction

Today, serious attention is paid to improving the education system in our country, raising a young generation that will ensure the prosperity of the Motherland. Our Government is creating all the conditions for raising a fully developed, well-rounded person who embodies high spiritual and moral values, and strengthening the health of the growing young generation.

Considering the need for the comprehensive and harmonious development of each person in the development of education and upbringing of the new generation, our state attaches great importance to the inclusion of physical culture and sports in these processes, which are necessary for the spiritual and physical education of school-age students.

One of the main tasks of physical education of school-age students is to strengthen their health, improve their physical fitness, and reduce morbidity. The need for movement is a necessary biological need and is an important factor in the growth and development of the student's body. Movement determines the functional capabilities of the student and his ability to perform work.

Butaev V.K. In his studies, he found that insufficient motor activity, that is, hypodynamia (overweight), is observed from school age. This negatively affects the health of students. That is why students need to engage in physical exercises; running, active games, elements of traditional sports[3].

Increasing motor activity helps to activate all the main physiological functions of the body, the activity of the circulatory and respiratory systems increases, and metabolism increases. Active muscular activity contributes to the development of the musculoskeletal and articular apparatus. Improves the coordination of movements. Improves the functions of the central nervous system. In increasing the respiratory activity of students, physical exercises, running, jumping, carried out in the open air throughout the year, are of particular importance. Such activities help in many ways to strengthen the student's body, improve health, and increase resistance to colds.

According to the data obtained by Boyboboyev B.G., students who were engaged in physical education in the open air suffered from colds 2-3 times less often than their peers [2].

At the same time, the existing system of physical education of the population, which has not justified itself, including the physical education program for educational institutions based on this system, which does not take into account regional ethical conditions and their traditions, cannot ensure the solution of the tasks facing us.

Therefore, it is necessary to further improve physical education and sports. For this, it should be based on a review of its essence, purpose, content and organization. Physical education of school-age students - taking advantage of the opportunities for health improvement, should be used in each school institution on the basis of methodologically correctly selected physical education means, forms and methods, taking into account the age and gender characteristics of students (concept).

Physical education of a student is not an easy task. Nowadays, in modern conditions, children and adolescents do not have a great need for movement. School-age students spend a lot of time in front of the TV and computer, as well as drawing, completing assignments, listening to various stories, etc.

The physical education specialist who does all the work to activate the movement activities of the participants is not at all interested in whether the students are interested in working, whether each student is involved in the learning process or is indifferent to studying.

Movement games and game exercises remain the most favorite activities for students for a long time. This activity can be carried out in the form of interesting and unusual games allows you to conduct. Practice shows that well-chosen and properly structured game exercises aimed at developing physical qualities have a beneficial effect on the physical development of students. These can include plot exercises such as “Walk in the Garden”, “Runner” and “Skipper”, “Knowing Everything” and similar game exercises.

The framework of a person’s knowledge and beliefs, value and motivational-need systems organize and direct him to perception and practical activity. An active-positive attitude to physical education, a formed need for daily physical exercise, indicates a healthy lifestyle and physical perfection [1].

The physical perfection of a person implies the level of physical development, psychophysiological and physical capabilities, health, which form the basis of his active creative, socially significant activity.

The problem of physical education of school-age students is one of the most important tasks at this stage one. This is an important period of human life in the formation of physical health and cultural skills that ensure the development, strengthening and preservation of a person in the future. That is why the result of physical education at school age should be a high level of student health and the creation of the foundation of future human physical culture, and it includes the following:

emotional and positive attitude of students to physical exercises and games, to the strengthening actions and the influence of the healing powers of nature, to the rules of personal hygiene, to the observance of the daily routine.

a school of natural movements of general developmental nature, which includes the development of primary skills, the basics of musical and rhythmic knowledge, the correct posture, the ability to behave around others, participation in collective actions (games, dances, holidays), the ability to demonstrate a culture of behavior, independence, organization, discipline.

self-service skills and skills in using equipment and devices for training.

As can be seen, the main emphasis in training for primary school students is on line marching. However, for a student of this age, it is determined by the need to run, shout, and jump.

Conclusions

In conclusion, the physical education of school-age students serves as a fundamental component of their overall development, directly influencing health, intellectual capacity, and moral upbringing. The integration of regular physical exercises, outdoor activities, and movement-based games into the educational process not only strengthens the body but also cultivates endurance, discipline, and a positive emotional attitude toward an active lifestyle. Modern educational institutions must therefore recognize that physical education is not merely an auxiliary activity but an essential pedagogical tool for forming a well-rounded and resilient personality. By adapting physical education programs to regional and cultural conditions, ensuring methodical diversity, and emphasizing motivation and interest, schools can significantly enhance the physical and psychological well-being of students. Ultimately, systematic and properly organized physical education lays the groundwork for a healthy, active, and socially responsible generation capable of contributing effectively to the progress and prosperity of the nation.

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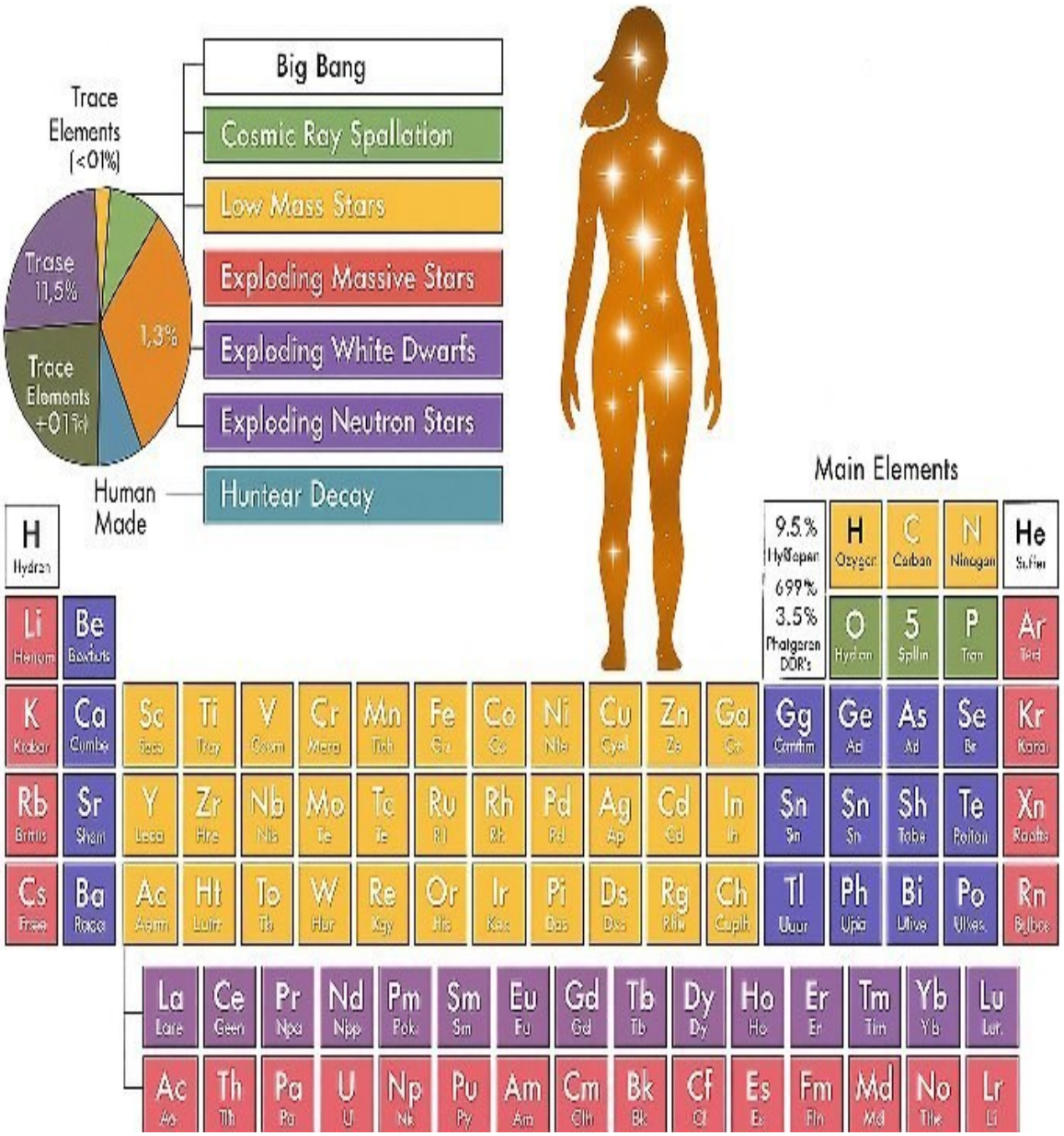
THE IMPORTANCE OF CHEMICALS IN THE HUMAN BODY (INTEGRATED CHEMISTRY, BIOLOGY AND ENGLISH)

Abstract. *Chemical substances play a fundamental role in sustaining human life, far beyond basic nutrition. Essential elements such as calcium, potassium, and magnesium are involved in structural integrity, nerve signaling, and enzyme activation, forming the biochemical foundation of bodily functions. Trace elements like zinc, iron, and selenium, though required in minute amounts, are vital for immune defense, oxygen transport, and cellular protection. Hormonal activity, metabolic rate, and pH balance are tightly regulated by specific chemical compounds and ions. Moreover, imbalances in these substances often serve as early indicators of diseases, making their presence and proportion critical to both health maintenance and medical diagnostics. Understanding the role of these chemicals reveals how intricately chemistry governs the human body, and highlights the necessity of maintaining internal chemical harmony for optimal health.*

Keywords. *chemical substances, human body, biochemical processes, trace elements.*

Introduction

The human body is an intricate system of chemical interactions, where various substances play critical roles in maintaining life and overall health. Chemical elements such as calcium, phosphorus, and magnesium form the structural components of bones and teeth, while trace elements like zinc, iron, and selenium contribute to immune functions and cell protection. Additionally, enzymes and hormones, driven by specific chemical substances, regulate vital processes such as metabolism, energy production, and growth. The balance of electrolytes like sodium, potassium, and chloride is equally essential for maintaining proper nerve function, muscle contraction, and fluid balance. Disruptions in these chemical processes often indicate underlying health issues and are key markers in the diagnosis of diseases. This paper explores the essential chemical substances in the human body and their indispensable roles in maintaining health, supporting growth, and preventing disease. Understanding the chemistry behind the body's functions is crucial for advancing health science and improving medical practices.



The human body relies on a vast array of chemical substances that work together to sustain life. These substances are essential not only for the structural integrity of the body but also for its continuous metabolic and biochemical functions.

1. Chemical Elements and Structural Integrity.The body's structure is heavily dependent on chemical elements like calcium, phosphorus, and magnesium. Calcium is a critical component of bones and teeth, providing them with strength and durability. Phosphorus, along with calcium, helps form the mineral structure of bones, while magnesium supports the function of muscles and nerves. These elements contribute to maintaining the body's skeletal framework, which is essential for mobility and physical health.

2. Trace Elements and Enzyme Functions.Trace elements, although required in minute quantities, play crucial roles in various biochemical processes. Zinc, for

instance, is vital for immune function, wound healing, and the synthesis of proteins and DNA. Iron is a key component of hemoglobin, enabling oxygen transport throughout the body. Selenium, a powerful antioxidant, helps protect cells from oxidative stress, reducing the risk of chronic diseases such as cancer and heart disease.

3. Metabolism and Energy Production.Chemical substances are at the heart of metabolism, the process by which the body converts food into energy. Enzymes, which are proteins that speed up chemical reactions, rely on minerals like magnesium and iron to function. These enzymes facilitate the breakdown of food molecules, allowing the body to absorb nutrients and produce energy. Without these essential chemicals, vital metabolic processes would cease, leading to a collapse of bodily functions.

4. Hormonal Regulation and Chemical Signaling.Hormones are another key group of chemical substances that regulate numerous bodily functions. For instance, thyroid hormones, produced with the help of iodine, regulate metabolism and energy production. Insulin, produced by the pancreas, controls blood sugar levels, while adrenaline, released during stress, helps prepare the body for “fight or flight” responses. These chemical signals are integral to maintaining homeostasis, the stable internal conditions necessary for health.

5. Electrolytes and Fluid Balance.Electrolytes, such as sodium, potassium, and chloride, are essential for maintaining fluid balance and ensuring proper function of cells. These charged particles help regulate the body’s pH levels, nerve impulses, and muscle contractions. An imbalance in electrolytes can lead to severe health issues, including dehydration, muscle weakness, or even cardiac arrest.

6. Health Indicators and Disease PreventionChemical imbalances in the body often serve as early indicators of health issues. For example, elevated blood glucose levels may point to diabetes, while abnormal cholesterol levels can indicate a risk for heart disease. By understanding the roles of various chemical substances in the body, healthcare providers can identify potential health risks early and implement preventive measures.

Here’s a lesson outline and a short sample text on “The Importance of Chemicals in the Human Body”, integrating chemistry, biology, and English for high school students (suitable for 9th grade):

Lesson Title:

The Importance of Chemicals in the Human Body

Subjects Integrated:

Chemistry: Chemical elements and compounds

Biology: Body systems and their functions

English: Reading comprehension, vocabulary, and speaking

Learning Objectives:

1. Identify key chemical elements found in the human body.
2. Explain the biological role of these chemicals.
3. Expand English vocabulary related to chemistry and biology.
4. Practice speaking and writing about scientific topics in English.

Key Vocabulary:

Elements: oxygen, carbon, hydrogen, nitrogen, calcium, phosphorus

Compounds: water, proteins, carbohydrates, DNA

Terms: essential, metabolism, energy, structure, function, nutrients

Sample Text for Reading (English):

The Importance of Chemicals in the Human Body

The human body is made up of many different chemicals. Some of the most important elements are oxygen (O), carbon (C), hydrogen (H), and nitrogen (N). These elements are found in water, proteins, and DNA. For example, water makes up about 60% of the body and is essential for all life processes. Calcium (Ca) and phosphorus (P) are important for strong bones and teeth.

Without these chemicals, the human body would not be able to function. Every movement, thought, and heartbeat depends on chemical reactions inside the body. That is why chemistry and biology are closely connected.

Follow-up Questions (English):

1. Which elements are most common in the human body?
2. Why is water important for the body?
3. What is the role of calcium and phosphorus?

Activity Ideas:

Chemistry task: Match elements to their symbols and roles.

Biology task: Label a diagram of the body with elements and their locations/functions.

English task: Write a short paragraph on your favorite chemical in the body and why it is important.

Conclusion

Today we have seen that chemistry and biology are closely connected: every cell in our body exists thanks to chemical elements and compounds. We have studied which substances form the basis of the human body and what role they play in vital processes such as breathing, nutrition, growth, and information transmission.

Knowing scientific terms in English helps us understand international scientific literature, broaden our horizons, and prepare for further learning.

So, chemistry explains what we are made of, biology shows how we live, and the English language opens the door to global scientific communication.

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ABDURAHMON JOMIYNING "FAVOIDU-Z-ZIYOIYA" ASARI: ARAB TILI GRAMMATIK TAFAKKURINING MUKAMMAL NAMUNASI SIFATIDA

Annotatsiya: *Mazkur maqolada buyuk mutafakkir Abdurahmon Jomiyning hayoti, ilmiy faoliyati va arab tili grammatik tafakkuridagi o'rni keng yoritilgan. Xususan, uning "Favoidu-z-Ziyoiya" asari Ibn Hojibning "Al-Kafiya" kitobiga yozilgan mukammal sharh sifatida tahlil qilinadi. Asarning tuzilishi, grammatik tamoyillari, nazariy asoslari va mantiqiy yondashuvi ilmiy jihatdan o'rganiladi. Jomiy asarida arab nahvining sintaksis va morfologik tizimlari, i'rob, ism va fe'l turlari hamda semantik asoslar falsafiy tafakkur bilan uyg'unlashtirilgan. Maqolada, shuningdek, Jomiyning Naqshbandiya tariqatidagi o'rni, ustozlari, shogirdlari va ilmiy maktabining keyingi avlodlarga ta'siri haqida ma'lumotlar berilgan. Tadqiqot natijalari Jomiyning "Favoidu-z-Ziyoiya" asarini Sharq grammatik maktabining yuksak namunasiga aylantirgan ilmiy va pedagogik jihatlarini ochib beradi.*

Kalit so'zlar: *Abdurahmon Jomiy, Favoidu-z-Ziyoiya, arab tili grammatikasi, nahv, Ibn Hojib, mantiq, tasavvuf, Naqshbandiya, Sharq ilmiy merosi, grammatik tafakkur.*

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ABDURAHMON JAMIY'S WORK "FAVOIDU-Z-ZIYOIYA": AS A PERFECT EXAMPLE OF ARABIC GRAMMATICAL THINKING

Abstract: *This article provides a comprehensive overview of the life, scholarly activity, and significant contribution of the great thinker Abdurahmon Jami to Arabic grammatical thought. In particular, his work "Favoidu-z-Ziyoiya" is analysed as a perfect commentary on Ibn Hajib's "Al-Kafiya." The structure, grammatical principles, theoretical foundations, and logical approach of the work are examined from a scientific perspective. In Jami's treatise, the syntactic and morphological systems of Arabic grammar (nahw), including i'rāb, noun and verb types, and semantic principles, are harmoniously integrated with philosophical reasoning. The article also presents information about Jami's role in the Naqshbandi order, his teachers, disciples, and the influence of his scholarly school on subsequent generations. The research findings reveal the scientific and pedagogical qualities that have made Jami's "Favoidu-z-Ziyoiya" a distinguished example of the Eastern grammatical tradition.*

Keywords: *Abdurahmon Jami, Favoidu-z-Ziyoiya, Arabic grammar, nahw, Ibn Hajib, logic, Sufism, Naqshbandi order, Eastern scholarly heritage, grammatical thought.*

Arab tili grammatikasi Sharq ilmiy merosining eng muhim yo‘nalishlaridan biridir. Bu sohada yaratilgan ko‘plab asarlar nafaqat tilshunoslik tarixida, balki umumiy filologik tafakkur rivojida ham katta ahamiyatga ega. Shu jihatdan Abdurahmon Jomiyning “Favoidu-z-Ziyoiya” asari arab tili nahvi bo‘yicha yozilgan eng mukammal sharhlardan biri sifatida e’tirof etiladi. Ushbu maqolada Jomiyning hayoti, ilmiy faoliyati va mazkur asarning grammatik ahamiyati tahlil qilinadi.

1. Abdurahmon Jomiyning hayoti va ilmiy faoliyati

Abdurahmon Jomiy (1414–1492) – Markaziy Osiyo va Xuroson ilmiy-madaniy muhitining eng yirik vakillaridan biri bo‘lib, u o‘z davrida adabiyot, falsafa, fiqh, tasavvuf va grammatika sohalarida chuqur iz qoldirgan. U Movarounnahr madaniy hayotining yuksalish davrida yashab, o‘z asarlari orqali butun islom olamida shuhrat qozongan.

Tarixiy manbalarda Jomiyning to‘liq ismi Abdurahmon ibn Ahmad ibn Muhammad, laqabi esa Nuriddin bo‘lgan. Uning “Jomiy” nisbasining kelib chiqishi ikki sababga borib taqaladi: birinchisi, u Xurosondagi Jam viloyatida tug‘ilgan; ikkinchisi, Shayx Ahmad Jamga bo‘lgan hurmatidir. Jomiy bu haqda o‘zining “Rashh-i bal bi sharh-i hal” nomli avtobiografik qasidalarida shunday yozadi:

“Mening tug‘ilgan joyim Jam, qalamimdan tomgan zarra Shayxulislomning Jamidan bo‘ldi; shu bois taxallusim ‘Jomiy’ bo‘ldi.”

Jomiy hijriy 817-yil sha’bon oyining 23-kuni (milodiy 1414-yil 7-noyabr)da Xurosonning Xarjard qishlog‘ida tug‘ilgan. U yoshligidanoq ilm-fan va tasavvuf muhitida voyaga yetgan. Otasi Nizomiddin Ahmad taniqli faqih va mudarris bo‘lgan, bu esa Jomiyning diniy va grammatik bilimlarida mustahkam poydevor yaratgan.

2. Jomiyning ta’lim olgan muhitlari va ustozlari

Jomiy dastlab Hirotda ta’lim olgan. Bu shahar XV asrda ilm va san’atning yirik markazlaridan biri bo‘lgan. U Shayx Junayd Usuliy va Shihobiddin Jojarmiy kabi olimlardan tafsir, fiqh, mantiq va arab grammatikasini o‘rgangan. Keyinchalik u Samarqandga ilmiy safar qilib, quyidagi mashhur olimlardan saboq olgan:

- Qozizoda Rumiy – matematika va astronomiya sohasida yetuk olim;
- Ali Qushchiy – mantiq va riyoziyot ilmida mashhur;
- Fathulloh Tabriziy – tafsir va falsafa mutaxassisi;
- Xoja Ali Samarqandiy – fiqh va usul ilmlarida yetuk alloma.

Bu ustozlar Jomiyning ilmiy tafakkurida chuqur mantiqiy va nazariy poydevor yaratgan. Ular orqali Jomiy arab tili grammatikasi, mantiq va tafsirni mukammal darajada o‘zlashtirgan.

3. Jomiyning tasavvufiy hayoti va Naqshbandiya tariqatidagi o‘rni

Jomiy nafaqat olim, balki buyuk mutasavvif sifatida ham tanilgan. U Naqshbandiya tariqatining yirik namoyandalaridan biri bo‘lgan. Uning bu yo‘ldagi

ustozlari Sa’duddin Qo‘shg‘ariy va Xoja Ubaydulloh Ahror edi. Jomiy bu tariqatning falsafiy mohiyatini keng ommaga tushunarli tilda bayon etgan.

Tasavvufiy ruhiy tajribasi uning “Lava‘ih” va “Nafahat al-Uns” asarlarida yaqqol namoyon bo‘ladi. Ayniqsa, “Lava‘ih” asari orqali u Ibn Arabiyning “vahdat al-vujud” ta’limotini Naqshbandiya g‘oyalari bilan uyg‘unlashtirgan.

4. “Favoidu-z-Ziyoiya” asarining yaratilishi va tuzilishi

Jomiyning “Favoidu-z-Ziyoiya” asari arab tili grammatikasiga bag‘ishlangan bo‘lib, u Ibn Hojibning mashhur “Al-Kafiya” asariga yozilgan keng sharh hisoblanadi. “Al-Kafiya” arab nahvining asosiy manbalaridan biri bo‘lib, Jomiy uni tahlil, izoh va misollar orqali yanada mukammallashtirgan.

Asarda arab tilining sintaksis va morfologiya qoidalari, fe’l va ism turlari, i‘rob masalalari, jumla turlari, hamda nahviy terminlarning semantik asoslari ilmiy tahlil etilgan. Jomiyning sharhi faqat grammatik qoidalarni bayon etish bilan cheklanmay, ularni mantiq, falsafa va lug‘aviy izohlar bilan boyitgan.

Ushbu asar qisqa, lekin chuqur tahliliy uslubda yozilgan bo‘lib, o‘rta asr madrasalarida asosiy darslik sifatida foydalanilgan. Asar o‘z davridan boshlab to hozirgacha Arabiston, Hindiston, Buxoro, Eron va Turkiya madrasalarida o‘qitilgan.

5. “Favoidu-z-Ziyoiya” asarining ilmiy ahamiyati

Bu asar o‘rta asr Sharq grammatik tafakkurining yuksak namunasi bo‘lib, u quyidagi jihatlari bilan ajralib turadi:

1. Nazariy chuqurlik – Jomiy nahv masalalarini mantiqiy tahlil bilan uyg‘unlashtiradi.
2. Izoh va dalillar tizimi – Qoidalar Qur’on va hadis misollari orqali mustahkamlanadi.
3. Til-falsafiy yondashuv – Har bir grammatik hodisaning semantik ildizini ochib beradi.
4. Pedagogik ahamiyat – Asar arab tili o‘rgatishda mukammal o‘quv qo‘llanma sifatida xizmat qilgan.

Bu jihatlar “Favoidu-z-Ziyoiya”ni nafaqat grammatika, balki lingvistik tafakkur falsafasi sifatida ham qadrlanishiga sabab bo‘lgan.

6. Jomiyning boshqa ilmiy asarlari bilan bog‘liqlik

“Favoidu-z-Ziyoiya” Jomiyning umumiy ilmiy tizimining bir bo‘lagi hisoblanadi. U “Durra al-Fakhira” (aqida), “Lava‘ih” (tasavvuf-falsafa), “Nafahat al-Uns” (tarix va biografiya), “Haft Avrang” (she’riyat) kabi asarlarida ham ilmiy va grammatik an’analarning uyg‘unligini namoyish etadi.

Jomiyning arab grammatikasiga yondashuvi o‘z davrining boshqa nahvshunoslaridan – Sibavayh, Ibn Malik, Zamaxshariylardan – farqli ravishda, estetik-mantiqiy asosda qurilgan. Shu bois uning asarlari ko‘proq fikriy chuqurlik va ma’naviy uyg‘unlik bilan ajralib turadi.

7. Jomiyning ilmiy maktabi va shogirdlari

Jomiy hayotlik chog‘ida ko‘plab shogirdlar tayyorlagan. Ularning eng mashhuri Abdul G‘afur Loriy bo‘lib, u ustozining tarjimai holini yozgan.

Shuningdek, Xusrav Daylamiy va Nizomiddin Nishopuriy singari shogirdlar Jomiy asarlaridan ilhom olib, grammatik va tasavvufiy yo‘nalishlarda ijod qilganlar.

Jomiyning ilmiy maktabi Hirot, Buxoro va Samarqand madrasalarida davom etgan. Ayniqsa “Favoidu-z-Ziyoiya” asari orqali Jomiyning grammatika haqidagi qarashlari Osiyo, Hindiston va Turk dunyosiga keng tarqalgan.

8. Xulosa

Abdurahmon Jomiy nafaqat adabiyot va tasavvuf, balki tilshunoslik tarixida ham o‘chmas iz qoldirgan mutafakkirdir. Uning “Favoidu-z-Ziyoiya” asari arab tili nahviga bag‘ishlangan eng mukammal ilmiy izohlardan biri bo‘lib, bu asar orqali Jomiy grammatikani falsafiy tafakkur bilan birlashtirishga erishgan.

Uning ilmiy merosi bugungi kunda ham o‘z ahamiyatini yo‘qotmagan bo‘lib, arab tili grammatikasi, semantika va mantiq sohalarida o‘rganish uchun muhim manba bo‘lib qolmoqda.

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ABDURAHMON JOMIYNING "FAVOIDU-Z-ZIYOIYA" ASARIDA GRAMMATIK TAFAKKUR VA TA'LIMIY YONDASHUVLAR

Annotatsiya: *Mazkur maqolada Abdurahmon Jomiyning "Favoidu-z-Ziyoiya" asari arab tili grammatikasi (nahv) fanidagi o'rni, undagi nazariy, falsafiy va metodik yondashuvlar tahlil qilinadi. Asarda Jomiyning grammatik birliklarga tizimli yondashuvi, nahviy qoidalarni mantiq va semantika bilan uyg'unlashtirishdagi mahorati ilmiy asosda yoritilgan. "Favoidu-z-Ziyoiya" asarining o'rta asr madrasalaridagi o'quv jarayonidagi ahamiyati, didaktik usullari va Basra hamda Kufa nahviy maktablari qarashlari bilan bog'liqligi ko'rsatiladi. Tadqiqot natijalari Jomiyning grammatik tafakkurda soddalashtirish, tizimlashtirish va falsafiy asoslash tamoyillarini shakllantirganini, shuningdek, Sharq madaniy merosida nahv ilmini yuksak bosqichga olib chiqqanini namoyish etadi.*

Kalit so'zlar*: Abdurahmon Jomiy, Favoidu-z-Ziyoiya, arab grammatikasi, nahv, mantiq, ta'lim metodikasi, ilmiy sharh, grammatik tafakkur, Basra maktabi, Kufa maktabi, Sharq madrasalari.*

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GRAMMATICAL THINKING AND EDUCATIONAL APPROACHES IN ABDURAHMON JAMIY'S WORK "FAVOIDU-Z-ZIYOIYA"

Abstract: *This article analyses Abdurahmon Jami's work "Favoidu-z-Ziyoiya" in terms of its role in the science of Arabic grammar (nahw), as well as its theoretical, philosophical, and methodological approaches. The study highlights Jami's systematic treatment of grammatical units and his skill in harmonising syntactic rules with logic and semantics on a scientific basis. The article also discusses the importance of "Favoidu-z-Ziyoiya" in the educational process of medieval madrasahs, its didactic methods, and its connection with the grammatical schools of Basra and Kufa. The research results demonstrate that Jami developed principles of simplification, systematisation, and philosophical grounding in grammatical thought, elevating the science of nahw to a higher level within the cultural heritage of the East.*

Keywords: *Abdurahmon Jami, Favoidu-z-Ziyoiya, Arabic grammar, nahw, logic, teaching methodology, scholarly commentary, grammatical thought, Basra school, Kufa school, Eastern madrasahs.*

Arab tili grammatikasi — Sharq tilshunoslik an’anasining eng qadimiy va mukammal yo‘nalishlaridan biridir. U tilshunoslik, mantiq, falsafa va teologiya fanlari bilan uzviy bog‘liq holda shakllangan. O‘rta asr musulmon Sharqida nahv ilmi nafaqat til tuzilishini, balki inson tafakkurining mantiqiy asoslarini ham yorituvchi ilm sifatida rivojlandi.

Bu jarayonda Abdurahmon Jomiy (1414–1492) o‘zining “Favoidu-z-Ziyoiya” asari orqali arab tili grammatik tafakkuriga chuqur nazariy yondashuv olib kirdi. U Ibn Hojibning “Al-Kofiya fi an-nahv” asariga yozgan keng sharhida nahv ilmini yangi bosqichga ko‘tardi. Jomiy grammatikani tilshunoslikdan tashqari, mantiq, semantika, falsafa va tasavvuf bilan bog‘lab talqin qilgan. Shu bois uning asari nafaqat grammatika fani, balki ilmiy tafakkurning metodologik manbasi sifatida ham qadrlanadi.

1. Jomiyning ilmiy merosi va grammatik tafakkur shakllanishi

Abdurahmon Jomiy Hirotda tug‘ilgan va o‘z davrining eng nufuzli madrasalarida tahsil olgan. U Qozizoda Rumiy, Ali Qushchiy, Shamsiddin Samarqandiy, Shihobiddin Jojarmiy singari buyuk allomalardan saboq olgan. Bu ilmiy muhit Jomiyning tafakkurida matematika, mantiq, falsafa, fiqh va nahv ilmlarining uyg‘unlashuviga sabab bo‘lgan. Jomiy uchun grammatika — bu faqat tildagi qoidalar majmui emas, balki inson tafakkurining mantiqiy shaklini ifodalovchi ilm edi. U “Favoidu-z-Ziyoiya”da so‘z, gap va ma’no o‘rtasidagi bog‘liqlikni, i‘rob tizimining mantiqiy mohiyatini chuqur tahlil qiladi. Shu jihatdan Jomiyni arab grammatikasini falsafiy asosda talqin qilgan ilk mutafakkirlardan biri deyish mumkin.

2. “Favoidu-z-Ziyoiya” asarining tuzilishi va mazmuniy asoslari

“Favoidu-z-Ziyoiya” asari Ibn Hojibning “Al-Kofiya” kitobiga yozilgan, ammo mazmun jihatidan mustaqil ilmiy manba darajasiga ko‘tarilgan. Asarda nahv ilmining barcha asosiy bo‘limlari:

- I‘rob (so‘zlarning gapdagi sintaktik vazifasi),
- Ism va fe’l turlari,
- Jumla tuzilmalari va bog‘lovchi birliklar,
- Qoidalar va istisnolar,
- Lug‘aviy va semantik dalillar tizimli tarzda bayon qilingan.

Jomiy har bir grammatik qoidani mantiqiy asos bilan izohlaydi, ba’zan Kufa va Basra maktablari o‘rtasidagi qarashlarni tahlil qilib, ularni muvozanatlashtiradi. U grammatik tushunchalarni Qur’on oyatlari, hadislar va adabiy misollar orqali dalillaydi. Bu jihatdan asar diniy, tilshunoslik va falsafiy yondashuvlarning uyg‘un namunasi hisoblanadi.

3. “Favoidu-z-Ziyoiya”da grammatik tafakkur va metodik tamoyillar

Jomiyning grammatik yondashuvi o‘ziga xos ilmiy va metodik xususiyatlarga ega:

- Soddalashtirish – murakkab grammatik qoidalar o‘quvchiga tushunarli tilda izohlanadi.
- Tizimlashtirish – nahviy birliklar mantiqiy zanjir asosida joylashtirilgan.

• Qiyoslash – turli grammatik maktablar (Basra va Kufa) qarashlari tahlil qilinadi.

• Didaktik yondashuv – asar o‘quv jarayoniga mos tarzda, bosqichma-bosqich tushuntirish asosida yozilgan.

• Falsafiy izchillik – grammatik tushunchalar tafakkur qonunlari bilan uyg‘unlashtiriladi.

Jomiy nahv ilmini nafaqat grammatika, balki tafakkur tarbiyasining bir qismi sifatida ko‘radi. Shu sababdan “Favoidu-z-Ziyoiya” asri madrasalarda grammatikani o‘qitish metodikasida muhim o‘rin tutgan.

4. Asarning Sharq ta’lim tizimidagi o‘rni va ta’siri

XV–XIX asrlar davomida “Favoidu-z-Ziyoiya” Movarounnahr, Xuroson, Eron va Hindiston madrasalarida asosiy o‘quv manbalaridan biri sifatida o‘qitilgan. Asar nafaqat arab tilini o‘rgatishda, balki mantiq va tafakkur tarbiyasida ham muhim rol o‘ynagan.

Jomiy asari asosida ko‘plab hoshiyalar va sharhlar yaratilgan, ular orasida Xindistonlik olimlar Abdulhakm Sialkoti, Shamsuddin Fanoni va boshqalar e’tiborga loyiqdir. Bu sharhlar orqali “Favoidu-z-Ziyoiya” arab grammatik tafakkurining asosiy o‘qituvchilik modeli sifatida shakllandi. Asarning didaktik qadriyati shundaki, u o‘quvchini grammatika orqali mantiqiy fikrlashga o‘rgatadi. Shu bois u faqat tilshunoslar emas, falsafa va kalom sohasidagi olimlar tomonidan ham keng o‘rganilgan.

5. “Favoidu-z-Ziyoiya”ning nazariy yangiligi va ilmiy xulosalar

Jomiy nahvni formal qoidalar tizimi sifatida emas, balki fikrning ifodaviy mexanizmi sifatida talqin qiladi. U grammatik birliklarni mantiqiy kategoriyalar bilan bog‘laydi. Misol uchun, “mubtada” va “xabar” tushunchalarini mavzu va hukm kategoriyalari bilan uyg‘unlashtiradi. Shuningdek, Jomiy arab tili strukturasi orqali inson tafakkurining ketma-ketlik va sabab-natija munosabatlarini ochib beradi. Shu jihatdan “Favoidu-z-Ziyoiya” tilshunoslik, mantiq va pedagogika fanlari kesishmasida turgan noyob manba hisoblanadi. Bugungi kunda Jomiyning bu yondashuvi zamonaviy tilshunoslikdagi kognitiv grammatika va semantik tahlil metodlariga yaqin turadi.

Xulosa qilsak, Abdurahmon Jomiyning “Favoidu-z-Ziyoiya” asari arab tili grammatik tafakkurining eng yuksak bosqichini ifodalaydi. U nahvni mantiqiy va falsafiy tahlil asosida qayta talqin qilib, grammatikani tafakkur tarbiyasiga xizmat qiluvchi ilm sifatida rivojlantirdi. Asarning ilmiy-metodik yondashuvlari, tizimlashtirish tamoyillari va o‘qituvchilik usullari bugungi zamonaviy til o‘qitish jarayonlari uchun ham katta ahamiyatga ega.
Jomiy yaratgan ilmiy meros nafaqat Sharq grammatik maktabi uchun, balki butun musulmon ilm-fani tarixida grammatika va tafakkur uyg‘unligining yorqin namunasi sifatida qadrlanadi.

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O‘ZBEKISTON SANOATINI BARQAROR RIVOJLANTIRISH XUSUSIYATLARI

Annotatsiya. *Ushbu maqolada O‘zbekiston Respublikasi sanoat tarmoqlarini barqaror rivojlantirish xususiyatlari va hududiy tarkibi, sanoatni mahalliylashtirish, modernizatsiya va diversifikatsiyalashning iqtisodiy - geografik jihatlari, iqtisodiy rayonlarda qayta ishlashning rivojlanishi, sanoat majmualari, klasterlar shakllanishi masalalari tahlil qilingan.*

Kalit so‘zlar: *Sanoat tarmoqlari, iqtisodiy rayon, iqtisodiy landshaft, tabiiy resurs, mahalliylashtirish, modernizatsiya, diversifikatsiya, kooperatsiya, infrastruktura, sanoat majmuasi, klaster, urbanistik mujassamlashuv.*

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FEATURES OF SUSTAINABLE DEVELOPMENT OF UZBEKISTAN’S INDUSTRY

Abstract. *This article analyzes the features and territorial structure of the sustainable development of industrial sectors of the Republic of Uzbekistan, the economic and geographical aspects of the localization, modernization and diversification of industry, the development of processing in economic regions, the formation of industrial complexes and clusters.*

Keywords: *Industrial sectors, economic region, economic landscape, natural resources, localization, modernization, diversification, cooperation, infrastructure, industrial complex, cluster, urbanistic embodiment.*

Jahonda ro‘y berayotgan globallashuv jarayonining jadal rivojlanishi o‘z ijobiy jihatlari bilan bir qatorda hududlarda o‘ziga xos iqtisodiy va ijtimoiy muammolarni yuzaga keltirmoqda. Bu muammolarni bartaraf etish uchun xalqaro tashkilotlar, jumladan, BMTning 2030-yilgacha mo‘ljallangan “Barqaror rivojlanish dasturi”ning 12-maqsadida “Barqaror iste‘mol va ishlab chiqarish shakllariga o‘tishni ta‘minlash” vazifasi belgilab berilgan [1]. Mazkur vazifalar echimida, ayniqsa, mintaqalarda sanoat tarmoqlari va uning hududiy tarkibini takomillashtirish, sanoat tarmoqlari imkoniyatidan samarali foydalanishni

ta’minlovchi ixtisoslashuvga erishish, prognoz qilish va mavjud muammolarni manzilli hal etish alohida dolzarblik kasb etadi.

Respublikamizda sanoat sohasini jadal rivojlantirishda hududlarning tabiiy-resurs salohiyati va mahalliy xususiyatlarini hisobga olgan holda korxonalarni joylashtirish va uning hududiy tarkibini takomillashtirishga doir qator islohotlar amalga oshirilmoqda. O‘zbekiston Respublikasining 2022-2026-yillarga mo‘ljallangan Yangi O‘zbekistonning taraqqiyot strategiyasining “Milliy iqtisodiyotni jadal rivojlantirish va yuqori o‘sish sur’atlarini ta’minlash” ustuvor yo‘nalishining 22-maqsadida milliy iqtisodiyot barqarorligini ta’minlash va yalpi ichki mahsulotda sanoat ulushini oshirishga qaratilgan sanoat siyosatini davom ettirib, sanoat mahsulotlarini ishlab chiqarish hajmini 1,4 baravarga oshirish, sanoatning yetakchi tarmoqlari va iqtisodiyotni yanada liberallashtirish hamda transformatsiya jarayonlarini yakunlash masalalari belgilab berilgan [2].

Respublikada sanoatning tayanch sohalarini texnik va texnologik qurollantirilishi barobarida keng xalq iste’mol mahsulotlari ishlab chiqarishga yo‘naltirilgan mehnat talab tarmoqlar, jumladan, mashinasozlikning avtomobilsozlik, elektrotexnika, maishiy mashinasozlik kabi sohalari shakllantirildiki, ushbu sohalarni yanada rivojlantirib ichki bozorni “to‘yintirib” keng eksportini yo‘lga qo‘yish milliy sarmoya to‘planishi, texnopolislar, klasterlar vujudga keltirishga o‘tish imkonini beradi.

Ma’lumki, respublika hududlari bir xil tabiiy hamda iqtisodiy salohiyatga ega emas. Ayni vaqtda, turli tarixiy, iqtisodiy va ijtimoiy jarayonlar ta’sirida o‘ziga xos rivojlanish bosqichlarini bosib o‘tishgan. Mustaqillik yillarida iqtisodiyotining barcha tarmoqlarida ishlab chiqarishni modernizatsiyalash, texnik va texnologik jihatdan qayta jihozlash tadbirlari amalga oshirildi. Respublikada amalga oshirilgan chora-tadbirlar o‘z natijalarini bermoqda. Tahlillar mustaqillik yillarida respublikamizda sanoat ishlab chiqarishi tez rivojlanib borayotganini ko‘rsatmoqda.

E’tiborlisi shundaki, sanoatning o‘sish ko‘rsatkichlari ayrim yillari yalpi ichki mahsulot (YIM) darajasidan yuqori bo‘lib kelmoqda [5]. Bu davrda xususan mashinasozlik va metalni qayta ishlash, kimyo va neft kimyosi tez rivojlantirildi. Chet el kompaniyalari bilan hamkorlikda Buxoro neftni qayta ishlash zavodi (NQZ) (“Teknip”, Fransiya), Sho‘rtan, Ustyurt gaz-kimyo majmuasi (“ABB”, Korgaz), Qandim gazni qayta ishlash majmuyi (Lukoyl, Rossiya) barpo etildi, Farg‘ona NQZ to‘liq rekonstruktsiya qilindi.

Gaz-kimyo tarmog‘ining tashkil etilishi tabiiy gazni qayta ishlashni chuqurlashtirish va turdosh tarmoqlarda yangi ishlab chiqarish quvvatlarini rivojlantirish imkonini yaratdi. Kimyo sanoatida 2006-yilda Qo‘ng‘irot kaltsiyli soda zavodi, 2010-yilda Dehqonobod kaliyli o‘g‘itlar zavodi, 2016-yilda Ustyurt gaz-kimyo majmuasi ishga tushirildi. Natijada respublika sanoatining YIMdagi ulushi 2000–2022 yillar oralig‘ida 16,2 foizdan 26,7 foizga yetdi.

Sobiq Ittifoq davrida mamlakat sanoatining bir tomonlama rivojlanishi tufayli yengil sanoatning ulushi yuqori bo‘lgan, uning 60 foizga yaqin hajmi paxta tozalash tarmog‘iga to‘g‘ri kelgan. Keyingi yillarda mamlakat sanoat tarmoqlar tarkibida

metallurgiya, mashinasozlik, yengil, oziq-ovqat, kimyo sanoat tarmoqlarining hissasi ortib bormoqda.

Respublika sanoat ishlab chiqarishining 1991-yildagi tarmoqlar tarkibida eng yuqori ulush - 39,9 foizi yengil, 19,1 foizi oziq-ovqat sanoatiga to‘g‘ri kelgan. Hozirda esa bu raqamlar, mos ravishda, 14,9 va 13,8 foizni tashkil etadi. Respublika sanoatining asosiy tarmoqlaridan biri bo‘lgan metallurgiya tarmog‘ining sanoatdagi ulishi 1991 yilga nisbatan 2 marta ortib 2022-yilga kelib 19,4 foizni berdi. Tarmoqning asosiy quvvatlari Toshkent va Navoiy viloyatlarida joylashgan.

Mashinasozlik majmuyida ham qator o‘zgarishlar yuz berdi. Ushbu tarmoqning ulushi 1991–2022 yillarda 11,6 foizdan 16,9 foizga oshganini kuzatish mumkin. 90-yillarda O‘zbekiston mashinasozligida avtomobilsozlik tarmog‘iga asos solindi. Hozirda Asaka, Pitnak shaharlarida AQShning “Jeneral Motors” kompaniyasi bilan hamkorlikda yengil avtomobillar, Samarqand shahrida Yaponiyaning “Isuzu” kompaniyalari bilan hamkorlikda avtobuslar va Germaniyaning “MAN” kompaniyasi yuk avtomobillar ishlab chiqaradigan yangi zavodlar faoliyat yuritmoqda [7, 8]. Bundan xulosa chiqarish mumkinki, respublika sanoat tarmoqlar tarkibi rivojlanib va turlanib bormoqda.

Hozirgi vaqtda respublika sanoat ishlab chiqarishda eng ko‘p ulush Toshkent shahri hissasiga to‘g‘ri kelmoqda. Toshkent viloyati bilan birgalikda ikkalasi respublika yalpi sanoatining 37-38 foizini berishmoqda (1-jadval).

Eski sanoat quvvatlarni tiklanishi (ko‘mir sanoati, mashinasozlikning transformator, ko‘tarma kran ishlab chiqarish tarmoqlari, televizor, elektrotexnika (mis kabel)) va modernizatsiyalanishi va kichik biznesda minglab yangi quvvatlarni tashkil etilishi Toshkent iqtisodiy rayoni ilgarigi salohiyatini tiklanishiga olib keldi. Toshkent shahri va viloyati sanoat korxonalari soni va har yili yangidan tashkil etilayotgan korxonalar soni bo‘yicha oldinda turishadi.

Yuqoridagi holat, sanoat ishlab chiqarishining kontsentratsiyasi (mujassamlashuv markazlari, A.Y.Probst) omili - infrastruktura omillari bilan bog‘liqdir. Iqtisodiy landshaft - rayonning (A. Lyosh) iqtisodiy geografik qulay infrastruktura rivojlangan hududlari o‘ziga xos o‘sish qutblariga (F.Perru, J.Budvil, P.Potye) aylanishgan. Kooperatsiyalashish imkoniyati mavjud sanoat korxonalarining mavjudligi, qulay infratuzilma, turli malakaga ega mehnat resurlarining nisbatan ko‘pligi (respublika oliy o‘quv yurtlarining 2/3 qismi Toshkent shahri va viloyatida joylashgan) bois har yili yangi tashkil etilayotgan korxonalarning 1/4 qismi Toshkent shahriga, 10 foiz atrofida Toshkent viloyatiga to‘g‘ri kelmoqda.

Hudud sanoat salohiyati ortgan sari, o‘sish qutblari va mujassamlashuv markazlari ma’lum bir to‘yinish nuqtasiga yetguncha, yangi – yangi quvvatlarni o‘ziga tortaveradi. Ko‘p hollarda hududda ishlab chiqarish kuchlarini joylashtirish oxir - oqibat ekologik omil bilan cheklanadi. Albatta sanoat korxonalari soni doimo ham hududning sanoat salohiyati bilan mos kelavermaydi (1-jadval). Navoiy, Olmaliq tog‘-kon metallurgiya kombinatlari kabi yirik korxonalar mintaqaviy sanoatning bir necha o‘n foizdan mahsulotini berishadi.

1-jadval

O‘zbekiston sanoat ishlab chiqarishning hududiy tarkibi (jamiga nisbatan foiz hisobida)

№	Hududlar nomi	1991- y.	1995 -y.	2000 -y.	2005 -y.	2010 -y.	2020 -y.	2021- y.	2022 -y.	1991-yilga nisb. (+,-)
1.	**Toshkent iqtisodiy rayoni**	**30,8**	**36,4**	**32,8**	**28,3**	**34,0**	**36,7**	**39,1**	**37,8**	**+7,0**
1.1.	Toshkent shahri	16,3	17,2	16,7	11,6	19,3	18,4	20,3	20,3	+4,0
1.2.	Toshkent viloyati	14,5	19,2	16,1	16,7	14,7	18,3	18,8	17,5	+3,0
2.	**Mirzacho‘l iqtisodiy rayoni**	**5,1**	**4,3**	**4,5**	**4,6**	**3,7**	**3,8**	**4,2**	**4,3**	**-0,8**
2.1.	Jizzax viloyati	2,3	1,4	1,2	1,8	1,3	1,6	2,0	2,1	-0,2
2.2.	Sirdaryo viloyati	2,8	2,9	3,3	2,8	2,4	2,2	2,2	2,2	-0,6
3.	**Farg‘ona iqtisodiy rayoni**	**26,0**	**26,3**	**23,7**	**23,6**	**23,4**	**19,2**	**17,7**	**19,2**	**-6,8**
3.1.	Andijon viloyati	6,4	5,5	7,7	10,9	12,7	10,1	8,1	10,1	+3,7
3.2.	Namangan viloyati	6,5	4,4	3,9	3,1	2,4	3,1	3,3	3,4	-3,1
3.3.	Farg‘ona viloyati	13,1	16,4	12,1	9,6	8,3	6,0	6,3	5,7	-7,4
4.	**Zarafshon iqtisodiy rayoni**	**21,6**	**18,4**	**24,1**	**24,3**	**20,2**	**28,1**	**26,4**	**26,4**	+4,8
4.1.	Buxoro viloyati	5,3	4,1	6,4	4,8	4,1	4,9	4,7	5,1	-0,2
4.2.	Navoiy viloyati	8,8	8,1	11,8	15,9	11,2	18,1	16,6	15,8	+7,0
4.3.	Samarqand viloyati	7,5	6,2	5,9	3,6	4,9	5,1	5,1	5,5	-2,0
5.	**Janubiy iqtisodiy rayoni**	**9,8**	**8,0**	**9,6**	**15,5**	**15,5**	**5,6**	**5,7**	**5,6**	**-4,2**
5.1.	Surxondaryo viloyati	3,4	2,4	2,4	2,1	1,9	1,5	1,5	1,4	-2,0
5.2.	Qashqadaryo viloyati	6,4	5,6	7,2	13,4	13,6	4,1	4,2	4,2	-2,2
6.	**Quyi Amudaryo iqtisodiy rayoni**	**6,7**	**6,6**	**5,3**	**3,7**	**3,2**	**6,6**	**6,8**	**6,7**	**-0,0**
6.1.	Qoraqalpog‘iston Respublikasi	3,1	2,8	2,5	1,8	1,7	3,9	3,7	3,3	+0,2
6.2.	Xorazm viloyati	3,6	3,8	2,8	1,9	1,5	2,7	3,1	3,4	-0,2

Jadval O‘zbekiston Respublikasi Milliy statistika qo‘mitasi ma’lumotlari asosida muallif tomonidan tuzilgan.

Respublikani industrlashtirish faqat yirik korxonalar bilan bog‘liq emas. Aholini ish bilan ta’minlashdagi, hududiy ijtimoiy zo‘riqishni kamaytirishi kabi jihatlarini e’tiborga olib O‘zbekistonda kichik biznes va xususiy tadbirkorlikni moliyalash uchun kuchli mexanizmlar yaratilgan [3]. Kichik biznesning sanoatda ulushi Jizzax, Namangan, Farg‘ona, Surxondaryo, Samarqand va Toshkent shahrida yuqori. Bu ko‘rsatkich Navoiy, Xorazm, Qashqadaryo va Qoraqalpog‘istonda past darajada.

O‘zbekiston sanoatining hududiy tarkibida Qoraqalpog‘iston Respublikasi, Surxondaryo, Jizzax, Sirdaryo, Xorazm, Namangan viloyatlarining sanoat ishlab chiqarishi juda past. Mazkur mintaqalarning ichki imkoniyatlarini hisobga olgan

holda, qulay investitsiya makonini yaratish, qo‘shma korxonalar tashkil etish hamda o‘sish nuqta va markazlarini belgilab olish mamlakat sanoatini rivojlantirishda muhim ahamiyat kasb etadi [7].

Mintaqalarda sanoat mujassamlashuvining maydoniga nisbatan qaraydigan bo‘lsak Andijon, Farg‘ona, Toshkent viloyatlarida sanoat mujassamlashuv darajasi yuqori. Sanoat ishlab chiqarishni aholi jon boshiga nisbatan olinganda Navoiy viloyati, Toshkent shahri, Toshkent viloyati, Andijon viloyatlari nisbatan yuqori ko‘rsatkichga ega.

Mintaqalarning iqtisodiy rivojlanganlik darajasini sanoatning faqat bir sohasi rivojlanganligida ko‘rib bo‘lmaydi. Binobarin, viloyatlarda sanoatning tarmoqlar bo‘yicha tarqalishi va turlanishi ularning xilma – xilligida ham o‘z aksini topadi. Hozirda, sanoat tarmoqlarini modernizatsiya va diversifikatsiya qilishga alohida e’tibor berilmoqda [4]. Bu jihatdan Toshkent hamda Farg‘ona viloyatlari birmuncha ajralib turadi. Toshkent viloyatida mashinasozlik, qora va rangli metallurgiya, kimyo, qurilish materiallari, yengil va oziq-ovqat sanoat tarmoqlari nisbatan yaxshi rivojlangan. Bir vaqtning o‘zida Qoraqalpog‘iston Respublikasi, Xorazm va Sirdaryo viloyatlari sanoati tarmoqlar turlanishi past darajada.

Respublika mintaqalarida qayta ishlashning rivojlanishi sanoat majmualari, klasterlarini shakllanishi hududlar iqtisodiy salohiyatini oshishi, ijtimoiy hududiy farqlarning kamayishi hamda mamlakatimizning hududiy mehnat taqsimotida o‘rnini yaxshilaydi. Respublikada sanoat ishlab chiqarish hajmi izchil o‘sib kelmoqda. Mamlakat sanoat tarmoqlar tarkibida mashinasozlik, oziq-ovqat va metallurgiya tarmoqlari hissasi ortib, tarkibi rivojlanib va turlanib bormoqda. Bular respublika hududlarini va sanoat tarmoqlarini rivojlantirish borasida amalga oshirilayotgan davlat dasturlari natijasidir.

Erishilayotgan yutuqlar qatori hududlarda mavjud resurslarni ishga solinmaganligi, sanoatning hudud iqtisodiyotidagi o‘rnining pastligi, tarmoq tarkibi turlanmaganligi, tor ixtisoslashuvi va yuqori hududiy va urbanistik mujassamlashuvi kabi muammolar saqlanib kelmoqda. Shuni alohida ta’kidlash lozimki, respublikada sanoatning turli tarmoqlarini rivojlantirish imkoniyatlari yetarli. Binobarin, mamlakatning mavjud imkoniyatlaridan kelib chiqib, sanoat ishlab chiqarishining strategik yo‘nalishlarini tanlab olish maqsadga muvofiq. Bu esa milliy iqtisodiyotning to‘la shakllanishiga asos bo‘lib xizmat qiladi.

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O‘ZBEK TILIDA ISMLARNING ERKALASH VA QISQARTIRISH SHAKLLARI

Annotatsiya: *Maqolada o‘zbek tilida shaxs ismlarining erkalash va qisqartirish shakllari lingvistik hamda ijtimoiy-madaniy nuqtayi nazardan tahlil qilinadi. Erkalash shakllarining fonetik va morfologik xususiyatlari, ularda qo‘llaniladigan -jon, -cha/-che, -oy kabi affikslarning mazmuniy-estetik vazifalari ko‘rib chiqiladi. Shuningdek, qisqartirish shakllarining fonetik mexanizmlari, ularning boshlang‘ich bo‘g‘in, oxirgi bo‘g‘in va fonetik qisqartirish asosida hosil bo‘lish turlari izohlanadi. Ismlarning erkalash va qisqartirish shakllari nafaqat nutqiy jarayonda talaffuz qulayligini ta’minlashi, balki suhbatdoshlarga nisbatan samimiyat, mehr-muhabbat va yaqinlik bildirishdagi ijtimoiy-pragmatik ahamiyati ham yoritiladi. Tadqiqot natijalari ushbu hodisalarni milliy-madaniy qadriyatlarning ifodasi sifatida o‘rganish zarurligini ko‘rsatadi.*

Kalit so‘zlar: *antroponimika, ism, erkalash shakli, qisqartirish shakli, samimiyat, pragmatika, milliy qadriyat.*

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DENOMINATION AND ABBREVIATION FORMS OF NOUNS IN THE UZBEKISTAN LANGUAGE

Abstract*: The article analyzes diminutive-affectionate and abbreviated forms of personal names in the Uzbek language from linguistic and socio-cultural perspectives. The phonetic and morphological features of diminutive-affectionate forms are examined, as well as the semantic and aesthetic functions of affixes such as* -jon*,* -cha/-che*, and* -oy*. In addition, the phonetic mechanisms of abbreviated forms are explained, including their types based on the initial syllable, the final syllable, and phonetic truncation. It is emphasized that diminutive-affectionate and abbreviated forms of names not only facilitate ease of pronunciation in speech but also serve an important socio-pragmatic function of expressing sincerity, affection, and closeness to the interlocutor. The research findings highlight the necessity of studying these phenomena as reflections of national and cultural values.*

Keywords: *anthroponymy, name, diminutive-affectionate form, abbreviated form, sincerity, pragmatics, national values.*

Kirish

O‘zbek antroponimik tizimi xalqimizning boy tarixiy, madaniy va ijtimoiy hayoti bilan chambarchas bog‘liq bo‘lib, unda shaxs ismlari alohida o‘rin tutadi. Ism insonning jamiyatdagi mavqeini belgilash, uni boshqa shaxslardan ajratib ko‘rsatish vositasi hisoblanadi. Shu bilan birga, o‘zbek tilida ismlar shaxsiyatni faqat identifikatsiya qilish vazifasini emas, balki milliy qadriyatlar, diniy qarashlar va tarixiy an’analarni ham aks ettiradi (E.Begmatov, 1990; Karimov, 2015). Ismlar orqali ota-onalarning farzandiga bo‘lgan umidlari, orzu-intilishlari ham ifodalanadi. Shu sababli, antroponimik tizimni lingvistik va sotsiokulturologik nuqtayi nazardan o‘rganish dolzarb masala hisoblanadi.

Ismlarning erkalash va qisqartirish shakllari esa antroponimik tizimning o‘ziga xos qatlamini tashkil etadi. Ular nafaqat fonetik yoki morfologik jihatdan farqlanadi, balki ijtimoiy-lisoniy munosabatlarni ham ifodalaydi. Masalan, -jon, -oy, -cha kabi suffikslar yordamida hosil qilingan erkalash shakllari samimiyat, mehr-muhabbat va yaqinlikni ifodalaydi (*Dilnozjon, Ra’nooy, Gulcha*) (E.Begmatov, 2007). Qisqartirilgan shakllar esa kundalik muloqotda qulaylik yaratish, nutqiy jarayonni soddalashtirish bilan birga, oila va do‘stona munosabatlarda samimiylikni kuchaytiradi (*Dilshod → Dil, Behruz → Behi*).

Demak, erkalash va qisqartirish shakllari o‘zbek tilida shaxsiy ismlarning ijtimoiy kommunikativ funksiyalarini kengaytirib, ularni nafaqat til birliklari, balki milliy madaniyat va ijtimoiy muhitning ifodachisiga aylantiradi. Bu hodisani o‘rganish nafaqat antroponimik tadqiqotlar uchun, balki lingvokulturologiya, sotsiologiya va psixolingvistika kabi fanlar kesimida ham muhim ahamiyat kasb etadi.

O‘zbek tilida shaxs ismlarining erkalash shakllari asosan fonetik qisqartirish va morfologik qo‘shimchalar yordamida hosil qilinadi. Fonetik jihatdan ular so‘zning tovush tarkibiga yumshoqlik, mayinlik bag‘ishlab, samimiy munosabatni bildiradi. Masalan, *Dilnoza → Dili*, *Sardor → Sardi* kabi qisqartirishlarda so‘zning oxiri yumshatilgan bo‘ladi. Morfologik jihatdan esa ismlarga maxsus suffikslar qo‘shilishi orqali erkalash shakllari hosil qilinadi. Bu suffikslar tilimizda qadimdan mavjud bo‘lib, ular semantik jihatdan “erkalash”, “yaqinlik”, “mehr” ma’nolarini anglatadi (Sh.Rahmatullayev, 2007).

O‘zbek antroponimik tizimida erkalash shakllari turli affikslar orqali yasaladi. Eng ko‘p ishlatiladigan erkalash affikislari quyidagilardir:

- **-cha/-che**: Bu affikslar asosan ayollar ismlarida uchraydi va samimiylikni kuchaytiradi. Masalan, *Dilnoza → Dilcha*, *Gulchehra → Gulche*. Ular qisqartirish orqali shakllanib, nutqda yumshoqlik va mehr ifodalaydi.
- **-jon**: O‘zbek tilida eng ko‘p qo‘llaniladigan erkalash suffiksi hisoblanadi. *Aziz → Azizjon, Gulnoz → Gulnozjon* kabi shakllar orqali shaxsga bo‘lgan iliq munosabat, hurmat va yaqinlik bildiriladi.
- **-oy**: Bu suffiks ko‘proq ayollar ismlarida uchraydi va ularga estetik jilo beradi. Masalan, *Ra’no → Ra’nooy*, *Dilbar → Dilbaroy*. Ushbu shakllar samimiyat va nazokatni ifodalashda muhim o‘rin tutadi (E.Begmatov, 1990).

Ismlarning erkalash shakllari faqat fonetik yoki morfologik hodisa emas, balki ijtimoiy-madaniy jarayonning ham bir qismidir. Ular ko‘pincha:

- **Ota-ona va qarindoshlar nutqida** – farzand yoki yaqinlarga mehr-muhabbat bildirishda qo‘llanadi (*Bolajon, Dilcha, Azizjon*).
- **Do‘stlar va yaqinlar o‘rtasida** – samimiylik va yaqinlikni kuchaytiradi (*Sardor → Sardi, Nodira → Nodi*).
- **Madaniy qadriyat sifatida** – o‘zbek xalqining mehmondo‘stlik va mehr-oqibatga asoslangan qadriyatlarida erkalash shakllari insoniy munosabatlarning ifodachisi bo‘lib xizmat qiladi (Karimov, 2015).

Shunday qilib, ismlarning erkalash shakllari fonetik yumshoqlik, morfologik qo‘shimchalar va ijtimoiy-madaniy vazifalari bilan o‘zbek tilidagi antroponimik tizimning boy qatlamini tashkil etadi.

Bundan tashqari ismlsrda disqartirish shaklining fonetik mexanizmlari ham mavjud.

O‘zbek tilida shaxs ismlarining qisqartirilgan shakllari fonetik jihatdan tovushlar yoki bo‘g‘inlarning qisqarishi orqali yuzaga keladi. Qisqartirish mexanizmi, asosan, so‘zning boshida yoki oxirida joylashgan bo‘g‘inlarni tushirib qoldirish natijasida amalga oshadi. Masalan, *Dilshod → Dil*, *Dilorom → Dilo*. Bunday jarayon fonetik iqtisod qonuniyatlari bilan ham bog‘liq bo‘lib, nutq jarayonida talaffuzni soddalashtirish, tezkorlikni ta’minlash va muloqotni qulaylashtirishga xizmat qiladi (Sh.Rahmatullayev, 2007).

Qisqartirishda shuningdek, fonetik yumshoqlik, jarangdorlik va talaffuzning osonligi ham muhim rol o‘ynaydi. Shu sababli, qisqartirilgan shakllar ko‘pincha muloqot jarayonida tez-tez qo‘llanadi va shaxsiy samimiyatni kuchaytiradi.

Qisqartirish shakllarining quyidagi turlari mavjud:

a) Boshlang‘ich bo‘g‘in asosida

Bu turdagi qisqartirishda ismning birinchi bo‘g‘ini yoki dastlabki tovushlar asos qilib olinadi. Masalan: *Dilshod → Dil, Gulbahor → Gul, Zaynab → Zai*. Bunday shakllar ko‘proq norasmiy nutqda, do‘stona muloqotlarda uchraydi.

b) Oxirgi bo‘g‘in asosida

Ba’zi qisqartirishlar ismning oxirgi bo‘g‘ini yoki tovushlari asosida hosil qilinadi. Masalan: *Javlon → Loni, Nodira → Dira, Shodiyor → Yor*. Bu turdagi qisqartirish ko‘proq yoshlar nutqida uchraydi va shaxsiy yaqinlikni bildiradi.

c) Fonetik qisqartirish

Fonetik qisqartirishda ismning o‘rtasi yoki ma’lum tovushlari tushirib qoldiriladi. Masalan: *Behruz → Behi, Dilorom → Dilo, Farhod → Faro*. Bunday shakllar talaffuzning ixchamligi va nutqiy qulaylikni ta’minlashga xizmat qiladi.

Qisqartirish shakllarining kommunikativ qulaylik va samimiylikni ta’minlashdagi o‘rni.

Ismlarning qisqartirilgan shakllari lingvistik hodisa sifatida kommunikativ jarayonda muhim ahamiyat kasb etadi. Avvalo, ular nutqiy jarayonni soddalashtirib, talaffuzni yengillashtiradi. Masalan, kundalik suhbatlarda *Dilshod* o‘rniga *Dil*, *Behruz* o‘rniga *Behi* deb murojaat qilish tezkor va qulay bo‘ladi.

Ikkinchidan, qisqartirilgan shakllar muloqotda samimiyat, yaqinlik va do‘stona munosabatni kuchaytiradi. Ular ko‘pincha oilaviy muhitda, do‘stlar davrasida, norasmiy sharoitlarda qo‘llanib, insonlar o‘rtasida iliq kayfiyatni shakllantiradi. Shu bois qisqartirish shakllari o‘zbek xalqining ijtimoiy-madaniy qadriyatlari bilan uzviy bog‘liq bo‘lib, milliy kommunikativ madaniyatning muhim bir qismi hisoblanadi (Karimov, 2015).

Umuman olganda, qisqartirish shakllari fonetik mexanizmlar, morfologik qisqarish va ijtimoiy vazifalari bilan o‘zbek tilining antroponimik tizimida alohida qatlamni tashkil etadi. Ular nutqiy qulaylikni ta’minlash bilan birga, shaxslararo samimiy muloqotni kuchaytiradi va milliy tilning boy imkoniyatlarini namoyon qiladi.

O‘zbek tilidagi o‘xshash va farqli jihatlari ham uchraydi. Ismlarning erkalash va qisqartirish shakllari bir-biriga yaqin hodisalar bo‘lib, ularning umumiy jihati shundaki, ikkisi ham shaxsga bo‘lgan samimiy munosabatni ifodalash, nutqiy jarayonni soddalashtirish va muloqotni qulaylashtirishga xizmat qiladi. Masalan, *Dilshod → Dil* (qisqartirish) va *Dilshod → Dilshodjon* (erkalash) shakllarining ikkalasi ham suhbatdoshga nisbatan yaqinlikni bildiradi.
Shu bilan birga, ularning farqli jihatlari ham mavjud. Qisqartirish shakllari asosan fonetik mexanizmlarga asoslangan bo‘lsa, erkalash shakllari morfologik qo‘shimchalar orqali hosil qilinadi (*-jon, -cha, -oy* va h.k.). Demak, qisqartirish ko‘proq talaffuzni soddalashtirishga qaratilgan bo‘lsa, erkalash shakllari mazmunan mehr-muhabbat, nazokat va iliqlikni kuchaytirishga yo‘naltirilgan (Rahmatullayev, 2007).

Ijtimoiy vazifalari: samimiyat, mehr ifodalash, yaqinlik bildirish,o’bek antroponimikasida erkalash va qisqartirish shakllari tilning nafaqat lingvistik, balki ijtimoiy funksiyasini ham bajaradi. Ular shaxslararo muloqotda quyidagi vazifalarni ado etadi:

- **Samimiyat ifodalash:** suhbatdoshlar o‘rtasidagi norasmiy, iliq munosabatni kuchaytiradi (*Sardor → Sardi, Aziza → Azizacha*).
- **Mehr-muhabbatni ifodalash:** ota-ona, qarindoshlar yoki do‘stlarning bir-biriga bo‘lgan iliq his-tuyg‘ularini ifodalaydi (*Gulbahor → Guljon, Behruz → Behi*).
- **Yaqinlik bildirish:** shaxsni boshqalardan ajratib, unga alohida e’tibor berilayotganini ko‘rsatadi. Bu, ayniqsa, oilaviy va do‘stona muloqotda muhim ijtimoiy ahamiyat kasb etadi (Karimov, 2015).

Ismlarning rasmiy nutqda va norasmiy nutqda qo‘llanish chegaralari quyidagilardan iboratdir. Ismlarning erkalash va qisqartirish shakllari, odatda, norasmiy muloqot doirasi uchun xosdir. Ular oilaviy suhbatlarda, do‘stona yig‘inlarda, samimiy vaziyatlarda keng qo‘llanadi. Masalan, *Dilshodjon, Nodi, Behi* kabi murojaatlar yaqinlar o‘rtasida juda tabiiy eshitiladi.
Biroq rasmiy nutqda bunday shakllardan foydalanish odobga zid hisoblanadi. Ilmiy anjumanlar, rasmiy yig‘ilishlar, hujjatlar yoki davlat idoralaridagi muloqotda shaxs ismi to‘liq shaklda ishlatilishi talab qilinadi (*Dilshodbek, Gulbahor opa* va h.k.).

Shu tarzda, erkalash va qisqartirish shakllarining qo‘llanish chegarasi ijtimoiy vaziyat va muloqot konteksti bilan belgilanadi (E.Begmatov, 1990).

Shunday qilib, o’zbek tilida ismlarning erkalash va qisqartirish shakllari faqatgina lingvistik hodisa emas, balki xalqning milliy-madaniy qadriyatlarini ifodalovchi vosita sifatida namoyon bo‘ladi. Ular orqali shaxslararo munosabatlarning iliqligi, samimiyligi va mehr-muhabbati ifodalanadi. Masalan, ota-ona farzandiga murojaat qilganda yoki do‘stlar o‘rtasida ishlatiladigan *-jon, -cha, -oy* kabi qo‘shimchalar tilimizda qadimdan mavjud bo‘lib, o‘zbek xalqining mehribonlik, samimiyat va yaqinlik kabi qadriyatlarini yoritib beradi (E.Begmatov, 1990).

Ismlarning qisqartirish shakllari esa fonetik iqtisod qonuniyatlariga asoslangan holda nutqiy jarayonni soddalashtirish, talaffuzni qulaylashtirish va muloqotni tezkor qilishga xizmat qiladi. Shu bilan birga, ular samimiy muhitni yaratishda, suhbatdoshlar o‘rtasidagi masofani qisqartirishda muhim vosita bo‘lib xizmat qiladi (Sh.Rahmatullayev, 2007).

Lingvistik nuqtayi nazardan, erkalash va qisqartirish shakllari fonetik, morfologik va semantik jihatdan o‘ziga xos bo‘lib, o‘zbek tilining antroponimik tizimining boyligini namoyon etadi. Pragmatik nuqtayi nazardan esa ular muloqotda yaqinlikni kuchaytirish, suhbatdoshlarga ijobiy ta’sir ko‘rsatish va nutqiy jarayonni emotsional jihatdan boyitishga xizmat qiladi (Karimov, 2015).

Shunday qilib, erkalash va qisqartirish shakllari o‘zbek tilidagi antroponimiyaning muhim qatlami bo‘lib, ular milliy ruhiyat, ijtimoiy qadriyatlar va til madaniyatini aks ettiruvchi vosita sifatida o‘rganilishi zarur.

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EROZIYAGA UCHRAGAN YERLARDAN FOYDALANISHNING XITOY TAJRIBASI

Annotatsiya: *Ushbu maqolada yer eroziyasining global muammosi, uning oqibatlari va Xitoy halq respublikasida eroziyaga uchragan yerlarni tiklash va ulardan samarali foydalanish tajribalari tahlil qilinadi.*

Kalit so‘zlar: *yer eroziyasi, degradatsiya, agroekologiya, melioratsiya, barqaror qishloq xo‘jaligi, jahon tajribasi.*

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CHINA’S EXPERIENCE IN THE UTILIZATION OF ERODED LANDS

Abstract: *This article discusses the global issue of soil erosion, its consequences, and analyzes the experience of the People's Republic of China in restoring eroded lands and utilizing them effectively.*

Keywords: *soil erosion, degradation, agroecology, land reclamation, sustainable agriculture, international experience.*

Kirish

Yer - insoniyat hayotining asosi, moddiy va ekologik barqarorlikning manbai sifatida qadimdan muhim ahamiyat kasb etib kelgan. Ammo bugungi global ekologik inqiroz sharoitida yer resurslarining holati tobora yomonlashib, jahon miqyosida tuproq eroziyasi insoniyatni tashvishga solayotgan eng jiddiy muammolardan biriga aylangan. Aholi sonining ortishi, sanoat va qishloq xo‘jaligining haddan ziyod intensivlashuvi, noto‘g‘ri yer resurslaridan foydalanish, o‘rmonlarning kesilishi, chorvachilikning nomutanosib rivoji - bularning barchasi yerning degradatsiyasiga, ayniqsa eroziyaga olib kelmoqda.

Yer eroziyasi - bu tuproq qatlamining tabiiy (masalan, yomg‘ir, shamol, yer silkinishlar) yoki antropogen (inson faoliyati) omillar ta’sirida yemirilishi, unumdor qatlamining yuvilib ketishi yoki uchib yo‘qolishi bilan tavsiflanadigan murakkab ekologik jarayondir. Yerning fizik, kimyoviy va biologik xossalarining buzilishi natijasida u o‘z unumdorligini yo‘qotadi, bu esa o‘z navbatida global oziq-ovqat xavfsizligi, ekologik muvozanat, iqlim o‘zgarishi va ijtimoiy-iqtisodiy barqarorlikka salbiy ta’sir ko‘rsatadi.

Statistik ma’lumotlarga ko‘ra, hozirgi kunda dunyo bo‘yicha qishloq xo‘jaligiga yaroqli yerlarning 33 foizi turli darajadagi eroziya jarayonlariga duchor bo‘lgan. Xususan, BMTning Oziq-ovqat va qishloq xo‘jaligi tashkiloti (FAO) hisob-kitoblariga ko‘ra, har yili 75 milliard tonnaga yaqin unumdor tuproq qatlamining yo‘qolishi aniqlangan. Bu esa o‘rtacha har bir inson boshiga yiliga 10 tonna unumdor tuproq yo‘qolishini anglatadi. E’tiborlisi, tuproqni qayta tiklash jarayoni nihoyatda sekin kechadi - 1 sm tuproq qatlamini hosil bo‘lishi uchun 100 yildan ortiq vaqt talab etiladi.

Yer eroziyasining asosiy turlari - **suv eroziyasi, shamol eroziyasi, texnogen eroziya, gravitatsion eroziya** va **muzlik eroziyasi** bo‘lib, ularning har biri alohida geologik va ekologik sharoitda yuzaga chiqadi. Masalan, suv eroziyasi yomg‘ir suvi yoki qor erishidan hosil bo‘ladigan oqimlar tufayli tuproq qatlamining yuvilishi bilan bog‘liq bo‘lsa, shamol eroziyasi, asosan, qurg‘oqchil va yarim qurg‘oqchil hududlarda kuchli shamollar ta’sirida sodir bo‘ladi. Texnogen eroziya esa insonning noto‘g‘ri yerdan foydalanish faoliyati - o‘rmonlarning kesilishi, ortiqcha chorva boqilishi, agrotexnik tadbirlarning buzilishi kabi omillar natijasida yuzaga keladi.

Bu muammo nafaqat ekologik, balki iqtisodiy, ijtimoiy va siyosiy jihatdan ham jiddiy oqibatlarga olib kelmoqda. Bir tomondan, eroziyaga uchragan yerlarda hosildorlik keskin pasayadi, bu esa oziq-ovqat tanqisligiga olib keladi. Ikkinchi tomondan, yer degradatsiyasi sababli aholining migratsiyasi, iqtisodiy beqarorlik, mahalliy mojarolar kuchaymoqda. Shunday qilib, eroziya masalasi ko‘p qirrali va kompleks yondashuvni talab qiluvchi global muammoga aylanmoqda.

Bunday sharoitda jahon mamlakatlari ushbu muammoga qarshi turli strategik, ilmiy va amaliy choralarni qo‘llab kelmoqda. Rivojlangan va rivojlanayotgan mamlakatlar o‘z tabiatiga, iqlimiga, iqtisodiy imkoniyatlariga mos ravishda eroziyaga qarshi kurashning o‘ziga xos yondashuvlarini ishlab chiqmoqda. Masalan, Xitoyda keng ko‘lamli o‘rmonzorlashtirish loyihalari (masalan, "Buyuk yashil devor") orqali eroziya darajasi sezilarli darajada kamaytirilgan. AQSHda esa “Conservation Reserve Program” orqali millionlab gektar yerlar qishloq xo‘jaligidan chiqarilib, ekologik tiklash rejimiga o‘tkazilgan. Yevropa Ittifoqi esa ekologik toza dehqonchilik tizimlarini rivojlantirish orqali yer degradatsiyasini oldini olishga intilmoqda.

O‘zbekiston va Markaziy Osiyo mintaqasi ham bu borada jiddiy muammolarga duch kelmoqda. Ayniqsa, tog‘ oldi hududlari, qurg‘oqchil vohalar, eski sug‘oriladigan yerlar eroziyaga juda moyil. Yiliga o‘rtacha 20–40 tonnagacha unumdor tuproq qatlamining yuvilishi yoki uchib ketishi kuzatilmoqda. Bu holat nafaqat qishloq xo‘jaligi samaradorligini, balki aholining iqtisodiy farovonligini ham bevosita tahdid ostiga qo‘ymoqda. Shunday ekan, global tajriba asosida O‘zbekistonda ham eroziyaga qarshi kurash va eroziyaga uchragan yerlarni qayta foydalanishga jalb qilish bo‘yicha aniq ilmiy-amaliy chora-tadbirlarni ishlab chiqish zaruriyati tug‘ilmoqda.

Shuni alohida ta’kidlash kerakki, eroziyaga uchragan yerlar “yo‘qotilgan” resurslar emas. To‘g‘ri agrotexnik, agroekologik va meliorativ tadbirlar orqali ularni qayta tiklash, ekinlar yetishtirish, chorvachilikka yaroqli holatga keltirish

mumkin. Buning uchun esa ilg‘or jahon tajribasini o‘rganish, moslashtirish va mahalliy sharoitga tatbiq etish muhim. Masalan, HIndistonning Rajasthan shtatida shamol eroziyasi yuqori bo‘lgan hududlarda maxsus barer tizimlari, cho‘l o‘simliklarini joriy qilish orqali yerlarni tiklashga erishilgan. Afrikada esa “zaï” texnologiyasi - ya’ni kichik quduqchalar qazib, kompost solib o‘simlik yetishtirish orqali yarim qurg‘oqchil yerlarda hosildorlik 3-5 barobarga oshirilgan.

Jahon tajribasi shuni ko‘rsatmoqdaki, eroziyaga qarshi kurashda kompleks yondashuv - ya’ni agrotexnik choralar, muhandislik ishlari, ekologik monitoring, iqtisodiy rag‘batlantirish, aholining ekologik savodxonligini oshirish muhim o‘rin tutadi. Bu yo‘lda davlat siyosatining barqarorligi, ilm-fan va amaliyotning integratsiyasi, xalqaro hamkorlik alohida ahamiyat kasb etadi. Shuningdek, zamonaviy texnologiyalar - masalan, GIS tizimlari, dronlar yordamida tuproq monitoringi, sun’iy yo‘ldosh ma’lumotlari orqali eroziya darajasini aniqlash, raqamli agroxaritalar tuzish kabi innovatsiyalar ushbu sohada yangi istiqbollarni ochmoqda.

Mazkur maqolada aynan mana shu masalalar – yer eroziyasi sabablarini chuqur o‘rganish**,** jahon miqyosidagi ilg‘or tajribalarni tahlil qilish**,** eroziyaga uchragan yerlardan qayta foydalanish yo‘llari**,** agroekologik barqarorlikni ta’minlash bo‘yicha amaliy tavsiyalar yoritib beriladi. Asosiy e’tibor xalqaro miqyosda sinovdan o‘tgan yondashuvlar, texnologiyalar, siyosiy strategiyalar va ularni O‘zbekiston sharoitida qo‘llash imkoniyatlariga qaratiladi.

Xitoyning eroziyaga uchragan yerlaridan foydalanish tajribasi: tizimli yondashuv va ekologik tiklanishning o‘ziga xos modeli

XXI asrda global ekologik muammolar ichida yer degradatsiyasi, xususan, tuproq eroziyasi eng xavfli va tahlikali tahdid sifatida ajralib turadi. Jahon miqyosida har yili milliardlab tonna unumdor tuproq qatlamining yo‘qolishi tufayli millionlab gektar yerlar qishloq xo‘jaligiga yaroqsiz holga kelmoqda. Ayni chog‘da, ba’zi mamlakatlar bu muammoni hal qilishda jahon miqyosida ilg‘or tajribani namoyon eta oldi. Ana shunday davlatlardan biri bu - **Xitoy Xalq Respublikasi**dir. Xitoy nafaqat iqtisodiy-texnologik rivojlanishda balki ekologik barqarorlikni ta’minlash, ayniqsa yer eroziyasiga qarshi tizimli kurashish sohasida ham samarali yondashuvlar orqali butun dunyoga namuna bo‘layotgan davlatga aylandi.

Xitoy hududining katta qismi tog‘li, plato va qurg‘oqchil zonalardan iborat bo‘lib, eroziya xavfi yuqori bo‘lgan tabiiy-geografik sharoitga ega. Ayniqsa, mamlakat shimoli-g‘arbidagi **Loess platosi (Selyon platolari)** uzoq yillar davomida kuchli shamol va suv eroziyasiga uchragan hudud hisoblanadi. Bu plato dunyodagi eng yirik shamol bilan yotqizilgan tuproqli hududlardan biri bo‘lib, u yerda joylashgan millionlab gektar maydon tarixan shamol, yog‘in va noto‘g‘ri dehqonchilik faoliyati ta’sirida kuchli darajada degradatsiyaga uchragan. XX asrning o‘rtalariga kelib, bu yerlarning yaroqsiz holga kelgani nafaqat ekin ekish, balki mahalliy aholining yashashi uchun ham tahdid solgan edi. Ayniqsa, o‘ttizinchi-yetmishinchi yillarda aholining haddan tashqari zich joylashuvi, o‘rmonlarning kesilishi, chorvachilikning noto‘g‘ri yuritilishi, terassalarning

yemirilishi va eroziyaga qarshi chora-tadbirlarning deyarli mavjud emasligi tufayli Loess platosida ekologik inqiroz yuzaga keldi.

Ammo Xitoy hukumati bu xavfni erta anglab, 1980-yillardan boshlab ushbu hududni ekologik tiklash va eroziyaga qarshi kurashishga alohida e'tibor qaratdi. Natijada, bir necha o'n yilliklar davomida amalga oshirilgan yirik ekologik loyihalar orqali Loess platosining katta qismi qayta tiklandi. Bu ishlar o'zida bir nechta strategik yondashuvni mujassam etgan**:** terrasa qilish**,** o'rmonzorlashtirish**,** suvni tejovchi texnologiyalarni joriy etish**,** aholi bandligini ekologik sohalarga yo'naltirish**, va** hukumat tomonidan moliyaviy rag'batlantirish**.**

Terrasalar tashkil etish

Tuproq eroziyasining asosiy sababi - tuproqning tik yoki qiyalikdagi maydonlarda yuvilib ketishidir. Xitoyning Loess platosida tuproq zich bo'lmagani sababli yog'inlar natijasida hosil bo'ladigan yuzaki oqimlar tuproq qatlamini tezda yuvib ketgan. Bu muammoni bartaraf qilishda asosiy yechimlardan biri sifatida **terrasa qilish** - ya'ni tog' yon bag'irlarida yassi platformalar barpo qilish orqali tuproqning yuvilib ketishini oldini olish chorasi qo'llanildi. Bu tizim nafaqat eroziyaning oldini oldi, balki qiyaliklarda dehqonchilik qilish imkonini yaratdi.

1980-yillardan boshlab, hukumat tomonidan yer egalari va fermerlar terrasa barpo qilishga jalb qilindi. Bu ishlar mexanizatsiyalashgan texnikalar orqali, mahalliy aholi mehnati bilan va davlat grantlari asosida amalga oshirildi. Loess platosining o'ziga xos geomorfologik xususiyatlari - ya'ni tuproqning yengil yumshoq va ishlov berishga yaroqli ekani bu jarayonni tezlashtirdi. Hozirgi kunda millionlab gektar maydon terrasalarga aylantirilgan, ular orqali eroziya darajasi sezilarli darajada kamaydi. Qishloq xo'jaligi unumdorligi o'rtacha 2,5 barobarga oshganligi kuzatildi.

O'rmonzorlashtirish

Xitoyda eroziyaga qarshi eng yirik loyihalardan biri bu –**"Buyuk yashil devor"** loyihasidir. Ushbu loyiha 1978-yilda ishga tushirilgan bo'lib, mamlakat shimoliy hududlarida cho'llanish va shamol eroziyasiga qarshi kurashishni maqsad qilgan. Loyiha doirasida millionlab daraxtlar ekildi, o'rmonchilik infratuzilmasi barpo etildi va mahalliy aholining ishtiroki ta'minlandi. Daraxtlarning ildiz tizimi tuproqni mustahkamlab, uni shamol va suv ta'siridan saqlaydi. Daraxtlar, ayniqsa, **akatsiya, qarag'ay, evkalipt**, va mahalliy qurg'oqchilikka chidamli buta o'simliklar tanlab ekildi.

2000-yillarga kelib, bu loyiha nafaqat ekologik, balki iqtisodiy foyda ham bera boshladi. Daraxtzorlar yonida asalari parvarishi, dorivor o'simliklar yetishtirish, yog'ochni qayta ishlash kabi faoliyatlar yo'lga qo'yildi. Shu tariqa "Yashil devor" nafaqat eroziyaga qarshi, balki bandlik va mahalliy iqtisodiyot uchun ham ijobiy omilga aylandi. Ayni vaqtda ushbu loyiha Osiyo, Afrika va hatto Yevropada o'rnak sifatida o'rganilmoqda.

Suvni tejovchi texnologiyalar va suv resurslarini boshqarish

Eroziyaga qarshi kurashda eng muhim resurslardan biri - bu **suv**dir. Suvning noto'g'ri taqsimlanishi, ortiqcha sug'orish, eroziyani yanada kuchaytiradi. Shu sababli Xitoyda suvni tejaydigan texnologiyalar**, masalan** tomchilatib sug'orish**,**

yopiq drenaj tizimlari**,** yomg‘ir suvini yig‘uvchi havzalar keng joriy etildi. Ayniqsa, terrasalarga ekilgan ekinlar uchun tomchilatib sug‘orish orqali suv sarfi 40–60% gacha kamaytirildi.

Bundan tashqari, Xitoy hukumati suv resurslarini boshqarish bo‘yicha aniq strategiya ishlab chiqdi. Suv havzalari darajasida rejalashtirish, kichik suv inshootlari qurilishi, yomg‘ir suvlarini yig‘ish tizimlari, qurg‘oqchil davrlarda suv taqsimotining nazorat qilinishi bu tizimni mustahkamladi. Bu bilan birga tuproqning ortiqcha namlanishi oldi olindi, demak, eroziyaga sabab bo‘luvchi suv oqimlari kamaytirildi.

Aholini ekologik tiklanishga jalb qilish

Xitoy tajribasining eng muhim jihatlaridan biri - mahalliy aholini ekologik tiklanish jarayoniga faol jalb qilishdir. Hukumat ushbu loyihalarni amalga oshirishda fermerlar, mahalliy mehnatkashlar, ijtimoiy tashkilotlar va hatto talaba-yoshlar ishtirokini ta'minlashga alohida e’tibor qaratdi. Buning uchun fuqarolarni rag‘batlantiruvchi iqtisodiy mexanizmlar joriy etildi: ekilayotgan daraxtlar uchun subsidiya ajratish, ekin ekishga yaroqsiz bo‘lgan yerlar uchun kompensatsiya to‘lash, qayta tiklangan yerlarni uzoq muddatli ijaraga berish kabi choralar ko‘rildi.

Masalan, “**Grain for Green**” (“Don evaziga yashillik”) dasturi orqali tog‘li va eroziyaga uchragan yerlarda dehqonchilik qilishdan voz kechgan fermerlarga boshqa joydan yaroqli yerlar ajratildi yoki ular uchun oziq-ovqat va moliyaviy yordam ko‘rsatildi. Shu bilan birga, ekologik foydasi bor bo‘lgan faoliyat bilan shug‘ullanuvchi aholi uchun soliqlarda imtiyozlar, yer solig‘idan ozod etish, va hatto davlat grantlari berilishi yo‘lga qo‘yildi. Buning natijasida aholi o‘z ixtiyori bilan eroziyaga uchragan yerlarda daraxt ekish, terrasalarni tiklash, shamolga qarshi barerlar yaratishda qatnasha boshladi. Shu tarzda ekologik tiklanish harakati ommaviy tus oldi.

Qishloq joylarda ekologik ta’limga ham alohida e’tibor qaratildi. Maktablarda va mahalla yig‘inlarida ekologik saboqlar tashkil etildi, ekologik festivallar, daraxt ekish kunlari, havzalarni tozalash aksiyalari muntazam o‘tkazildi. Bu orqali aholining tabiatga bo‘lgan mas'uliyat hissi kuchaytirildi.

Innovatsion yondashuvlar: raqamli monitoring va sun’iy intellekt yordamida boshqaruv: Xitoy tajribasining zamonaviy bosqichida raqamli texnologiyalar va sun’iy intellektdan foydalanish orqali eroziyaga qarshi chora-tadbirlar samaradorligi sezilarli darajada oshirildi. Ayniqsa, GIS (Geografik Axborot Tizimlari)**,** dronlar**,** sun’iy yo‘ldosh tasvirlari**,** hamda masofadan zondlash texnologiyalari orqali eroziya darajasi, tuproq unumdorligi, o‘rmon qoplamasi va suv resurslarining holati muntazam monitoring qilinmoqda. Ushbu tizimlar tufayli aniq muammoli joylar tezkor aniqlanadi va u yerlar bo‘yicha maxsus ekologik choralar belgilanadi.

Bundan tashqari, sun’iy intellekt yordamida agrotexnik tavsiyalar ishlab chiqiladi - qaysi yerda qanday o‘simlik ekish maqsadga muvofiq, qaysi hududda suvni tejash kerak, qaysi daraxtlar eroziya xavfini kamaytiradi - bularning barchasi algoritmlar asosida hisoblab chiqilmoqda. Shu yo‘sinda inson mehnatining samaradorligi oshmoqda, vaqt va resurslar tejalyapti.

Xitoy tajribasining natijalari va jahon e’tirofi: Xitoyning eroziyaga qarshi kurashishdagi yondashuvi nafaqat mamlakat ichida, balki xalqaro miqyosda ham keng e’tirof etildi. BMT, FAO, UNEP kabi tashkilotlar Xitoyning Loess platosini ekologik tiklashdagi yutuqlarini muvaffaqiyatli model sifatida e’tirof etdi. Ba’zi statistik ma’lumotlarga ko‘ra, 1980-yillardan to hozirga qadar Xitoyda 400 million gektardan ortiq maydon eroziyadan himoya qilindi yoki tiklandi. Faqatgina Loess platosida oxirgi 30 yilda, o‘rmon qoplamasi 10% dan 30% gacha oshdi, suv eroziyasi tufayli yuvilib ketayotgan tuproq miqdori yillik 5 tonnadan 1,5 tonnagacha kamaydi, qishloq xo‘jaligi hosildorligi o‘rtacha 2 barobarga oshdi, qishloq aholisi daromadi 3–5 barobarga ko‘tarildi.

Bundan tashqari, Xitoy tajribasi asosida boshqa ko‘plab mamlakatlar (masalan, Hindiston, Efiopiya, Braziliya) o‘zining eroziyaga qarshi strategiyalarini ishlab chiqmoqda. “South-South Cooperation” dasturlari orqali Xitoy o‘z tajribasini boshqa rivojlanayotgan davlatlar bilan o‘rtoqlashmoqda, agrar va ekologik mutaxassislarni tayyorlashda faol ishtirok etmoqda.

Xulosa

Xitoyning eroziyaga uchragan yerlarni tiklash va ulardan foydalanishdagi tajribasi shuni ko‘rsatadiki, bu boradagi yondashuv kompleks, uzoq muddatli, ilm-fanga asoslangan va ijtimoiy jihatdan inklyuziv bo‘lishi kerak. Faqatgina texnik chora-tadbirlar emas, balki aholi bilan muloqot, ekologik ta’lim, iqtisodiy rag‘batlantirish va zamonaviy texnologiyalar bilan uyg‘unlashgan siyosat muhim rol o‘ynaydi.

O‘zbekiston sharoitida ham ushbu tajriba o‘ziga xos tarzda qo‘llanilishi mumkin. Jumladan t**errasa tizimlarini** Surxondaryo, Qashqadaryo, Farg‘ona vodiysi tog‘ oldi hududlariga joriy etish, qurg‘oqchil hududlarda o‘rmonzorlashtirish orqali shamol eroziyasini kamaytirish, “Yashil texnologiyalar” - tomchilatib sug‘orish, yomg‘ir suvlarini yig‘ish tizimlarini kengaytirish, aholini ekologik kompensatsiya dasturlari orqali jalb etish, **s**un’iy yo‘ldosh monitoringi orqali eroziya xaritasini ishlab chiqish va real vaqtda kuzatib boorish, Talabalar, fermerlar, fuqarolik jamiyati tashkilotlarini barqaror yer boshqaruviga jalb etish.

Xulosa qilib aytganda, Xitoy tajribasi bizga o‘rgatadigan eng muhim dars shuki, har bir yer – u qanchalik yaroqsiz ko‘rinsa ham – to‘g‘ri siyosat, ilm-fan, texnologiya va odamlar ishtiroki orqali barqaror foyda keltiruvchi resursga aylanishi mumkin**.** Bu faqat bir davlatning emas, butun insoniyatning ekologik xavfsizligi yo‘lida tashlangan muhim qadamlardan biridir.

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RAQAMLI TEXNOLOGIYALAR ASOSIDA OLIY TA'LIMDA BIOLOGIYA O'QITISH MAZMUNI VA METODIKASI

Annotatsiya: *Mazkur maqolada oliy ta'lim tizimida biologiya fanini o'qitishda raqamli texnologiyalardan foydalanishning nazariy va amaliy asoslari yoritiladi. Biologiya ta'limida zamonaviy axborot-kommunikatsiya texnologiyalari, virtual laboratoriyalar, multimediya darsliklar, simulyatorlar va onlayn platformalarning ahamiyati tahlil qilinadi. Shuningdek, biologiya o'quv jarayonida talabalarning mustaqil ishlash, tanqidiy fikrlash va ilmiy-tadqiqot ko'nikmalarini shakllantirishda raqamli vositalarning metodik imkoniyatlari ko'rsatib beriladi.*

Kalit so'zlar: *raqamli texnologiyalar, oliy ta'lim, biologiya o'qitish, metodika, virtual laboratoriya, interaktiv ta'lim.*

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CONTENT AND METHODOLOGY OF TEACHING BIOLOGY IN HIGHER EDUCATION BASED ON DIGITAL TECHNOLOGIES

Abstract: *This article highlights the theoretical and practical foundations of the use of digital technologies in teaching biological sciences in the higher education system. In biology education, the importance of modern information and communication technologies, virtual laboratories, multimedia textbooks, simulators and online platforms is analyzed. It also shows the methodological possibilities of digital tools in the formation of students' independent work skills, critical thinking, and research skills in the process of teaching biology.*

Keywords: *digital technologies, higher education, biology teaching, methodology, virtual laboratory, interactive learning.*

Kirish

Bugungi kunda ta'lim tizimini modernizatsiya qilishda raqamli texnologiyalar muhim o'rin tutmoqda. O'zbekiston Respublikasi Prezidentining ta'lim sohasini raqamlashtirish bo'yicha qabul qilgan qaror va farmonlari oliy ta'limda o'quv jarayonini zamonaviy texnologiyalar asosida tashkil etishni talab qilmoqda. Ayniqsa, tabiiy fanlar, xususan biologiya yo'nalishida raqamli texnologiyalarning qo'llanishi nafaqat ta'lim samaradorligini oshiradi, balki talabalarni ilmiy izlanishlarga jalb etishda ham muhim ahamiyat kasb etadi.

Biologiya fanining mazmuni murakkab bo‘lib, uni samarali o‘zlashtirish uchun ko‘plab vizual materiallar, tajribalar, laboratoriya ishlari zarur. Shu bois raqamli texnologiyalar biologiyani o‘qitishda yangi imkoniyatlarni ochib beradi: virtual tajribalar, 3D modellashtirish, biologik jarayonlarni simulyatsiya qilish, onlayn ma’lumotlar bazalari va interaktiv platformalardan foydalanish.

Bugungi kunda dunyo bo‘yicha ta’lim jarayoniga yangi innovatsion texnologiyalar keng ko‘lamda tatbiq etilmoqda. Mamlakatimizda ham ushbu yo‘nalishda ko‘plab islohotlar amalga oshirilmoqda. Maktablar, oliy o‘quv yurtlari va boshqa ta’lim muassasalarida dars jarayonlari zamonaviy texnologiyalar asosida tashkil qilinmoqda. Bunday noan’anaviy usullarni qo‘llash ta’lim-tarbiya jarayonida kompyuter va texnika vositalarining samaradorligini oshirayotganini amaliyot ko‘rsatmoqda. Shu sababli, axborot texnologiyalaridan foydalanish o‘qituvchilarga mavzularni tayyorlashda erkinlik va tezkorlikni ta’minlasa, talabalarga esa mavzularni tez va oson o‘zlashtirish, shuningdek, ularda fanga qiziqishni kuchaytirishga yordam beradi. Ayniqsa, internet manbalaridan foydalanilgan holda olib boriladigan mashg‘ulotlar yoshlarning mustaqil va mantiqiy fikrlash, boshqaruvchilik, o‘ziga ishonch va bilim salohiyatini rivojlantirishga keng imkoniyat yaratadi.

Pedagogik texnologiya – bu ta’lim jarayonini samarali tashkil etish va o‘quvchilarning bilimlarni o‘zlashtirish darajasini oshirish maqsadida insoniy imkoniyatlar hamda texnik vositalardan birgalikda foydalanishni, ularning o‘zaro munosabatini aniqlashni ta’minlovchi tizimli metodlar yig‘indisidir [1].

Shaxsga yo‘naltirilgan o‘qitish texnologiyasini ta’lim jarayoniga tadbiq etish masalasini amerikalik psixologlar B. Blum va J. Karoll ilmiy tadqiq etgan bo‘lib, ularning “bilimlarni to‘liq o‘zlashtirish” texnologiyasi M.V. Klarin tomonidan nazariy jihatdan asoslab berilgan. Axborot-kommunikatsiya texnologiyalarini ta’lim jarayoniga joriy etish, internet texnologiyalaridan foydalanish usullari hamda masofaviy ta’lim texnologiyalarini qo‘llash borasida G‘arb olimlarining tadqiqotlari ham beqiyos ahamiyat kasb etadi. Jumladan, A. Berglund, D. Geladze, H. Long, M. Sugata, K. Whattananarong, P. Alfred, B. Means, W. Olatokun, K. Peters, J. Traxler va B. Furuholt kabi tadqiqotchilarning izlanishlari ushbu yo‘nalishda muhim ilmiy asos bo‘lib xizmat qiladi [2].

Ta’lim-tarbiya jarayonida pedagogik texnologiyalarni samarali qo‘llash uchun o‘qituvchilar, xususan, biologiya fanidan dars beruvchilar maxsus metodik bilim va ko‘nikmalarga ega bo‘lishlari zarur. Ularning kasbiy kompetentligini oshirish pedagogik amaliyotda muhim ahamiyat kasb etadi. T.R. Kuzimina ta’kidlaganidek, davlat ta’lim standartlarida belgilangan maqsadlarga erishish uchun o‘qitish vositalarini to‘g‘ri tanlash, ta’lim samaradorligini oshirish va o‘quv jarayonini takomillashtirishga alohida e’tibor qaratilishi lozim.

O‘quv jarayonida individuallashtirish va ixtisoslashtirishning muvaffaqiyati o‘quvchilarda bilim olishga bo‘lgan qiziqishning uyg‘onishi bilan bevosita bog‘liqdir. Bilimga qiziqish esa, o‘z navbatida, o‘quv motivatsiyasining shakllanishidan kelib chiqadi. Tadqiqotlarga ko‘ra, motivatsion omillar asosida o‘quvchilar shartli ravishda to‘rt guruhga ajratiladi [5].

Birinchi guruhdagi o‘quvchilarda asosan tashqi salbiy motivlar ustun bo‘lib, ichki bilish istagi deyarli kuzatilmaydi. Ikkinchi guruhda tashqi motivlar yetakchi, ichki bilishga oid qiziqish esa ikkinchi darajali hisoblanadi. Uchinchi guruhda ichki motivlar mavjud bo‘lsa-da, bilish faoliyati zaif rivojlangan bo‘ladi. To‘rtinchi guruhdagi o‘quvchilarda esa ichki motivlar ustuvor bo‘lib, ular faol bilish faoliyatini namoyon etadilar.

Biologiya tirik mavjudotlarning tashqi muhit bilan o‘zaro aloqalarini o‘rganadigan fan sifatida, ta’lim jarayonida innovatsion texnologiyalardan foydalanishni talab etadi. Faqatgina darslikka asoslanib o‘qitishda barcha organlarning tuzilishi va vazifalarini o‘quvchilarga to‘liq tushuntirish qiyin kechadi. Shu sababli biologiya darslarida ko‘rgazmali materiallar, diagrammalar hamda uch o‘lchamli virtual modellar qo‘llanilganda, o‘quvchilar mavzuni chuqurroq anglab, bilimni uzoq muddat eslab qoladilar. Masalan, hujayra tuzilishini matn orqali o‘rganish murakkab bo‘lsa, ko‘rgazmali taqdimotlar o‘quvchilarda aniqroq tasavvur uyg‘otadi [3].

Bugungi kunda elektron darsliklar va multimediali qo‘shimcha resurslardan foydalanish o‘quvchilarning mustaqil ishlash imkoniyatlarini kengaytirmoqda. Yangi yondashuvning asosiy mohiyati an’anaviy majburiy o‘qitish usullaridan voz kechib, ta’lim jarayonini zamonaviy pedagogik va axborot texnologiyalariga asoslashdir. Bu esa talabalarni mustaqil fikrlash, mustaqil faoliyat yuritish va jamoa bilan ishlash ko‘nikmalarini rivojlantirishga xizmat qiladi.

Shaxs rivojida mustaqil fikrlash katta ahamiyat kasb etadi. Shu sababdan biologiya o‘qitish jarayonining barcha bosqichlarida o‘quvchilarda muammoli vaziyatlarni tahlil qilish, farazlar ilgari surish, ilgari o‘zlashtirilgan bilimlarni yangi sharoitda qo‘llash, fikrni asoslash hamda natijani tekshirish kabi mustaqil fikrlash jarayonlariga alohida e’tibor berilishi lozim.

O‘qituvchining vazifasi esa har bir mavzuni o‘rgatishda muammoli vaziyatlarni yuzaga keltirish, o‘quvchilarning bilish faoliyatini rag‘batlantirish va ularni yechim topishga yo‘naltirishdan iboratdir.

Bugungi kunda biologiya ta’limida samaradorlikni oshirish maqsadida turli xil pedagogik texnologiyalar qo‘llanilmoqda. Masalan, didaktik o‘yin texnologiyasi dars jarayonida bilim olish faoliyatini o‘yin faoliyati bilan uyg‘unlashtirish orqali o‘quvchilarni qiziqtiradi va faollashtiradi. Muammoli ta’lim texnologiyasi esa o‘quvchilarni faollikka undash, ularda mustaqil yechim topish ko‘nikmalarini shakllantirishga qaratilgan. Modulli ta’lim texnologiyasi zamonaviy yondashuvlardan biri bo‘lib, u ma’lumotlarni modul bloklarida tizimli qayta ishlash va talabaning mustaqil faoliyatiga asoslanadi. Shuningdek, hamkorlikda o‘qitish texnologiyasi pedagogik jarayonni takomillashtirish va uni o‘quvchi shaxsiga yo‘naltirishga xizmat qiladi. Loyihaviy ta’lim texnologiyasida esa darsliklar, metodik qo‘llanmalar va ta’lim dasturlari asosiy vosita bo‘lib, pedagogik maqsadlar aniq rejalashtiriladi.

An’anaviy ta’lim texnologiyalari ham o‘z afzalliklariga ega. Jumladan, ular o‘quv jarayonini qat’iy nazorat qilish, vaqtni tejash va ilmiy bilimlarni aniq yetkazish imkonini beradi. Biroq, kamchiliklari ham mavjud: talabalarning

nofaolligi, mustaqil fikrlash imkoniyatining cheklanishi va motivatsiya darajasining pastligi. Shu bois hozirgi davrda keys, insert, klaster, Venn diagrammasi, aqliy hujum, kichik guruhlar bilan ishlash, atamalar zanjiri va tezkor o‘yin mashqlari kabi lokal texnologiyalardan foydalanish ham samarali hisoblanadi.

Biologiya darslarining sifatini oshirishda o‘qitish metodlarining turli guruhlari qo‘llaniladi.

Biologiya fanining oliy ta’limdagi mazmuni quyidagilarni qamrab oladi:

- Molekulyar biologiya, genetika, bioinformatika fanlari bo‘yicha chuqurlashtirilgan bilimlar;
- Ekologiya va atrof-muhitni muhofaza qilish masalalari;
- Zamonaviy biotexnologiyalar, tibbiy biologiya va bioetika;
- Ilmiy tadqiqot metodlari va tajribaviy ishlar.

Mazkur mazmun raqamli ta’lim vositalari bilan boyitilganda, talabalar bilim olish jarayonida amaliy tajribaga ega bo‘lishlari, ilmiy axborotlarni mustaqil tahlil qilishlari mumkin.

Og‘zaki metodlar suhbat, hikoya va ma’ruza; ko‘rgazmali metodlar tabiiy obyektlar, tasviriy ko‘rgazmalar, AKT vositalari va multimedialar; amaliy metodlar kuzatish, tajriba o‘tkazish va amaliy ishlarni bajarish; mantiqiy metodlar induktiv va deduktiv yondashuv, tahlil, qiyoslash va umumlashtirish; shuningdek, mustaqil ish metodlari darslik va ko‘rgazmali vositalar bilan ishlash. Bu usullar o‘quvchilarda fanni chuqur o‘zlashtirish va amaliy ko‘nikmalarni rivojlantirishga yordam beradi.

Zamonaviy ta’limning asosiy talabi ortiqcha kuch sarf etmasdan qisqa vaqt ichida yuksak natijalarga erishishdir. Bu jarayonda o‘qituvchidan nafaqat pedagogik mahorat, balki yangicha yondashuv ham talab qilinadi. Zamonaviy texnologiyalar asosida dars o‘tilganda talabalar faol ishtirok etadi, boshqaruvchilik va muammolarni hal etish ko‘nikmalarini rivojlantiradi, hamkorlikda ishlashga va ijtimoiy muloqotga kirishishga tayyor bo‘ladi.

Xulosa

Xulosa qilib aytganda, biologiya ta’limining samaradorligi dars, sinfdan tashqari ishlar, ekskursiyalar, laboratoriya mashg‘ulotlari va zamonaviy innovatsion pedagogik texnologiyalarni qo‘llash bilan uzviy bog‘liqdir. O‘quvchilarning qiziqishlari va ehtiyojlarini hisobga olgan holda tashkil etilgan ta’lim jarayoni ularning mustaqil fikrlashi, mantiqiy tahlil qilish va ilmiy dunyoqarashini shakllantirishda muhim omil bo‘lib xizmat qiladi.

Foydalanilgan adabiyotlar

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ВОЗМОЖНОСТИ РАЗВИТИЯ ЗЕЛЕНОЙ ЭНЕРГЕТИКИ В РЕСПУБЛИКЕ УЗБЕКИСТАН

Аннотация. *В статье анализируются возможности развития зеленой энергетики в Республике Узбекистан. Рассматривается соответствие возобновляемых источников энергии — солнечной, ветровой, гидроэнергетики и биомассы — географическим и климатическим условиям страны. Отмечено, что Кашкадарьинская, Сурхандарьинская, Бухарская и Навоийская области благоприятны для солнечной энергетики; Каракалпакстан, Навоийская и Самаркандская области — для ветровой; Ферганская долина, Ташкентская и Наманганская области обладают значительным гидроэнергетическим потенциалом. Также анализируются крупные инвестиционные проекты с участием международных компаний, их вклад в энергетическую безопасность, экономическую эффективность и экологическую устойчивость страны. В статье обоснована стратегическая важность возобновляемых источников энергии для перехода Узбекистана к «зеленой экономике».*

Ключевые слова. *Зеленая энергетика, возобновляемые источники энергии, солнечная энергия, ветровая энергия, гидроэнергетика, биомасса, энергетика Узбекистана, экологическая устойчивость, международные инвестиционные проекты, зеленая экономика.*

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OPPORTUNITIES FOR THE DEVELOPMENT OF GREEN ENERGY IN THE REPUBLIC OF UZBEKISTAN

Abstract. *The article analyzes the opportunities for the development of green energy in Uzbekistan. It highlights the suitability of renewable energy sources such as solar, wind, hydropower, and biomass to the country's geographical and climatic conditions. Regions like Kashkadarya, Surkhandarya, Bukhara, and Navoi are favorable for solar energy; Karakalpakstan, Navoi, and Samarkand for wind energy; while the Fergana Valley, Tashkent, and Namangan regions are rich in hydropower potential. The study also examines major investment projects implemented with the participation of international companies, emphasizing their*

contribution to energy security, economic efficiency, and environmental sustainability. The paper substantiates the strategic importance of renewable energy in Uzbekistan's transition towards a green economy.

Keywords. *Green energy, renewable energy, solar energy, wind energy, hydropower, biomass, Uzbekistan's energy, environmental sustainability, international investment projects, green economy.*

Зеленая энергия – это энергия, получаемая из возобновляемых и не наносящих ущерб окружающей среде природных источников. Это получение энергии, необходимой для жизни человека, за счёт использования сил природы. К таким источникам относятся солнечный свет, ветер, дождь, наводнения, волны и геотермальное тепло. В отличие от ископаемых видов топлива, таких как уголь и нефть, источники зеленой энергии неисчерпаемы и не выделяют вредных отходов, загрязняющих воздух или способствующих изменению климата. Ниже представлены виды «зеленой энергии», которые можно развивать в Республике Узбекистан:

Солнечная энергия: это энергия, получаемая путем преобразования солнечных лучей в электрическую энергию. Для этого необходимо строительство солнечных электростанций.

Энергия ветра: ветряные турбины используют силу ветра для выработки электроэнергии. Когда дует ветер, турбины вращаются, производя энергию, которая может использоваться для питания домов и зданий.

Гидроэнергетика: эта энергия получается из текущих вод, таких как реки и ручьи. Плотины и турбины улавливают энергию движущейся воды и превращают её в электричество.

Биомасса: энергия, получаемая из органических материалов — древесины, сельскохозяйственных отходов и даже бытового мусора. При разложении или сжигании эти материалы выделяют энергию, которая может использоваться для отопления или выработки электроэнергии.

Развитие зеленой энергетики в Узбекистане напрямую связано с географическими особенностями страны, её природными ресурсами и климатическими условиями. Для эффективного использования каждого вида возобновляемой энергии необходимы особые условия в различных регионах.

Узбекистан имеет в среднем около 300 солнечных дней в году, что создаёт благоприятные условия для использования солнечной энергии. Наиболее подходящими регионами для её применения являются Кашкадарьинская, Сурхандарьинская, Бухарская и Навоийская области, где наблюдается наибольшее количество солнечного света. Например, солнечная электростанция «Нур Навои», построенная в Навоийской области, является одной из крупнейших в Центральной Азии и обладает мощностью производства 1000 гигаватт-часов электроэнергии в год.

Энергия ветра наиболее эффективно используется на открытых равнинных и плоских территориях, а также в предгорных районах. К наиболее подходящим регионам относятся Республика Каракалпакстан, степные зоны

Навоийской области, предгорья Джизакской и Самаркандской областей. Вблизи города Зарафшан планируется строительство ветровой электростанции, где среднегодовая скорость ветра составляет 6–7 м/с.

Горные районы и речные долины имеют важное значение как источники гидроэнергии. В основном в Ферганской долине, Ташкентской, Сурхандарьинской и Наманганской областях существуют благоприятные условия для строительства малых и крупных гидроэлектростанций. Например, Чарвакская ГЭС в Ташкентской области является одной из крупнейших гидроэлектростанций Узбекистана и работает за счёт горных рек.

В сельскохозяйственных и животноводческих районах возможности получения энергии из биомассы (растительные остатки, навоз, пищевые отходы) довольно высоки. Например, в Ферганской долине интенсивно развиваются хлопководство, садоводство и животноводство, что позволяет использовать сельскохозяйственные отходы для производства биогаза. Некоторые фермерские хозяйства уже установили биогазовые установки.

Использование возобновляемых источников энергии полностью соответствует современному периоду стремительного инновационного развития и имеет ряд преимуществ. Экономическое преимущество альтернативной энергии заключается прежде всего в том, что, как видно из названия, она не требует никакого топлива и никогда не исчерпывается. Ею можно пользоваться постоянно. В настоящее время общий объём используемого в мире органического топлива в пересчёте на нефть составляет 12 млрд тонн в год, тогда как запасы традиционных энергоресурсов ограничены.

В условиях сокращения традиционных видов топлива одним из экономических преимуществ использования альтернативных источников энергии является то, что они обходятся значительно дешевле. Кроме того, каждое энергозатратное производственное предприятие может построить для себя такую электростанцию и использовать её. Благодаря этому предприятие избавляется от зависимости в энергообеспечении и сокращает часть избыточных расходов, что повышает его экономическую эффективность. Наряду с этим, возможность комплексного применения альтернативных источников энергии в повседневной жизни и во всех сферах экономики является ещё одним их важным преимуществом.

За последние 7 лет в Узбекистане особое внимание уделяется развитию «зелёной» экономики, в частности, «зелёной» энергетики. Было проделано много работы по увеличению производства электроэнергии на основе возобновляемых источников энергии. В настоящее время подписано 38 контрактов с международными компаниями на строительство солнечных и ветровых электростанций общей мощностью 20 630 мегаватт (из них 7 630 мегаватт — для солнечных фотоэлектрических станций и 13 000 мегаватт — для ветровых электростанций).

В целях реализации этих проектов президентом Узбекистана было подписано 29 постановлений, и на сегодняшний день ведутся проекты по

строительству 7 солнечных фотоэлектрических станций общей мощностью 1700 МВт и 3 ветровых электростанций общей мощностью 900 МВт.

Эти инвестиционные проекты реализуются компаниями из Саудовской Аравии (ACWA Power), Объединённых Арабских Эмиратов («Masdar», TeplingGroup AG и Solar Power Shine), Франции (Total Eren) и Китая (Gezhouba Overseas Investment, China Datang Overseas Investment и Universal Energy). Общая стоимость данных проектов составляет около 21,121 млрд долларов США, и все они финансируются за счёт прямых иностранных инвестиций.

В результате таких усилий сегодня в 7 областях Узбекистана функционируют 9 солнечных электростанций и одна ветровая электростанция общей мощностью 2,7 ГВт, производящие «зелёную» энергию.

К 2026 году общая мощность солнечных и ветровых электростанций в Узбекистане достигнет 5000 МВт, а к 2030 году превысит 18 000 МВт. После ввода в эксплуатацию этих «зелёных» проектов в стране ежегодно будет производиться 50 миллиардов киловатт-часов электроэнергии, что позволит экономить около 15 миллиардов кубометров природного газа в год. Кроме того, будет предотвращено попадание в атмосферу 21 миллиона тонн вредных газов. К 2030 году 40 % производимой в Узбекистане электроэнергии будет получаться из возобновляемых источников.

В заключение можно отметить, что географические и климатические условия Узбекистана обладают высоким потенциалом для развития возобновляемых источников энергии. Реализованные проекты и программы в таких сферах, как солнечная и ветровая энергия, гидроэнергетика и биомасса, способствуют устойчивому и экологически чистому обеспечению энергетических потребностей страны. Подобная стратегия имеет важное значение для превращения Узбекистана в конкурентоспособного производителя экологически чистых источников энергии на мировом энергетическом рынке.

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ВЛИЯНИЕ ПОВЕРХНОСТНОГО РЕЛЬЕФА НА РАЗМЕЩЕНИЕ НАСЕЛЕНИЯ

Аннотация. *В статье обосновано, что рельеф земной поверхности является важнейшим фактором, определяющим первоначальное размещение населения на территориях. Рассматривается современное состояние рельефа Республики Узбекистан на основе его профилей в различных направлениях. Анализируются высоты, на которых расположены центры административных районов, являющиеся этническими ядрами, где сосредоточена основная часть населения. Кроме того, в статье обосновывается необходимость изучения размещения населения в пределах его природно-географических границ в современных исследованиях по расселению.*

Ключевые слова. *Размещение населения, структура земной поверхности, высотные пояса, природно-географические регионы, этническое ядро, административные центры.*

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INFLUENCE OF SURFACE RELIEF ON POPULATION DISTRIBUTION

Abstract. *The article substantiates that the surface relief is the most important factor determining the initial distribution of the population across territories. The current state of the relief of the Republic of Uzbekistan is examined based on its profiles in various directions. The altitudes of administrative district centers, which serve as ethnic cores where the main part of the population is concentrated, are analyzed. In addition, the article justifies the necessity of studying the spatial distribution of the population within its natural-geographical boundaries in contemporary settlement research.*

Keywords*. Population distribution, land surface structure, altitude zones, natural-geographic regions, ethnic core, administrative centers.*

Введение.

Достижения ландшафтоведения находят широкое применение не только в географии, но и в гуманитарных исследованиях. А.Г. Исаченко придавал большое значение принципу ландшафтного подхода. Он считал, что ландшафтный подход полностью соответствует принципам географического детерминизма, поскольку позволяет объективно оценить роль географической среды в жизни общества и открывает новые возможности её изучения [9].

Освещая вопросы взаимного влияния человека и природы, А.Г. Исаченко отмечал, что на протяжении долгого времени проблема имела односторонний характер: исследователей в основном интересовало воздействие природной среды на судьбу человечества. Однако с ростом влияния человека на природу акцент сместился в сторону изучения судьбы самой природной среды. В то же время учёный подчёркивал наличие чёткой взаимосвязи между типами и подтипами ландшафтов и процессами их освоения и расселения.

Анализ литературы и методология.

Впервые расчёт демографической ёмкости территории и плотности населения был предложен П.П. Семёновым-Тян-Шанским. В настоящее время наблюдается необходимость применения нового, оригинального географического подхода к изучению плотности населения. Это обусловлено тем, что в экономике плотность населения обычно рассчитывается в пределах административно-территориальных единиц и выражается в виде усреднённых показателей. Такой подход не отражает конкретных различий между территориями и даёт лишь первичные данные о них.

На самом деле специалисты уже давно предлагают рассчитывать плотность населения отдельно для различных зон рельефа, климата и почв в пределах одной административной единицы [2, 6, 10, 11].

Для устранения указанного несоответствия было предложено анализировать плотность населения, прежде всего, в пределах природно-ландшафтных комплексов каждого административного района, а затем связывать полученные результаты с административными границами. На этой основе целесообразно изучать обеспеченность населения земельными ресурсами, определять естественную потребность населения в пространстве, оценивать возможности производства продовольствия и другой сельскохозяйственной продукции.

Кроме того, полученные таким образом показатели отражают уровень обеспеченности земельными ресурсами не только населения, но и производственных отраслей.

Методология исследования.

В ходе исследования использовались данные о численности населения каждого региона, его размещении и территориальном распределении. На основе этих данных анализ проводился с применением традиционных методов определения плотности населения.

При проведении расчётов использовались материалы Комитета по статистике Республики Узбекистан, данные Государственного комитета по земельным ресурсам, геодезии, картографии и государственному кадастру, а также тематическая литература. В исследовании применялись методы системного анализа, сравнительно-географический и статистический подходы.

Результаты и обсуждение.

Для проведения нового исследования возникает необходимость выделения природно-ландшафтных или природно-географических единиц. В этом отношении весьма удобным источником является первый том *Национального атласа Узбекистана*, раздел «Ландшафты и физико-географическое районирование». На странице 214 представлена «Карта ландшафтов», где ландшафты классифицированы по следующим категориям:

1. классы;
2. группы;
3. типы;
4. категории;
5. разновидности.

Проведение социально-экономических географических исследований на уровне природно-географических единиц является довольно сложным процессом. Поэтому для нашего анализа наибольшим образом подходит классификационная единица «тип» из раздела «Ландшафты и физико-географическое районирование» первого тома Национального атласа Узбекистана (стр. 214).

В атласе выделены следующие типы ландшафтов:

1. пустынный;
2. пустынно-степной и сухостепной;
3. лесо-лугово-степной;
4. степной, лугово-степной и гляциально-нивальный.

Пустынные ландшафты представлены 62 разновидностями, пустынно-степные и сухостепные — 11, лесо-лугово-степные — 4, а степные, лугово-степные и гляциально-нивальные — 2 разновидностями, всего 79 разновидностей. Для проводимого исследования такое детализированное деление оказалось слишком дробным, поэтому для анализа были выбраны 4 основных типа ландшафтов. Это позволяет в дальнейшем определить сеть населённых пунктов по высотным поясам [12].

На страницах 216–217 атласа представлена «Морфологическая карта ландшафтов, составленная на основе пластики рельефа». Здесь исследование также проводится по четырём вышеуказанным типам ландшафтов (1. пустынный; 2. пустынно-степной и сухостепной; 3. лесо-лугово-степной; 4. степной, лугово-степной и гляциально-нивальный) для равнинных и горных регионов.

На страницах 218–219 приведена «Карта районирования ландшафтов в градостроительных целях», согласно которой территория Узбекистана разделена на следующие зоны: пустынная, предгорно-пустынно-степная и сухостепная, среднегорная лесо-лугово-степная, а также высокогорная степная, лугово-степная и гляциально-нивальная. На карте также показаны сейсмические зоны различной интенсивности (в баллах) и природно-градостроительные районы, что имеет важное значение при прогнозировании перспектив размещения населённых пунктов [12; 218–219 с.].

Ландшафты орошаемых территорий страны на протяжении многих лет подвергались интенсивным изменениям по сравнению с другими регионами. Доля освоенных земель, строительство каналов и водохранилищ служат наглядным подтверждением этого. При сопоставлении выделенных ландшафтных зон с плотностью населения становятся отчётливо видны территориальные различия. Это, в свою очередь, позволяет определить ландшафты с наибольшей концентрацией населения.

Увеличение плотности населения в ландшафтах зависит не только от природных факторов, но и от процессов индустриализации территории. Так, высокая плотность населения в таких городах, как Ташкент, Самарканд, Чирчик, обусловлена не столько благоприятными природными условиями, сколько активным процессом индустриализации.

В целом, роль ландшафтов в размещении населения рассматривалась многими исследователями. Большинство из них отмечают, что максимальная плотность населения наблюдается в речных долинах и на террасах, где имеются водные ресурсы, а с увеличением высоты и удалённости от реки плотность постепенно снижается [6, 7].

Сравнение плотности населения с экологическим потенциалом ландшафтов также имеет важное значение, поскольку население

преимущественно концентрируется в районах с высоким экологическим потенциалом. В таких местах возникали древнейшие города: Самарканд и Бухара в долине Зарафшана, Ташкент в долине Чирчика, Карши в долине Кашкадарьи, Ахангаран на одноимённой реке, Маргилан в долине Шахимардансая, Коканд в долине Соха и Андижан в долине Андижансая.

Экологические факторы природной среды играли особую роль на ранних стадиях природопользования. Тогда центры хозяйственной деятельности формировались, как правило, в районах с высоким экологическим потенциалом. Позднее усилилось значение экономических факторов, среди которых водный фактор вновь занял ведущие позиции, являясь определяющим элементом в индустриализации.

На основе теоретического анализа природно-ландшафтных факторов, влияющих на территориальное размещение населения в мире, а также региональных особенностей Республики Узбекистан как своеобразного региона (пустыня, предгорья, горы, пастбища) [3, 8], в качестве основных критериев были выбраны геоморфологические (орографические), климатические, почвенные и гидрологические показатели.

Среди орографических показателей, определяющих размещение населения, для горных районов (например, Ферганская долина, Сурхандарьинская оазисная зона) особое значение имеют высота местности над уровнем моря, крутизна и расчленённость рельефа.

Рельеф (от франц. *relief*, лат. *relevo* — «возвышаюсь») — это поверхность Земли, различающаяся по строению, форме, происхождению, возрасту и истории развития. Рельеф может оказывать как положительное, так и отрицательное влияние в зависимости от характера использования территории. Так, например, для проживания населения горные и крутые участки считаются неблагоприятными, однако они создают удобные условия для развития горнолыжного спорта, рафтинга и экотуризма.

При оценке территорий по рельефу первостепенное значение придаётся таким показателям, как высота над уровнем моря, крутизна склонов и степень расчленённости поверхности [1].

Территория Узбекистана в результате длительного геологического развития испытала сложные тектонические процессы, вследствие чего её рельеф отличается большим разнообразием. Восточная и юго-восточная части страны заняты самыми высокими горами Средней Азии — Тянь-Шанем и Памиро-Алаем [4]. К горным, предгорным и относительно наклонным районам относятся Сурхандарьинская, Кашкадарьинская, Самаркандская, Джизакская, Ташкентская, Наманганская, Ферганская и Андижанская области.

Центральная, западная и северо-западная части страны имеют преимущественно равнинный рельеф. В отдельных районах (в Кызылкумах — остаточные горы, в нижнем течении Амударьи — горы Султан-Увайс) встречаются возвышенности, являющиеся остатками древних структур. Следует отметить, что хотя эти районы отличаются равнинным рельефом и

удобны для жилищного строительства, они не всегда густо заселены. Населённые пункты высокой плотности здесь формировались, главным образом, в местах с хорошими возможностями орошения.

Рельеф территории Узбекистана в разное время исследовался многими географами. Особенно подробно изучался рельеф Ферганской долины, окружённой со всех сторон горами. В частности, зональные особенности территории рассматривались А. Абулкасымовым (2004), Ю. Султановым (2005), ступенчатость рельефа — Р. Кузиевым (2004), О. Абдуганиевым (2008, 2024), высотные пояса — К. Боймирзаевым (2004), микрозональное деление — О. Кузибоевой (2006), высотная поясность — Я. Ахмадалиевым (2007).

Говоря о любом типе рельефа, прежде всего, необходимо учитывать высоту над уровнем моря как основной показатель. На основе указанных данных, с применением современных геоинформационных систем (ГИС), был проведён анализ высотного дифференцирования ряда административных районов Республики Узбекистан.

Для анализа рельефа с использованием современных ГИС-технологий и программы *Google Earth* были выбраны четыре профильные линии, пересекающие территорию Узбекистана в разных направлениях. Целью было выявление закономерностей изменения высоты и крутизны поверхности.

Первый профиль (а) — проходит с запада на восток от южной окраины плато Устюрт (узбекская часть) до города Ханабад в Андижанской области. Его длина составляет 1413 км. Высота начинается с отметки 159 м над уровнем моря в районе тройного стыка границ Узбекистана, Казахстана и Туркменистана. В окрестностях Сарыкамышского озера высота снижается до 14 м, далее постепенно повышается. На 674–675 км профиль достигает 564 м (район западнее Мурунтауского золотого рудника). Затем рельеф колеблется в пределах 400–500 м. В районе Чардаринского водохранилища высота падает до 238 м, севернее города Ангрен достигает 2166 м, в долине Ахангарана опускается до 1213 м и вновь повышается до 2439 м на западных склонах хребта Чоркул. В Ферганской долине высота в районе Чуста составляет 635 м, в Туракургане — 486 м, далее рельеф понижается до 400 м и вновь повышается до 655 м на Асакинских адирных холмах. В районе Ханабада высота достигает 771 м.

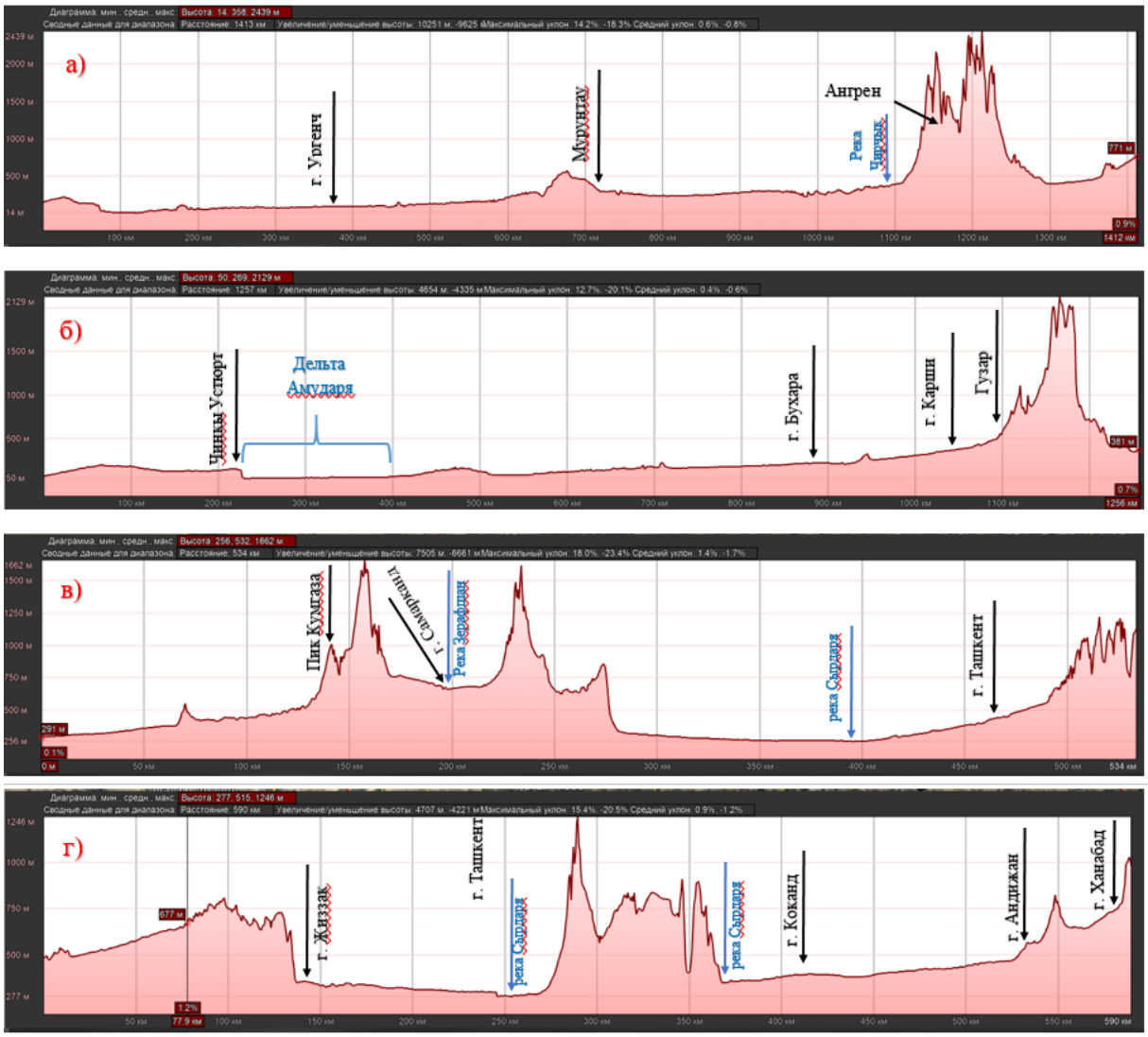
Второй профиль (б) — длиной 1257 км, начинается в северо-западной части плато Устюрт на высоте 78 м и направляется на юго-восток до южных районов Сурхандарьинской области. Через 67 км высота достигает 202 м, затем постепенно снижается до 150 м в районе чинка (уступа). После чинка рельеф резко падает до 50 м, а затем вновь повышается. В пределах дельты Амударьи наблюдаются понижения до 90 м. В районе Бухары высота составляет 229 м, вблизи Муборака — 283 м, в Касане — 345 м, в Карши — 385 м, в Гузаре — 570 м, у Пачкамарского водохранилища — 1100 м, в Дехканабаде — 889 м. Наивысшая точка профиля — перевал Тахтакорача (2129 м). Профиль завершается в районе Кукайди (381 м).

Третий профиль (в) — длиной 534 км, проведён в северо-восточном направлении, приближённо вдоль трассы «Большой узбекский тракт». Начинается на юге Кашкадарьинской области у границы с Туркменистаном и заканчивается в посёлке Чарвак Ташкентской области, проходя через города Карши, Самарканд, Пахтакор, Сырдарью и Ташкент.

Высота в начальной точке — 291 м. В районе Карши рельеф постепенно поднимается (0,1–0,2 %), достигая северо-восточной окраины города на высоте 571 м. Затем наклон увеличивается до 3,8 % вплоть до населённого пункта Гуджумли. Далее подъем усиливается в направлении хребта Зарафшан, где вблизи населённого пункта Юкори Сарыкамыш высота достигает 1100 м при крутизне до 7,7 %. В районе Зарафшанского водохранилища поверхность резко понижается до 310–315 м, после чего вновь повышается до 2197 м (пик Кумгаза). В Самарканде высота составляет 695 м, в долине Зарафшана — 660 м. Затем рельеф вновь повышается до 1630 м (Губдинтаг), опускается до 364 м в Галляарале и образует крутые склоны (до 15,8 %) у восточных отрогов гор Койташ (1024 м). Далее поверхность выравнивается, проходя через Пахтакор, Галаба, Сардоба, Мирзакент и город Сырдарью, а в Ташкенте достигает 428–430 м. За пределами города высота возрастает, и в районе Чарвакского водохранилища превышает 1100 м (см. рис. 1).

Четвёртый профиль (г) — длиной 589 км, проведён от города Самарканда до города Ханабад (Андижанская область). Этот профиль пересекает города Самарканд, Джизак, Худжанд, Коканд, Шахрихон, Андижан и Ханабад.

В Самарканде высота составляет 695 м. В направлении Джизака рельеф постепенно повышается (0,2–1,6 %), затем в районе хребта Курама достигает 1240 м. Профиль дважды пересекает реку Сырдарью, поскольку течение реки из Ферганской долины впадает в Кайраккумское водохранилище и, вытекая из него, изменяет направление на северо-запад. В районе Коканда высота — 397 м, в окрестностях водохранилища Ёзъявон — 410 м, в Шахрихане — 452 м, в Андижане — 530 м. За городом рельеф проходит через адирные холмы Тешиктош, где высота достигает 680 м.



РРис. 1. Профили рельефа территории Республики Узбекистан

a) профиль рельефа по направлению Устюрт – Ханабад (1413 км);
b) профиль рельефа по направлению Устюрт – Кукайди (1257 км);
d) профиль рельефа по направлению Кашкадарья – граница с Туркменистаном – Чарвак (534 км);
e) профиль рельефа по направлению Самарканд – Ханабад (539 км).

Если рассмотреть размещение населения и населённых пунктов на земной поверхности, можно увидеть, что на него влияют различные факторы. Одним из наиболее значимых факторов является близость к побережью. Однако этот фактор менее характерен для стран, расположенных в глубине материка.

По данным исследований, около **37 % населения мира** проживает на расстоянии до 100 км от морского побережья, где средняя плотность населения примерно в два раза выше среднемирового уровня. Кроме того, **56 % населения мира** живут на равнинах, расположенных на высоте до 200 м над уровнем моря, **24 %** — на холмах высотой 200–500 м, **18 %** — в низких

горах (500–1000 м), **7 %** — в среднегорьях (1000–2000 м), и лишь **1 %** населения — в районах выше 2000 м [1].

По данным Т. Джумаева, в горных районах Узбекистана проживает всего около **10 % населения.** Учёный отмечает, что самые высоко расположенные населённые пункты находятся на высоте **от 2500 до 2700 м над уровнем моря** [5; 33–34 с.].

При анализе высоты над уровнем моря центров административных районов Республики Узбекистан было установлено, что самый низкий показатель зафиксирован в городе **Муйнак**, являющемся административным центром Муйнакского района Республики Каракалпакстан. Его высота — **57 м над уровнем моря,** что на **1163 м ниже** самого высокорасположенного районного центра. Наибольшая высота наблюдается в городе **Байсун** (Сурхандарьинская область) — **1220 м** над уровнем моря.

Высоко расположены также:

— посёлок **Равон** (центр Сохского района Ферганской области) — **1167 м;**

— посёлок **Усмат** (центр Бахмальского района Джизакской области) — **1090 м;**

— город **Ургут** (центр Ургутского района Самаркандской области) — **1010 м.**

Средняя высота центров административных районов Республики Узбекистан составляет **406 м над уровнем моря** (табл. 1).

При формировании центров сельских административных районов действовали различные факторы, однако в большинстве случаев они формировались в наиболее населённых и центрально расположенных частях соответствующих территорий. Согласно теории центральных мест, районные центры можно рассматривать как элементы, формирующие городскую систему расселения, и их анализ является весьма информативным.

Таблица 1

Размещение центров сельских административных районов Республики Узбекистан по высотным категориям

№	Регионы	1-100 м	101-200 м	201-300 м	301-400 м	401-500 м	501-600 м	601-700 м	701-800 м	801-900 м	901-1000 м	свыше 1000 м	Всего
1.	Р. Каракалпакстан	14	2										16
2.	Андижанская обл.					9	1	3	1				14
3.	Бухарская обл.		2	9									11
4.	Джизакская обл.			3	4		2	1			1	1	12
5.	Кашкадарьинская обл.			1	5	1	4	2			1		14
6.	Навоийская обл.			3	3	2							8
7.	Наманганская обл.				1	5	1	1	2	1			11
8.	Самаркандская обл.					4	2	2	5			1	14
9.	Сурхандарьинская обл.				4	5	3	1				1	14
10.	Сырдарьинская обл.			7	1								8
11.	Ташкентская обл.			3	4	3	3	1	1				15
12.	Ферганская обл.				4	9					1	1	15
13.	Хорезмская обл.	7	4										11
	Всего:	**21**	**8**	**26**	**26**	**38**	**16**	**11**	**9**	**1**	**3**	**4**	**163**
	В процентах	12,9	4,9	16,0	16,0	23,3	9,8	6,7	5,5	0,6	1,8	2,5	100

(Составлено автором на основе данных программы Google Earth Pro.)

По данным Комитета по статистике Республики Узбекистан, в стране насчитывается **177 районов,** из которых **12** входят в состав города Ташкента, **2** (Янги Наманган и Давлатабад) — в состав города Намангана, остальные **163** — сельские административные районы (см. табл. 1).

Согласно данным таблицы: — на высотах **до 200 м** расположено **17,8 %** районных центров;

— на высотах **200–500 м — 55,2 %;**

— на высотах **500–1000 м — 24,5 %;**

— на высотах **свыше 1000 м — 2,5 %.**

Таким образом, более **половины всех районных центров (55 %)** расположено в холмистых районах. При более детальном анализе, проведённом с шагом в 100 м, выявлено, что **38 районных центров,** или **около 23,3 %** от общего числа, находятся на высотах **401–500 м** над уровнем моря.

Заключение

Из приведённых выше данных следует, что применение ландшафтного подхода позволяет теоретически выделить основные факторы, влияющие на территориальное размещение населения. Частичный анализ расселения населения на основе геоморфологических (прежде всего рельефных)

показателей показывает, что рельеф поверхности является одним из главных факторов, определяющих характер расселения населения страны.

Рельеф, как природный компонент, может как ограничивать, так и стимулировать размещение населения. Наиболее благоприятными для проживания оказываются слабо наклонные и выровненные поверхности, где складываются оптимальные условия для хозяйственной деятельности, транспортных связей и формирования населённых пунктов.

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ЦИФРОВАЯ КРИМИНАЛИСТИКА ГОЛОСОВЫХ АССИСТЕНТОВ: АНАЛИЗ ПОЛЬЗОВАТЕЛЬСКИХ ДАННЫХ ИЗ ALEXA, SIRI И GOOGLE HOME

Аннотация: *В статье рассматриваются вопросы цифровой криминалистики, связанные с анализом данных голосовых ассистентов, таких как Alexa, Siri и Google Home, для использования в расследованиях преступлений. Описываются методы извлечения и анализа пользовательских данных, включая голосовые команды, историю запросов и данные о местоположении. Особое внимание уделено возможностям использования этих данных для воссоздания событий, идентификации подозреваемых и установления мотивов преступлений. Рассматриваются также технические проблемы, которые возникают при сборе и анализе данных голосовых ассистентов, включая вопросы конфиденциальности и защиты данных. В заключении подчеркивается важность этих технологий в современном расследовании преступлений и обозначены перспективы дальнейших исследований и применения данных IoT-устройств в цифровой криминалистике.*

Ключевые слова: *анализ данных, голосовые ассистенты, цифровая криминалистика, Alexa, Google Home, Siri.*

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DIGITAL FORENSICS OF VOICE ASSISTANTS: ANALYSIS OF USER DATA FROM ALEXA, SIRI, AND GOOGLE HOME

Abstract: *This article examines issues of digital forensics related to the analysis of data from voice assistants such as Alexa, Siri, and Google Home for use in criminal investigations. It describes methods for extracting and analyzing user data, including voice commands, search history, and location data. Special attention is given to the potential of using these data to reconstruct events, identify suspects, and determine motives for crimes. The article also discusses technical challenges that arise during the collection and analysis of data from voice assistants, including privacy and data protection concerns. In conclusion, the importance of these technologies in modern criminal investigations is emphasized, along with the prospects for further research and the application of IoT device data in digital forensics.*

Keywords: *data analysis, voice assistants, digital forensics, Alexa, Google Home, Siri.*

Alexa, Siri и Google Home — это популярные голосовые ассистенты, используемые на различных устройствах для выполнения команд пользователей с помощью голоса. Каждый из этих ассистентов имеет свои особенности, функции и способы интеграции в экосистему умного дома. В последние годы голосовые ассистенты, такие как Alexa, Siri и Google Home, стали неотъемлемой частью повседневной жизни пользователей. Эти устройства позволяют выполнять различные задачи: управлять умными домами, выполнять поисковые запросы в интернете, организовывать расписание и многое другое. Широкое распространение голосовых ассистентов объясняется удобством их использования и высокой степенью интеграции в экосистему умного дома.

Актуальность исследования обусловлена тем, что параллельно с ростом популярности голосовых помощников всё чаще поднимаются вопросы

безопасности данных, которые они собирают и хранят. Эти устройства фиксируют значительный объём информации о действиях и поведении пользователей, а также о событиях, происходящих в помещении, что может представлять интерес в рамках цифровой криминалистики. Использование данных голосовых ассистентов в качестве цифровых доказательств открывает новые возможности для расследования преступлений, однако связано с рядом технических, юридических и этических проблем. Объектом исследования являются голосовые ассистенты Alexa, Siri и Google Home, функционирующие в системах умного дома. Предметом исследования выступают методы извлечения, анализа и использования данных, собираемых голосовыми ассистентами, в рамках цифровой криминалистики. Целью работы является исследование технических возможностей и ограничений при извлечении и анализе данных из Alexa, Siri и Google Home, а также определение способов их применения в процессе расследования преступлений.

Для достижения поставленной цели необходимо решить следующие задачи:

1. Проанализировать архитектуру и особенности работы голосовых ассистентов Alexa, Siri и Google Home.
2. Определить типы данных, собираемых этими устройствами, и возможные каналы их хранения.
3. Рассмотреть существующие методы извлечения данных из голосовых ассистентов.
4. Исследовать возможности анализа извлечённых данных для целей цифровой криминалистики.

В качестве методов исследования используются сравнительный анализ и метод систематизации информации. Научная новизна работы заключается в комплексном рассмотрении вопросов, связанных с извлечением, анализом и использованием данных, собранных голосовыми ассистентами, в качестве цифровых доказательств. Практическая значимость исследования состоит в возможности использования его результатов специалистами в области цифровой криминалистики, судебных экспертов и правоохранительных органов для повышения эффективности расследования преступлений с применением технологий умного дома.

Голосовые ассистенты собирают широкий спектр данных, которые могут быть полезны в рамках криминалистического анализа. Эти данные включают информацию о запросах, которые делают пользователи, их голосовые команды, а также данные о месте нахождения и времени их запросов. Также важным аспектом является взаимодействие голосовых ассистентов с другими умными устройствами в доме, такими как камеры наблюдения, термостаты, замки и системы освещения.

1. Голосовые команды и транскрипты: Каждый запрос, сделанный пользователем, сохраняется в базе данных сервиса. Запросы могут быть как прямыми голосовыми командами, так и запросами для поиска информации в

интернете. Эти данные могут быть использованы для установления хронологии событий или для анализа поведения подозреваемых в ходе расследования.

2. История запросов: История запросов и команд, выполненных голосовым ассистентом, сохраняется и может быть доступна для последующего анализа. Эта информация может быть полезна для установления мотивов преступления или же для обнаружения логики преступных действий.

3. Местоположение**:** Многие устройства собирают данные о местоположении пользователя через GPS и используют их для предоставления персонализированных услуг. Для расследования преступлений данные о местоположении могут быть важными, особенно если они позволяют восстановить передвижения подозреваемого.

4. Интеграция с другими IoT-устройствами: Важно отметить, что голосовые ассистенты часто взаимодействуют с другими IoT-устройствами в доме, такими как умные камеры, замки, термостаты и другие устройства. Эти данные могут содержать важную информацию о событиях в доме в момент совершения преступления.

Извлечение данных из голосовых ассистентов может быть сложной задачей. Для этого существуют различные методы, которые зависят от того, какие именно данные необходимо извлечь, и от технических ограничений устройств.

1. API и интерфейсы для разработчиков: Компании, предоставляющие голосовых ассистентов, такие как Amazon, Google и Apple, предлагают API для разработчиков. Через эти интерфейсы можно получить доступ к данным, собранным голосовыми ассистентами, таким как история запросов, транскрипты голосовых команд, а также метаданные о взаимодействии.

2. Использование облачных сервисов: Для большинства голосовых ассистентов данные хранятся в облаке. Например, для Siri это iCloud, для Google Home — Google Cloud. Доступ к этим данным может быть получен только с согласия владельца устройства или по судебному запросу, что требует наличия правовых оснований.

3. Физическое извлечение данных с устройств: В случае физического доступа к устройству (например, Amazon Echo или Google Home), можно провести анализ локальных данных, сохраненных на устройствах. Это может включать в себя восстановление системных логов, истории взаимодействий и других данных, которые могут быть полезны для расследования.

4. Резервные копии и извлечение через мобильные устройства: Данные, собранные с устройств, часто синхронизируются с мобильными приложениями. Например, резервные копии данных голосовых команд могут быть доступны через мобильные устройства, подключенные к учетной записи пользователя.

После того как данные были извлечены из голосовых ассистентов, следующим шагом является их анализ. Для криминалистов это не только

техническая задача, но и юридическая, так как необходимо учитывать допустимость доказательств в суде.

1. Воссоздание событий: Голосовые команды и их временные метки могут помочь в восстановлении последовательности событий, произошедших до, во время и после преступления. Например, запись о том, что голосовой ассистент был активирован в момент преступления, может стать важным доказательством.

2. Идентификация подозреваемых: Голосовые команды, а также история запросов могут помочь идентифицировать подозреваемых или определить их намерения. Например, запросы о местоположении, информацию о жертве или поисковые запросы, связанные с преступлением, могут быть ключевыми для установления мотивов и деталей преступления.

3. Интеграция с другими данными: Важным аспектом является возможность интеграции данных с других источников. Например, данные с камер наблюдения, GPS-трекинг мобильных устройств и транскрипты голосовых ассистентов могут быть использованы для воссоздания событий и подтверждения показаний свидетелей или обвиняемых.

Несмотря на значительный потенциал использования данных голосовых ассистентов в рамках цифровой криминалистики, их практическое применение сталкивается с рядом серьёзных проблем и вызовов. Ключевыми среди них являются вопросы конфиденциальности, технической защищённости информации и правового регулирования.

1. Конфиденциальность и защита персональных данных. Голосовые ассистенты, такие как Alexa, Siri и Google Home, собирают значительный объём персональной информации через взаимодействия с устройствами умного дома. Эти данные нередко содержат чувствительную информацию о пользователях, включая детали личной жизни, привычки, график передвижений, сведения о здоровье или финансовом положении.

Использование такой информации в расследованиях несёт риск нарушения права на неприкосновенность частной жизни, гарантированного законодательством большинства стран. Во многих юрисдикциях законы о защите персональных данных, такие как GDPR в Европе, предусматривают строгие ограничения на обработку, хранение и передачу подобных данных третьим лицам, включая правоохранительные органы. Это создаёт значительное правовое и этическое напряжение между необходимостью получения доказательств и правами пользователей.

2. Технические барьеры: шифрование и безопасность. Современные голосовые ассистенты используют надёжные механизмы шифрования для хранения и передачи пользовательских данных. Это обеспечивает высокий уровень безопасности информации, но одновременно создаёт сложности для цифровой криминалистики. Без прямого согласия владельца устройства или получения судебного разрешения правоохранительные органы не могут получить доступ к зашифрованным данным. Кроме того, компании-производители (Amazon, Apple, Google) активно защищают данные своих

пользователей и нередко отказывают в предоставлении информации без соответствующих правовых оснований. Даже при наличии судебного постановления расшифровка данных может быть затруднена из-за использования сложных алгоритмов шифрования и распределённого хранения данных на облачных серверах. Это удлиняет процесс получения доказательств и увеличивает его стоимость.

3. Правовые аспекты и судебные процедуры. Доступ к данным голосовых ассистентов требует соблюдения строгих юридических процедур. В зависимости от юрисдикции, для этого необходимо:

1. Получение ордера или судебного разрешения.
2. Обоснование необходимости и законности такого доступа.
3. Соблюдение правил хранения и использования полученных данных.

Также важно учитывать ограничения, установленные законами о защите данных, которые могут запрещать использование определённых категорий информации в качестве доказательств. Например, в некоторых странах могут быть ограничены:

1. Использование записей без уведомления участников разговора;
2. Сбор данных о местоположении без согласия;
3. Доступ к данным, хранящимся за пределами юрисдикции страны.

Эти ограничения серьёзно сужают возможности правоохранительных органов и специалистов в области цифровой криминалистики. Кроме того, возникающие правовые коллизии между национальным и международным законодательством затрудняют трансграничный обмен цифровыми доказательствами.

Процесс извлечения данных из голосовых ассистентов сопряжён с рядом технических особенностей и ограничений, которые определяют как возможности цифровой криминалистики, так и её ограничения. В этом разделе рассмотрим основные аспекты, влияющие на работу с подобными устройствами.

1. Извлечение данных с разных платформ. Голосовые ассистенты работают на различных программных и аппаратных платформах, что обуславливает различия в доступности, структуре и способах получения информации:

- Amazon Alexa хранит данные на облачных серверах Amazon Web Services (AWS) и предоставляет доступ к ним через защищённый пользовательский аккаунт или по запросу правоохранительных органов с судебным разрешением. Формат хранения, используемые API и политики безопасности Amazon делают процесс получения данных строго контролируемым.
- Apple Siri использует облако iCloud, где данные синхронизируются с устройствами пользователя. Apple применяет сквозное шифрование для большинства данных, что ограничивает возможность их извлечения без доступа к самому устройству или без согласия пользователя.
- Google Home хранит данные на серверах Google Cloud. Доступ к

информации возможен через Google Account, однако, как и в случае с другими системами, требуется соблюдение юридических процедур.

Эти различия обуславливают необходимость индивидуального подхода при работе с каждой платформой, выбора подходящих инструментов и понимания специфики архитектуры хранения и обработки данных.

2. Проблемы с точностью и полнотой данных. Особенности работы голосовых ассистентов напрямую влияют на качество и полноту собираемой информации:

- Ошибки распознавания речи: Голосовые ассистенты могут неправильно интерпретировать команды пользователя из-за фонового шума, особенностей произношения, акцента или технических сбоев. Это приводит к появлению неточных или искажённых записей в журналах взаимодействия.
- Фрагментарность информации: Ассистенты записывают только отдельные команды или фрагменты разговоров, активируемых ключевыми словами (например, "Alexa", "Hey Siri"). Поэтому полная картина событий, происходящих в помещении, недоступна.
- Зависимость от настроек пользователя: Доступность данных зависит от конфигурации устройства и параметров конфиденциальности, установленных пользователем. Например, пользователь может отключить историю запросов или очистить данные, что ограничит возможности криминалистики.

Эти факторы могут оказывать значительное влияние на качество цифровых доказательств, их надёжность и допустимость в судебных разбирательствах. Поэтому при анализе информации из голосовых ассистентов необходимо учитывать возможные погрешности, проверять корректность расшифровок и соотносить их с другими источниками цифровых данных.

С развитием технологий и улучшением алгоритмов обработки данных голосовых ассистентов, можно ожидать значительное расширение их роли в криминалистике. Например, более точная обработка данных с использованием искусственного интеллекта и машинного обучения позволит быстро извлекать и анализировать ключевые данные, такие как тональность голоса и контекст взаимодействий, что откроет новые возможности для анализа.

Кроме того, с увеличением популярности умных домов и IoT-устройств можно ожидать, что взаимодействие голосовых ассистентов с другими умными устройствами, такими как системы видеонаблюдения, будет становиться всё более сложным и интегрированным. Это, в свою очередь, повысит эффективность использования данных голосовых ассистентов в расследованиях преступлений.

Голосовые ассистенты представляют собой новый тип цифрового свидетеля, который может сыграть важную роль в расследованиях преступлений. Они могут собирать данные, которые помогут восстановить хронологию событий, установить мотивы и поведение подозреваемых.

Однако для успешного использования данных голосовых ассистентов в криминалистике важно учитывать как технические аспекты, так и юридические ограничения. В будущем с развитием технологий и правовых норм роль этих данных в расследованиях будет только увеличиваться.

Данное исследование опирается на результаты предыдущей работы, в рамках которой была разработана методология и программное обеспечение для выявления доказательств преступлений на основе анализа цифровых данных, генерируемых экосистемами умных домов. Настоящая работа подтверждает эффективность этих подходов при их адаптации к данным голосовых ассистентов.

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ПРИМЕНЕНИЕ ИСКУССТВЕННОГО ИНТЕЛЛЕКТА ДЛЯ ФОРМИРОВАНИЯ ДОКАЗАТЕЛЬНОЙ БАЗЫ ПРЕСТУПЛЕНИЙ В УМНЫХ ДОМАХ

Аннотация: *В работе описывается решение задачи формирования доказательной базы преступлений, совершенных с использованием IoT-устройств в умных домах путем использования искусственного интеллекта в качестве помощника в определении возможных доказательств правонарушений. Результаты анализа представляются в процентах, отражающих вероятность, что те или иные события могут быть связаны с правонарушением.*

Ключевые слова: *аномалия, доказательство, интернет вещей (IoT), искусственный интеллект (AI), модель, преступление, умный дом, экосистема.*

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APPLICATION OF ARTIFICIAL INTELLIGENCE FOR BUILDING THE EVIDENCE BASE OF CRIMES IN SMART HOMES

Abstract: *This paper describes a solution to the problem of forming an evidence base for crimes committed using IoT devices in smart homes by employing artificial intelligence as an assistant in identifying potential evidence of offenses. The results of the analysis are presented as percentages, reflecting the probability that certain events may be related to a criminal act.*

Keywords: *anomaly, evidence, Internet of Things (IoT), artificial intelligence (AI), model, crime, smart home, ecosystem.*

Умный дом — это концепция жилого пространства, оснащённого интеллектуальными технологиями, которые обеспечивают автоматическое и/или дистанционное управление различными системами и устройствами. Такие дома используют интегрированные системы управления для повышения комфорта, энергоэффективности, безопасности и удобства проживания. **Умный дом** является одним из ярких примеров применения **интернета вещей (IoT)**. В умном доме используется множество устройств, которые подключены к сети и взаимодействуют друг с другом. **Интернет вещей (IoT, Internet of Things)** — это концепция, которая описывает сеть физически подключённых устройств (вещей), способных собирать, обмениваться и обрабатывать данные через интернет. Эти устройства оснащены датчиками, процессорами, программным обеспечением и коммуникационными модулями, что позволяет им взаимодействовать с другими устройствами и системами без участия человека. IoT-устройства, такие как системы видеонаблюдения, умные замки и датчики, постоянно генерируют огромные объемы данных, которые могут стать важными доказательствами в случае преступлений. Однако стандартные методы обработки и анализа данных не всегда подходят для эффективного выявления потенциальных правонарушений в реальном времени. В связи с этим актуальной задачей становится разработка решений на базе искусственного интеллекта, которые позволят анализировать данные IoT-систем для создания доказательной базы, особенно в условиях сложных экосистем умных домов.

На сегодняшний день исследователи активно изучают вопросы безопасности IoT и умных домов, включая методы аномалий, диагностики и анализа данных. Множество научных работ сосредоточено на детектировании угроз безопасности в IoT-средах, а также на использовании искусственного интеллекта и машинного обучения для обработки больших данных. Тем не менее, исследования, направленные на формирование доказательной базы с использованием AI, остаются относительно новыми и актуальными. Значительное внимание уделяется детектированию аномалий, но его внедрение в области криминалистики IoT-устройств только начинает развиваться. Так, Yaman Salem, Amani Yousef Owda в своей работе

предложили многоуровневую систему, которая охватывает не только сбор, но и валидацию, а также корреляцию данных между устройствами, чтобы установить последовательность событий в рамках одной преступной деятельности. Основной акцент сделан на автоматизации и стандартизации процессов для IoT-экспертизы, что позволяет сделать судебные экспертизы более целостными и надежными. Abiodun Abdullahi Solanke описывает, как технологии ИИ могут способствовать улучшению криминалистического анализа цифровых данных. Ямана Салема, Маджи Оды и Амании Юсеф Оды, посвящено разработке многоуровневой цифрового судебно-экспертного фреймворка для устройств Интернета вещей (IoT). Ключевая особенность — её способность охватывать все уровни архитектуры IoT и фокусироваться на артефактах интереса (AoI). В исследовании вводится матрица действия/обнаружения (Action/Detection Matrix), которая помогает систематизировать и ускорить процесс судебной экспертизы в IoT-средах. Проведённые эксперименты показали, что предложенная рамка превосходит существующие методы по таким параметрам, как удобство использования, полнота охвата, фокус на AoI и ускорение процесса расследования. Таким образом, исследование представляет собой значимый вклад в область цифровой судебной экспертизы, предлагая адаптированную и эффективную методологию для анализа данных, генерируемых IoT-устройствами.

Однако эти работы рассматривают проблему на этапе получения данных из датчиков устройств интернета вещей до их обработки центральным контроллером системы. Более того, хоть и использование искусственного интеллекта затронуто как способ добычи доказательств с помощью корреляции данных, в них отсутствует разработка модели.

В работе представлена методология использования ИИ в выявлении доказательств преступлений умных домов, а также представлена модель ИИ, выявляющая потенциальные доказательства из имеющихся данных и выдающая процент вероятности отношения к преступлению аномалий и коррелированных данных. Для анализа и выявления доказательств используются структурированные данные из лидирующих экосистем умных домов на рынке: Google Home, Apple Homekit и Amazon Alexa.

Объектом исследования является процесс формирования доказательной базы преступлений, совершаемых с использованием IoT-устройств в умных домах.

Предметом исследования выступает использование моделей искусственного интеллекта для анализа данных экосистем умных домов, с целью выявления аномальных действий и последовательностей событий.

Экосистема умного дома — это сеть устройств и технологий, которые работают вместе для автоматизации и упрощения управления домом.

Центральной частью умного дома часто является центральный контроллер или приложение, которое связывает все устройства и позволяет управлять ими удаленно через смартфон или голосовые команды с помощью ассистентов. В данном исследовании рассматриваются 3 лидирующие по

количеству пользователей экосистемы: Google Home, Apple Homekit и Amazon Alexa.

1. Google Home: управляется через Google Assistant и идеально подходит для пользователей экосистемы Google.

2. Apple HomeKit: это система, ориентированная на пользователей устройств Apple. Она предлагает высокую безопасность и автоматизацию, а также отличную интеграцию с продуктами Apple, такими как iPhone, iPad, Apple TV и HomePod.

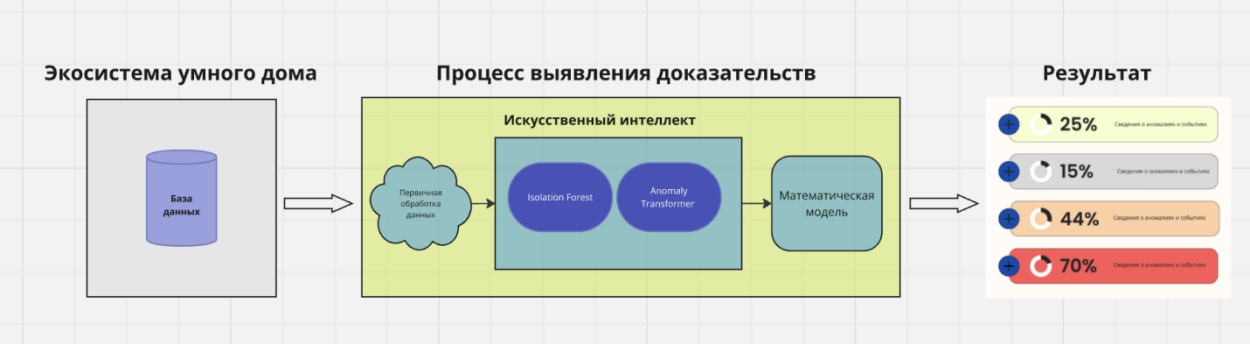
3. Amazon Alexa: основана на голосовом помощнике Amazon Alexa и предлагает обширную совместимость с различными умными устройствами от разных производителей.

Каждая из трех систем имеет 100 и более миллионов пользователей.

Для эффективного формирования доказательной базы преступлений в системах Интернета вещей (IoT) умных домов с использованием искусственного интеллекта (ИИ), можно выделить следующие ключевые этапы:

1- Рисунок

Методология использования искусственного интеллекта для выявления доказательств



1. **Извлечение данных.** Необходимо получить доступ к данным устройств из хранилищ, включая журналы событий, показания датчиков и данные об обычном поведении пользователя. Для этого будут использоваться следующие таблицы базы данных экосистемы умного дома:

• События
• Устройства
• Расписание

2. Обработка данных для передачи на анализ ИИ. Следующим шагом полученные данные должны быть очищены и нормализованы, т. е. без пропусков, выбросов и несоответствий. Также объединение данных из различных таблиц в единую структуру, обеспечив их совместимость для дальнейшего анализа осуществляется на данном этапе.

3. Анализ данных с использованием ИИ. Полученные и подготовленные данные отправляются в искусственный интеллект на анализ. В данном решение нами предложено использование двух элементов анализа:

•Isolation Forest – алгоритм для выявления аномалий по отношению к обычному поведению пользователя. Аномальные точки требуют меньшего

количества разделений для изоляции, что позволяет алгоритму эффективно их обнаруживать. Алгоритм основывается на концепции изоляции аномальных точек в данных. Его основная идея заключается в том, что аномалии легче изолировать, чем нормальные точки, так как они встречаются реже и отличаются от общей массы данных. Алгоритм базируется на следующих ключевых принципах:

•Количество разбиений для изоляции: Аномальные точки требуют меньшего количества разбиений (splits) в случайно построенном дереве для изоляции, в сравнении с обычными точками.

•Оценка аномальности (Anomaly Score): Для определения степени аномальности точки используется средняя длина пути (h(x)), которая вычисляется для множества деревьев, и поправочный коэффициент нормализации (c(n)), относящийся к количеству точек в выборке.

•. Чем короче путь изоляции, тем выше вероятность того, что точка является аномальной.

Показатель аномалии, представленный коэффициентом нормализации (s(x,n)) относительно размера выборки (n), рассчитывается как:

$$s(x,n) = 2^{-\frac{h(x)}{c(n)}}$$

Если s(x,n) близко к 1, то точка x считается аномальной. Если s(x,n) близко к 0.5, то точка скорее всего является нормальной.

•Anomaly Transformer в unsupervised режиме – для выявления аномалий в последовательностях данных. **Anomaly Transformer** — это алгоритм машинного обучения, предназначенный для **обнаружения аномалий в временных рядах** в **несупервизорном** режиме. Он фокусируется на различиях в ассоциациях между нормальными и аномальными точками во временном ряду, что позволяет эффективно выявлять отклонения. Внутри трансформера используется механизм анализ разрывов внимания (Anomaly-Attention Discrepancy Analysis), который сопоставляет степень важности каждой точки временного ряда с её соседями. Основная идея: если внимание, выделяемое на текущую точку, значительно отличается от ожиданий (по сравнению с её "нормальными" соседями), то эта точка может быть аномальной. Anomaly Transformer использует два ключевых компонента:

•Карта внимания (A) Представляет собой матрицу, показывающую, насколько каждый временной шаг (или элемент входного ряда) связан с остальными временными шагами. Каждый элемент (A(i,j)) вычисляется с использованием механизма внимания масштабированного скалярного произведения, где сходство между вектором запроса на временном шаге (Q_i) и ключевым вектором на временном шаге (K_j)) определяется их скалярным произведением ($Q_i K_j^T$). Этот показатель сходства масштабируется по квадратному корню ключевой размерности (d_k) для поддержания числовой стабильности, а затем передается через функцию softmax, чтобы обеспечить правильное взвешивание на всех временных шагах.

$$A(i,j) = Softmax(\frac{Q_i K_j^T}{\sqrt{d_k}})$$

•Loss-функция (анализ разрывов внимания): Loss-функция делится на два компонента:

1) $\mathcal{L}_{recon}$: для минимизации ошибки восстановления временного ряда.

2) $\mathcal{L}_{prior}$: для измерения расхождения между распределением внимания текущей точки и ожидаемым распределением.

Общая функция потерь с балансирующим коэффициентом (λ):

$\mathcal{L} = \mathcal{L}_{recon} + \lambda\mathcal{L}_{prior}$,

где λ — коэффициент для баланса двух частей.

4. Результатами обоих алгоритмов являются оценки аномальности (anomaly_scores), которые присваиваются каждой точке временного ряда на основе её степени аномальности. Эти оценки нормализуются (normal_scores) так, чтобы они попадали в диапазон [0, 1] с использованием минимального (min_score) и максимального (max_score) возможных оценок:

$$normal_scores = \frac{anomaly_scores - min_score}{max_score - min_score}$$

5. После, результаты каждой точки (normal_scores) конвертируются в процентную вероятность (probabilities_percent):

$$probabilities_percent = normal_scores \times 100$$

Результатом работы алгоритмов (P) является полу сумма вероятности аномалии относительно обычного поведения пользователя (P_e) и последовательной вероятности для каждой точки (P_s).

$P = \frac{P_e + P_s}{2}$

6. Финальное решение принимается криминалистом.

1) На основе представленных процентных вероятностей и предоставленных данных специалист опирается на цифровой показатель: если он ниже определенного значение заданного самим специалистом и не имеет явного отношения к составу преступления, то данный результат не принимается во внимание.

2) Однако, даже если результат вероятности высок, но приведенный список аномалий и событий не является достаточно полным, то криминалист может отклонить данный результат или же провести дополнительный анализ данных.

3) Если же показатель стремится к плану поставленной специалистом и имеет полный объем необходимых коррелированных сведений, то этот результат определенно принимается во внимание и формирует доказательство.

ЧИСЛЕННЫЕ ЭКСПЕРИМЕНТЫ

Проведено исследование по работе искусственного интеллекта и экспертной модели. Эксперимент прошел по следующим этапам:

1. Имитирование работы экосистемы умного дома. В первую очередь была создана и заполнена база данных, эмитирующая базу данных экосистемы умного дома. Были созданы таблицы событий (events), пользователей (users), устройств(devices) и расписаний(schedules).

2. После заполнения базы данных начинается работа искусственного интеллекта – последовательно отрабатывают два алгоритма: Isolation Forest и Anomaly Transformer.

➢ Результатами работы Isolation Forest является процентная вероятность отношения/аномалии события относительно обычного поведения пользователя, представленного в таблице расписаний. Результаты состоят из порядкового номера события в базе, действия события и его вероятности.

2- Рисунок

Результаты работы Isolation Forest

```
ai_digital_forensics    | Аномальные события (Isolation Forest):
ai_digital_forensics    | {'id': 1, 'event': 'Light turned on', 'event_probability': '93.55%'}
ai_digital_forensics    | {'id': 2, 'event': 'Speaker played music', 'event_probability': '0.68%'}
ai_digital_forensics    | {'id': 3, 'event': 'Speaker played music', 'event_probability': '0.68%'}
ai_digital_forensics    | {'id': 4, 'event': 'Speaker played music', 'event_probability': '0.68%'}
ai_digital_forensics    | {'id': 5, 'event': 'Camera activated', 'event_probability': '0.0%'}
ai_digital_forensics    | {'id': 6, 'event': 'Lock engaged', 'event_probability': '30.86%'}
ai_digital_forensics    | {'id': 7, 'event': 'Battery low', 'event_probability': '56.47%'}
ai_digital_forensics    | {'id': 8, 'event': 'Lock engaged', 'event_probability': '30.86%'}
ai_digital_forensics    | {'id': 9, 'event': 'Light turned on', 'event_probability': '93.55%'}
```

➢ Результатами работы Anomaly Transformer является процентная вероятность отношения/аномалии последовательности событий относительно других событий. События разделяются на последовательности длинной 21 элемент и отображаются в виде порядкового номера последовательности и ее вероятности.

3- Рисунок

Результаты работы Anomaly Transformer

```
ai_digital_forensics    | Аномальные последовательности (Anomaly Transformer):
ai_digital_forensics    | {'sequence_index': 0, 'sequence_probability': '0.0%'}
ai_digital_forensics    | {'sequence_index': 1, 'sequence_probability': '100.0%'}
```

3. Финальным этапом эксперимента являлась обработка результатов математической моделью. Для этого каждое событие было оценено в частности: по порядковому номеру события определялось его отношение в определенной последовательности и ее вероятность. Получив последовательную вероятность, математическая модель подсчитывает итоговый результат для каждой точки.

4- Рисунок

Результаты математической модели

```
ai_digital_forensics    | Объединенные результаты (события + последовательности):
ai_digital_forensics    | {'id': 1, 'event': 'Light turned on', 'event_probability': '93.55%', 'sequence_probability': '0.0%', 'combined_probability': '46.77%'}
ai_digital_forensics    | {'id': 2, 'event': 'Speaker played music', 'event_probability': '0.68%', 'sequence_probability': '0.0%', 'combined_probability': '0.34%'}
ai_digital_forensics    | {'id': 3, 'event': 'Speaker played music', 'event_probability': '0.68%', 'sequence_probability': '0.0%', 'combined_probability': '0.34%'}
ai_digital_forensics    | {'id': 4, 'event': 'Speaker played music', 'event_probability': '0.68%', 'sequence_probability': '0.0%', 'combined_probability': '0.34%'}
ai_digital_forensics    | {'id': 5, 'event': 'Camera activated', 'event_probability': '0.0%', 'sequence_probability': '0.0%', 'combined_probability': '0.0%'}
ai_digital_forensics    | {'id': 6, 'event': 'Lock engaged', 'event_probability': '30.86%', 'sequence_probability': '0.0%', 'combined_probability': '15.43%'}
ai_digital_forensics    | {'id': 7, 'event': 'Battery low', 'event_probability': '56.47%', 'sequence_probability': '0.0%', 'combined_probability': '28.23%'}
ai_digital_forensics    | {'id': 8, 'event': 'Lock engaged', 'event_probability': '30.86%', 'sequence_probability': '0.0%', 'combined_probability': '15.43%'}
```

В работе предложена методология использования искусственного интеллекта (ИИ) для формирования доказательной базы преступлений, совершённых с использованием IoT-устройств в умных домах. Разработанная система включает этапы получения данных из баз данных экосистем умного дома, их предварительной обработки, анализа с применением ИИ и представления результатов в удобной для специалистов форме. Применение ИИ позволяет эффективно выявлять аномальные действия и последовательности событий, указывающие на потенциальные правонарушения, что способствует повышению качества и скорости расследований в сфере кибербезопасности.

Новизна работы заключается в разработке интегрированной методологии, объединяющей искусственный интеллект (ИИ) и экспертной оценки для анализа данных из экосистем умных домов с целью формирования доказательной базы преступлений, совершённых с использованием IoT-устройств.

В отличие от существующих исследований, которые преимущественно фокусируются на отдельных аспектах, таких как сбор данных или детектирование аномалий, представленная методология охватывает полный цикл: от получения данных из баз данных умных домов до их анализа с помощью ИИ и представления результатов в удобной для специалистов форме. Это позволяет более эффективно выявлять и интерпретировать аномальные действия и последовательности событий, потенциально связанные с правонарушениями, что ранее не было полноценно реализовано в подобных системах.

Предлагаемая экспетная (математическая) модель позволяет количественно оценивать вероятность того, что определённые события, зафиксированные в экосистемах умных домов, связаны с преступной деятельностью. Такая модель обеспечивает объективность и точность в процессе формирования доказательной базы, что является существенным вкладом в область цифровой криминалистики.

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ДОСТИЖЕНИЕ ЭНЕРГОСБЕРЕЖЕНИЯ В ТРАНСПОРТНЫХ СРЕДСТВАХ

Аннотация. *В настоящее время во всех странах мира уделяется большое внимание эффективному использованию энергетических ресурсов. Это объясняется увеличением затрат на добычу и переработку топливных и энергетических ресурсов, а также ростом дополнительных трудовых и материальных затрат.*
Энергетический кризис конца XX и начала XXI века, охвативший весь мир, побудил промышленные страны разработать государственные программы экономии органического топлива и электроэнергии, а также стимулировал развитие научных и практических работ по их реализации.

Ключевые слова: *Электромобиль, аккумуляторные батареи, электродвигатели, дорожные сопротивления, воздушное сопротивление, коробка передач, чистый водород в качестве топлива, чистый кислород в качестве окислителя, натрий-серные аккумуляторы.*

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ACHIEVING ENERGY SAVINGS IN TRANSPORT VEHICLES

Abstract. *At present, all countries of the world pay great attention to the efficient use of energy resources. This is explained by the increasing costs of extraction and processing of fuel and energy resources, as well as the growth of additional labor and material expenses.*
The energy crisis of the late 20th and early 21st centuries, which affected the entire world, prompted industrialized countries to develop national programs for saving

fossil fuels and electricity, and also stimulated the advancement of scientific and practical efforts for their implementation.

Keywords: *Electric vehicle, storage batteries, electric motors, road resistance, air resistance, gearbox, pure hydrogen as fuel, pure oxygen as oxidizer, sodium-sulfur batteries.*

Введение.

Снижение расхода энергии электромобилей и повышение их эффективности является актуальной задачей в условиях современного развития. Электромобили постепенно вытесняют автомобили с двигателями внутреннего сгорания и занимают свое место в транспорте. Требуется дальнейшее техническое совершенствование электромобилей, используемых как в городе, так и за его пределами.

Одной из наиболее практичных задач является обеспечение пробега электромобилей, движущихся со скоростью 80–100 км/ч, на расстояние не менее 200 км на одной зарядке аккумуляторов. Этого можно достичь за счет уменьшения всех дорожных сопротивлений, снижения потерь энергии на вспомогательных устройствах, а также повышения КПД аккумуляторных батарей, электродвигателей, трансмиссии и кабелей.

Основной задачей здесь должно быть снижение расхода энергии на преодоление дорожных сопротивлений и снижение потерь мощности на вспомогательных устройствах, а также совершенствование тормозной системы.

Коэффициент аэродинамического сопротивления для электромобилей не должен превышать 0,2–0,3, что является сложной, но решаемой задачей. Применение рекуперативного торможения при торможении является наиболее целесообразным с точки зрения экономии энергии. При рекуперативном торможении вся кинетическая энергия электромобиля преобразуется в электрическую и возвращается в аккумуляторные батареи. Хотя в настоящее время продолжаются разработки различных типов аккумуляторов для электромобилей, наиболее широко используются свинцово-кислотные аккумуляторы. Их масса почти равна массе самого электромобиля, поэтому снижение массы аккумуляторов остается актуальной конструктивной проблемой.

Использование электродвигателей постоянного тока с последовательным возбуждением в электромобилях имеет ряд преимуществ по сравнению с другими типами электродвигателей. Такие двигатели могут обеспечивать необходимый крутящий момент при малых скоростях и малый момент при высоких скоростях. Управление ими удобно, и они могут быть непосредственно подключены к аккумуляторным батареям. Регулировка скорости может осуществляться с помощью преобразователя с широтно-импульсной модуляцией. Кроме того, регулирование скорости электромобиля механическим способом, например с использованием коробки передач, также приводит к снижению потерь электроэнергии.

Мощность электродвигателя, применяемого в электромобилях для движения по ровной дороге, рассчитывается по следующей формуле:

Уравнение баланса тяговой силы:

$$F_t=F_{rab}+F_p+F_x+F_i \quad (1)$$

где:

F_t – сила тяги на колесах, Н;

F_{rab} – сила трения, Н;

F_q – сила сопротивления на уклоне, Н;

F_x – сила аэродинамического сопротивления, Н;

F_i – сила сопротивления инерции, Н.

Момент сопротивления на колесе электромобиля рассчитывается следующим образом:

Момент сопротивления на колесе:

$$M_q=F_t r_{kol} \quad (2)$$

где $r_{g'il}$ – радиус колеса автомобиля, м.

Момент на валу двигателя:

$$M_m=M_q/(i\cdot\eta_{mu}) \quad (3)$$

где i – передаточное число редуктора.

Частота вращения вала двигателя:

$$n=(\vartheta_{ai})60/(2\pi\ r_{kol}) \quad (4)$$

Требуемая мощность электродвигателя:

$$P_m=M_m\omega_m \quad (5)$$

Мощность двигателя должна быть выбрана в соответствии с условием:

$$P'_m\geq P_m \quad (6)$$

Отношение максимального момента к номинальному:

$$M_{max}/M_{nom}=2{,}5 \quad (7)$$

Параметры электромобиля приведены в следующей таблице:

Таблица 1

Параметры	Условные знаки	Значения
Суммарная сила тяги ведущих колес, N	F_t	3899,73
Суммарный момент сопротивления на колесе автомобиля, Nm	M_{kol}	435,8
Крутящий момент двигателя, Nm	M_m	54,4
Номинальное число оборотов двигателя, обо/мин	n_{nom}	11400
Мощность, необходимая для электромобиля, kW	P_m	64999,6
Угловая скорость колеса электромобиля, s^{-1}	ω_m	149,15

Максимальная скорость электродвигателя ограничивается значением механического напряжения на краю ротора. Обычно диаметр ротора двигателя

постоянного тока меньше, чем у двигателя переменного тока, поэтому частота его вращения выше.
Ток электродвигателя электромобиля обычно не превышает 50 А, а напряжение – 400 В, что ограничивается емкостью аккумулятора.

Энергосбережение в электромеханических системах транспортных средств.

В будущем в качестве источника электрической энергии могут использоваться топливные элементы. Работа топливного элемента схожа с работой аккумулятора. В самом простом топливном элементе в качестве топлива используется чистый водород, а в качестве окислителя – чистый кислород.

Газы проходят через пористый материал и вступают в реакцию в электролитном растворе, в результате чего образуется постоянный ток, а конечным продуктом реакции становится вода (рисунок 1). В процессе выделяется тепло. Такие источники энергии могут применяться в электромобилях благодаря следующим преимуществам:

- топливо не сжигается, а непосредственно преобразуется в электрическую энергию, что позволяет не ухудшать экологическую обстановку;
- нет необходимости в системе охлаждения для топливного элемента;
- процесс эксплуатации топливного элемента происходит бесшумно;
- широкий диапазон мощностей топливных элементов расширяет область их применения.

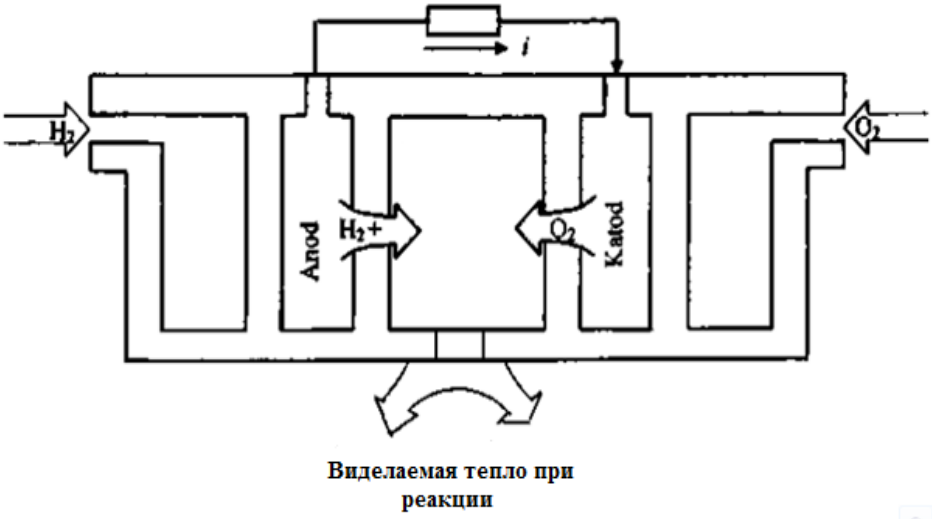


Рисунок 1. Схема работы топливного элемента

На данный момент КПД топливных элементов превышает 35% (если использовать тепловой насос для повторного использования выделяемого тепла, общий КПД энергетической установки может достигать 94%). В будущем возможно использование других видов топлива для топливных элементов.

Поскольку свинцово-кислотные аккумуляторы, применяемые в электромобилях, не полностью удовлетворяют требованиям к электротранспорту, ведутся исследования по созданию принципиально новых типов аккумуляторов.

Перспективными аккумуляторами для электромобилей будущего являются натрий-серные аккумуляторы (рисунок Катод из жидкого натрия и анод из жидкой серы разделены твердым электролитом, который выполняет функцию фильтра, пропускающего только ионы натрия. Ионы натрия вступают в реакцию с серой, в результате чего между электродами возникает разность потенциалов.

При работе электромотора, то есть при протекании тока через электрическую цепь, образуется конечный продукт – полисульфид натрия.

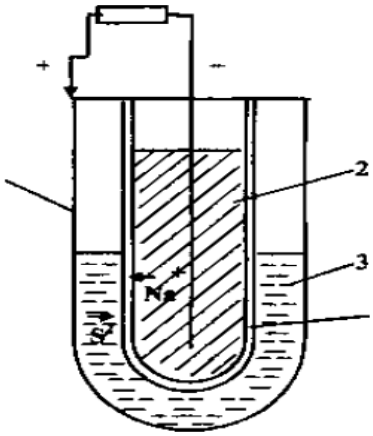


Рисунок 2. Конструктивное устройство натрий-серного аккумулятора:

1 – корпус из нержавеющей стали, выполняющий функцию сборщика тока с анода из жидкой серы; 2 – жидкий натрий (плавится при 98 °С); 3 – жидкая сера (плавится при 119 °С); 4 – твердый электролит на основе оксида алюминия, выполняющий функцию фильтра для ионов натрия.

Результаты дорожных испытаний показали, что электрофургон с натрий-серным аккумулятором на одной зарядке может преодолеть от 96 до 120 км в зависимости от состояния дороги и условий движения. На данный момент удельная энергия одного элемента натрий-серного аккумулятора достигает 550 Вт·ч. Для обеспечения электропитания электромобиля достаточно 90 таких аккумуляторных элементов.

В ведущих автомобильных странах, таких как США, Япония, Германия и Франция, прошли испытания гибридные электромобили с комбинированным использованием бензинового и электрического двигателей.

Заключение.

На основании вышеизложенного можно сделать вывод, что в будущем в качестве источника электрической энергии могут быть использованы топливные элементы. Работа топливного элемента схожа с работой

аккумулятора, при этом в качестве топлива используется чистый водород, а в качестве окислителя – чистый кислород.

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ПОТЕНЦИАЛ РАЗВИТИЯ МОЛОДЁЖНОГО ПРЕДПРИНИМАТЕЛЬСТВА В АГРАРНОЙ ОТРАСЛИ ТУРКМЕНИСТАНА

Аннотация: *В статье рассматриваются перспективы развития молодёжного предпринимательства в аграрной отрасли Туркменистана. Раскрывается значимость аграрного сектора в обеспечении продовольственной безопасности страны, отмечается его вклад в ВВП и занятость населения. Анализируются возможности привлечения молодёжи к предпринимательской деятельности на селе, а также факторы, препятствующие их активному участию: высокие финансовые затраты, ограниченный доступ к кредитам, недостаток опыта и кадров, сезонность производства и климатические риски. Рассмотрен зарубежный опыт поддержки молодёжного предпринимательства в сельском хозяйстве. Обоснована необходимость создания комплексной системы мер государственной поддержки, включающей финансовое стимулирование, обучение и наставничество, предоставление земельных ресурсов, маркетинговую помощь и развитие кооперативов. Сделан вывод о важной роли молодёжного предпринимательства в модернизации аграрного сектора и обеспечении устойчивого социально-экономического развития Туркменистана.*

Ключевые слова: *молодёжное предпринимательство, аграрный сектор, сельское хозяйство, продовольственная безопасность, государственная поддержка, молодёжь, Туркменистан, сельская занятость, инновации, агробизнес.*

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DEVELOPMENT POTENTIAL OF YOUTH ENTREPRENEURSHIP IN THE AGRICULTURAL SECTOR OF TURKMENISTAN

Abstract: *The article examines the prospects for the development of youth entrepreneurship in the agricultural sector of Turkmenistan. The importance of the agricultural sector in ensuring the country's food security, as well as its contribution*

to GDP and employment, is highlighted. The study analyzes opportunities for engaging young people in entrepreneurial activities in rural areas, along with the main challenges they face, such as high initial investment costs, limited access to credit, lack of experience and qualified personnel, seasonality of production, and climate-related risks. International practices of supporting youth entrepreneurship in agriculture are reviewed. The article substantiates the necessity of establishing a comprehensive system of state support, including financial incentives, training and mentoring, allocation of land resources, marketing assistance, and the development of cooperatives. It concludes that youth entrepreneurship plays a crucial role in modernizing the agricultural sector and ensuring the sustainable socio-economic development of Turkmenistan.

Keywords: *youth entrepreneurship, agricultural sector, agriculture, food security, state support, youth, Turkmenistan, rural employment, innovation, agribusiness.*

Аграрный сектор входит в число ключевых отраслей национальной экономики Туркменистана. С одной стороны, данная отрасль обеспечивает потребности промышленного сектора в исходных сырьевых ресурсах, с другой стороны оказывает ощутимое влияние на последовательное укрепление продовольственной безопасности нашей страны. Цели и задачи в области дальнейшего развития сельскохозяйственной отрасли находят отражение в действующих в нашей стране долгосрочных программах развития – «Возрождение новой эпохи могущественного государства: Национальной программе социально-экономического развития Туркменистана на 2022-2052 г.г.». В разделе 11 «Стратегические направления развития сельскохозяйственной отрасли в Туркменистане», в частности, намечен целый комплекс конкретных задач развития отечественного аграрного сектора на долгосрочный период до 2052 года [1,105]. В текст «Программы Президента Туркменистана по социально-экономическому развитию страны на 2022-2028 г.г.», в свою очередь, включены обозримые перспективы и задачи развития отрасли на основе вполне конкретных базовых индикаторов [2,11].

Важная роль в успешной реализации намеченных целей и задач в обеспечении опережающего развития национальной аграрной отрасли отводится вопросам эффективного задействования внушительного потенциала молодёжного предпринимательства. Мировая практика демонстрирует высокий уровень активности и креативный подход, достаточное новаторство и смелость решений, настрой на освоение и применение самых прогрессивных инноваций и трендов, выгодной отличающие молодёжное предпринимательство и одновременно обеспечивающие его успешность. Именно такую успешность и эффективность молодёжное предпринимательство показывает в том числе и в сфере аграрного хозяйства.

Следует отметить глубинные исторические истоки возникновения и становления молодёжного предпринимательства на селе. Несмотря на относительную новизну непосредственно понятия «молодёжное предпринимательство», существует достаточная количество исторических гипотез, что в реальности данное явление существовало всегда. Целый ряд учёных формулируют гипотезу о том, что в силу объективных социально-экономических и технологических реалий менялось лишь его название.

Аграрный сектор составлял базисную основу традиционного хозяйства античных цивилизаций и средневековья. Традиционно, молодёжь с ранних лет приобщалась к сельскохозяйственному труду.

В различные периоды существовало большое разнообразие инструментария и программ эффективного стимулирования субъектов молодёжного предпринимательства к экономической деятельности в сельскохозяйственном секторе. В Соединённых Штатах Америки, например, действуют специализированные программы для начинающих аграриев и фермеров, включающие в себя различные гранты, техническую поддержку и специальные обучающие семинары.

В государстве Израиль действуют системы «кибуцы» и «мошавы», основанные на коллективном владении и пользовании землёй и другими ресурсами. В Нидерландах функционируют системы кооперативов и ассоциаций, способствующие объединению для успешного разрешения общих проблем. В Японии тоже действует обширная программа поддержки, предусматривающая предоставление молодым предпринимателям-аграриям земельных наделов, целевых кредитов, а также их обучение. В Республике Узбекистан с 2017 года эффективно функционируют целые аграрные кластеры, включающие в себя полный цикл – от получения исходного сырья до производства готовой продукции и её доставки до конечного потребителя.

Говоря о потенциале возможностей отечественной аграрной сферы, по итогам 2023 года доля данной отрасли в структуре валового внутреннего продукта составила почти 11,3% [3,25].

Важно отметить, что именно аграрный сектор заключает на себе составную часть трудовых ресурсов нашей страны. Согласно данным за 2023 год, 42,5% общего объёма трудоустроенного населения Туркменистана были заняты в различных сегментах сельского и лесного хозяйства, а также рыбного промысла [3, 275].

Под руководством уважаемого Президента в отечественном аграрном секторе были осуществлены коренные преобразования. Составная часть указанных реформ были реализованы в рамках претворения в жизнь Постановления «О дальнейшем совершенствовании преобразований в сельскохозяйственной отрасли», принятого на первом заседании Халк Маслахаты Туркменистана, состоявшемся в 2018 году. Постановлением закреплены в общей сложности 10 приоритетных предложений и инициатив по дальнейшему совершенствованию процессов реформирования отечественной аграрной отрасли [4].

Следует отметить также существование определённых проблемных аспектов, с которыми потенциально сталкиваются молодые предприниматели, начинающие свой бизнес в аграрном секторе. Указанные вопросы связаны, в основном, с экономическими и социальными аспектами:

Экономические аспекты: завышенная планка размера первоначального капитала; неустойчивость рынка; высокая конкуренция; отсутствие доступности кредитов.

Социальные аспекты: отсутствие достаточного опыта; дефицит профессиональных кадров сельской местности; ощутимая отдалённость геолокации аграрного хозяйства от городской черты.

Другим аспектом можно отнести сезонность производства, неустойчивость климата.

Для эффективного стимулирования развития молодёжного предпринимательства в аграрном секторе, с учётом и умелым использованием имеющегося в Туркменистана позитивного потенциала возможностей, видится целесообразным реализация следующих мер:

Финансовое поддержка: предоставление субъектам «молодёжного предпринимательства» финансовой поддержки согласно нормам Закона Туркменистана «О государственной молодёжной политике». Данный вид поддержки может включать в себя меры целевого государственного субсидирования, а также предоставление грантов, низкопроцентных либо беспроцентных льготных кредитов на приобретение сельскохозяйственной техники, инвентаря, семенного материала, различных животных и т.д. Также, к такой форме финансовой поддержки молодых предпринимателей можно причислить предоставление государственных гарантий по кредитам, полученным субъектам молодёжного предпринимательства.

Обучение и наставничество: организация для молодых предпринимателей специальных обучающих семинаров, посвящённых основам сельскохозяйственного дела, а также бизнеса (обучение навыкам планирования, маркетинга и других аспектов предпринимательства). Важным подспорьем может стать принятие Союзом промышленников и предпринимателей Туркменистана специальных программ наставничества и курирования деятельности начинающих молодых предпринимателей;

Маркетинговая поддержка: содействие молодым предпринимателям в вопросах брендирования аграрной продукции. Также, организация и проведение масштабных выставочных экспозиций и ярмарок в целях создания благоприятных условий для успешной реализации молодыми предпринимателями собственной продукции. Оказание содействия в реализации сельскохозяйственной продукции через размещение на коммерческих электронных площадках.

Таким образом, установлена важная роль развития молодёжного предпринимательства в коренной модернизации отечественного аграрного сектора, обеспечении и последовательном укреплении продовольственной безопасности нашей страны. Всё это позволяет сделать заключение о

насущной необходимости формирования комплексной системы поддержки молодёжного бизнеса в рамках неуклонного развития и структурного совершенствования отечественной сельскохозяйственной отрасли.

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ЙОДНИНГ ИНСОН ОРГАНИЗМИДАГИ БИОЛОГИК АҲАМИЯТИ

Аннотация: *Мақолада йоднинг инсон организмидаги биологик аҳамияти, тиреоид гормонлар синтезидаги роли ва йод танқислиги оқибатлари таҳлил қилинган. Йод етишмовчилиги сабабли ривожланувчи эндокрин бузилишлар ва уларнинг олдини олишда йодланган туз, озиқ-овқат ва дори воситалари орқали профилактика усуллари ёритилган. ЖССТ тавсиялари ҳамда маҳаллий олимлар тадқиқотлари асосида самарали ечимлар келтирилган.*

Калит сўзлар: *йод танқислиги, тироксин, ТТГ, қалқонсимон без, профилактика, йодланган туз.*

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BIOLOGICAL SIGNIFICANCE OF IODINE IN THE HUMAN BODY

Abstract: *This article reviews the biological importance of iodine in the human body, its role in thyroid hormone synthesis, and the consequences of iodine deficiency. Methods for preventing iodine deficiency through iodized salt, food products, and medicinal supplements are discussed. Recommendations from the WHO and findings from local researchers on effective solutions are also presented.*

Key words: *iodine deficiency, thyroxine, TSH, thyroid gland, prevention, iodized salt.*

Йод — муҳим микроэлемент бўлиб, у қалқонсимон без фаолиятида асосий рол ўйнайди. У тиреоид гормонлари — тироксин (Т4) ва трийодтиронин (Т3) синтези учун зарур бўлиб, ушбу гормонлар организмдаги барча тўқималарнинг ўсиши ва дифференциацияси, митохондриал энергия алмашинуви, трансмембран ион алмашинуви ҳамда гормонларнинг ҳужайра ичига ташилиши жараёнларини тартибга солади. Йод етишмовчилиги гипотиреоз, эндемик зоб, модда алмашинуви секинлашуви, артериал гипотензия, болаларда ўсишнинг сустлашуви ва ақлий ривожланишнинг орқада қолиши каби жиддий саломатлик муаммоларига сабаб бўлади. Шу сабабли, турли геокимёвий минтақаларда йоднинг кунлик қабул миқдори 65 мкг дан 230 мкг гача бўлиши тавсия этилади [1]. Йодга бўлган кунлик эҳтиёж

миқдорлари Жаҳон соғлиқни сақлаш ташкилоти (ЖССТ), ЮНИСЕФ ҳамда Йод танқислигига оид касалликларни назорат қилиш бўйича Халқаро кенгаш (ICCIDD) томонидан белгиланган. Йоднинг ўзига хос биологик аҳамияти шунда намоён бўладики, у қалқонсимон без томонидан ишлаб чиқариладиган гормонлар — тироксин (Т4) ва трийодтиронин (Т3) таркибида тўғридан-тўғри иштирок этади. Тироксин молекуласи 4 та, трийодтиронин эса 3 та йод атомини ўз ичига олади, бу эса уларнинг гормонал фаоллигини таъминлайди.

Йод етишмовчилиги инсон организмида бир қатор нохуш клиник белгилари билан намоён бўлади. Улар орасида асаб тизими фаолиятининг бузилиши (ҳаддан ташқари асабийлашиш ёки депрессия ҳолати), жисмоний чарчоқ, уйқунинг бузилиши, иммун тизим заифлашуви натижасида юқумли касалликларга мойилликнинг ортиши, шунингдек, жинсий фаолликнинг пасайиши каби ҳолатлар кузатилади. Оқсиллар, ёғлар ва углеводлар каби асосий озиқ моддалари танқислигидан фарқли равишда, йод етишмовчилиги баъзан ташқи белгиларсиз, яъни клиник жиҳатдан намоён бўлмаслиги мумкин. Шу сабабли бундай ҳолат илмий адабиётларда "яширин очлик" (hidden hunger) атамаси билан ифодаланади.

Ўзбекистонда ҳар олти нафар янги туғилган боладан бири ҳомиладорлик даврида онанинг организмида йод танқислиги кузатилиши натижасида руҳий ёки ақлий ривожланиш нуқсонлари билан туғилмоқда. Йод танқислигига боғлиқ бузилишлар (ЙТК) Жаҳон соғлиқни сақлаш ташкилоти (ЖССТ) томонидан глобал миқёсда эътироф этилган бўлиб, улар юқумсиз касалликлар қаторида энг кенг тарқалган ҳолатлардан бири сифатида баҳоланади.

Ўзбекистонлик биокимёгар олим Ё.Х. Тўрақулов ўзининг илмий тадқиқотлари орқали қалқонсимон без фаолияти, аввало, тиротропин (тироидни стимуляция қилувчи гормон — ТТГ) таъсири остида бошқарилишини асослаб берган. ТТГ гипофиз бези томонидан ажратилади ва тироид гормонлари — тироксин (Т4) ҳамда трийодтиронин (Т3) ишлаб чиқарилишини ҳамда уларнинг секрециясини назорат қилади. Бу орқали организмда тиреоид функцияси изчил ҳолда сақланиб, гипотиреоз ва гипертиреоз каби ҳолатлардан муҳофаза қилинади. ТТГ секрецияси, шунингдек, қалқонсимон без томонидан йоднинг сўрилишини фаоллаштиради ва Т3 ва Т4 гормонларининг синтезини рағбатлантиради. Агар организмда йод етишмовчилиги юзага келса, гипофиз бези ТТГ ишлаб чиқаришни оширади. Бу эса организмнинг кўпроқ йод сўрилишини таъминлаш ва тироид гормонлари ишлаб чиқарилишини кучайтиришга қаратилган физиологик жавоб реакцияси сифатида без тўқимасининг гиперплазияси — яъни бўқоқ ривожланишига олиб келади. Бундан ташқари, йод инсон организмида бир қатор бошқа физиологик жараёнларни ҳам тартибга солишда қатнашади.

Қалқонсимон без касалликлари кузатиладиган беморлар учун тузилган парҳез рационида йодга бой озиқ-овқат маҳсулотлари албатта мавжуд бўлиши лозим. Бундай маҳсулотлар тиреоид гормонларининг синтези ва без

фаолиятини қўллаб-қувватлашда муҳим аҳамият касб этади. Кундалик рационда тез-тез учрайдиган айрим озиқ-овқат маҳсулотларининг таркибидаги йод миқдори 1-жадвалда келтирилган.

1-жадвал

Айрим озиқ-овқат маҳсулотлари таркибидаги йоднинг миқдори

Мева, сабзавот ва гўшт маҳсулотларининг номи	100 грамм маҳсулотдаги йод миқдори, мкг	100 мкг йод тутган маҳсулот миқдори, г
Ёнғоқ	4,6	2180
Олма	1,6	6300
Помидор	2,1	4800
Картошка	2,8	3600
Сабзи	2,4	4200
Пиёз	1,8	5600
Нўҳат	2,3	4350
Мош	1,7	5900
Мол гўшти	2,1	4800
Қўй гўшти	1,8	5600
Балиқ (сазан)	3,9	2560
Туҳум	3,5	2880

Йод танқислигини бартараф этишда энг оммавий ва иқтисодий жиҳатдан мақбул манбалardan бири бу — йодланган ош тузидир. Унинг таркибига йод, одатда, калий йодат (KIO_3) шаклида қўшилади. Йодланган тузнинг 1 кг намунасида тахминан 40 мг йод бўлиши мумкин, бу эса аҳоли орасида йод танқислиги хавфини камайтиришда самарали восита ҳисобланади. Шу билан бирга, амалиётда кенг қўлланиладиган йод манбаи сифатида йод сақловчи синтетик дори воситалари ва биологик фаол қўшимчалар ҳам мавжуд. Улар қаторига «Йодомарин», «Йодорал», «Йод фаол» каби препаратлар, шунингдек, «Витрум плюс» каби йод ва бошқа минералларни ўз ичига олган комплекс витаминлар киради. Жаҳон соғлиқни сақлаш ташкилоти (ЖССТ) тавсияларига кўра, йод танқислигини олдини олиш мақсадида йод профилактикаси учун тўртта асосий усул қўлланилади: тузни, нонни, сариёғни йодлаш ҳамда йод сақловчи дори воситаларини (масалан, антистрамин, Люгол эритмаси) қабул қилиш. Хусусан, калий йодид билан бойитилган нон ва нон маҳсулотларининг турли шакллари ишлаб чиқарилаётгани қайд этилган. Шунингдек, алкоголсиз ичимликлар, ичимлик суви ҳамда новвойхона маҳсулотларида ишлатиладиган хамиртуруш таркибини ҳам калий йодид билан бойитиш тавсия этилади. Сўнгги вақтларда кенг қўлланилаётган яна бир йод манбаи — бу калий йодат ҳисобланади. У калий йодидга нисбатан юқори барқарорликка эга бўлиб, ишлатилган маҳсулотларнинг таъми ва рангига деярли таъсир қилмайди. Шу билан бирга, тадқиқотчи Е. Иванова томонидан олиб борилган илмий ишлар натижасида калий йодатдан фойдаланилганда йод дозасининг ортиб кетиши эҳтимоли мавжудлиги қайд этилган.

Хулоса

Йод инсон организми учун муҳим микроэлемент бўлиб, у қалқонсимон без гормонлари – тироксин (T4) ва трийодотиронин (T3) ишлаб чиқарилишини таъминлайди. Йод танқислиги эндемик бўқоқ, гипотиреоз ва болаларда ақлий ва жисмоний ривожланишнинг сусайиши каби саломатлик муаммоларига олиб келади.

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GLYCHYRRHIZA GLABRA L. ИЛДИЗИ — САПОНИНЛАРНИНГ МАНБАИ ВА УНИНГ ТИББИЁТДА ҚЎЛЛАНИЛИШИ

Аннотация: *Glycyrrhiza glabra L. (ширинмия) илдизи таркибидаги тритерпен сапонинлар ва бошқа биологик фаол моддалар сабабли кўп қиррали шифобахш таъсирга эга. У кўплаб доривор препаратлар таркибида йўталга қарши, яллиғланишга қарши, гепатопротектор, антиоксидант ва иммуномодулятор восита сифатида қўлланилади.*

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LICORICE ROOT (GLYCHYRRHIZA GLABRA L.) IS A SOURCE OF SAPONINS AND ITS MEDICINAL USE

Abstract: *The root of Glycyrrhiza glabra L. (licorice) contains triterpenoid saponins and other biologically active compounds, providing it with a wide range of medicinal properties. It is widely used in pharmaceutical formulations as an expectorant, anti-inflammatory, hepatoprotective, antioxidant, and immunomodulatory agent.*

Замонавий тиббиётда дори воситаларини ўсимликлардан тайёрлаш фитотерапия — яъни ўсимликлар ёрдамида даволаш — ва маълум даражада медикаментоз терапиянинг асосини ташкил этади. Доривор ўсимликлар инсон организмининг умумий фаоллигини ошириш, моддалар алмашинувини рағбатлантириш ва бошқа умумий таъсирга эга бўлган носпецифик восита сифатида кенг қўлланиб келинмоқда. Улар биологик фаол қўшимчалар (БФҚ) таркибида муҳим ўрин тутади.

Кўплаб шифобахш ўсимликлар нафақат тиббиёт соҳасида, балки парфюмерия-косметика, озиқ-овқат саноати каби халқ хўжалигининг турли соҳаларида ҳам ишлатилади. Масалан, долчин, ялпиз, кашнич ва эрмон каби ўсимликлар кенг фойдаланилади. Маълумки, баъзи ўсимлик мойлари техник мақсадларда ҳам ишлатилади, айрим турлари эса овқат маҳсулоти сифатида аҳамиятга эга. Масалан, кунжут мойи авиация двигателлари учун алмаштириб бўлмайдиган мойловчи восита ҳисобланади.

Шунингдек, ширинмия (солодка) илдизидан олинадиган экстракт кўпик ҳосил қилувчи хусусияти туфайли нафақат шифобахш, балки техник жиҳатдан ҳам катта аҳамиятга эга ҳисобланади.

Сапонинлар (ёки сапонизидлар) — гликозидлар гуруҳига мансуб моддалар бўлиб, улар гемолитик таъсирга эга ва детергент (ювувчи) хусусиятларга ҳамда совуқ қонли ҳайвонлар учун заҳарли таъсир кўрсатади. Одатда, сапонинлар рангсиз бўлади ва сувда турлича эрувчанликка эга. Уларнинг сувдаги эритмалари ёки хом ашёдан олинган ажратмалари чайқалганда қаттиқ кўпикланиб, барқарор ва узоқ вақт сақланадиган кўпик ҳосил қилади. Шу сабабли, ўтган асрнинг бошида ушбу моддалар «сапонинлар» деб аталган (лотинча «sapo» — совун).

Сапонинлар одатдаги температурада суюлтирилган этанол ва метанолда эрийди, концентрацияси юқори бўлган спиртларда фақат қиздирилганда эрийди ва совутилганда чўкмага тушади; эфирда, хлороформда, ацетонда ва бошқа органик эритувчиларда эримайди. Айрим сапонинлар юқоридаги хоссаларнинг барчасига эга эмас, масалан сувда эримайди, айримлари эса гемолитик таъсирга эга эмас ва ҳ.к.

Агликоннинг тузилишига боғлиқ равишда, сапонинлар *стероид сапонинларга* ва *тритерпен сапонинларга* бўлинади. Тритерпен сапонинлар одатда $C_{30}H_{48}$ умумий формулага эга бўлган пентациклик баъзан тетрациклик бирикмалардир. Агликонлар скелетларининг хусусиятлари бўйича тритерпен сапонинлар тўрт хил типга бўлинади: 1) β-амирин типидпги; 2) α-амирин типидаги; 3) лупеол типидаги; 4) фриделин типидаги ҳосилалари бўлган агликон тутувчи тритерпен сапонинлар ҳам маълум.

Баъзи сапонинлар бир вақтнинг ўзида турли функционал гуруҳларни ўз ичига олиши мумкин. Масалан, глицирет кислотаси молекуласининг С3 позициясида гидроксил гуруҳи, С11 да кислород, С30 да эса карбоксил гуруҳи мавжуд. Таркибида альдегид, лактон гуруҳлари ёки эфир боғларини ўз ичига олган сапогенинлар нисбатан беқарор бўлиб, ўсимликдан ажратиб олиш жараёнида кимёвий ўзгаришларга учраши мумкин.

Ширинмия илдизидан турли фармацевтик препаратлар ишлаб чиқарилади, улар орасида қуюқ ва қуруқ ширинмия экстрактлари, ширинмия сиропи, элекасол, глицирам, ликвиритон, лавалон, флакарбин ва бошқа маҳсулотлар бор.

Ширинмия илдизи қадимдан балғамни камайтирувчи, йўталга қарши, жигарни ҳимоя қилувчи (гепатопротектор), ошқозон-ичак яраларига қарши ва қон томирларини мустаҳкамловчи восита сифатида кенг қўлланиб келмоқда. Илдиз асосида турли фармацевтик препаратлар ва маҳсулотлар ишлаб чиқарилган. Ширинмия препаратлари юқори самарадорликка эга бўлиб, заҳарланиш хавфи нисбатан паст ҳисобланади.

Ширинмия тритерпенлари фармацевтика саноати, озиқ-овқат қўшимчалари ишлаб чиқариш ва савдо соҳалари учун энг мақбул сапонинлардан бири саналади. Бу ўсимлик Марказий Осиё, жумладан Ўзбекистон ҳудудида кенг тарқалган. Ўзбекистонда ширинмия 3000 гектар атрофида ерларда етиштирилади ва ёввойи ҳолда ҳам учрайди. Етиштирилаётган ширинмия илдизи асосан хом-ашё сифатида экспорт қилинади.

Ширинмия экстрактини, саратон ҳужайраларига қарши, антивирус, антимикроб ва антиоксидантлик фаолликлари ўрганилган.

Илдиз экстракти тери саратонини чақирувчи Эпштейн-Барр вируси (*Epstein-Barr virus, EBV*) ривожланишини ингибирлаши ҳақида маълумотлар келтирилган. Ширинмия ўсимлиги илдиз сиропи герпетик стоматитни даволашда муваффақиятли қўлланилганли ҳақида адабиётларда маълумотлар келтирилган.

Хулоса

Ширинмия илдизи — табиий доривор ўсимлик сифатида қадимдан тиббий амалиётда кенг қўлланиб келмоқда. Унинг таркибидаги сапонинлар, айниқса тритерпен сапонинлари, ўзининг кўп қиррали биологик фаоллиги билан фармацевтика саноатида муҳим ўрин эгаллайди. Ширинмия препаратлари ёталга қарши, балғам кўчирувчи, жигарни ҳимоя қилувчи ҳамда ошқозон-ичак яраларига қарши таъсирлари билан ажралиб туради. Шунингдек, улар заҳарлилик даражаси паст бўлгани туфайли хавфсиз ҳисобланади.

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ЗНАЧЕНИЕ ФИЗИЧЕСКОЙ КУЛЬТУРЫ ДЛЯ ДЕТЕЙ ДОШКОЛЬНОГО ВОЗРАСТА

Аннотация: *Основой всестороннего развития ребенка в первые годы жизни является физическое воспитание. В статье рассмотрены некоторые вопросы значения физической культуры в жизни ребенка дошкольного возраста и методики преподавания данной дисциплины.*

Ключевые слова: *Физическое воспитание, организация жизни детей, режим дня, здоровое питание, требования гигиены.*

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THE IMPORTANCE OF PHYSICAL EDUCATION FOR PRESCHOOL CHILDREN

Abstract: *Physical education is the foundation of a child's comprehensive development in the first years of life. This article examines the importance of physical education in the life of a preschool-aged child and the methods of teaching this subject.*

Key words: *Physical education, organization of children's lives, daily routine, healthy eating, hygiene requirements.*

Дошкольный возраст имеет исключительно важное значение в жизни человека. В этот период закладывается фундамент здоровья, начинают развиваться разнообразные способности, формируются нравственные качества, складываются черты характера. От того как воспитывается ребенок в эти годы, во многом зависит его будущее, эффективность школьного обучения, последующее формирование личности.

Основой всестороннего развития ребенка в первые годы жизни является физическое воспитание. Физическое воспитание складывается из мероприятий, направленных к тому, чтобы вырастить здоровых, выносливых, жизнерадостных, трудоспособных людей. В систему мероприятий, необходимых для правильного физического развития детей, входит организация их жизни в соответствии с требованиями гигиены и борьба с заболеваемостью. Наряду с созданием благоприятных условий жизни большое внимание надо уделять и повышению сопротивляемости организма ребенка, его способности быстро, без вреда для здоровья, применяться к изменениям привычных условий. Значительную роль при этом играет

использование в целях закаливания естественных сил природы: воздуха, воды, солнечных лучей. Для полноценного физического развития ребенка необходимо, чтобы он занимался физическими упражнениями, играл в подвижные игры, пользовался лыжами, коньками, совершал пешеходные экскурсии.

Нормально развивающийся ребенок постоянно стремится к движениям.

Под влиянием движений улучшается деятельность сердечно – сосудистой, дыхательной и нервной систем, укрепляется опорно – двигательный аппарат, улучшается обмен веществ. Они повышают устойчивость ребенка к заболеваниям, мобилизуют защитные силы организма.

Через движения ребенок познает мир, развиваются его психические процессы, воля, самостоятельность, дисциплинированность, коллективизм.

Особое значение имеют движения кистей рук, которые активизируют кору больших полушарий, стимулируют развитие речедвигательного центра. При этом создаются благоприятные условия для созревания лобных отделов мозга, играющих ведущую роль в осуществлении умственной деятельности. Поэтому чем большим количеством разнообразных движений и действий овладеет ребенок, тем шире возможности для развития ощущения, восприятия и других психических процессов, полноценнее осуществляется его развитие.

Теория физического воспитания детей дошкольного возраста – наука об общих закономерностях физического воспитания и формирования личности ребенка. Важнейшей задачей, определяющей особую значимость физического воспитания как основы всестороннего развития, является формирование здорового, крепкого, закаленного, жизнерадостного, отзывчивого, инициативного ребенка, хорошо владеющего своими движениями, любящего спортивные и физические упражнения, способного к обучению в школе и к активной последующей творческой деятельности.

Место и роль физического воспитания в системе воспитания детей дошкольного возраста.

Правильное физическое воспитание детей – одна из ведущих задач дошкольных учреждений. Хорошее здоровье, полученное в дошкольном возрасте, является фундаментом общего развития человека. Ни в какой другой период жизни физическое воспитание не связано так тесно с общим воспитанием, как в первые семь лет. В период дошкольного детства у ребенка закладываются основы здоровья, долголетия всесторонней двигательной подготовленности и гармонического физического развития. Недаром выдающийся педагог В. А. Сухомлинский подчеркивал, что от здоровья, жизнерадостности детей зависит их духовная жизнь, мировоззрение, умственное развитие, прочность в знаниях, вера в свои силы. Поэтому крайне важно организовывать занятия физической культурой именно в детстве, что позволит организму накопить силы и обеспечить в дальнейшем всестороннее гармоническое развитие личности.

Теория физического воспитания детей дошкольного возраста, имея единое содержание и предмет изучения с общей теорией физического воспитания, вместе с тем специально изучает закономерности управления развитием ребенка в процессе его воспитания и обучения. Теория физического воспитания учитывает возможности работоспособности организма, возникающие интересы и потребности, формы наглядно-действенного, наглядно-образного и логического мышления, своеобразии преобладающего вида деятельности, в связи с развитием которой происходят главнейшие изменения в психике ребенка и подготавливается переход ребенка к новой высшей ступени его развития. В соответствии с этим теория физического воспитания детей разрабатывает содержания всех форм организации физического воспитания и оптимальной педагогические условия его реализации. Познавая и учитывая закономерности потенциальных возможностей ребенка каждого возрастного периода, теория физического воспитания предусматривает требования научно обоснованной программы всего воспитательно-образовательного комплекса физического воспитания, усвоение которой обеспечивает детям необходимый уровень физической подготовленности для поступления в школу.

Вместе с тем предусматривается соблюдение строгой последовательности при усвоении детьми программы с учетом возрастных особенностей и возможности ребенка каждого периода его жизни, состояния нервной системы и всего организма в целом.

Физическое воспитание в то же время комплексно решает задачи умственного, нравственного, эстетического и трудового воспитания. Во всех формах организации физического воспитания детей внимание воспитателя направляется на воспитание ребенка.

Таким образом, теория физического воспитания детей дошкольного возраста содействует совершенствованию всей системы физического воспитания.

Цели и задачи физического воспитания детей дошкольного возраста.

Целью физического воспитания является воспитание здорового, жизнерадостного, жизнестойкого, физически совершенного, гармонически и творчески развитого ребенка.

В соответствии с возрастными, анатомо-физиологическими и психологическими особенностями физическое воспитание решает оздоровительные, образовательные и воспитательные задачи. Они направлены на формирование у ребенка рациональных, экономных, осознанных движений; накопление им двигательного опыта и переноса его в повседневную жизнь.

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ДИНАМИКА ИЗМЕНЕНИЙ МИКРОБНОГО СОСТАВА И КОЛИФОРМНЫХ БАКТЕРИЙ ПРОБ ВОДЫ РАЗНЫХ ТИПОВ ВОДОХРАНИЛИЩ

Аннотация: *Изучена посезонная динамика высеваемости микроорганизмов из проб воды некоторых водохранилищ Узбекистана в сравнительном аспекте. Установлено, что в пробах воды Каттакурганского водохранилища ОКБ в 1 дм^3 в летнее время превышал норму в пробах воды из середины водоема в 2,2 раза, выше плотины в 10,4 раза, из рекреационной зоны в 18,8 раз. Весной показатель ОКБ был на 2-3 порядка меньше, чем в летнее время года, а ОМЧ, наоборот, больше. Превышение норматива 4,5-26,0 раз по этому параметру отмечали в водах Туямуюнского гидроузла. Весной качество воды по ОКБ не отличается, по ОМЧ достоверно лучше, чем летом. В Чарвакском водохранилище эти параметры находились на уровне верхних границ нормы. Качество воды Чарвакского водохранилища по микробиологическим показателям многократно превысили показатели Каттакурганского водохранилища и Туямуюнского гидроузла.*

Ключевые слова: *водохранилища, вода водоемов, микробный состав, патогенные и условно-патогенные микроорганизмы.*

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DYNAMICS OF CHANGES IN MICROBIAL COMPOSITION AND COLIFORM BACTERIA IN WATER SAMPLES IN DIFFERENT TYPES OF RESERVOIRS

Abstract: *Was studied seasonal dynamics of inoculation of microorganisms from water samples of some reservoirs of Uzbekistan in a comparative perspective. It was found that in samples of water of Kattakurgan reservoir TC in 1 dm^3 in summer in the water samples from the middle of the reservoir is 2.2 times higher than normal, above the dam - 10.4 times, from the recreational area - 18.8 times. In spring TC was 2-3 times smaller than in the summer, but TBC, on the contrary, more. Exceeding in this parameter 4,5-26,0 times is mentioned in the water of*

Tuyamuyun reservoir. In the spring, quality of the water by TC not differ, by TBC is significantly better than in the summer. These parameters of water of Charvak reservoir are at the upper limit of normal. The quality of the water of Charvak reservoir repeatedly exceeded microbiological parameters of Kattakurgan reservoir and Tuyamuyun reservoir.

Keywords: *reservoirs, water of reservoirs, microbial composition, pathogenic and conditionally pathogenic microorganisms.*

Водохранилища - особые географические природно-климатические объекты [2, 8], ставшие обязательной частью ландшафта территорий многих стран мира, которые хотя и созданы человеком, испытывают сильное воздействие многих природных факторов.

Известно, что изменения минерального и химического состава, жесткости воды изменяет количественный и качественный состав микрофлоры воды. Патогенные микроорганизмы, передающиеся водным путем, приспосабливаясь к этим условиям, изменяют свои биологические свойства [4, 5]. Все это приводит к снижению высеваемости представителей нормальной микрофлоры (мезофильных аэробов и факультативных анаэробов) и патогенных микроорганизмов находящихся в воде поверхностных водоемов [1, 6, 7, 10].

В связи с этим **целью** исследования было изучение и оценка посезонной динамики высеваемости микроорганизмов из проб воды некоторых водохранилищ Узбекистана в сравнительном аспекте.

Материалы и методы исследования.

Учитывая наличие в Узбекистане 3 типов водохранилищ (русловые, наливные, смешанные) для исследований выбрали в виде опытных объектов 3 водохранилища: русловое - Чарвакское; наливное - Каттакурганское; смешанное - Туямуюнский гидроузел, в состав которого входят водохранилища (чаши) Русловое, Капарас и Султон Санжар.

Каттакурганское водохранилище (Каттакурганский район Самаркандской области) - долинное, ирригационное водохранилище наливного типа, эксплуатируется с 1941 года. Водохранилище расположено в левобережной части Зеравшанской долины в 6 км южнее города Каттакурган. Оно предназначено для сезонного регулирования стока реки Зеравшан. Под чашу использована естественная котловина в предгорьях Зерабулака, образовавшаяся на месте соединения древних логов Шурсая и Узундуксая. Наполнение производится через подводящий канал из притока Зарафшана - Карадарья. Протяженность береговой линии более 200 км, максимальная длина 15 км, максимальная ширина 10 км, максимальная глубина 25 м. Площадь зеркала 80,5 км^2, объем водохранилища более 662 млн. м^3, мертвый объем 24 млн. м^3. Ирригационные цели достигаются аккумуляцией воды в зимне-весенний период, подачей ее из водохранилища в период вегетации растений. По внешнему водообмену является аккумулятивно-транзитным I типа [8, 12].

Туямунское водохранилище (Туямуюнский гидроузел), начало затопления 1984 год. Это водохранилище смешанное (русловое - наливное). Своим местоположением он обязан теснине Туямуюн, находящийся на границе среднего и нижнего течения реки Амударья, в 450 км от Аральского моря. Полная емкость всех водохранилищ составляет 7,8 км^3, полезная емкость 5,28 км^3. Водная поверхность более 250 км^2, площадь водного зеркала 780 км^2, сезонного регулирования стока. Протяженность в длину 80 км, подбор уровня воды у плотины 13 м. По морфологическому типу оно сложно-котловинно-долинное [8, 12].

Чарвакское водохранилище (Бостанлыкский район Ташкентской области, 85 км от города Ташкента) - русловое, долинное водохранилище, построенное в 1978 году, образованное при перегораживании реки Чирчик на выходе последней из Чарвакской котловины, затопившее долины основных притоков, составляющих рек Чирчик, Пскем и Чаткал. Водохранилище имеет полный объем 2,006 км^3, полезный 1,58 км^3, площадь зеркала при нормально-подпертом уровне 40,1 км^3. Плотина водохранилища замыкает Чарвакское ущелье в 5 км ниже места слияния рек Пскем и Чаткал. Площадь водоема при его полном затоплении более 41 км^2, максимальная глубина у плотины 150 м, объем воды около 2 млрд. м^3. Заполнение его водой происходит, в основном, весной за счет таяния снега, сработка - летом в период вегетации растений. По внешнему водообмену оно является аккумулятивно-транзитным 1 типа [8, 12].

Методы исследований.

Воду из водохранилищ отбирали стерильными батометрами с глубины до 20 см от поверхности воды в объеме 1 л. В случае необходимости отбора проб на разных глубинах, придонные пробы отбирали в 30-50 см от дна. В местах купания (Каттакурганское и Чарвакское водохранилище) отбирали поверхностный слой воды, не заглубляя горлышко емкости. В реке Амударья и изученных водохранилищах отбор проб производили с использованием плавательных средств (катера). Доставку проб воды осуществляли при соблюдении указанных условий в методических рекомендациях Алиевой С.К. и соавт. [3]. Срок начала исследований от момента отбора не превышал 2,5-3,5 часов (рис. 1) [13, 14].

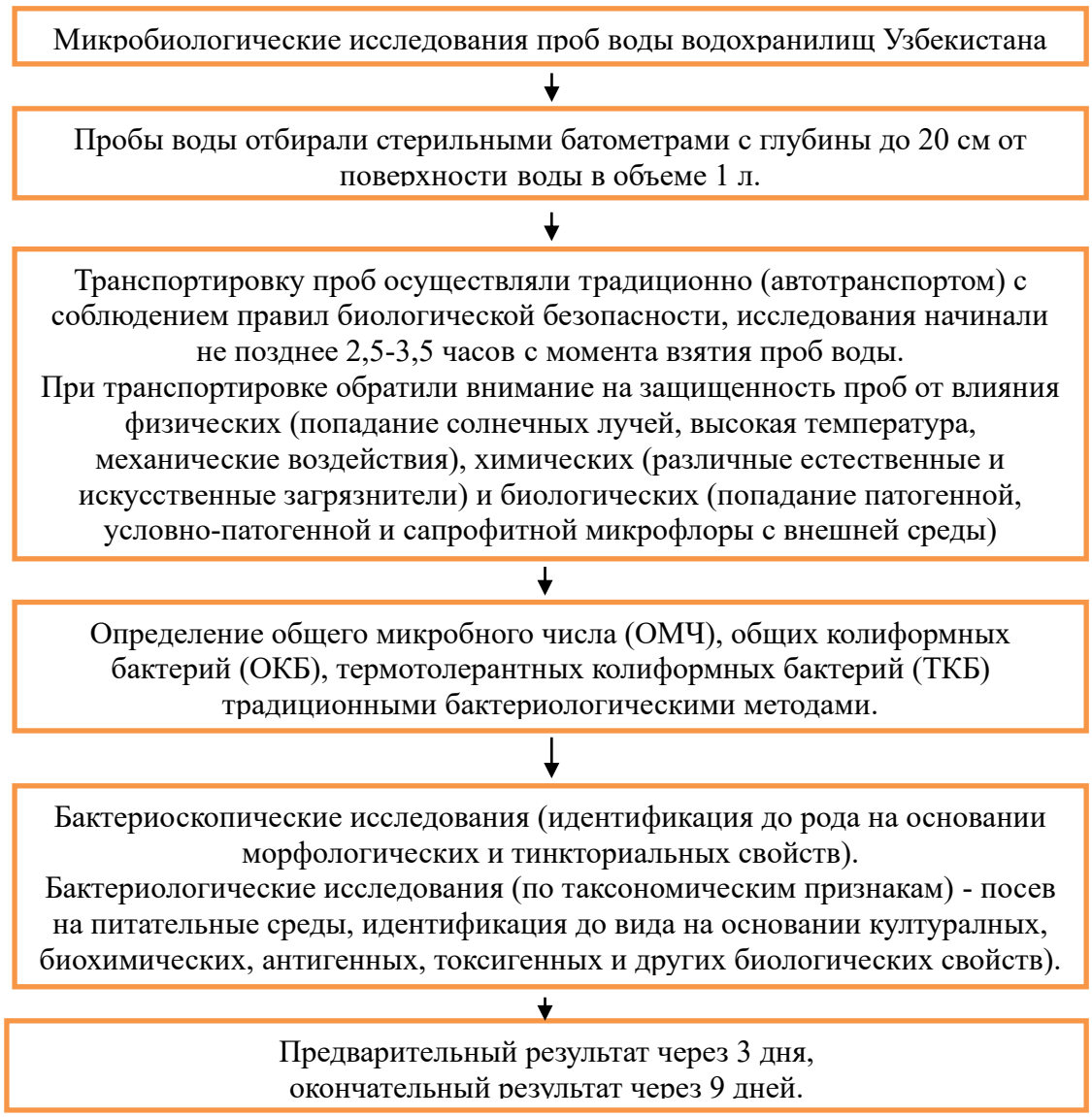


Рис. 1. Алгоритм микробиологических исследований проб воды водохранилищ Узбекистана

Все микробиологические исследования проводили по рекомендациям Алиевой С.К. и соавт. [3] и Недачина А.Е. [9]. Определяли общее число сапрофитных микроорганизмов (ОМЧ), общие колиформные бактерии (ОКБ), термотолерантные колиформные бактерий (ТКБ), число ОКБ в 1 дм^3 воды (по O`zDSt 950-2011 - коли индекс), патогенных (*Shigella spp., Salmonella spp.*) и условно-патогенных микроорганизмов - УПМ (*Escherichia spp., Staphylococcus spp., Enterococcus spp.*). Для проведения бактериологических исследований были использованы стандартизированные питательные среды фирмы «HiMedia» (Индия). С каждой точки забора пробы брали трехкратно, всего проведено 9 серий исследований.

Статистическую обработку проводили методом вариационной статистики с вычислением средней арифметической (M), ошибки средней

арифметической (m), значимость различий определяли согласно критерию Фишера - Стьюдента путем вычисления P. Достоверным считались различия, удовлетворяющие условия P<0,05. Все вычисления проводились на персональном компьютере, на базе процессоров «Pentium 4» с использованием пакета прикладных программ для медико-биологических исследований. При организации и проведении исследований использовали принципы доказательной медицины.

Результаты и их обсуждение

Полученные результаты исследований микробиологических показателей проб воды Каттакурганского водохранилища показали, что общее количество ОКБ в 1 дм^3 воды в летнее время было наименьшим в пробах воды ниже плотины - 500 КОЕ/100 мл (табл. 1).

Это соответствует нормальным значениям для водоемов I категории водопользования, но в 2 раза ниже нормы для водоемов II категории водопользования [11]. В других пробах полученных из разных мест водохранилищ ОКБ был больше в 2-9 раза, чем показатели ниже плотины (500 КОЕ/100 мл) - соответственно 1100 КОЕ/100 мл (середина водоема), 5200 КОЕ/100 мл (выше плотины) и 9400 КОЕ/100 мл (рекреационная зона). Весной этот показатель был на 2-3 порядка меньше, чем в летнее время года во всех точках взятия проб (рис. 2).

Таблица 1.

Микробиологические показатели проб воды Каттакурганского водохранилища

Объекты	Время года	Наименование показателей		
		ОКБ в 1 дм^3 воды	ОМЧ	Наличие ПМ
O`zDSt 950-2011		≤ 500	≤ 100	отсутствие
Середина водоема	весна	3	158	присутствие
	лето	1100	140	отсутствие
Рекреационная зона	весна	23	201	присутствие
	лето	9400	250	отсутствие
Выше плотины	весна	90	525	присутствие
	лето	5200	160	отсутствие
Ниже плотины	весна	9	253	отсутствие
	лето	500	50	отсутствие

Примечание: ПМ - патогенные микроорганизмы.

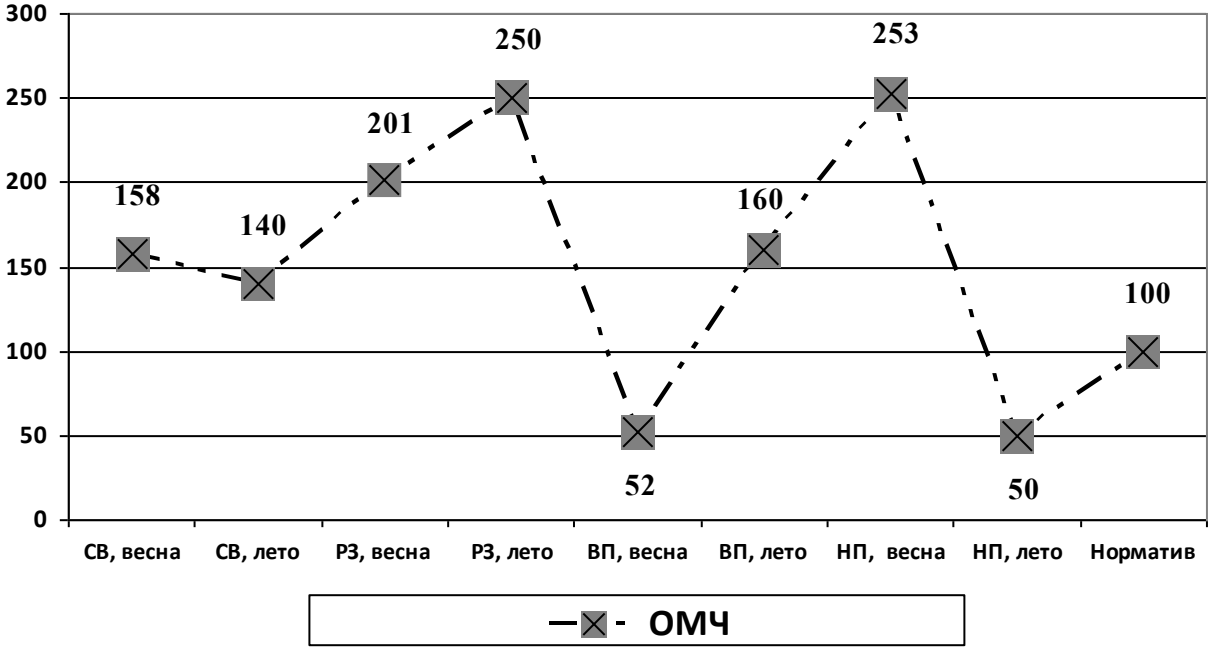


Рис. 2. Посезонная динамика общего микробного числа проб воды Каттакурганского водохранилища (СВ - середина водоема; РЗ - рекреационная зона; ВП - выше плотины; НП - ниже плотины)

Во всех пробах воды, взятых из разных мест в летнее время года, ОМЧ было выше нормы - не более 100 КОЕ/100 мл [11]. Особенно, это выражалось в пробах воды из рекреационной зоны (250 КОЕ/100 мл). В весенний период эти показатели ухудшились в 1,5-5,2 раза по сравнению с нормой и были выше параметров летнего времени ($P<0,05$).

Исследования по изучению микробиологических показателей были проведены и с пробами воды из Туямуюнского гидроузла (табл. 2).

Таблица 2.

Микробиологические показатели проб воды Туямуюнского гидроузла

Объекты	Время года	Наименование показателей		
		ОКБ в 1 дм^3 воды	ОМЧ	Наличие ПМ
O`zDSt 950-2011		≤ 500	≤ 100	отсутствие
Вдхр Капарас	весна	400	15	присутствие
	лето	2300	> 300	отсутствие
Вдхр Султон Санжар	весна	1750	26	присутствие
	лето	500	> 300	отсутствие
Вдхр Русловое (выше плотины)	весна	11400	19	присутствие
	лето	9400	> 300	отсутствие
Вдхр Русловое (ниже плотины)	весна	13800	290	отсутствие
	лето	13000	> 300	отсутствие
Отводящее русло (река Амударья)	весна	11400	19	отсутствие
	лето	13000	> 300	отсутствие

Примечание: Вдхр - водохранилище; ПМ - патогенные микроорганизмы.

Результаты показывают, что наибольшие параметры ОКБ в летнее время были определены в пробах воды ниже плотины водохранилища Русловое и в отводящем русле (река Амударья) - соответственно по 13000 КОЕ/100 мл. Наименьшее количество было обнаружено в пробах воды из водохранилища Султон Санжар (500 КОЕ/100 мл), это количество соответствует нормативным значениям [11, 13, 14].

Параметры воды из водохранилищ Капарас и Русловое (выше плотины) в летнее время также были выше нормы, но достоверно ниже, чем показатели ниже плотины и отводящего русла ($P<0,01$). Показатели ОМЧ во всех пробах воды, независимо от места взятия были более 300 КОЕ/100 мл, что превышала нормативные значения [11, 13, 14]. Несколько иная картина наблюдалась при изучении весенних показателей, если по количеству ОКБ достоверных изменений нет, то ОМЧ резко снижены ($P<0,001$). По ОКБ сезонная динамика резко отличается только в водохранилищах Капарас и Султон Санжар (рис. 3).

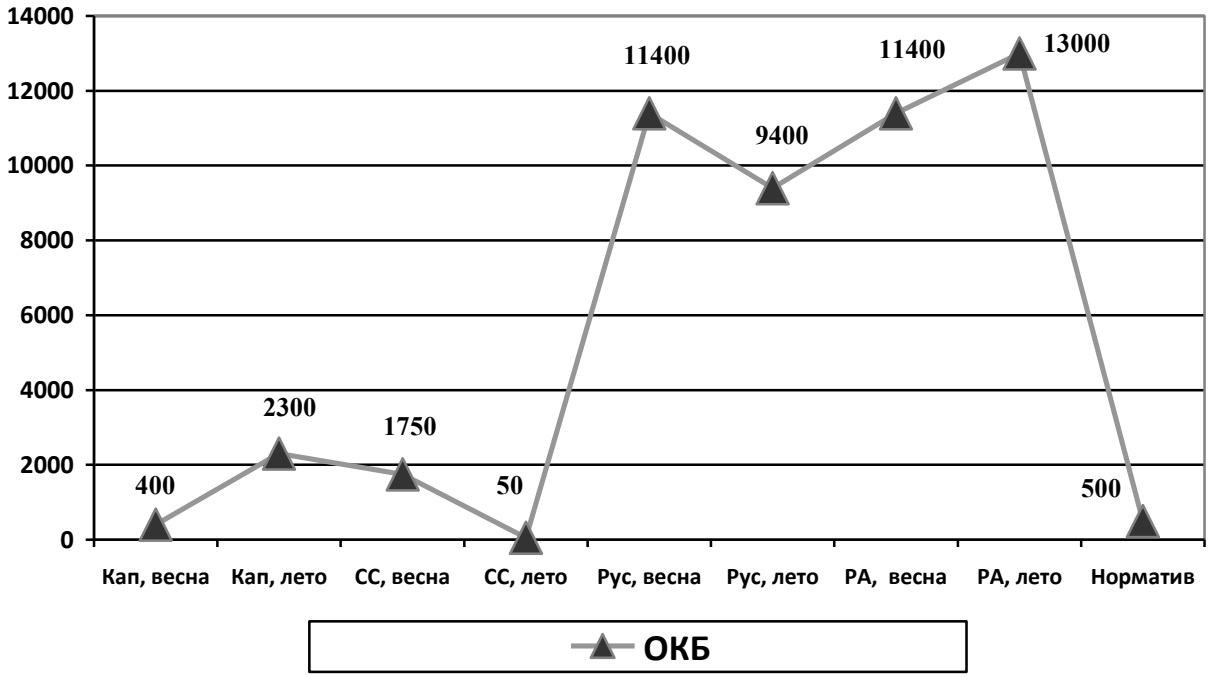


Рис. 3. Посезонная динамика общих колиформных бактерий проб воды Туямуюнского водохранилища (Кап - Капарас; СС - Султон Санжар; Рус - Русловое; РА - река Амударья)

В пробах воды Султон Санжар этот параметр не превышал нормы. Этот факт объясняется тем, что вода в водохранилище Султон Санжар поступает из водохранилища Русловое, через водохранилище Капарас, где вода отстаивается и в Султон Санжар поступает осветленная вода. По-видимому, микроорганизмы вместе с химическими веществами и взвешенными частицами из глины и песка оседают на дно водохранилища Капарас. Кроме того, в этих водохранилищах (Капарас и Султон Санжар) практически отсутствует движение воды и это исключает поднятия взвешенных частиц со

дна водохранилища на поверхность. Весной качество воды по параметру ОКБ не отличается от нормы, по показателю ОМЧ достоверно лучше (P<0,001) практически во всех пробах.

По микробиологическим показателям качество проб воды Туямуюнского гидроузла достоверно хуже, чем эти же показатели Каттакурганского водохранилища - и по параметру ОКБ и по ОМЧ.

Микробиологические исследования были проведены и с пробами воды Чарвакского водохранилища. Полученные результаты показывают, что в пробах воды из середины водоема и выше плотины результаты летних проб были ниже верхних границ нормы для водоемов II категории [11].

Показатели коли индекса проб воды ниже плотины (800 КОЕ/100 мл) были в пределах нормы для водоемов I категории водопользования - 1000 КОЕ/100 мл [11], однако в рекреационной зоне были выше (1200 КОЕ/100 мл) нормальных величин (табл. 3).

Показатели ОМЧ во всех пробах воды, не зависимо от места взятия Чарвакского водохранилища были в пределах указанных нормативных величин. Только параметры ОМЧ рекреационной зоны и ниже плотины были выше уровня верхних границ нормы, а в других пробах воды ОМЧ было в 3,3 и 5,0 раз ниже, чем верхние границы нормы. Во всех пробах воды, не зависимо от места забора проб, патогенные микроорганизмы не обнаружены.

Пробы воды, взятые весной, особо не отличались от проб, забранных в летний период, показатели ОКБ и ОМЧ были достоверно ниже не только нормы, но и показателей летнего времени (P<0,001).

Если сравнить микробиологические показатели Чарвакского водохранилища с другими описанными выше водными объектами, то выявлено, что все показатели многократно снижены и находятся в пределах указанного норматива. По-видимому, это является основным отличием воды Чарвакского водохранилища по сравнению с водой Каттакурганского водохранилища, и особенно водой Туямуюнского гидроузла, что можно объяснить тем, что Чарвакское водохранилище заполняется горными реками с низкой температурой воды, отсутствием выраженных мелководий и небольшим количеством планктона.

Таблица 3.

Микробиологические показатели проб воды Чарвакского водохранилища

Объекты	Время года	Наименование показателей		
		ОКБ в 1 дм^3 воды	ОМЧ	Наличие ПМ
O`zDSt 950-2011		≤ 500	≤ 100	отсутствие
Середина водоема	весна	4	7	отсутствие
	лето	200	20	отсутствие
Рекреационная зона	весна	4	11	отсутствие
	лето	1200	120	отсутствие
Выше плотины (300 м от берега)	весна	13	12	отсутствие
	лето	300	30	отсутствие
Выше плотины (1 км от плотины)	весна	10	39	отсутствие
	лето	200	30	отсутствие
Ниже плотины (2 км от плотины)	весна	6	11	отсутствие
	лето	800	70	отсутствие

Примечание: ПМ – патогенные микроорганизмы.

Следующим этапом наших исследований было изучение высеваемости патогенных и УПМ из проб воды сравниваемых водохранилищ.

Микробиологические исследования были посвящены идентификации и дифференциации *Shigella spp., Salmonella spp., Escherichia spp., Staphylococcus spp.* и *Enterococcus spp.* Возбудители бактериальных кишечных инфекций - *Shigella spp., Salmonella spp.* и *Escherichia spp.* были изучены в целях обоснования качества воды в водохранилищах.

В летнее время не зависимо от места взятия проб воды Каттакурганского водохранилища идентифицировать *Shigella spp., Salmonella spp., Escherichia spp., Staphylococcus spp.* и *Enterococcus spp.* не удалось. По-видимому, это связано с тем, что время взятия проб воды совпало с наполнением водохранилища, где движение воды было значительным. Кроме того, строго соблюдались зоны санитарной охраны водохранилища и предписанные противоэпидемические мероприятия. Однако, весной наблюдалась иная картина - из середины водоема, рекреационной зоны и выше плотины были обнаружены *Shigella spp., Salmonella spp.* и *Enterococcus spp.*

Аналогичные исследования проводились и с пробами воды из Туямуюнского гидроузла. Полученные результаты показывают, что в летнее время *Shigella spp., Salmonella spp., Escherichia spp., Staphylococcus spp.* и *Enterococcus spp.* в пробах воды из водохранилищ Капарас, Султон Санжар и выше плотины водохранилища Русловое дифференцировать не удалось. *Escherichia spp., Staphylococcus spp.* и *Enterococcus spp.* высеяны из проб воды ниже плотины водохранилища Русловое и отводящего русла (река Амударья). Показатели весенних проб резко не отличались от летних, за исключением

Enterococcus spp., которые высеяны из всех проб. Закономерностей, связанных с местом взятия проб или сезоном года не выявлено.

Исследования по изучению высеваемости микроорганизмов из проб воды Чарвакского водохранилища дали следующие результаты: были идентифицированы *Escherichia spp.* и *Enterococcus spp.* в пробах воды из рекреационной зоны; *Shigella spp.* и *Salmonella spp.* идентифицировать не удалось; исследования, проведенные в весеннее время положительных бактериологических результатов не дали.

Установлено, что *Enterococcus spp.* и *Staphylococcus spp.* высевались только на берегах (на расстоянии 1 м от берега) водохранилищ, где имелись рекреационные зоны или пасся скот ($P<0,05$). Начиная с расстояния 5 м и далее, а также в глубине 20 см и более патогенные микроорганизмы и УПМ, в том числе *Enterococcus spp.* и *Staphylococcus spp.* не высевались во всех изученных водохранилищах.

По-видимому, *Enterococcus spp.* и *Staphylococcus spp.* можно использовать как санитарно-показательные микроорганизмы (СПМ) рекреационных зон водохранилищ и их обнаружение даже в незначительных количествах можно рассматривать как фактор микробной загрязненности и фактор риска для рекреационных зон водохранилищ.

По высеваемости *Shigella spp., Salmonella spp., Escherichia spp., Staphylococcus spp.* и *Enterococcus spp.* из проб воды водохранилищ определенных закономерностей, связанных с местом отбора проб и сезонностью не обнаружено.

Выводы.

1. Результаты микробиологических исследований Каттакурганского водохранилища показали, что ОКБ в 1 $дм^3$ в летнее время превышал норму в пробах воды из середины водоема в 2,2 раза, выше плотины в 10,4 раза, из рекреационной зоны в 18,8 раз. Весной показатель ОКБ был на 2-3 порядка меньше, чем в летнее время года, а ОМЧ, наоборот, больше.

2. Превышение норматива в 4,5-26,0 раз по этому параметру отмечали в водах Туямуюнского гидроузла, только в пробах воды Султон Санжар этот показатель не превышал нормы. Весной качество воды по ОКБ не отличается от нормы, по ОМЧ достоверно лучше, чем летом.

3. В Чарвакском водохранилище ОМЧ и ОКБ находились на уровне верхних границ нормы. Качество воды Чарвакского водохранилища по микробиологическим показателям многократно превысили показатели Каттакурганского водохранилища и Туямуюнского гидроузла.

4. Из проб воды Туямуюнского гидроузла и Каттакурганского водохранилища были высеяны *Escherichia spp., Staphylococcus spp., Enterococcus spp.*, а также *Shigella spp.* и *Salmonella spp.* Определенных закономерностей, связанных с местом взятия проб или сезоном года не выявлено. Из проб воды Чарвакского водохранилища *Escherichia spp.* и *Enterococcus spp.* высеяны только в рекреационной зоне.

5. Установлено, что *Enterococcus spp.* и *Staphylococcus spp.* можно использовать как СПМ рекреационных зон водохранилищ, их обнаружение даже в незначительных количествах можно рассматривать как фактор микробной загрязненности и фактор риска заражения для рекреационных зон водохранилищ.

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ЗНАЧЕНИЕ БАНКОВСКОГО СЕКТОРА В ФИНАНСОВОЙ СИСТЕМЕ ГОСУДАРСТВА В УСЛОВИЯХ ЦИФРОВИЗАЦИИ ФИНАНСОВЫХ УСЛУГ

Аннотация: *В статье рассматривается роль банковского сектора в финансовой системе государства в условиях активной цифровизации финансовых услуг. Особое внимание уделено теоретическим основам функционирования банков, современным тенденциям внедрения цифровых технологий, а также влиянию инноваций на значение банковских организаций в экономике. Проанализированы перспективы развития банковского сектора с учетом внедрения искусственного интеллекта, систем быстрых платежей и цифровых валют. Подчеркивается необходимость укрепления кибербезопасности и совершенствования регулирования для обеспечения устойчивости финансовой системы. Сделан вывод о том, что цифровизация усиливает значение банков, превращая их в ключевых участников цифровой экономики.*

Ключевые слова: *банковский сектор, финансовая система, цифровизация, финтех, искусственный интеллект, кибербезопасность, цифровая валюта.*

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THE IMPORTANSE OF THE BANKING SECTOR IN THE STATES FINANCIAL SYSTEM IN THE CONTEXT OF DIGITALIZATION OF FINANCIAL SERVICES

Annotation*: The article examines the role of the banking sector in the financial system of the state under the conditions of active digitalization of financial*

services. Particular attention is paid to the theoretical foundations of banking operations, current trends in the implementation of digital technologies, as well as the impact of innovations on the significance of banking institutions in the economy. The prospects for the development of the banking sector are analyzed, taking into account the introduction of artificial intelligence, fast payment systems, and digital currencies. The necessity of strengthening cybersecurity and improving regulation to ensure the stability of the financial system is emphasized. It is concluded that digitalization enhances the importance of banks, transforming them into key participants in the digital economy.

Keywords: *banking sector, financial system, digitalization, fintech, artificial intelligence, cybersecurity, digital currency.*

Банковский сектор традиционно играет ключевую роль в функционировании финансовой системы государства. Через него осуществляется движение денежных потоков, обеспечивается кредитование экономики, формируются условия для инвестиций и накоплений. От эффективности работы банков напрямую зависит устойчивость финансового рынка и стабильность хозяйственных процессов. В последние десятилетия наблюдается стремительное развитие технологий, что приводит к существенным изменениям в организации банковских услуг. Цифровизация стала неотъемлемой частью современного этапа развития экономики, и банковская сфера здесь занимает особое место.

Сегодня клиенты всё чаще пользуются дистанционными сервисами: интернет- и мобильным банкингом, электронными кошельками, системами быстрых платежей. Эти инструменты значительно упрощают доступ населения и бизнеса к финансовым операциям, делают услуги более удобными и быстрыми. Вместе с тем цифровизация несёт и новые вызовы: возрастают риски киберугроз, вопросы защиты персональных данных и устойчивости инфраструктуры приобретают особую значимость. [1] Государственные и наднациональные регуляторы активно работают над созданием правовой базы, которая позволит поддерживать баланс между инновациями и безопасностью.

Поэтому, изучение роли банковского сектора в условиях цифровизации финансовых услуг представляется особенно актуальным. Важно рассмотреть, каким образом цифровые технологии изменяют функции банков, усиливают их значение в финансовой системе и влияют на перспективы её дальнейшего развития.

Особенность банковского сектора заключается в том, что именно банки аккумулируют временно свободные денежные средства предприятий, населения и государства, а затем перераспределяют их в экономику через кредитные, инвестиционные и расчетные операции. В научной литературе банковская система определяется как совокупность банков и иных кредитных институтов, которые функционируют на основе законодательства и выполняют посреднические функции между субъектами хозяйственной

деятельности. [2; 3] Согласно экономической теории, без устойчивого и эффективно работающего банковского сектора невозможно обеспечить полноценное развитие национальной экономики.

Основными функциями банков являются кредитование, привлечение депозитов, организация расчетов, эмиссия безналичных денег и обслуживание денежного оборота. Кроме того, банки играют значимую роль в трансформации сбережений в инвестиции, способствуют развитию предпринимательства, расширению внутреннего рынка и интеграции в мировое финансовое пространство. Не случайно многие исследователи отмечают, что банки выполняют не только экономическую, но и социальную функцию, так как обеспечивают доверие к финансовой системе и выступают гарантом стабильности денежных отношений.

Немаловажное значение имеет и роль банков в проведении денежно-кредитной политики. Центральный банк как главный регулятор управляет денежной массой, ставками и ликвидностью, тогда как коммерческие банки реализуют эти меры на практике. Через такие инструменты, как кредитование, операции на межбанковском рынке и расчетные системы, банки становятся проводниками государственной экономической политики. В этом контексте банковский сектор можно рассматривать как своеобразный "механизм передачи" решений регулятора в реальную экономику.

При этом в современных условиях банки перестают быть исключительно финансовыми посредниками в классическом смысле. Они превращаются в сложные многофункциональные структуры, предоставляющие широкий спектр услуг - от традиционных расчетов и кредитования до инвестиционного консультирования и управления активами. Это свидетельствует о расширении их роли в финансовой системе и усилении их влияния на экономические процессы.

Таким образом, теоретические основы изучения банковского сектора позволяют рассматривать его не просто как совокупность кредитных организаций, а как системообразующий элемент финансовой системы, обеспечивающий устойчивость, развитие и конкурентоспособность экономики государства.

Цифровизация финансовой сферы в последние годы стала одним из наиболее заметных и значимых процессов, определяющих развитие мировой и национальной экономики. Банковские и небанковские организации всё активнее внедряют новые технологии, стремясь сделать свои продукты более удобными, доступными и безопасными для клиентов. На современном этапе цифровизация затрагивает практически все сегменты финансового рынка: от традиционного кредитования и расчетов до инвестиционных и страховых услуг.

Одним из наиболее очевидных направлений цифровых преобразований является развитие дистанционного банковского обслуживания. Сегодня интернет- и мобильный банкинг становятся стандартом, позволяя клиентам совершать операции без посещения отделений. Это касается не только

платежей и переводов, но и открытия вкладов, оформления кредитов, инвестиций в ценные бумаги. По данным Банка России, доля безналичных платежей в общей массе расчетов в стране уже превышает две трети, и этот показатель продолжает расти. [1]

Значительное внимание уделяется развитию систем быстрых платежей, которые обеспечивают мгновенные переводы средств между счетами физических лиц и организаций. Такие сервисы способствуют снижению транзакционных издержек, повышают доступность финансовых услуг и стимулируют конкуренцию между банками. Дополнительно набирают популярность биометрические технологии, которые позволяют идентифицировать клиентов по голосу, лицу или отпечатку пальца, что повышает уровень удобства и безопасности операций.

Важную роль в цифровизации играют финтех-компании, предлагающие инновационные решения в области платежей, кредитования и управления личными финансами. Их активное развитие формирует новые стандарты обслуживания, а также побуждает традиционные банки ускорять внедрение современных технологий. При этом сотрудничество банков с финтехом становится всё более распространенным, что позволяет сочетать устойчивость классической банковской системы с гибкостью новых игроков.

Отдельного внимания заслуживает внедрение технологий искусственного интеллекта и больших данных. С их помощью банки анализируют поведение клиентов, формируют персонализированные предложения, прогнозируют риски и предотвращают мошенничество. Не менее перспективным направлением является использование блокчейна, который обеспечивает прозрачность, надежность и скорость финансовых операций, а также открывает возможности для выпуска цифровых валют центральных банков.

Таким образом, современные тенденции цифровизации финансовых услуг отражают глобальную трансформацию финансового сектора. Технологии делают его более открытым, динамичным и клиентоориентированным. Вместе с тем новые возможности сопровождаются и новыми вызовами, связанными с киберугрозами, необходимостью совершенствования регулирования и защиты интересов потребителей. Именно поэтому цифровизация сегодня воспринимается не просто как инструмент повышения эффективности, но и как стратегическое направление развития всей финансовой системы.

Цифровизация в последние годы не только изменила организацию банковских услуг, но и усилила роль банков в национальной финансовой системе. Если ранее ключевой функцией банков оставалось посредничество между вкладчиками и заемщиками, то сегодня они превратились в комплексные цифровые платформы, через которые проходят основные денежные потоки страны.

Ярким примером трансформации является распространение дистанционного обслуживания. По данным Банка России, в 2023 году доля

безналичных расчетов в России превысила 76 %, тогда как десять лет назад она составляла менее 30 %. [1] Это свидетельствует о том, что банки стали ведущими проводниками цифровых технологий, формирующих современную платежную инфраструктуру. Системы быстрых платежей позволяют совершать переводы между физическими лицами практически мгновенно и без комиссии, что повышает доступность финансовых услуг для миллионов граждан.

Значительные изменения наблюдаются и в кредитной сфере. Автоматизация процессов позволяет банкам принимать решения о выдаче потребительских кредитов за считаные минуты. Так, крупнейшие российские банки заявляют, что более 70 % заявок рассматриваются в автоматическом режиме на основе алгоритмов скоринга и анализа больших данных. [2] Это не только ускоряет обслуживание клиентов, но и повышает эффективность управления рисками.

Цифровизация также способствует росту финансовой инклюзии. Благодаря онлайн-сервисам жители малых городов и сельских территорий получили доступ к банковским продуктам без необходимости посещать отделения. По оценкам Всемирного банка, уровень вовлеченности населения в использование финансовых услуг в странах с активно развивающейся цифровой инфраструктурой вырос на 20-25 % за последние десять лет. [4] В российской практике этому способствовало развитие удаленной идентификации через Единую биометрическую систему и портал "Госуслуги".

Однако усиление значимости банковского сектора в условиях цифровизации сопровождается и новыми вызовами. По данным Центрального банка, в 2022 году количество зарегистрированных киберинцидентов в финансовой сфере превысило 1 миллион, что подтверждает уязвимость цифровой инфраструктуры. [7] Для снижения рисков банки вынуждены ежегодно наращивать инвестиции в кибербезопасность: например, расходы на эти цели у крупнейших игроков рынка выросли в среднем на 15-20 % в год. [5]

Так, цифровизация усилила значение банков в финансовой системе государства, сделав их не только посредниками, но и драйверами технологического развития. Их способность внедрять инновации, обеспечивать киберустойчивость и удерживать доверие клиентов напрямую влияет на устойчивость всей финансовой системы и ее адаптацию к вызовам цифровой экономики.

Будущее банковского сектора напрямую связано с темпами и глубиной цифровой трансформации. Уже сегодня очевидно, что цифровизация перестала быть просто дополнительным направлением развития: она превратилась в стратегическую необходимость, от которой зависит конкурентоспособность и устойчивость банковских организаций.

Одним из ключевых направлений станет внедрение искусственного интеллекта и технологий анализа больших данных. Они позволяют не только

автоматизировать рутинные процессы, но и создавать персонализированные предложения для клиентов. Крупные банки уже используют такие алгоритмы для предсказания финансового поведения клиентов, что дает возможность формировать индивидуальные кредитные лимиты и инвестиционные продукты. [6] В перспективе эти инструменты будут играть ключевую роль в повышении эффективности работы и минимизации рисков.

Особое внимание будет уделено вопросам кибербезопасности. Рост числа кибератак, зафиксированных в последние годы, заставляет банки увеличивать расходы на защиту цифровой инфраструктуры. По данным международных исследований, ежегодные инвестиции в этот сегмент в мире растут в среднем на 12-15 %. [5] Для банковского сектора это не только обязательное условие сохранения доверия клиентов, но и фактор обеспечения стабильности всей финансовой системы.

Значительные перспективы связаны также с развитием цифровых валют. Центральные банки разных стран, включая Банк России, активно тестируют концепцию цифрового рубля и аналогичные проекты. Введение национальных цифровых валют способно изменить структуру расчетов, повысить прозрачность финансовых операций и создать новые механизмы контроля за денежным обращением. Это открывает перед банковским сектором новые возможности, но одновременно требует адаптации бизнес-моделей и поиска дополнительных источников дохода.

Не стоит забывать и о международной интеграции. Развитие трансграничных цифровых сервисов и систем быстрых платежей будет способствовать расширению экономических связей, упрощению расчетов между странами и повышению конкурентоспособности национальных финансовых систем. Банки, активно участвующие в таких проектах, смогут укрепить свои позиции не только на внутреннем, но и на внешнем рынке.

В целом перспективы развития банковского сектора в условиях цифровизации связаны не только с технологическими инновациями, но и с необходимостью гибко реагировать на новые вызовы. Те организации, которые сумеют совместить внедрение передовых решений с обеспечением надежности и высокого уровня обслуживания, будут определять облик финансовой системы ближайшего будущего.

Анализ показал, что банковский сектор остается системообразующим элементом финансовой системы государства, а процессы цифровизации придают ему новое содержание и повышают его значимость. Сегодня банки не ограничиваются традиционными функциями хранения средств и кредитования: они становятся комплексными цифровыми платформами, объединяющими широкий спектр услуг. Доля безналичных расчетов в России уже превысила 75 %, большинство кредитных заявок обрабатывается автоматически, а дистанционные сервисы становятся основным каналом взаимодействия с клиентами. [7] Эти факты свидетельствуют о том, что цифровизация не является просто техническим усовершенствованием, а формирует качественно новую модель функционирования банков.

Вместе с тем цифровая трансформация сопровождается серьезными вызовами. Растет число кибератак, усиливается конкуренция со стороны финтех-компаний, требуется постоянное совершенствование регулирования и защиты данных. Банки вынуждены инвестировать значительные ресурсы в кибербезопасность, модернизацию инфраструктуры и обучение персонала. В условиях таких изменений роль государства и Центрального банка как гарантов устойчивости и надежности финансовой системы приобретает особое значение.

Перспективы развития банковского сектора связаны с расширением онлайн-сервисов, внедрением искусственного интеллекта, развитием биометрических технологий и цифровых валют. Эти направления открывают новые возможности для повышения эффективности и доступности финансовых услуг, но одновременно требуют адаптации бизнес-моделей и выработки долгосрочной стратегии.

Следовательно, цифровизация усиливает значение банковского сектора в экономике, делая его не только посредником, но и активным участником цифровой трансформации государства. От того, насколько успешно банки смогут использовать технологические возможности и преодолеть сопутствующие риски, во многом будет зависеть устойчивость финансовой системы и конкурентоспособность национальной экономики в будущем.

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РАҚАМЛИ ТЕХНОЛОГИЯЛАР АСОСИДА КАСБИЙ ФАОЛИЯТИ НАТИЖАЛАРИНИ МОНИТОРИНГ ҚИЛИШ

Анотация: *Мақола жисмоний тарбия ва спорт мутахассислари учун қайта тайёрлаш ва малака ошириш институтларида касбий фаолият натижаларини рақамли технологиялар асосида мониторинг қилиш механизмларини такомиллаштириш масаласига бағишланган. Унда замонавий жамиятнинг ахборотлашув жараёни таълим тизимига чуқур таъсир кўрсатиши, ахборот-коммуникация технологиялари(АКТ)нинг асосий тушунчалари, қўлланилиш йўналишлари ва таълим жараёнини ташкил этишдаги роли батафсил таҳлил қилинади. П.К. Петровнинг "Жисмоний тарбия ва спортда ахборот технологиялари" ўқув қўлланмасига асосланиб, мониторинг механизмларини такомиллаштиришнинг илмий асослари, жумладан, компютер тестлари, мултимедиа воситалари, аудио-видео материалларни қайта ишлаш технологиялари ва онлайн платформалар орқали натижаларни реал вақт режимида кузатиш ва таҳлил қилиш усуллари кўриб чиқилади. Мақолада рақамли технологияларнинг анъанавий мониторинг усулларининг чекловларини бартараф этиши, индивидуал ривожланиш траекторияларини шакллантириш ва институтлар самарадорлигини оширишдаги афзалликлари таъкидланади. Шунингдек, Ўзбекистон контекстида жисмоний тарбия ва спорт соҳасида рақамли технологияларнинг ривожланиш босқичлари, таълим жараёнларининг самарадорлигини оширишда онлайн ўйинлар ва рақамли платформаларнинг роли, шунингдек, инновацион технологияларнинг аҳамияти ёритилади. Натижада, таклиф этилган механизмлар таълим сифатини ошириш, мутахассислар малакасини замонавий талабларга мослаштириш ва соҳа ривожига ҳисса қўшишга қаратилган бўлиб, илмий ва амалий аҳамиятга эга. Мақола педагогик ва спорт мутахассислари, таълим муассасалари раҳбарлари ҳамда илмий тадқиқотчилар учун мўлжалланган.*

Калит сўзлар: *Рақамли технологиялар, касбий фаолият мониторинги, жисмоний тарбия ва спорт, малака ошириш институтлари, ахборот-коммуникация технологиялари (АКТ), таълим жараёни, мултимедиа воситалар, автоматлаштирилган тизимлар, малака ошириш, ахборотлашув, компютер тестлари, аудио-видео қайта ишлаш, онлайн платформалар, индивидуал ривожланиш траекторияси.*

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IMPROVING THE MECHANISMS OF MONITORING THE RESULTS OF PROFESSIONAL ACTIVITY BASED ON DIGITAL TECHNOLOGIES (FOR THE EXAMPLE OF INSTITUTIONS FOR THE RE-TRAINING AND PROFESSIONAL IMPROVEMENT OF SPECIALISTS IN PHYSICAL EDUCATION AND SPORTS)

Abstract: *The article is devoted to the issue of improving the mechanisms of monitoring the results of professional activity based on digital technologies in retraining and professional development institutions for physical education and sports specialists. In it, the informatization process of modern society has a deep impact on the educational system, the main concepts, directions of application of information and communication technologies (ICT), and their role in the organization of the educational process are analyzed in detail. P.K. Based on Petrov's textbook "Information Technologies in Physical Education and Sports", the scientific foundations of improving monitoring mechanisms are considered, including methods for monitoring and analyzing results in real time through computer tests, multimedia tools, audio-video processing technologies, and online platforms. The article emphasizes the advantages of digital technologies in overcoming the limitations of traditional monitoring methods, shaping individual development trajectories, and increasing the efficiency of institutions. It also highlights the stages of development of digital technologies in the field of physical education and sports in the context of Uzbekistan, the role of online games and aggregate platforms in increasing the efficiency of educational processes, as well as the importance of innovative technologies. As a result, the proposed mechanisms are aimed at improving the quality of education, adapting the qualifications of specialists to modern requirements, and contributing to the development of the industry, and are of scientific and practical importance. The article is intended for pedagogical and sports specialists, heads of educational institutions, and scientific researchers.*

Keywords: *Digital technologies, professional activity monitoring, physical education and sports, retraining institutions, information and communication technologies (ICT), educational process, multimedia tools, automated systems, professional development, informatization, computer tests, audio-video processing, online platforms, individual development trajectory, innovative technologies.*

Рақамли технологиялар асосида касбий фаолият натижаларини мониторинг қилиш механизмларини такомиллаштириш масаласи жисмоний тарбия ва спорт соҳасидаги мутахассисларнинг қайта тайёрлаш ва малакасини

ошириш институтлари фаолиятида муҳим оърин тутади. Замондош жамиятнинг ахборотлашуви жараёни таълим тизимига чуқур таъсир кўрсатиб, анъанавий усулларни рақамли воситалар билан бойитишни талаб этмоқда. Бу жараён, хусусан, П.К. Петровнинг “Жисмоний тарбия ва спортда ахборот технологиялари” ўқув қўлланмасида батафсил ёритилганидек, жамиятнинг умумий ахборотлашувидан келиб чиқадиган мантиқий натижа сифатида кўрилади. Ўқув қўлланмада таъкидланганидек, ахборот-коммуникация технологиялари (АКТ) нафақат таълим жараёнини ташкил этишда, балки мутахассисларнинг касбий фаолиятини баҳолаш ва мониторинг қилишда ҳам асосий роль ўйнайди. Бу технологиялар орқали мутахассисларнинг малакасини ошириш жараёнида натижаларни реал вақт режимида кузатиш, таҳлил қилиш ва такомиллаштириш имконияти яратилади, бу эса институтларнинг самарадорлигини оширишга хизмат қилади. Петровнинг таҳлилига кўра, жисмоний тарбия ва спорт таълимининг ахборотлашуви жамиятнинг умумий ривожланиш тенденциясидан келиб чиқиб, мутахассисларнинг касбий тайёргарлигини янги даражага кўтаришга ёрдам беради, чунки рақамли воситалар орқали ўқув жараёни самаралироқ ва шаффофроқ бўлади. Масалан, китобда кельтирилганидек, жамият ахборотлашуви натижасида жисмоний тарбия ва спорт таълими рақамлаштирилмоқда, бу малака ошириш институтларида мутахассисларнинг натижаларини кузатишда янги имкониятлар очади, шу жумладан компютер тестлари ва маълумотлар базалари орқали индивидуал ривожланиш траекторияларини шакллантириш.

Жисмоний тарбия ва спорт мутахассислари учун қайта тайёрлаш va малака ошириш институтларида касбий фаолият натижаларини мониторинг қилишнинг асосий механизмлари рақамли платформалар ва дастурий таъминотлар асосида қурилиши лозим. Петровнинг ишида кўрсатилганидек, АКТ нинг асосий тушунчалари орасида ахборот технологиялари, коммуникация тармоқлари ва мултимедиа воситалари мавжуд бўлиб, улар таълим ва касбий фаолиятда қўлланилганда натижаларни аниқ баҳолашга ёрдам беради. Масалан, ўқув жараёнини ташкил этишда компютер тестлари ва мониторинг дастурлари мутахассисларнинг назарий билимлари, амалий кўникмалари ва спортдаги натижаларини автоматлаштирилган ҳолда кузатиш имконини беради. Бу механизмлар орқали институт ўқитувчилари ва тингловчиларининг фаолияти реал вақт режимида таҳлил қилинади, масалан, тест натижалари орқали билим даражаси, видеотасвирлар орқали спорт машқлари самараси ва маълумотлар базалари орқали узоқ муддатли тараққиёт кузатилади. Такомиллаштиришда эса, китобда тавсифланганидек, аудио ва видео материалларни қайта ишлаш технологиялари қўлланилиши мумкин, бу орқали мутахассисларнинг касбий фаолияти видеоконференсиялар ва онлайн мониторинг орқали баҳоланади. Бундан ташқари, Петров АКТ нинг асосий йўналишларини таъкидлаб, уларни таълим жараёнини ташкил этиш, илмий-методик иш ва спорт-соғломлаштириш фаолиятида қўллашни тавсия этади, бу эса қайта тайёрлаш ва малака ошириш институтларида мониторинг

механизмларини такомиллаштириш учун асос бўлиб хизмат қилади. Китобда батафсил ёритилганидек, АКТ нинг жисмоний тарбия ва спортдаги қўлланилиши ўқув жараёнини ташкил этишда компютер дастурлари орқали тестлаш ва натижаларни сақлаш тизимини ўз ичига олади, бу тизим график интерфейслар, саволлар базаси ва автоматик баҳолаш алгоритмлари ёрдамида мутахассисларнинг натижаларини реал вақт режимида таҳлил қилиш имконини беради. Рақамли технологияларнинг афзалликлари шундаки, улар анъанавий мониторинг усулларининг чекловларини бартараф этади. Петровнинг таҳлилига кўра, жамият информациялашуви натижасида физкультура таълими ҳам рақамлаштирилмоқда, бу эса қайта тайёрлаш ва малака ошириш институтларида мутахассисларнинг натижаларини кузатишда янги имкониятлар очади. Масалан, компютерлаштирилган тест дастурлари (масалан, саволлар базаси, график ва видео элементлар билан бойитилган тестлар) орқали тингловчиларнинг билим даражаси нафақат баҳоланади, балки индивидуал ривожланиш траекторияси тузилади. Бу механизм институтларда қўлланилганда, мутахассисларнинг касбий фаолият натижалари – масалан, спорт машғулотлари самараси, педагогик услублар ва соғломлаштириш дастурлари – автоматлаштирилган тизимлар орқали доимий мониторингдан ўтади. Такомиллаштиришда эса, китобда кельтирилган мисоллар асосида, мултимедиа дастурий-педагогик воситалар (масалан, спорт-педагогик фанлар бўйича интерактив дарсликлар) қўлланилиши мумкин, бу орқали натижаларни таҳлил қилиш жараёни аниқроқ ва самаралироқ бўлади. Шунингдек, Петров АКТ ни ўқув жараёнини ташкил этишда қўллашнинг батафсил мисолларини кельтириб, компютер дастурлари орқали тестлаш ва натижаларни сақлаш тизимини таъкидлайди, бу тизимда график интерфейслар, саволлар базаси ва автоматик баҳолаш алгоритмлари мавжуд бўлиб, улар мутахассисларнинг натижаларини реал вақт режимида таҳлил қилиш имконини беради. Бундан ташқари, китобда таъкидланганидек, АКТ нинг асосий йўналишлари орасида ўқув жараёнини ташкил этиш муҳим ўрин тутади, бу ерда компютер тестлари ва мултимедиа воситалари орқали натижаларни мониторинг қилиш самаралироқ бўлади, масалан, видеотасвирлар ва график элементлар ёрдамида спорт машқлари самарасини баҳолаш.

Қайта тайёрлаш ва малака ошириш институтлари мисолида, рақамли мониторинг механизмларини такомиллаштиришнинг илмий асослари Петровнинг ўқув қўлланмасида батафсил кўриб чиқилган АКТ нинг таълим жараёнидаги қўлланилишига асосланади. Масалан, ўқув жараёнини ташкил этишда компютер дастурлари орқали тестлаш ва натижаларни сақлаш тизими тингловчиларнинг касбий ривожланишини кузатишга ёрдам беради. Бу тизимда, китобда тасвирланганидек, график интерфейслар, саволлар базаси ва автоматик баҳолаш алгоритмлари мавжуд бўлиб, улар мутахассисларнинг натижаларини реал вақт режимида таҳлил қилиш имконини беради. Такомиллаштириш учун эса, институтлар рақамли платформаларни (масалан, онлайн ЛМС тизимлари) интеграция қилиши керак, бу орқали

мутахассисларнинг касбий фаолияти натижалари – масалан, спорт мусобақалари статистикаси ёки педагогик лойиҳалар самараси – автоматлаштирилган ҳолда мониторинг қилинади. Петровнинг таъкидлашича, АКТ нинг жисмоний тарбия ва спортдаги асосий йўналишлари орасида ўқув жараёнини ташкил этиш муҳим ўрин тутади, бу ерда компютер тестлари ва мултимедиа воситалари орқали натижаларни мониторинг қилиш самаралироқ бўлади. Натижада, бу механизмлар нафақат натижаларни аниқ баҳолашга, балки индивидуал ривожланиш режасини тузишга ва институтларнинг умумий самарадорлигини оширишга хизмат қилади, чунки рақамли тизимлар орқали маълумотлар базалари ва аналитик воситалар ёрдамида узоқ муддатли тенденцияларни аниқлаш мумкин. Китобда батафсил ёритилганидек, АКТ нинг қўлланилиши таълим жараёнида компютер дастурлари орқали тестлашни ўз ичига олади, бу эса мутахассисларнинг назарий ва амалий кўникмаларини автоматлаштирилган ҳолда баҳолашга имкон беради.

Умуман олганда, рақамли технологиялар асосидаги мониторинг механизмлари жисмоний тарбия ва спорт мутахассислари учун қайта тайёрлаш ва малака ошириш институтларида касбий фаолият натижаларини такомиллаштиришнинг калити ҳисобланади. Петровнинг ишида таъкидланганидек, АКТ нинг асосий йўналишлари – таълим жараёнини ташкил этиш, илмий-методик иш ва спорт-ўсмирлик фаолияти – бу механизмларни бойитади. Такомиллаштириш жараёнида институтлар рақамли воситаларни қўллаш орқали мутахассисларнинг натижаларини доимий кузатиб, таҳлил қилиб ва оптималлаштириб бориши мумкин, бу эса соҳа ривожига ҳисса қўшади. Бундай ёндашув нафақат таълим сифатини оширади, балки мутахассисларнинг касбий малакасини замонавий талабларга мослаштиради. Петровнинг ўқув қўлланмасида кельтирилганидек, АКТ нинг жисмоний тарбия ва спорт таълимидаги қўлланилиши жамиятнинг ахборотлашувига мос келиб, мутахассисларнинг қайта тайёрлашида мониторинг механизмларини такомиллаштириш учун мустаҳкам асос яратади, чунки рақамли технологиялар орқали натижаларни реал вақт режимида баҳолаш ва тузатиш имконияти пайдо бўлади. Шу билан бирга, китобда таъкидланганидек, АКТ нинг асосий тушунчалари ва йўналишлари орқали институтлар ўз фаолиятини янада самарали қилиши мумкин, бу эса жисмоний тарбия ва спорт соҳасидаги мутахассисларнинг касбий натижаларини мониторинг қилиш механизмларини такомиллаштиришга олиб келади. Натижада, рақамли технологияларни жорий этиш орқали институтлар нафақат ўқув жараёнини, балки мутахассисларнинг касбий фаолиятини ҳам юқори даражада бошқариши ва такомиллаштириши мумкин.

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ЗНАЧЕНИЕ ИННОВАЦИОННОГО УПРАВЛЕНИЯ КАЧЕСТВОМ В ПОВЫШЕНИИ ЭФФЕКТИВНОСТИ ДЕЯТЕЛЬНОСТИ ОБРАЗОВАТЕЛЬНЫХ УЧРЕЖДЕНИЙ

Аннотация. *В статье рассматривается роль инновационного управления качеством в повышении эффективности деятельности образовательных учреждений. Раскрываются основные принципы и подходы к внедрению инновационных методов управления, направленных на оптимизацию образовательного процесса и повышение качества предоставляемых услуг. Особое внимание уделяется практическим аспектам применения современных технологий и инструментов управления качеством, а также их влиянию на конкурентоспособность и устойчивое развитие образовательных организаций.*

Ключевые слова: *инновационное управление, качество образования, образовательные учреждения, эффективность, современные технологии, конкурентоспособность.*

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THE SIGNIFICANCE OF INNOVATIVE QUALITY MANAGEMENT IN ENHANCING THE EFFICIENCY OF EDUCATIONAL INSTITUTIONS

Annotation. *The article explores the role of innovative quality management in enhancing the efficiency of educational institutions. It outlines the main principles and approaches to implementing innovative management methods aimed at optimizing the educational process and improving the quality of services provided. Special attention is given to the practical aspects of applying modern technologies and quality management tools, as well as their impact on the competitiveness and sustainable development of educational organizations.*

Keywords: *innovative management, quality of education, educational institutions, efficiency, modern technologies, competitiveness.*

Введение.

Анализ отечественной и зарубежной практики, а также теоретических исследований показывает, что предоставление услуг и цифровая трансформация социально-экономических систем осуществляются на основе

цифровых платформ, объединяющих экономические, социальные и технологические процессы и формирующих экосистемы цифровых услуг. В этой связи формируется новый институт, новая категория повышения качества образования в сфере услуг – интеграторы качества образования, роль которых в последовательном развитии экономики страны существенно возрастает, однако механизмы их функционирования, методы управления, сетевые сервисы, взаимодействие с другими хозяйствующими субъектами, а также многие другие вопросы остаются недостаточно изученными, что на практике тормозит развитие системы образования.

В соответствии с Постановлением Президента Республики Узбекистан от 5 сентября 2018 года № УФ-5538 «О дополнительных мерах по совершенствованию системы управления народным образованием» [1], направленным на обеспечение безопасности информационных ресурсов, наряду с развитием информационно-коммуникационных технологий в сфере образования, реализуются меры по «созданию образовательного портала для предоставления интерактивных образовательных услуг, разработке электронной базы данных образовательных учреждений, созданию электронной системы учета посещаемости и обучения учащихся, созданию электронных систем (электронных журналов, дневников и табелей) для их электронного контроля».

Обзор литературы.

Вопросы развития системы образования и ее изменения в рамках всей социально-экономической системы, в том числе в связи с развитием цифровизации и сетевых процессов, а также с учетом фундаментальных социальных тенденций, раскрыты в трудах А.А. Волковой, И.В. Капустиной, Г.А. Карповой, И.Д. Котлярова, А.А. Курочкиной, Т.А. Лавровой, Е.В. Песоцкой, О.Е. Пироговой, В.И. Сиговой, О.А. Третьяк, С.А. Уваровой, И.П. Фировой, Л.В. Хоревой, Е.В. Ялунер и др. Указанные исследования послужили теоретико-методологической основой для формирования авторского подхода к анализу институциональных и структурных изменений как в самой системе образования, так и в национальной экономике, обусловленных качеством ее образования.

Механизмы перехода системы образования к концепции цифровой экономики рассматриваются в работах таких отечественных авторов, как Г.Н. Андреева, Ю.М. Акаткин, Т.Г. Богатырева, А.В. Бабкин, С.Д. Бодрунов, Ю.В. Вертакова, С.Ю. Глазьев, Ф.И. Ерешко, В.А. Ефимушкин, А.В. Кешелава, А.М. Колесников, В.С. Курдюмов, В.В. Макаров, Р.В. Мещеряков, В.Ф. Минаков, А.В. Олексин, В.А. Плотников, М.Н. Руденко, Т.О. Толстих, В.В. Трофимов, В.А. Цветков, Е.В. Шкарупет, А.А. Енговатова и др.

Анализ и результаты.

Наша страна, входящая в число развитых стран, добивается значительных успехов во всех областях, и мы видим, что эти успехи основаны на развитии информационных технологий и телекоммуникационных систем,

основанных на современных цифровых технологиях. Сегодня мы наблюдаем применение ИКТ и интеграцию науки во всех сферах жизни мира, в том числе:

- в био- и нанотехнологиях, используемых в медицине, в суперкомпьютерах, позволяющих получать уникальную геологическую и астрономическую информацию о нашей планете, и в генной инженерии;

- в новых современных информационных технологиях, используемых в промышленности и сельском хозяйстве,

- в виртуальных научных лабораториях и электронных библиотеках, а также во всех других областях.

Сегодня, насколько важна цифровизация всех сфер человеческой деятельности и повсеместное внедрение современных информационных технологий в эти сферы, столь же важна её реализация с точки зрения безопасности. В этой связи стоит отметить, что современный процесс глобализации требует цифровизации и деятельности системы государственного образования и является актуальным. [2].

В связи с этим, нашим правительством разработан широкий комплекс мер по цифровизации образовательной деятельности и доведению её до современного состояния. Принят Указ Президента Республики Узбекистан «Об утверждении Стратегии «Цифровой Узбекистан – 2030» и мер по её эффективной реализации», а также реализуются комплексные меры по активному развитию цифровой экономики, широкому внедрению современных информационно-коммуникационных технологий во все отрасли и сферы, прежде всего в государственное управление, образование, здравоохранение и сельское хозяйство. Кроме того, в программе определены основные принципы, порядок, уровни и функции отраслей и регионов по развитию цифровой экономики. [3].

Модернизация системы образования и внедрение новых подходов, их адаптация к современным техническим требованиям, обеспечение интеграции системы образования с другими отраслями с использованием современных информационных технологий, соблюдение норм и стандартов качества в сфере цифровизации – одни из самых актуальных вопросов современности.

В настоящее время в глобальных и компьютерных информационных сетях циркулирует и обрабатывается большой объём информации, различной по содержанию, достоверности и конфиденциальности. В этих условиях, когда объём данных и скорость их передачи постоянно растут, требования к информационной безопасности и обеспечению целостности информации в процессах выделения достоверной информации, её получения, хранения, обработки и передачи становятся всё более увеличивается.

Таблица-1

Распределение объема платных услуг, оказанных населению (в ценах соответствующих лет, млн. сумов)[4]

Виды предоставляемых услуг	2019	2020	2021	2022	2023	2024	Соотношение 2024 к 2023, в %
Всего оказанные услуги, в том числе:	756,5	1142,0	1460,4	1865,32	2390,24	4011,02	115,56
бытовые услуги	279,5	491,0	685,6	800,38	991,15	1403,86	127,99
транспортные услуги	172,7	257,0	282,6	368,95	502,54	865,14	84,28
услуги связи	38,72	78,0	147,0	214,08	542,73	811,27	116,25
коммунально-хозяйственные услуги	89,0	84,6	97,0	108,57	124,8	190,0	141,93
услуги системы образования	130,2	161,5	146,3	226,53	219,19	328,13	120,55

В Послании Президента Республики Узбекистан Шавката Мирзиёева Олий Мажлису «Активный переход к цифровой экономике» назван одним из наших главных приоритетов на ближайшие 5 лет. В 2024 году наша страна поднялась на 8 позиций в «Международном индексе развития информационно-коммуникационных технологий», нам ещё предстоит преодолеть немало трудностей для достижения поставленных целей. «Действительно, большинство министерств, ведомств и предприятий совершенно далеки от цифровых технологий», – подчеркнул он. Поэтому для достижения прогресса нам необходимо овладеть цифровыми знаниями и современными информационными технологиями.[5] Это даёт нам возможность идти кратчайшим путём к прогрессу. Ведь сегодня во всех отраслях в мире идёт процесс цифровизации с использованием современных информационных технологий.

Непрерывное образование в Республике Узбекистан является основой системы подготовки кадров, приоритетным направлением, обеспечивающим социально-экономическое развитие, удовлетворяющим научные, технические и культурные потребности личности, общества и государства, создающим необходимые условия для формирования творческой, социально активной, духовно богатой личности и ускоренной подготовки высококвалифицированных конкурентоспособных кадров.

Действительно, процесс непрерывного образования считается наиболее благоприятным периодом для всестороннего развития человека. В этот период человек овладевает основами науки и профессиональных знаний, формируется как личность с высокими духовно-нравственными качествами и квалифицированный кадр. В нем формируется определенное мировоззрение.

Оно является приоритетным направлением, обеспечивающим социально-

экономическое развитие Республики Узбекистан, удовлетворяющим экономические, социальные, научно-технические и культурные потребности личности, общества и государства. Непрерывное образование создает необходимые условия для формирования творческой, социально активной, духовно богатой личности и подготовки высококвалифицированных конкурентоспособных кадров. Функционирование системы непрерывного образования обеспечивается на основе государственных образовательных стандартов, преемственности образовательных программ разных уровней и включает дошкольное образование, общее среднее образование, среднее специальное, профессиональное образование, высшее образование, послевузовское образование, повышение квалификации и переподготовку кадров, внешкольное образование. [6]

Принципами непрерывного образования являются:

- приоритет образования – первостепенная важность его развития, престиж знаний, образованности и высокого интеллекта;
- демократизация образования – расширение самостоятельности образовательных учреждений в выборе методов обучения и воспитания, переход к государственно-общественной системе управления образованием;
- гуманизация образования – раскрытие способностей человека и удовлетворение его разнообразных образовательных потребностей, приоритет национальных и общечеловеческих ценностей, гармонизация взаимоотношений человека, общества и окружающей среды;

Уровень использования инновационных технологий педагогическими работниками: Использование мультимедийных средств – 45%. Использование презентаций – 78%. Использование передовых педагогических технологий – 87%.

Инновационный процесс связан с созданием, внедрением и популяризацией инноваций. По инновационному потенциалу инновации подразделяются на: модификационные, связанные с модернизацией, совершенствованием деятельности, преобразованием, развитием; комбинированные, предполагающие объединение элементов ранее известных методов в новую систему; радикальные инновации, не имеющие сходства и общности, определяются как основа для реформ.

Внедрение инновации как система само по себе представляет, во-первых, внутреннюю логику взаимосвязи или процесса, а во-вторых, последовательное развитие внедренной инновации в течение определенного периода времени и ее взаимодействие с окружающей средой. В Узбекистане развитие педагогических инноваций привлекает внимание широкой общественности педагогов. Также расширилась область применения инноваций. Поэтому спрос на новые знания, необходимость понимания понятий «новизна», «новая инновация» и «инновационный процесс» с каждым днем становятся все более острыми.

Заключение и предложения.

В заключение следует отметить, что Узбекистан реализует рыночные реформы в сфере образования и осуществляет интеграционные процессы с системами образования зарубежных стран в соответствии с конкретными целями. Системы качества менеджмента в образовательных учреждениях реализуется следующим образом в целях:

- Обеспечение документальной базы СКМ;

- Содействие оптимальному управлению процессами, связанными с внедрением СКМ в организациях высшего образования и достижением высокого качества;

-Поддержание и повышение качества образования на высоком уровне в соответствии с требованиями стандартов;

- Обеспечение уверенности потребителя образовательных услуг в получаемых знаниях и навыках;

-Уверенность руководства в том, что ожидаемый эффект от внедрения СКМ приведет к занятию высоких позиций на рынке образовательных услуг и достижению устойчивой конкурентоспособности.

При внедрении системы менеджмента качества руководитель должен постоянно контролировать этот процесс, оценивать его результаты. Руководство должно тщательно анализировать выводы внутреннего мониторинга и аудитов и разрабатывать соответствующие меры по устранению выявленных в ходе них недостатков.

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ПРАВОВОЕ ПОЛОЖЕНИЕ НЕКОММЕРЧЕСКИХ ОРГАНИЗАЦИЙ В СОВРЕМЕННОЙ РОССИИ: ПРОБЛЕМЫ РЕГУЛИРОВАНИЯ И ПЕРСПЕКТИВЫ РАЗВИТИЯ

Аннотация. *В статье исследуется правовое положение некоммерческих организаций в Российской Федерации на основе анализа действующего законодательства и научных работ отечественных исследователей. Рассматриваются нормативно-правовые основы деятельности некоммерческих организаций, их организационно-правовые формы, источники финансирования и механизмы государственного контроля. Автор анализирует роль некоммерческих организаций как института гражданского общества и обосновывает необходимость совершенствования законодательной базы для создания более благоприятных условий функционирования данного сектора. В работе систематизируются научные подходы к определению целей, задач и социальных функций некоммерческих организаций, выявляются пробелы в существующем правовом регулировании и формулируются направления его дальнейшего развития.*

Ключевые слова: *некоммерческие организации, правовое регулирование, гражданское общество, организационно-правовые формы, источники финансирования, государственный контроль, специальная правоспособность, административные барьеры, третий сектор, социальная функция.*

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THE LEGAL STATUS OF NON-PROFIT ORGANIZATIONS IN MODERN RUSSIA: REGULATORY ISSUES AND DEVELOPMENT PROSPECTS

Annotation. *The article examines the legal status of non-profit organizations in the Russian Federation based on an analysis of current legislation and scientific works by domestic researchers. The article considers the regulatory and legal bases of the activities of non-profit organizations, their organizational and legal forms, sources of financing and mechanisms of state control. The author analyzes the role of non-profit organizations as an institution of civil society and substantiates the need to improve the legislative framework in order to create more favorable conditions for the functioning of this sector. The paper systematizes scientific approaches to defining the goals, objectives and social functions of non-profit*

organizations, identifies gaps in the existing legal regulation and formulates directions for its further development.

Keywords: *non-profit organizations, legal regulation, civil society, organizational and legal forms, sources of financing, state control, special legal capacity, administrative barriers, the third sector, social function.*

Правовую основу деятельности некоммерческих организаций в Российской Федерации составляет комплекс нормативных актов, центральное место среди которых занимают Гражданский кодекс Российской Федерации от 30 ноября 1994 года № 51-ФЗ [3] и Федеральный закон от 12 января 1996 года № 7-ФЗ «О некоммерческих организациях» [12]. Согласно статье 2 Федерального закона «О некоммерческих организациях», некоммерческая организация представляет собой организацию, не имеющую извлечение прибыли в качестве основной цели своей деятельности и не распределяющую полученную прибыль между участниками. Данное определение закладывает фундаментальное отличие некоммерческих организаций от коммерческих структур и определяет специфику их правового статуса. Гражданский кодекс Российской Федерации в части первой устанавливает общие положения о юридических лицах, включая некоммерческие организации, определяя их место в системе субъектов гражданского права. Важно отметить, что законодательство о некоммерческих организациях характеризуется динамичностью и постоянным совершенствованием, что отражает стремление государства адаптировать правовое регулирование к изменяющимся общественным потребностям.

Исследование правового положения некоммерческих организаций требует обращения к научным работам, посвященным анализу законодательства и практики его применения. И.В. Мирикова рассматривает сущность некоммерческих организаций, их особенности и формы, акцентируя внимание на ключевых характеристиках некоммерческого сектора и его роли в социальном развитии общества [6, с. 100]. Позиция И.В. Мириковой представляет ценность в части систематизации социальных функций некоммерческих организаций, однако в ее работе недостаточно внимания уделено юридико-техническим аспектам правового регулирования и проблемам правоприменительной практики. Исследователь справедливо указывает на то, что некоммерческие организации создаются для удовлетворения общественных потребностей и решения социальных, культурных, образовательных задач, направленных на благо общества, что отличает их от коммерческих структур фундаментальной целевой направленностью.

А.А. Антипов и Я.С. Артамонова в своем исследовании анализируют практико-ориентированные аспекты взаимосвязи некоммерческих организаций с социальными, культурными и экономическими феноменами развития российского социума через призму юридического института [2, с. 99]. Авторы представляют анализ многообразных подходов к

рассматриваемому явлению, исследуя роль и деятельность некоммерческих организаций в России, уделяя особое внимание ключевым аспектам их функционирования, включая правовое регулирование, цели, виды деятельности и источники финансирования. Сильной стороной данного исследования является комплексный подход к изучению некоммерческих организаций, охватывающий как юридические, так и социально-экономические аспекты их деятельности. А.А. Антипов и Я.С. Артамонова выделяют основные характеристики некоммерческих организаций, включая отсутствие цели получения прибыли, общественную значимость, добровольное участие, прозрачность и отчетность, а также способность адаптироваться к изменяющимся условиям и потребностям общества. Вместе с тем, в работе авторов можно отметить недостаточную проработку вопросов правовой ответственности некоммерческих организаций и механизмов контроля за их деятельностью, что представляется важным для полноты юридического анализа.

Е.А. Абросимова анализирует итоги реформы законодательства о некоммерческих организациях, выделяя два вектора его развития [1, с. 14]. Исследователь обращает внимание на избыточность и фрагментарность существующей нормативно-правовой базы, отмечая, что с момента принятия Федерального закона «О некоммерческих организациях» в него было внесено порядка девяноста изменений, что свидетельствует о нестабильности законодательства. Позиция Е.А. Абросимовой представляет особую ценность для понимания динамики развития правового регулирования некоммерческого сектора, однако автор не предлагает конкретных механизмов систематизации законодательства, ограничиваясь констатацией проблемы. Важным вкладом исследователя является указание на необходимость унификации норм, регулирующих деятельность некоммерческих организаций, что является актуальной задачей современного законодателя.

Е.Е. Никитина и Е.В. Оболонкова в своей работе рассматривают проблемы и перспективы реформы законодательства о некоммерческих организациях [8, с. 41]. Авторы акцентируют внимание на административных барьерах, таких как сложные процедуры регистрации и отчетности, которые создают дополнительные трудности для деятельности некоммерческих организаций. Исследователи справедливо указывают на необходимость упрощения процедур регистрации, отчетности и ликвидации некоммерческих организаций, включая внедрение системы «одного окна». Сильной стороной исследования Е.Е. Никитиной и Е.В. Оболонковой является практическая направленность предложений по совершенствованию законодательства, однако авторы недостаточно внимания уделяют вопросам финансового контроля и предотвращения злоупотреблений в деятельности некоммерческих организаций. Предложенные меры по упрощению административных процедур представляются обоснованными и востребованными практикой.

С.А. Синицын анализирует публично-правовой и частно-правовой статус некоммерческих организаций, исследуя границы правового

регулирования [10, с. 11]. Автор подчеркивает, что некоммерческие организации обладают специальной правоспособностью, ограниченной их уставными целями, что отличает их от коммерческих организаций.

Ф.К. Мамбетов в своей работе исследует систему некоммерческих организаций России, анализируя различные организационно-правовые формы [5, с. 12]. Автор рассматривает классификацию некоммерческих организаций, выделяя общественные организации, фонды, благотворительные организации, ассоциации и другие формы. Исследование Ф.К. Мамбетова представляет ценность в части систематизации организационно-правовых форм некоммерческих организаций, однако автор недостаточно анализирует критерии выбора конкретной формы для реализации тех или иных общественных целей. Работа содержит полезный обзор различных типов некоммерческих организаций, но нуждается в дополнении практическими рекомендациями по их применению.

П.Е. Спиридонов исследует правовые аспекты контроля за деятельностью некоммерческих организаций в России [11, с. 8]. Автор обращает внимание на проблему имущественной ответственности некоммерческих организаций, которая ограничивается их собственными средствами, что обеспечивает их независимость, но одновременно создает необходимость строгого контроля за использованием целевых средств. Позиция П.Е. Спиридонова представляет особую актуальность в контексте необходимости усиления контроля за целевым использованием средств некоммерческими организациями, однако автор не предлагает конкретных моделей такого контроля, что снижает практическую значимость исследования. Важным вкладом исследователя является постановка проблемы баланса между независимостью некоммерческих организаций и необходимостью контроля за их деятельностью.

Е.А. Суханов в фундаментальном учебнике по гражданскому праву предлагает системный анализ организационно-правовых форм некоммерческих организаций, отмечая, что большинство некоммерческих организаций, подобно коммерческим, представляют собой корпорации, построенные на началах членства, однако среди некоммерческих организаций чаще встречаются юридические лица, не являющиеся корпорациями, к которым относятся фонды, учреждения и автономные некоммерческие организации [4]. Данная классификация имеет важное значение для понимания внутренней структуры некоммерческого сектора и различий в механизмах управления различными типами организаций, поскольку корпоративные начала предполагают коллективное участие членов в управлении, тогда как унитарные структуры основаны на иных принципах. Вместе с тем следует отметить, что позиция Е.А. Суханова требует дополнительного анализа с учетом изменений законодательства, произошедших после публикации учебника в 1998 году, включая реформу гражданского законодательства, существенно изменившую систему юридических лиц. В.П. Мозолин и Н.Н. Агафонова в своем учебном пособии

развивают данный подход, акцентируя внимание на особенностях правового статуса различных организационно-правовых форм некоммерческих организаций и специфике их гражданско-правовой правоспособности [7]. Ценность работы данных авторов заключается в детальном анализе механизмов реализации уставных целей некоммерческих организаций через призму гражданского права, однако их исследование в меньшей степени затрагивает проблемы взаимодействия некоммерческого сектора с государственными органами и вопросы публично-правового регулирования деятельности таких организаций.

Ю.С. Попова в своей работе обращается к теоретико-методологическим основам определения социально-экономической эффективности некоммерческой сферы, используя термин «третий сектор» для обозначения некоммерческих организаций наряду с государственным и коммерческим секторами экономики [9]. Данный подход представляется продуктивным, поскольку позволяет рассматривать некоммерческие организации как самостоятельный сегмент национальной экономики со специфическими механизмами функционирования и оценки результатов деятельности, однако следует отметить, что в российской юридической науке концепция «третьего сектора» разработана недостаточно, что затрудняет формирование адекватных правовых механизмов поддержки и регулирования некоммерческих организаций.

Анализ научной литературы позволяет выявить различные подходы к классификации организационно-правовых форм некоммерческих организаций. А.А. Антипов и Я.С. Артамонова выделяют общественные организации, представляющие собой объединения граждан, созданные для защиты интересов определенной группы, проведения мероприятий или реализации проектов в интересах общества, фонды как организации, которые аккумулируют финансовые средства для финансирования различных социальных, культурных или образовательных программ, благотворительные организации, занимающиеся предоставлением помощи нуждающимся, в том числе инвалидам, детям-сиротам и другим уязвимым категориям населения, а также ассоциации, включающие в себя группы профессионалов или организаций, объединяющихся для защиты своих интересов, обмена опытом и разработки стандартов.

Особое значение для понимания правового положения некоммерческих организаций имеет анализ источников их финансирования. А.А. Антипов и Я.С. Артамонова выделяют семь основных источников финансирования, включая государственные гранты, индивидуальные пожертвования, корпоративные спонсорства, средства фондов и благотворительных организаций, доходы от фандрайзинга и специальных мероприятий, поступления от социальных предприятий и международные гранты. Данная классификация достаточно полно отражает многообразие финансовых источников некоммерческого сектора, однако исследователи справедливо отмечают существенные проблемы в данной сфере, включая зависимость

многих российских некоммерческих организаций от государственных грантов и субсидий, что создает риски для их автономии и организационной устойчивости. Особо острой проблемой исследователи называют введение в России строгих мер, касающихся финансирования из-за рубежа, что связано с подозрениями в том, что иностранные средства могут использоваться для подрыва государственной стабильности, в результате чего многие международные фонды приостановили или закрыли свои программы поддержки, оставив некоммерческие организации без важных ресурсов. Данная проблематика действительно представляет существенный вызов для российского некоммерческого сектора и требует поиска баланса между обеспечением национальной безопасности и сохранением пространства для деятельности независимых общественных организаций, однако авторы ограничиваются констатацией проблемы, не предлагая конкретных правовых механизмов ее решения.

Вопросы прозрачности и отчетности некоммерческих организаций занимают важное место в исследованиях правового положения данного сектора. А.А. Антипов и Я.С. Артамонова развивают данную мысль, отмечая, что проблема прозрачности в финансировании стоит остро, поскольку некоторые некоммерческие организации могут сталкиваться с недоверием со стороны доноров и общества, что может быть связано с недостаточной отчетностью и неясностью в использовании средств, затрудняющей привлечение новых инвестиций. Данные положения отражают важность механизмов общественного контроля за деятельностью некоммерческих организаций, однако не содержат детального анализа правовых норм, регулирующих порядок и формы отчетности таких организаций перед учредителями, членами, жертвователями, государственными органами и широкой общественностью, а также не рассматривают механизмы юридической ответственности за нарушение требований прозрачности.

Анализ целей и задач некоммерческих организаций представляет важную составляющую исследования их правового положения. А.А. Антипов и Я.С. Артамонова выделяют пять основных целей некоммерческих организаций, реализуемых в социуме, включая социальную справедливость с акцентом на уязвимых группах и борьбе с дискриминацией, охрану окружающей среды через экологические инициативы и образование по экологии, образование и просвещение посредством программ обучения и информационных кампаний, здоровье и благополучие через обеспечение доступа к медицинским услугам и поддержку ментального здоровья, а также культурное развитие, включающее сохранение культурного наследия и поддержку художников. Данная классификация целей некоммерческих организаций представляется обоснованной и отражающей основные направления деятельности данного сектора, однако следует отметить, что с юридической точки зрения важна не столько содержательная классификация целей, сколько механизмы их закрепления в учредительных документах, процедуры изменения уставных целей и правовые последствия

осуществления деятельности, не соответствующей заявленным целям организации.

Роль некоммерческих организаций в формировании гражданского общества является предметом особого внимания исследователей. Некоммерческие организации способствуют развитию гражданского общества, создавая платформы для вовлечения граждан в процессы принятия решений и реализации проектов, направленных на улучшение качества жизни, способствуя формированию общественного сознания и осознанию ответственности за окружающий мир. Данная позиция отражает важнейшую функцию некоммерческих организаций как институтов гражданского участия и социальной мобилизации, однако представляется, что правовые аспекты реализации этой функции, включая механизмы общественного контроля, право законодательной инициативы, участие в общественных советах при органах власти и другие формы влияния на публичную политику, требуют более детального анализа.

Проведенный анализ научной литературы и нормативно-правовых актов позволяет сделать ряд важных выводов относительно правового положения некоммерческих организаций в современной России. Законодательная база, представленная Гражданским кодексом Российской Федерации и Федеральным законом «О некоммерческих организациях», создает общие рамки для функционирования некоммерческого сектора, определяя основные организационно-правовые формы, порядок создания и ликвидации, права и обязанности таких организаций. Вместе с тем правовое регулирование деятельности некоммерческих организаций характеризуется рядом проблемных аспектов, включая сложность регистрационных процедур, ограничения в сфере международного финансирования, недостаточную проработанность механизмов государственно-частного партнерства и делегирования государственных полномочий некоммерческим организациям, а также необходимость совершенствования системы налогообложения и отчетности.

Правовое положение некоммерческих организаций в современной России отражает сложный баланс между необходимостью обеспечения организационной автономии и самостоятельности данного сектора, с одной стороны, и потребностью государственного контроля и надзора за целевым использованием имущества и соответствием деятельности организаций их уставным целям, с другой стороны. Дальнейшее развитие законодательства о некоммерческих организациях должно быть направлено на создание более благоприятных условий для деятельности данного сектора, включая упрощение административных процедур, расширение возможностей для диверсификации источников финансирования, совершенствование механизмов государственной поддержки социально значимых проектов, развитие институтов общественного контроля и участия некоммерческих организаций в формировании и реализации публичной политики.

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АНАЛИЗ ВЛИЯНИЯ НЕКОТОРЫХ ЭПИДЕМИОЛОГИЧЕСКИХ ФАКТОРОВ РИСКА НА РАЗВИТИЕ И РАСПРОСТРАНЕННОСТЬ ПРЕДГИПЕРТЕНЗИИ И АРТЕРИАЛЬНОЙ ГИПЕРТЕНЗИИ

Аннотация: *В данном исследовании проводится сравнительная оценка и анализ влияния некоторых эпидемиологических факторов риска на развитие и распространенность как предгипертензии, так и артериальной гипертензии. Данные представленные в статье еще раз подтверждают, что принимая меры профилактики этих факторов, мы можем предотвратить развитие артериальной гипертензии уже на донозологическом уровне.*

Ключевые слова: *предгипертензия, артериальная гипертензия, факторы риска, эпидемиология, профилактика,*

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ANALYSIS OF THE IMPACT OF SOME EPIDEMIOLOGICAL RISK FACTORS ON THE DEVELOPMENT AND PREVALENCE OF PREHYPERTENSION AND ARTERIAL HYPERTENSION

Annotation: *This study provides a comparative assessment and analysis of the impact of some epidemiological risk factors on the development and prevalence of both prehypertension and arterial hypertension. The data presented in the article once again confirm that by taking preventive measures against these factors, we can prevent the development of arterial hypertension at the preclinical level.*

Keywords: *prehypertension, arterial hypertension, risk factors, epidemiology, prevention.*

Известно, что есть такое понятие, как «предгипертензия», которая характеризуется, как предиктор артериальной гипертензии, и в свою очередь может переходить в неё или самостоятельно способствовать ремоделированию левого желудочка сердца, тем самым являясь фактором развития сердечно-сосудистых заболеваний. Существуют так называемые факторы риска, приводящие, как к артериальной гипертензии, так и к предгипертензии.

С этой **целью** мы провели более глубокий анализ и сравнительную оценку выявляемости основных факторов риска и ассоциированных клинических состояний у популяции с предгипертензией (ПрГ) и артериальной гипертензией (АГ) в условиях Ферганской долины.

Материалом послужили результаты одномоментного эпидемиологического исследования случайных репрезентативных выборок из неорганизованного мужского и женского населения в возрасте ≥ 15-70 лет, проживающего в г.Андижане.

Результаты:

Очевидно было, что при наличии низкого образовательного статуса (НОС) выявляемость ПрГ увеличивается до 10,3%; а при АГ – такая зависимость не прослеживается (0,0%).

В зависимости от степени образовательного статуса частота ПрГ и АГ среди обследованных составили соответственно: среди лиц с высшим образованием – по 34,6% и 17,3% ($P<0,05$), при наличии незаконченного высшего образования – по 28,6% и 3,6% ($P<0,001$), у лиц с полным средним или специальным образованием – по 25,4 и 20,4% ($P>0,05$) и у обследованных с неполным средним образованием – по 11,6% и 0,0% ($P<0,001$). Среди лиц с начальным образованием или без образований - случаев ПрГ и АГ не зарегистрированы (0,0%).

В таблице 2 представлена сравнительная характеристика выявляемости ПрГ и АГ у популяции ≥ 15-70 лет в зависимости от профессиональной деятельности.

Таблица 2

Характеристика семейного положения обследованных	n	Повышенное АД			
		ПрГ (1)		АГ (2)	
		Есть ПрГ n (%)	Нет ПрГ n (%)	Есть АГ n (%)	Нет АГ n (%)
Рабочие	132	102 (77,3)	30 (22,7)	71 (53,8)	61 (46,2)
Предприниматели	166	26 (15,7)	140 (84,3)	6 (3,4)	160 (96,3)
Безработные	301	29 (9,7)	272 (90,3)	25 (8,4)	276 (91,6)
НБСС	6	4 (66,7)	2 (33,3)	3 (50,0)	3 (50,0)

Из представленных данных видно, что выявляемость повышенного АД (ПАД) существенно различается в зависимости от вида профессиональной деятельности и составляет: у рабочих в среднем 65,6% (77,3%, ПрГ и 53,8% АГ, $P<0,05$), у предпринимателей – 19,1% (15,7% ПрГ и 3,4% АГ, $P<0,001$), у безработных – 18,1% (9,7% ПрГ и 8,4% АГ, $P>0,05$) и у лиц с НБСС – 58,4% (66,7% ПрГ и 50,0% АГ, $P<0,05$).

Таким образом, нам удалось выявить определенные эпидемиологические тенденции в аспекте выявляемости и распространенности предгипертензии и артериальной гипертензии в зависимости от факторов риска, что заставляет обратить внимание на необходимость совершенствования профилактических программ. Учет их в целом позволяет во-первых, достаточно четко предсказать развитие предгипертензии и артериальной гипертензии, а также повысить эффективность профилактических программ и до минимума снизить суммарный сердечно-сосудистый риск.

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РАСПРОСТРАНЕННОСТЬ АРТЕРИАЛЬНОЙ ГИПЕРТЕНЗИИ В РАЗЛИЧНЫХ ВОЗРАСТНЫХ КАТЕГОРИЯХ

В данной статье представляются данные исследования распространения артериальной гипертензии (АГ) среди мужского отделения в возрастном диапазоне, что позволяет разработать профилактические мероприятия в предупреждении развития сердечно-сосудистых осложнений.

Ключевые слова: *артериальная гипертензия, возрастные категории, популяция, мужское население, профилактика.*

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PREVALENCE OF ARTERIAL HYPERTENSION IN DIFFERENT AGE GROUPS

This article presents data from a study on the prevalence of arterial hypertension (AH) in the male department across age groups. This study allows for the development of preventive measures to prevent the development of cardiovascular complications.

Keywords: *arterial hypertension, age categories, population, male population, prevention.*

По данным ряда исследований последних лет АГ является ведущим фактором риска ишемической болезни сердца, инфаркта миокарда, сердечной недостаточности, заболеваний периферических сосудов, почечной недостаточности и основной причиной смерти [2,4,3,5]. Поэтому целью нашего исследования было проведение эпидемиологического исследования

по изучению распространенности АГ в современной популяции мужчин г.Андижана Ферганской долины в возрастном диапазоне.

Материалом послужили результаты одномоментного эпидемиологического исследования случайных репрезентативных выборок из неорганизованного мужского населения, проживающего в г.Андижане. Проводилось комплексное обследование популяции с использованием биохимических, эпидемиологических, инструментальных, клинических и опросных методов исследования. В таблице 1 и на рисунке 1 представлены данные о распространенности АГ среди неорганизованного мужского населения в различных возрастных категориях.

Таблица 1

Распространенность АГ среди неорганизованного мужского населения в различных возрастных категориях

Группы обследованных	Число обследо-ванных	Распространенность АГ	
		Абс.ч	%
15-19 (1)	18	0	0,0
20-29 (2)	74	0	0,0
30-39 (3)	69	2	3,1
40-49 (4)	54	8	14,8
50-59 (5)	35	11	31,4
60-69 (6)	21	13	61,9

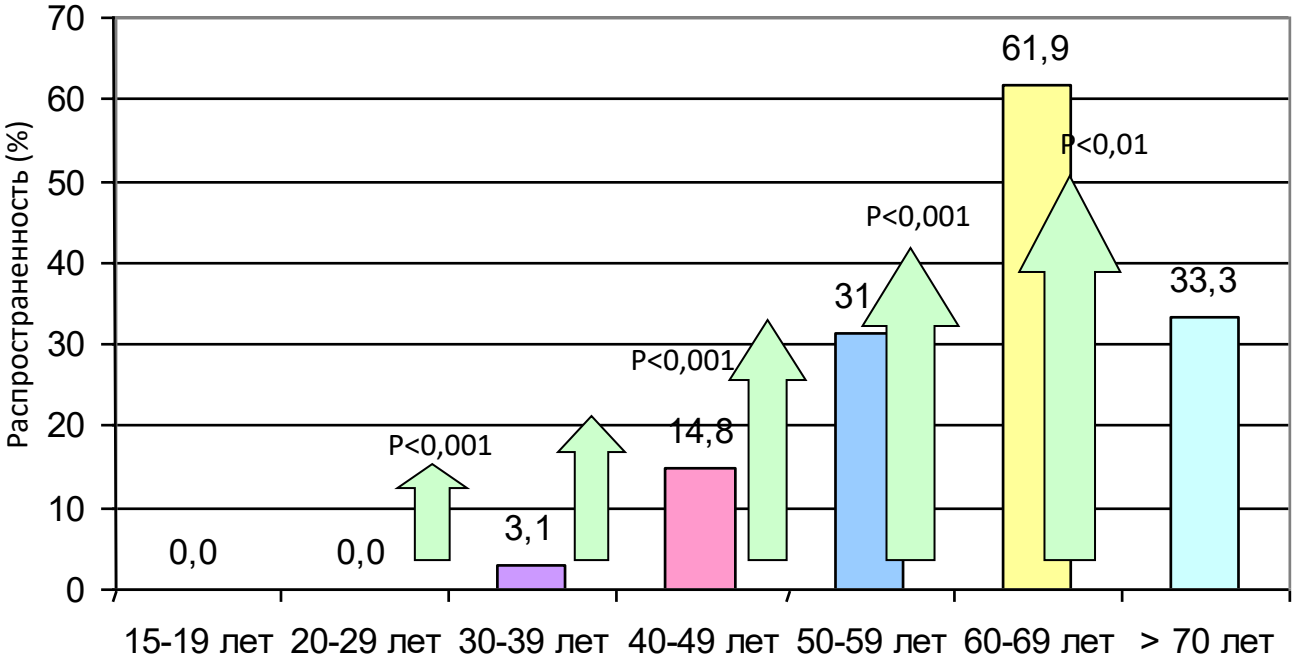


Рис.1. Распространенность АГ в различных возрастных диапазонах у мужчин

Из данных таблицы и рисунка следует, что с возрастом частота распространенности АГ у мужчин увеличивается до 61,9% или в 20 раз (P<0,001).

В нашем исследовании в группах мужчин 15-19 и 20-29 лет случаи АГ не установлены, среди мужчин 30-39 лет АГ наблюдалась с частотой – 3,1%,

в 40-49 лет – 14,8% (P<0,001), в 50-59 лет – 31,4% (P<0,05), в 60-69 лет – 61,9% (P<0,001) и в группе 70 лет и старше – 33,3% (P<0,001). Обращают на себя внимание высокие показатели АГ в возрастных группах 50-59 лет, 60-69 лет, 70 лет и старше. При анализе данных получено, что у пациентов с АГ мужчин I ст. АГ встречается с частотой 18,9%, II ст. АГ – 56,9% и III ст. АГ – 72,9%. По сравнению с I ст. АГ наиболее выражена выявляемость II ст. АГ (в 3 раза, P<0,001) и III ст. АГ (в 1,5 раза, P<0,05).

Выводы: в структуре АГ у мужчин, наиболее выражены и достоверно чаще всего встречаются АГ II ст. и АГ III ст. Особое внимание обращает показатель АГ I ст, то есть до поражения органов мишеней, что не маловажно и естественно, требует проведения активного профилактического – немедикаментозного и медикаментозного вмешательства

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Хусусийлаштириш ва давлат активларини бошқариш муаммоларини тадқиқ этиш маркази бўлим мудири,
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ҚИШЛОҚ ХЎЖАЛИГИГА МЎЛЖАЛЛАНМАГАН ЕР УЧАСТКАЛАРИНИ ХУСУСИЙЛАШТИРИШ МАСАЛАЛАРИ

Аннотация: *мақолада қишлоқ хўжалигига мўлжалланмаган ерларни хусусийлаштириш масалалари тадқиқ этилган, ерларни хусусийлаштириш тушунчаси ҳамда ушбу соҳани тартибга солувчи норматив-ҳуқуқий ҳужжатлар мазумуни ёритилган. Ишда қишлоқ хўжалигигига мўлжалланмаган ерларни хусусийлаштириш бўйича эришилган натижалар кўрсатиб ўтилган ҳамда тадқиқот натижалари бўйича хулоса ва таклфилар тайёрланган.*

Калит сўзлар: *ер майдони, ҳуқуқ, эгалик қилиш, ислоҳот, хусусийлаштириш, аукцион, ордер.*

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ISSUES OF PRIVATIZATION OF NON-AGRICULTURAL LANDS

Abstract: *The article examines the issues of privatization of non-agricultural land, the concept of land privatization, and the content of regulatory legal acts governing this area. The work demonstrates the results achieved in the privatization of non-agricultural land and prepares conclusions and proposals based on the research results.*

Keywords: *land plot, right, ownership, reform, privatization, auction, order.*

Кириш

Бозор ислоҳотларини чуқурлаштириш ва давлат мулкини бошқариш механизмларини такомиллаштириш шароитида ер ресурсларидан самарали фойдаланиш Ўзбекистон Республикаси иқтисодий сиёсатининг асосий йўналишларидан бирига айланмоқда. Тўлақонли бозор муносабатларини шакллантириш, тадбиркорликни рағбатлантириш ҳамда шаҳар ва аҳоли пунктларини барқарор ривожлантиришда қишлоқ хўжалигига мўлжалланмаган ерларни хусусийлаштириш алоҳида аҳамият касб этмоқда. 2021 йил 15 ноябрда Ўзбекистон Республикасининг "Қишлоқ хўжалигига мўлжалланмаган ер участкаларини хусусийлаштириш тўғрисида"ги ЎРҚ-728-

сонли Қонунининг қабул қилиниши қишлоқ хўжалигига мўлжалланмаган ерларни хусусий мулк субъектларига ўтказишнинг ҳуқуқий асосларини яратди. Бундан ташқари, Вазирлар Маҳкамасининг 2022 йил 14 февралдаги "Ўзбекистон Республикасининг "Қишлоқ хўжалигига мўлжалланмаган ер участкаларини хусусийлаштириш тўғрисида"ги Қонунини амалга ошириш чора-тадбирлари ҳақида"ги 71-сонли қарори билан қишлоқ хўжалигига мўлжалланмаган ерларни хусусийлаштиришнинг тартиблари белгиланди.

Ерларни хусусийлаштириш бошланганига нисбатан қисқа давр бўлганлигига қарамай уларни хусусийлаштириш ишлари жадал суръатларда амалга оширилмоқда ва бу жараёнга фуқаролар ҳамда нодавлат юридик шахслар томонидан катта қизиқиш билдирилмоқда. Жумладан, 2022-2024 йилларда фуқаролар ва юридик шахслар томонидан ўзларига тегишли бўлган ер участкаларини хусусийлаштириш бўйича 85 014 та аризалар берилган. Бундан ташқари, бўш турган ерлардан самарали фойдланишни ташкил этиш мақсадида қонунчиликка асосан қишлоқ хўжалигига мўлжалланмаган ер участкаларини тадбиркорлик фаолиятини ташкил этиш ва шаҳарсозлик мақсадида аукцион савдолари орқали жисмоний ва юридик шахсларга мулк ҳуқуқида сотиш имконияти ҳам яратилган.

Қишлоқ хўжалигига мўлжалланмаган ерларни хусусийлаштиришни янада жадаллаштириш, жараёнга аҳоли ва тадбиркорларни кенг жалб қилиш учун шароитлар яратиш мақсадида ерларни хусусийлаштириш масалаларини тадқиқ этиш, соҳадаги мавжуд муаммоларни аниқлаш ҳамда уларни ечими бўйича илмий асосланган таклифларни ишлаб чиқиш долзарб аҳамиятга эга ҳисобланади.

Адабиётлар таҳлили ва методлар

Ер муносабтлари, ерларга мулк ҳуқуқи ва уларга хусусий мулкни вужудга келиши масалалари хорижий олимлардан Д. Норт [1], А.Н. Татаркин [2], В.А. Ершов [3], Г.Г. Котов [4] асарларида ёртилган бўлса, мамлакатимиз олимларидан Т.А. Кадиров [5], Ж. Рахматиллаев [6] томонидан ушбу соҳага доир мақолалар эълон қилинган. Ушбу мақолада тадқиқотнинг статистик таҳлил ва монографик ўрганиш усулларидан фойдаланилди.

Таҳлил ва натижалар

Дуглас Нортнинг фикрига кўра, ерни хусусийлаштириш транзакция харажатларини камайтиришга ёрдам беради ва иқтисодий ўсишни рағбатлантиради [1]. Шу билан бирга, А.Н. Татаркин каби рус муаллифларининг асарларида ерни хусусийлаштириш бўйича ислоҳотларини амалга оширишда миллий хусусиятлар ва ижтимоий адолатни ҳисобга олиш зарурлиги таъкидланади [2]. Давлатни ривожлантириш ва унинг ижтимоий-иқтисодий базаси – бозор иқтисодиётини ривожлантиришнинг муҳим йўналишларидан бири ерларни хусусийлаштириш ҳисобланади [5].

Қишлоқ хўжалигига мўлжалланмаган ер участкаларини хусусийлаштириш жараёнини таҳлил қилишни бошлаш учун, аввало, "ер участкаси" тушунчаси нимани англатишини аниқлаб олиш лозим.

Мамлакатимиз қонунчилигига мувофиқ, ер участкаси — ер фондининг қайд этилган чегарага, майдонга, жойлашиш манзилига, ҳуқуқий режимга ҳамда давлат ер кадастрида акс эттириладиган бошқа хусусиятларига эга бўлган қисмидир.

Қишлоқ хўжалигига мўлжалланмаган ер участкаси — қишлоқ хўжалиги эҳтиёжлари учун берилмаган ёки ушбу мақсадлар учун мўлжалланмаган ер участкаси. Ер участкасини хусусийлаштириш — давлат мулки бўлган қишлоқ хўжалигига мўлжалланмаган ер участкасини Ўзбекистон Республикаси фуқароларининг ва (ёки) юридик шахсларининг мулкига ўтказиш.

Умуман олганда, хусусийлаштириш ва ер бозорини тартибга солувчи қонунчиликни таҳлил қилиш натижасида ер участкаларини хусусийлаштиришни амалга оширган мамлакатларни маълум гуруҳларга ажратиш мумкинлиги маълум бўлди:

АҚШ ва Ғарбий Европа мамлакатларида, яъни анъанавий "бозор иқтисодиёти"га эга бўлган давлатларда ер участкаларини хусусийлаштириш (шу жумладан, ким ошди савдоси усули) қадимдан узоқ вақт давомида марказлашган дастурларга асосланмаган ҳолда, табиий равишда ривожланиб борган. Ҳозирги кунда бу мамлакатларнинг баъзилари ер участкаларини узоқ муддатли ижарага бериш амалиётини қўлламоқда;

Шарқий Европа мамлакатларида хусусийлаштириш муайян дастурлар асосида амалга оширилган бўлиб, бу жараёнда кимошди савдолари ўтказиш ҳамда мулкни аввалги эгаларига қайтариш усуллари қўлланилган;

МДҲнинг айрим давлатларида хусусийлаштириш дастлаб кўчмас мулк объектларини, кейинчалик эса улар жойлашган ер участкаларини ҳам қамраб олган. Хусусийлаштириш жараёни давлат дастурлари асосида марказлаштирилган тарзда олиб борилган, Болтиқбўйи мамлакатларида эса мулкни аввалги эгаларига қайтариш амалиёти кенг тарқалган. Ҳозирги кунда ер участкаларини сотиш ва уларни узоқ муддатли ижарага бериш бўйича кимошди савдолари ўтказиш ҳам кенг қўлланилмоқда.;

баъзи мамлакатларда, масалан, Хитой (100 фоиз), Сингапур (100 фоиз) ва Исроилда (93 фоиз) ер давлат мулки ҳисобланади ва фақат узоқ муддатли ижарага берилади [5].

Қишлоқ хўжалигига мўлжалланмаган ер участкаларини хусусийлаштириш Ўзбекистон Республикасининг 2021 йил 15 ноябрдаги "Қишлоқ хўжалигига мўлжалланмаган ер участкаларини хусусийлаштириш тўғрисида"ги ЎРҚ-728-сон Қонуни ва Ўзбекистон Республикаси Вазирлар Маҳкамасининг 2022 йил 14 февралдаги "Қишлоқ хўжалигига мўлжалланмаган ер участкаларини хусусийлаштириш тўғрисида"ги Ўзбекистон Республикаси Қонунини амалга ошириш чора-тадбирлари ҳақида"ги 71-сон қарорига мувофиқ амалга оширилади.

Қонун ҳужжатларига мувофиқ қишлоқ хўжалигига мўлжалланмаган ер участкаларини хусусийлаштириш қуйидаги шаклларда амалга оширилади:

Ўзбекистон Республикаси фуқаролари ва юридик шахсларга доимий фойдаланиш (эгалик қилиш), ижара ёхуд мерос қилиб қолдириладиган умрбод

эгалик қилиш ҳуқуқи асосида тегишли бўлган қишлоқ хўжалигига мўлжалланмаган ер участкаларини хусусийлаштириш;

бўш турган ер участкаларини тадбиркорлик ва шаҳарсозлик фаолиятини амалга ошириш учун ер участкаларини мулк ҳуқуқи асосида электрон онлайн-аукцион орқали реализация қилиш.

Бугунги кунда ер участкаларини хусусийлаштириш Ўзбекистон Республикаси Президентининг "2025 йилга мўлжалланган хусусийлаштириш дастури тўғрисида"ги 2025 йил 21 апрелдаги ПФ-70-сон Фармони билан тасдиқланган 2025 йилда тадбиркорлик ва шаҳарсозлик фаолиятини ташкил этиш учун ер участкаларини устувор тартибда мулк ҳуқуқи асосида электрон онлайн-аукцион савдоларига чиқариш режасига мувофиқ амалга оширилмоқда. Фармонга мувофиқ тадбиркорлик ва шаҳарсозлик фаолиятини ташкил этиш учун республика бўйича 6100 гектар қишлоқ хўжалигига мўлжалланмаган ер майдонлари аукцион савдоларига чиқарилиши назарда тутилган. Ер участкаларини савдоларга қўйишнинг 2025 йил учун максимал прогнозлари Самарқанд вилояти 730,2 гектар (республика бўйича жами прогнознинг 12,0 фоизи), Тошкент вилояти 649,5 гектар (10,6 фоиз), Қорақалпоғистон Республикаси 614,3 гектар (10,1 фоиз) учун белгиланган.

Қишлоқ хўжалигига мўлжалланмаган ер участкаларини хусусийлаштириш жараёнининг таҳлили шуни кўрсатадики, қаноатлантирилган аризалар (буюртмалар) улуши 2024 йилда 40,14 фоизни ташкил этган бўлса, 2022 йилда бу кўрсаткич 7,85 фоизни ташкил этган. Ўз навбатида, шуни таъкидлаш керакки, кўриб чиқилган аризаларнинг умумий сонидан хусусийлаштиришни рад этиш ҳолати 2024 йилда қисқариб, бу кўрсаткич жами топширилган аризаларнинг 51,37 фоизини ташкил этган. 2022 йилда бу кўрсаткич юқори даражада бўлган, яъни жами топширилган аризаларнинг 75,65 фоизи рад этилган. Демак, ерларни хусусийлаштириш бўйича аризаларни кўриб чиқишда уларни рад этиш камаймоқда.

2024 йилда қишлоқ хўжалигига мўлжалланмаган ер участкаларини "E-auksion" электрон савдо майдончаси орқали мулк ҳуқуқи асосида сотиш 684 гектар майдонни ва 15037 бирликни ташкил этди. Қишлоқ хўжалигига мўлжалланмаган ер участкаларини "E-auksion" электрон савдо майдончаси орқали мулк ҳуқуқи асосида сотиш 2022-2024 йиллар давомида сони бўйича 3,67 баробарга, сотилган ер участкалари майдони бўйича эса 3,3 баробарга ошган.

2024 йилда хусусийлаштирилган ерларга ордер олган жисмоний шахслар сони (9 123 та) 2022 йилга (2 293 та) нисбатан 4 баробарга ошган. 2024 йилда ер участкаларига ордер олган юридик шахслар сони 2022 йилга нисбатан қарийб 3 баробарга ошган.

Хулоса ва таклифлар

Юқоридагиларни эътиборга олган ҳолда, қишлоқ хўжалигига мўлжалланмаган ерларни хусусийлаштириш ер эгалари шаклидаги мулкдорларнинг кўпайтиришга, ер муносабатларини ҳуқуқий тартибга

солишни такомиллаштиришга ва умуман олганда ердан фойдаланиш самарадорлигини оширишга хизмат қилади деган хулосага келиш мумкин.

Қишлоқ хўжалигига мўлжалланмаган ерларни хусусийлаштириш жараёнларини янада ривожлантириш учун тегишли давлат органлари томонидан туман (шаҳар)ларда бўш турган, фойдаланилмаётган ер участкаларини аниқлаш ва аукцион савдоларига чиқариш ишларини жадаллаштириш ҳамда аҳоли ва тадбиркорларга ўзлари эгалик қилаётган ер участкаларини хусусийлаштиришнинг афзалликлари тўғрисида тарғибот ишларини кучайтириш мақсадга мувофиқ.

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МИЛЛИЙ ҚАДРИЯТЛАР МЕДИАКОНТЕНТИДА ШАКЛ ВА МАЗМУН МАСАЛАСИ

Аннотация: *Мақолада миллий қадриятларни медиаконтентда намоён қилишда шакл ва мазмун масалалари таҳлил қилинади. Ўрганиш жараёнида медиаконтент орқали маданий ва маънавий қадриятларнинг сақланиши ва тарқалиши, визуал ва матнли воситаларнинг таъсири, шунингдек аудиториянинг қабул қилиш механизмлари таҳлил қилинади. Мақолада миллий идентичликни мустаҳкамлашда медианинг роли ва самарали коммуникация усуллари муҳокама қилинади.*

Калит сўзлар: *миллий қадриятлар, медиаконтент, шакл ва мазмун, маданий идентичлик, визуал ва матнли воситалар, оммавий коммуникация.*

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ISSUES OF FORM AND CONTENT OF NATIONAL VALUES IN MEDIA CONTENT

Annotation: *The article analyzes issues of form and content in the representation of national values in media content. The study examines how media content contributes to the preservation and dissemination of cultural and spiritual values, the impact of visual and textual tools, and the mechanisms through which audiences perceive such content. The article also discusses the role of media and effective communication methods in strengthening national identity.*

Keywords: *national values, media content, form and content, cultural identity, visual and textual tools, mass communication.*

Ўзбекистон телевидениеси ўтмиши ва илк медиаконтентнинг эфирга узатилиш санаси анчагина узоққа бориб тақалади. Агар жаҳон телевидениеси тарихига назар ташласак, унинг номи биринчилардан бўлиб тилга олинади. “...1928 йилда ***Тошкентда дунёда биринчи бўлиб*** (курсив ва таъкид бизники – Н.В.)[35], тасвирни узатиш имкониятига эга бўлган физик қурилма – “телефот”га асос солинди. Бу эса кейинчалик жаҳонда илк телевидениенинг пайдо бўлишига сабаб бўлди, дейиш мумкин”[36]. Дунёнинг ривожланган

[35] Ўзбекистон телерадиоси (Китоб-энциклопедия), Тошкент. “IJOD-PRESS” нашриёти, 2022. – Б.3.

давлатлари – АҚШ, Буюк Британия, Германия, Россия қатори Ўзбекистонда телевидение ўз фаолиятини биринчилардан бўлиб бошлагани тарихий воқелик саналади.

Ўзбек ТЕЛЕКОНТЕНТИнинг шакл ва мазмуни тарихан худди шу сана – 1956 йил 5 ноябрдан бошланди. Гарчанд биттагина телеканал ўз медиамаҳсулотларини эфирга узатган бўлса ҳам... Худди шу ўринда ҳақли савол туғилади: бу ўз-ўзидан пайдо бўлдими ёки ўзбек телевидениесининг хаёлий тасаввурлари аждодлар орзусида шаклланган эдими?

Бу ҳақда тарих фанлари номзоди Анвар Каримов китобида яхшигина ва дадил мулоҳазалар келтирилган. Мана, у нима деб ёзади: “Инсонлар жуда қадим замонлардан буён ер юзидаги олис жойлар, самовотдаги юлдузлар олами, денгизлар тубидаги ажойиботларни яқиндан кўрсатувчи воситаларни орзу қилишган. “Ойнаи жаҳон”, “Жоми Жамшид”, “Искандар кўзгуси” ҳақидаги афсона, ривоятлар Шарқ халқлари ўртасида кенг тарқалган”[37]. Кейин муаллиф ҳазрат Мир Алишер Навоийнинг “Фарҳод ва Ширин” достонидан мисра- далил келтириб, юқоридаги фикрини исботлашга ҳаракат қилади. Унинг бу фикрларига эътирозимиз йўқ. Аммо, биз ўртага ташламоқчи бўлган масала бошқа. Яъни, ҳақиқатни ёритиш, воқеликни фақат борича кўрсатиш тўғрисида. Айнан шу муаммо биз ўрганаётга мавзунинг туб моҳиятини ташкил этади. Миллий қадриятлар медиаконтентини бор бўйи басти билан оммага етказиш, айнан ўзидек, ўзбеклигимизга хос ва мос ҳолатда кузатувчи ва ёки томошабинга кўрсатиш асосий мақсад бўлиши лозим. Акс ҳолда унинг қадр-қиммати ва тарбиявий самараси деярли бўлмайди. Шунинг учун шарқ мумтоз адабиётида учрайдиган, халқларнинг асрий орзуси – фақат ҳақиқатни кўрсатадиган ***КЎЗГУ*** ҳақидаги баҳсимизни ўртоқлашишни мақсад этдик. Чунки, мана шу масала бироз назардан четда қолиб кетгандек фикр уйғотади. Ваҳоланки, халқлар қадимда жуда кўп ноҳақликларга дуч бўлишган. Авом омманинг дарду ҳасратини доим ҳам эшитиб, унинг оғирини енгил қилиш, машаққат ва адолатсизликлардан ҳимоя қиладиган одил шоҳ орзуси орзулигича қолиб келаверган. Барча уриниш ва ҳаракатларидан ижобий натижа ололмаган ва ҳафсаласи пир бўлган фуқаро (фақирлар дегани, аслида – Н. В.) ҳеч нимага ишонмай, эртанги кун фаровонлиги ҳақидаги гап ва ваъдалардан умидини узган. Бу борада тарихдан истаганча мисол келтириш мумкин. Бугунги кунда ҳам айнан шу муаммо аҳолининг жабрдийда қатламини қийнаб келади. Шунинг учун аждодларимиз нафақат бутун оламни кўрсатадиган “Ойнаи жаҳон”ни ихтиро қилишни орзу қилишган, балки ҳақиқатни ошкор, намойиш қиладиган ускунани яъни “Ойнаи Чин”ни бунёд этишни хаёл қилишган. Буни ҳазрат Навоий “Садди Искандарий” достонида қўйидагича баён қиладилар:

[37] Каримов А., Ўзбекистонда телевидение, Тошкент, Ўзбекистон КП МКнинг нашриёти, 1964, 45 саҳифа, 6-бет; Шу муаллиф, Ойнаи жаҳон фидойилари, Тошкент, “Тафаккур”, 2009, 168 саҳифа, 8- бет

Ва лекин ики булъажаб туҳфа ҳам, Ки андоқ келиб булъажаб туҳфа кам –Бири кўзгуйи жоми Жамшиддек, Сафо ичра миръоти хуршиддек. Ки они фалак меҳройин дебон, Вале халқ Ойинаи Чин дебон.

Ики юз анга ою кундек ёруғ,

Вале тийра бўлмай бўлурдин очуқ. Ёруғ ҳар юзи чеҳра кўргузгудек, Демай бир юзи тийра рў кўзгудек. Ҳакимики они тилисм айлабон, Намойиш анга ики қисм айлабон. Келиб бир юзи буйлаким чунки шоҳ, Сўрар чоғида маснад уза додхоҳ.

Ки бир-бирга эл даъво изҳор этар, Агар кимса даъвоға инкор этар.

Бу даъвода эрмас гувоҳ эҳтиёж, Эрур кўзгу сори нигоҳ эҳтиёж. Агар сўзи чиндур – кўринур юзи, Кўринмас юзи – бўлса ёлғон сўзи[38].

Хўш, бу мисраларда нима ҳақда гап бормоқда ва бу мулоҳазалар бугунги кун телеконтентига нима алоқаси бор? Буюк шоир ва юксак тафаккур эгаси Навоий айтадики, "...иккита ажойиб туҳфа бор эдиким, бундай таажжуб туҳфа дунёда кам бўларди. Бунинг бири ойна бўлиб, Жамшиднинг жомини эслатарди. У ёруғликда қуёш ойнасига ўхшар эди. У фалак қуёши сингари бўлса ҳам, лекин халқ уни ***"Ойинаи чин" (ҳақиқат ойнаси)*** (курсив ва таъкид бизники – Н. В.) дер эди. Бу ойнанинг иккала бети ҳам ой ва кундек ёруғ бўлиб, сира зангламас ва доим биллурдан ҳам тиниқ эди. Бунинг бир бети киши аксини кўрсатадиган даражада ёруғ бўлгани ҳолда, иккинчи бети оддий ойналарникидай қора эмас эди. Уни тилсим қилиб ясаган ҳакимлар, у ойнанинг икки бетига икки хил кўрсатиш қобилиятини берган эдилар. Масалан, унинг бир юзи шундай ясалганки, қачон шоҳ адолат тахтига ўтириб, халқнинг арз-додига етмоқчи бўлса, кишилар бир-бири билан даъволашиб, булардан бири нариги томоннинг даъвосини инкор этса, даъвонинг қанчалик ҳақ эканини аниқлаш учун гувоҳ керак эмас, жавоб эгасининг ойнага бир қараши кифоя эди. Ўша қарашда агар даъвоси рост бўлса – ойнада юзи кўринар эди; ёлғон сўзлаган бўлса-чи – юзи кўринмасди"[39]. Равшан бўлаётирки, ўша давр ва замон учун бундай кашфиётларни хаёл қилиш учун теран тафаккур, илғор фикр, қолверса катта ақл ва заковат керак эди. Навоийнинг буюклиги ҳам шунда, аслида. Нега ёлғон гапирган одамнинг юзи "Ойнаи Чин"да кўринмаслиги керак, деган савол туғилади? Ахир, аксинча бўлиши керак эмасми? Алдамчининг юзини ҳамма кўриши ва изза қилиниши шарт эмасми, аслида? Йўқ, бу иқтибосда гап бошқа ёқда – ҳижолат бўлиш, уялиш ва алалхусус: уни тарбияси ҳақида гап кетаётир. Халқимизда шундай мақол бор: "Алдамчининг юзи шувут, рози бўлмас ундан эл-юрт". Навоий ҳазратлари худди шу масалани – ёлғончининг юзини кўрсатмай, товбасига тазарру қилиб, унинг тарбиясига диққатни қаратаяптилар. Шунинг учун ҳам "Ойнаи Чин"да: "Агар сўзи чиндур – кўринур юзи, Кўринмас юзи – бўлса ёлғон сўзи".

[38] Алишер Навоий, Садди Искандарий, Тошкент, Ғофур Ғулом номидаги Нашриёт-матбаа бирлашмаси, 1991, 832 саҳифа, 328-бет

[39] Шу асар, 707-бет

Бу муаммо бугуннинг долзарб масаласи сифатида баҳоланмоғи ва ўзининг қадр-қимматини заррача йўқотмаганлигини таъкидлаш лозимдир. Янада аниқроқ айтадиган бўлсак, давлатимиз раҳбарининг видеоселектор орқали олиб бораётган ҳар бир мажлис ва йиғинларда фақат тўғри сўз ва адолат борасида гап бораётганлиги барчага аён. Афсуски, иқтисодий-маънавий-сиёсий ислоҳотларнинг амалий самараси мана шундай: нотўғри ахборот бериш, қўшиб ёзиш, сўзда бўлак, амалда бошқа каби ёлғонларнинг салбий тўсиғи сабаб: жуда секинлик билан ҳаётга тадбиқ қилинаётгандек туюлади. Президентимизнинг жонкуярлик билан миллат ва халқ фаровонлиги йўлида олиб бораётган одилона сиёсатининг таъсири ва самараси айрим мансабдор шахсларнинг масъулиятсизлиги оқибатида жойларда ўз ижобий натижасини бермаётгандек, гўё... Шу ҳолатларни ошкора оммага етказиш учун эса “Ойнаи Чин” етишмаётганга ўхшайди. Агар, ҳақиқатдан ҳам оммавий ахборот воситалар – “тўртинчи ҳокимият” саналар экан, унинг асосийва таянч тармоғи ҳисобланмиш – телевидение соҳасида ислоҳотлар ўтказиш вақти келганлигини давр кун тартибига аллақачон талаб қилиб қўйди. Бу эса кечиктириб бўлмайдиган вазифадир. Бироқ Ўзбекистон телеканалларининг қувонса бўладиган томонлари, мақтаса арзигулик жиҳатлари ҳам борлигини қайд этиб ўтиш лозим. Масалан, Ўзбекистонда нафақат телеканаллар сони ошиб кетди, балки сифат даражаси ҳам жаҳон стандартларига тўлиқ жавоб бера оладиган медиамаҳсулотлар билан бойимоқда. Ҳар бир ўзбек телеканалининг намойиш қилиш дизайни, шаклу шамойили, формати – айнан унинг ўзига мос ва мувофиқлик йўналишидан келиб чиқиб, телеконтент яратиш тажрибасига эга бўлди. Мисол учун кўнгилочар канал дастурларининг шакли, формати ва жанри спорт каналидаги телеконтентга ўхшамаслиги, мутлақо бошқа форматда эфирга узатилиб келинмоқда. Бу эса телевидение ходимларининг бетиним изланишидан, ҳар кунги эфирга ижодкорона ёндашувидан далолат, аслида. Бу ҳақда илмий тадқиқот ва монографиялар яратилганини ҳам қайд этиб ўтишимиз зарур[40]. Бироқ телеканалларнинг шакл ва мазмунини, телеконентларнинг форматини қиёсий тарзда ўрганиш ва уларга бағишланган, давр талабига мос келадиган илмий таҳлиллар етишмайди. Биз буни 1-ҳаволада давлат, хусусий ва тижорат телеканаллари мисолида, қиёсий-типологик тарзда ёритишга, илмий таҳлил қилишга ҳаракат қилдик:

[40] Каримов А., Становление и развитие телевидения Узбекистана 1957-1967 гг. Автореф. дисс. канд. ист.наук, Ташкент, 1971; Есин А., Радио и телевидение Узбекистана: рост, достижения, проблемы, Тошкент, «Узбекистан» 1975; Фаязов М. Средства массовой информации и нравственное воспитание. Ташкент, “Узбекистан”, 1981; Асадуллаев М., Телевидениенинг назарий ва амалий асослари, Тошкент, “Мумтозсўз”, 2021; Маҳамедов М., Умр лаҳзалари. Режиссёрнинг ҳаёт кечинмалари. –Т.: “Адабиёт учқунлари”, 2018; Ўтаев Ў. Телевидение – табаррук маскан. – Тошкент, «Ўзбекистон», 2010; Ўрмонова С., Тележурналист, Тошкент, “ИЛМ- ЗИЁ-ЗАКОВАТ”, 2021; Каримов А. А., Рекреактивлик – замонавий тележурналистиканинг глобал қонунияти сифатида, Тошкент, “ADABIYOT”, 2021; Хаджаев А., Ҳайитов Ш. Радио ва телевидение: Ўқув-услубий қўлланма.– Тошкент, “IJOD-PRESS”, 2022; Шу муаллифлар, Ўзбекистон телерадиоси (Китоб-эниклопедия), Тошкент, “IJOD-PRESS” нашриёти, 2022; Шу муаллифлар, Телевидение менинг тақдиримда (Эссе, бадиа, мақолалар), Тошкент, “IJOD-PRESS”, 2022; Шу муаллифлар, Ўзбекистон миллий телерадиокомпаниси: замон билан ҳамқадам, Тошкент, “IJOD-PRESS”, 2022 ва ҳоказо

1-ҳавола

ШАКЛ-ШАМОЙИЛИ	ТЕЛЕКАНАЛЛАР	КЎРИМЛИ ДАСТУРЛАР ЖАНРЛАРИ
Кўнгилочар телевидение	“O'zbekiston”, “Madaniyat va ma'rifat”, “Sevimli TV”, ,“Mahalla” “ZO'R TV”, “Toshkent”, “Yoshlar”,“Mening Yurtim”,“Milliy TV”, “Дунё бўйлаб”, “Кинотеатр”, “Oilaviy”	Сериаллар, бадиий фильмлар, кўнгилочар дастурлар
Таълимий телевидение	“Madaniyat va ma'rifat”, “UzReport”, “Foreign Languages”,“Ўзбекистон тарихи”, “Oilaviy”	Телесабоқлар, чет тили дарслари, ҳужжатли фильмлар
Таҳлилий ва янгиликлар телевидениеси	“O'zbekiston 24”, “Yoshlar”, “Toshkent”	Ахборот-таҳлилий дастурлар, янгилик кўрсатувлари
Болалар телевидениеси	“Aqlvoy”, “Bolajon”	Мультфильмлар, қўғирчоқ театри намойишлари
Мусиқий телевидение	“Navo”, “8” “TTV”	Мусиқий клиплар, шашмақом ва яккахон концертлар
Спорт телевидениеси	“Sport”, “ZO'R TV”, “Футбол TV”	Спорт дастурлари ва янгиликлари

Энди, жадвалнинг баёнидан келиб чиқадиган бўлсак, телеконтентларнинг мазмуни, муайян каналнинг формати, унинг ички моҳиятига ва танлаган йўналишига айнан мос тушади, деб айтиш мумкин. Бироқ, айрим телеканаллар аудитория талаб ва таклифидан келиб чиқиб, ўз йўналишидан чиқиб, эркин эфир мойиллигини афзал кўришади. Аслида, бу ижодий ва ўзаро акс таъсир ёндашув – тўғри ҳамдир. Бу, бир томондан эфир эркинлигини белгиласа, иккинчидан телеканал жамоасининг ижодкорлик КОНТЕНТини кўрсатади. Масалан, яқинда эфирга узатилган футбол бўйича Европа чемпионатини “ZO'R” телеканали орқали томоша қилдик. Савол туғилади: нега бошқа телеканаллар, хоҳ у хусусий ва ёки давлатники бўлсин, бу намойишни эфирга узатмади? Бунга қўйидагича, тахминий жавоб айтиш мумкин. Тўғри, эфир соатлари ҳам маблағни, қолаверса, тадбиркорликни тақозо этади. Бироқ, яна бир ҳақиқат борки, биринчидан бу – давлат ва хусусий телеканаллар ўртасидаги ижодкорона рақобат бўлса, иккинчидан молиявий манфаатга боғлиқлик томонининг мавжудлигидир. Дейлик, бирор-бир давлат телеканали раҳбарияти, молиявий муаммони деярли, мустақил ҳал

қила олмайди ва бу масала бюджет маблағига, шунингдек, ажратиладиган Давлат сметасига бориб тақалади. Хусусий телеканалда эса, маблағдан ташқари, масалани тезкор ҳал қилиш босқичи ҳам муаммони ҳал қилинишига ижобий таъсир кўрсатади. Пировард натижада жуда кўп масалалар ПУЛга боғлиқлигидан ташқари, муайян масалани тезкор – “оператив” ҳал қилинишини кўрсатади. Ёки жадвалдаги яна бир далилга мурожаат қилсак... “Таълимий телевидание”да фақат бир хил контентдаги медиамаҳсулот берилса, зерикарли эфирга айланиши мумкин. Шунинг учун томошабиннинг миграция (бошқа каналга ўтиш) ҳолатини юзага келтирмасдан, таълимий дастурлар КОНТЕНТИни ранг-баранг медиамаҳсулотлар билан қоришиқ ҳолда эфирга узатилса, телеканалнинг аудиторияси кенгайишига ва рейтингини юқорилашига олиб келади, деб тахмин қилиш мумкин. Кези келганда шуни ҳам қайд этиш жоизки, айрим телеканалларда “Ретро – контент” услубда медиамаҳсулотларни эфирга бериш анъанаси борки, буни, албатта ёқлаш ва қўллаш лозим. Масалан, “Mahalla” телеканалида эфирга узатилаётган миллий қадрият ва ўзлигимизни тараннум этадиган ретро фильмлар ҳамда кўнгилочар дастурларнинг намойиши, шубҳа йўққи, ёшларни комиллик руҳида тарбиялашга хизмат қилади, деб умид қилса бўлади. Тўғри, замонавий фильм ва бошқа дастурларнинг ҳам таъсир доираси кенг бўлиши мумкин. Аммо, давр синовидан ўтган бадиий фильм ва “ретро-ханда” каби медиаконтентларнинг аудиторияси кенгроқ. Кези келганда шуни ҳам алоҳида таъкидлаш лозимки, баъзи телеконтентларнинг савияси, маънавий озуқа бериш рейтинги жуда паст. Масалан “Sevimli TV” да эфирга кетадиган “Ilk uchrashuv” медиамаҳсулотини, аввало олқишлаш лозим. Сабаб: икки ёшни бахтли қилиш мақсадида ташкил қилинган телеконтент. Ҳатто баъзи ёшлар шу телелойиҳа сабаб, ўз бахтларини топишди. Тўғри, бир хил қолипда қолиб кетмаслик ва бошқа дастурларга ўхшамаган ҳолда медиамаҳсулот яратиш: бу ҳам ижодий гуруҳнинг изланувчанлигидан далолатдир. Бироқ, кўрсатувнинг айрим сонларида ўта примитив ва миллатнинг менталитетига зид одатларни ташвиқ қилишига йўналтирилгандек фикр уйғотади. Бу контентда олға сурилаётан талқинлар томошабинга қандай маънавий озуқа ва ёки кимларни нимага ундаётгани аниқ эмас. Масалан телеконтентнинг бир сонида бошловчи куёвнинг холаси ролини ўйнаётган актрисага мурожаат қилмоқчи бўлиб, микрофон тутганида, у “хола”: “торт микрофонингни, микрофонинг бошингда қолсин”, - дейди. Ҳатто, мазкур кўрсатувдан қўйилган шу парча – анонсда ҳам қайта-қайта эфирга узатилди. Ахир бу гап: қарғиш – ўлим тилаш эканлигини, наҳотки ижодий гуруҳ билмаса... Бизнинг халқ шу қадар донишманд ва доноки, ўлим билан боғлиқ қарғишларни “қоғозга ўраб” айтади. Яъни инсон кўнглига тегмайдиган тарзда ифода этишга ҳаракат қилади. Ўзбек қарғишлари ҳақида алоҳида илмий ишлар яратилган[41]лигини эътиборга олсак, фикримиз янада

[41] Саримсоқов Б., И., Олқишлар ва қарғишлар//Ўзбек фольклори очерклари, Уч томлик, Биринчи том, Тошкент, “Фан” нашриёти, 1988, 288 саҳифа, 128-152-бетлар; Саттор Маҳмуд, Ўзбек удумлари, Тошкент, “Фан” нашриёти, 1993, 224 саҳифа, 169-174-бетлар

равшанлашади. Ижодий гуруҳ шу масалаларни эфирга беришдан олдин ёки монтаж жараёнида эътиборга олишлари лозим эди. Ваҳоланки, бошловчи ва журналистнинг касб одоби ҳамиша муайян телеканал раҳбариятининг диққат марказида бўлиши керак. Бу борада устозимиз Хуршид Дўстмуҳаммедовнинг салмоқли ва илмий теран ишларини айтиб ўтиш жоиз. Домла ёзадилар: “Миллий қадриятлар, миллий менталитет ва миллий одоб журналист касб одобининг негизи”[42]дир. Бу фикрларни қўшимча қиладиган бўлсак, телеконтент ва медиамаҳсулотларини обдон ўйлаб, муҳокама қилиб, кейин эфирга беришимиз шарт. Акс ҳолда ўсиб келаётган ёш авлодга салбий таъсир кўрсатиши ва шу тарбия усули билан онги шаклланиши эҳтимоли бор. Ушбу кўрсатув – “Илк учрашув”да бироз сунъийлик ранги баланддек, назаримизда.

Чунки,бу каби эфир маҳсулотлари миллий менталитетимизга мос келмаётган жиҳатлари мавжуддек, назаримизда. Аввало, миллатнинг асл қадриятларидан келиб чиқиб, кейин эса замон руҳига мос, маънавий мазмуни самара берадиган КОНТЕНТ эфирга узатилиши керак. Акс ҳолда, бугунги закий ёш авлодни асл миллий қадриятлармиздан чағитишимиз мумкин. Шундай тарбия ва таълим (***медиамаҳсулот ҳам тарбиянинг бир тури, аслида*** – таъкид ва курсив бизники – Н. В.) олаётган авлод эса, ташқи ножоиз таъсирларга тез берилувчан ва сиёсий-маънавий иммунтитети паст ёшлар бўлиб вояга етишади. Бу гап: давр синови натижасида ўз тасдиғини билдирди. Иложи борича, бундай медиамаҳсулотларни эфирга берилмагани маъқул. Биринчидан, маблағ беҳудага сарф қилинади. Иккинчидан ва асосийси, бу каби телеконтентларнинг маънавийсамараси жуда паст. Ҳолбуки, бугунги томошабин – жуда зийрак ва синчковдир.

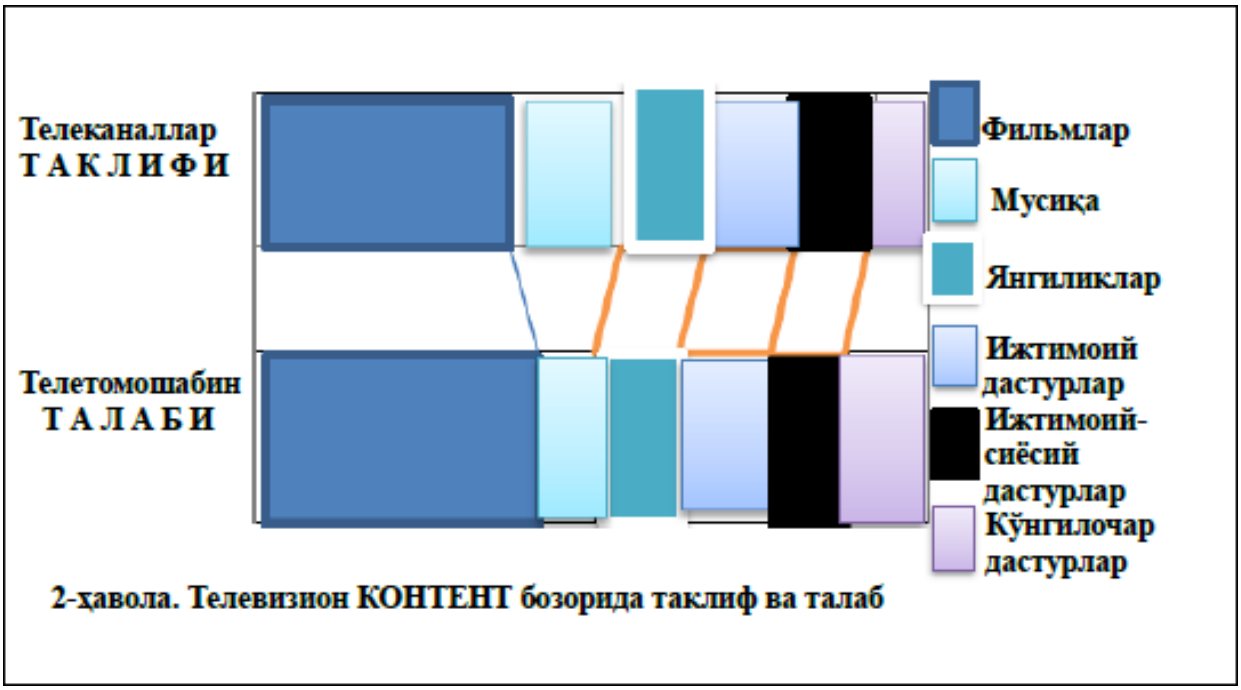
Шуни алоҳида қайд этиш лозимки, давлат телеканалларига нисбатан хусусий ва тижорат телеканалларининг аудиторияси кенгайиб бормоқда. Мисол учун, туманларга борганингизда томошабинлардан: қайси телеканални томоша қиласиз, деб сўралганида, ҳеч иккиланмасдан “Sevimli” ёки “ZO'R TV” деган жавобни олинади. Хўш, бундай қарашларга нима сабаб бўлиши мумкин? Бизнингча, энг аввало бу телеканаллар нисбатан эркин ва томошабин эҳтиёжлари ҳамда талабларини ўрганиб чиқади.

Маълумки, телеканаллар тақдим этаётган КОНТЕНТЛАРни танлаш ва томоша қилиш масаласини кўрувчи талаби, хоҳиш-истаги ва билдираётган таклифи асосида ҳал қилиниши рад этиб бўлмайдиган ҳақиқатдир. Чунки, телеканаллар томонидан тақдим этилаётган таклифлар, энг аввало томошабин учун. Шу нуқтаи назардан олиб қараладиган бўлса, медиабозорда ҳам, бошқа йўналиш ва соҳаларда бўлгани каби, “харидор”, “мижоз” талаби:

асосли ва сифат, аниқ ва ишонарли таклифга – замонавий КОНТЕНТга бориб тақалади. Қуйида медиабозор ва контент харидорлари учун телеканаллар таклифи, томошабин талабини 2-жадвал асосида фикримизни

[42] Дўстмуҳаммад Х., Журналистнинг касб одоби муаммолари: назарий-методологик таҳлил, Монография, Т.: “Янги аср авлоди”, 2007, 216 саҳифа, 78-бет

баён этишга, ТЕЛЕКОНТЕНТ БОЗОРИдаги вазиятни таҳлил қилишга уриндик.



2-ҳавола. Телевизион КОНТЕНТ бозорида таклиф ва талаб

Аслида ҳам бир мулоҳазали инсоннинг савия ва диди бошқасиникига ўхшамагани ва мос келмагани сингари, телеканалларнинг таклифи билан томошабин нуқтаи назари ва талаби, айнан бир-бирига тўғри келмайди. Келтирилган 2-жадвалда ҳам шундай ҳолатни кўришимиз мумкин бўлади. Масалан, телеканал қаршисида, томошабин асосан кечги пайт, хусусан оила даврасида йиғилади. Шунинг учун бундай вақтда кўнгилочар дастурларга талаб кучаяди. Мана, масалан “Sevimli” хусусий телеканалида берилаётган “Qizim” миллий сериали, айни шу пайтда – соат 19 берилди. Бу эса канал ходимларининг ижодий ёндашувидан дарак, десак хато эмас. Мазкур миллий сериалда ҳам биз таҳлил қилаётган миллий қадриятлар жуда яхши ёритиб берилган. Тўғри, фильм контентда нуқсон ва камчиликлар бор.

Аммо ижодий гуруҳни табриклаш керакки, улар бугунда танқис бўлиб бораётган: яхшилик, эзгу амал, меҳр-оқибат, саховатпешалик, адолат тантанаси, ўз уйим – ўлан тўшагим, оила – муқаддас қўрғон эканлиги, бир болага етти маҳалла – ота-она, ота-она ризолги, эр-хотин қўш қанот, адолат ва ҳақиқат тантанаси каби жуда кўп миллий қадриятларимиз исломий таълим билан қоришиқ шаклда тақдим этилди. Алдамчилик, қабоҳат, кўролмаслик, бевафолик сингари ёмон ҳатти-ҳаракатларнинг оқибати – охири “вой” эканлиги яна бир бор таъкид қилинди. Бу тарбия усули билан қанчадан-қанча замондошларимиз ўзларига тегишли хулоса чиқарган бўлса, ажаб эмас. Фильм-контентнинг таҳлили, камчилик ва муваффақиятлари алоҳида мавзу бўлганлиги боис: биз бу йўналишга батафсил тўхталмадик. Лекин, миллий қадриятларни бадиий намойиш этган миллий сериал билан барча ўзбекларни табрикласа бўлади. Сериал эфирга узатилган даврда бошқа телеканалларда

ҳам шу каби телеконтент – теленовеллалар эфирга узатилди. Аммо жуда кўпчилик кузатувчилар шу “Qizim” миллий сериалини кўришга ўзларида эҳтиёж сезишди. Дарҳақиқат, томошабинларнинг бир телеканалдан иккинчисига ўтишлари учун: асос яъни ўзбекона ва тўлақонли миллий сценарий бўлиши керак. Бу биринчидан. Иккинчидан сценарий – КОНТЕНТ мақоми ва даражасига чиқиши лозим. Аниқроғи, шакл ва мазмуннинг ниҳоятда гўзал омухталиги зарур. Шундагина медиамаҳсулотнинг “харидоргир”лиги таъминланади. Акс ҳолда, нафақат “Sevimli” каналининг аудиторияси, балки: умумий маънода, қайсидир ТЕЛЕКОНТЕНТнинг томошабини кўпайган пайтда, иккинчи каналнинг аудиторияси камайиши мумкин ва ёки аксинча. Бундай “ўтиш жараёни”ни телеканаллар дастури ва медиамаҳсулотларини кузатиш ва таҳлил қилиш орқали билиб олса бўлади. Бунда, шакл ва мазмуннинг ўзаро узвийлик сифати асосий роль ўйнаши шубҳасиз.

Алқисса, миллий ўзлигимиз асоси бўлган – миллий қадриятларга бўлган сезгимиз ва қизиқиш тўйғуларимиз яшаяпти. Буни томошабинлар орасидаги баҳслардан ҳам билса бўлади. Демак, кичик хулоса қилса бўладики, миллий қадриятларга бўлган ТАЛАБ юқори экан, “Sevimli” каналининг ТАКЛИФИ ўзини тўла оқлади: ЎЗБЕК МИЛЛИЙ ҚАДРИЯТЛАРИнинг қадр-қиммати давр ва замон билан ўлчанмас экан. Улар ҳар вақт ҳам ўзининг аҳамият ва моҳиятини йўқотмайди: ҳар бир авлод бу неъматларни сайқаллаштириб бораверади. Бироқ, яна ўша масала: закий томошабин кўзи ва нигоҳи билан қаралса, “харидоргир” медиамаҳсулот ҳам сифат ва кўримли, савияли ва маънавий озиқа берадиган бўлиши шарт. Худди шу нуқтада: замонавий ТЕЛЕКОНТЕНТ яратиш ва шу билан томошабинни ёт унсурлардан қайтариш муҳим вазифадир. Президент айтганларидек, “...одамлардаги янгилик, таҳлилий маълумотлар, реал воқеларга бўлган эҳтиёжни биз тўлдирмас эканмиз, буни бошқалар қилади. Бунга мутлақо йўл қўйиб бўлмайди”[43].

Биз шу ўринда бошқа телеканалларни камситмаган ҳолда бадиий пишиқ ва савияси юқори миллий сериаллар ёки теленовеллалар берилиши тарафдоримиз. Афсуски, бундай КОНТЕНТЛАР жуда кам. Шуни назарга олганимизда, бошқа каналларда фильмлар намойиши камдек фикр уйғотгани учун ТАКЛИФ ўрнига ТАЛАБ доирасини каттароқ белгиладик. Тақдим қилинаётган мусиқий контент ҳам “Navo” телеканалини ҳисобга олмаганда бошқаларида камроқ. Қоришиқ медиаконтентларни ҳавола этиш, бизнингча томошабинни зерикиб қолмаслигига олиб келади. Ва натижада ҳар бир каналнинг рейтингини кўтарилишига сабаб бўлиши мумкин. Албатта, ҳар бир телеконтентнинг мухлиси ва томошабини бор. Буни кенгайтириш ва оммалашиши учун эса таклиф ва талаб уйғунлигини изчил ўрганиб, ҳар бир канал доимий ижодий жараёнда медиамаҳсулот тайёрлаб, сўнгра намойиш

[43]https://www.facebook.com/watch/?v=370056348940357, Ўзбекистон Республикаси Президенти Ш.Мирзиёевнинг Хавфсизлик кенгашининг кенгайтирилган йиғилишидаги нутқидан, 2024.12 январь.

этиши зарур. Акс ҳолда муайян телеканал ўзининг контент форматини қайта кўриб чиқиши, уни шакллантириши лозим саналади. Бу эса анчайин жиддий масала яъники молиявий-иқтисодий муаммолари билан боғлиқ. Дейлик: оддий саҳна декорациясини ўзгартириш ёки замонавий дизайн билан безатишкеракми – ўз-ўзидан маблағга бориб тақалади. Бюджетдан ажратилган ресурс эса ўзгармас ёки тақсимоти олдиндан белгиланган. Хуллас, телеконтент шакл ва мазмунининг идеал (гўзал) уйғунлиги, томошабинбоп медиамаҳсулотга айланиши, уларнинг маънавий эҳтиёжини қониқтириш учун ижодий гуруҳ ва муаллифлар зиммасига катта масъулият ва ижодкорона ёндашиш талаб этилади.

Ўзбекистон телерадиоси (Китоб-энциклопедия), Тошкент. “IJOD-PRESS” нашриёти, 2022. – Б.3.

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МЕТОДИКА ОРГАНИЗАЦИИ ИНДИВИДУАЛЬНОГО ОБУЧЕНИЯ ПО ПОДГОТОВКЕ СТУДЕНТОВ К ПРОФЕССИОНАЛЬНОЙ ДЕЯТЕЛЬНОСТИ

Аннотация. *Подготовка специалистов с высокими знаниями и профессиональным потенциалом является одной из важнейших задач, стоящих перед системой высшего образования. Методология организации индивидуального обучения при подготовке студентов к профессиональной деятельности способствует наиболее полному раскрытию способностей студента, формирует необходимые практические навыки в профессиональной деятельности, позволяет использовать инновационные технологии в образовательном процессе, повышает эффективность за счет индивидуализации образования. В статье рассматриваются теоретико-методические, педагогические и психологические основы индивидуального обучения, структура методики организации индивидуального обучения при подготовке к профессиональной деятельности, этапы и задачи методики индивидуального обучения.*

Ключевые слова: *Профессиональная деятельность, индивидуальное обучение, современные методы, личностно-ориентированный подход, учет потребностей и возможностей студента, деятельностный подход, компетентностный подход.*

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METHODOLOGY FOR ORGANIZING INDIVIDUAL TRAINING TO PREPARE STUDENTS FOR PROFESSIONAL ACTIVITIES

Abstract*: Training specialists with high knowledge and professional potential is one of the most important challenges facing the higher education system. The methodology of organizing individual training in preparing students for professional activity contributes to the most complete disclosure of the student's abilities, develops the necessary practical skills in professional activities, allows the use of innovative technologies in the educational process, and increases efficiency through the individualization of education. The article examines the theoretical, methodological, pedagogical and psychological foundations of individual training, the structure of the methodology for organizing individual training in preparation for professional activity, the stages and objectives of the methodology of individual training.*

Key words: *Professional activity, individual training, modern methods, student-centered approach, consideration of student needs and capabilities, activity-based approach, competence-based approach.*

Введение.

Одной из важных задач высшего образования сегодня является подготовка специалистов, обладающих высокими знаниями и профессиональным потенциалом. В этом процессе важно использовать современные методы, обеспечивающие подготовку студентов к профессиональной деятельности. Одним из них является внедрение индивидуальных методов обучения**.** Индивидуальное обучение – это образовательный процесс, структурированный с учётом индивидуальных способностей, интересов, уровня знаний и будущей профессиональной направленности обучающегося. В рамках индивидуального обучения каждый обучающийся имеет индивидуальную траекторию обучения и возможность постепенного развития своих профессиональных компетенций.

Методология организации индивидуального обучения при подготовке студентов к профессиональной деятельности имеет свои основы.

Теоретико-методологические основы. Из анализа полученных данных стало ясно, что учёные-педагоги, работавшие над этими проблемами, определили, что методологическими основами индивидуального образования являются:

- то, что теряется для личности (3)
- учёт спроса и его удовлетворение;
- то, что вредит деятельности (4)
- развитие знаний и практической деятельности в форме:
- охват компетенций (5)
- мониторинг компетенций, необходимых для профессиональной

Психолого-педагогические основы

В процессе индивидуального обучения большое значение имеют когнитивные стили, мотивация и факторы личностного развития учащегося. Представитель когнитивной психологии Колб утверждал, что «образовательный процесс более эффективен, когда он основан на индивидуальных когнитивных особенностях» [2].

«Когнитивные стили учащегося», или стили обучения, — это индивидуальные способы восприятия, обработки, хранения и использования информации учащимся [11]. Проще говоря, у каждого человека есть свой уникальный «стиль» в процессе обучения и мышления, который определяет его познавательную активность.

Если проанализировать когнитивные стили ученика, то можно увидеть, что им присущи следующие основные черты: Индивидуальность – каждый ученик имеет свой собственный образ мышления. Стабильность – когнитивные стили постоянны, не меняются часто. Влияние на

образовательный процесс – от этого стиля зависят скорость обучения, самостоятельность и подход ученика к проблеме [12].

Существуют общие когнитивные стили среди учеников, и знание учителем когнитивного стиля ученика помогает ему корректировать методику обучения, выбирать индивидуальный подход и улучшать результаты обучения.

Структура методики организации индивидуального обучения по подготовке к профессиональной деятельности состоит из следующих этапов:



Рисунок 1. Структура методики организации индивидуального обучения в рамках подготовки к профессиональной деятельности.

Однако обеспечение эффективности индивидуального обучения не происходит само по себе. Для обеспечения эффективности индивидуального обучения необходимы следующие условия:

- компетентность преподавателя в организации индивидуального обучения;
- современная материально-техническая база;
- электронные платформы обучения;
- система мотивации, обеспечивающая активное участие обучающихся.

Этапы и задачи методики индивидуального обучения играют важную роль в правильной организации методики.

Таблица 1. Этапы и задачи методики индивидуального обучения

№	Этап	Основная задача
1	Диагностика	Определение способностей и интересов учащегося
2	Траектория	Составление индивидуального плана обучения
3	Образовательный процесс	Организация обучения по индивидуальному плану
4	Мониторинг	Оценка

Эффективность индивидуальных методов обучения – один из важнейших аспектов профессионального развития студентов. Этот метод не только индивидуализирует процесс обучения, но и способствует подготовке конкурентоспособных на рынке труда кадров.

Эффективность индивидуальных методов обучения оценивается по следующим критериям:

1. Когнитивная эффективность – глубина теоретических знаний;
2. Практическая эффективность – уровень развития профессиональных навыков;
3. Личностная эффективность – самостоятельность мышления, креативность, ответственность;
4. Социальная эффективность – способность работать в команде и адаптироваться к профессиональным отношениям.

В заключение следует отметить, что методика индивидуального обучения играет важную роль в совершенствовании профессиональной подготовки студентов. Её реализация способствует повышению качества образования, реализации личностного потенциала студентов, формированию их профессиональных компетенций.

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ПРИЧИНЫ ПАТОЛОГИЧЕСКОГО ФАКТОРА У НЕДОНОШЕННЫХ

Аннотация. *В данной статье анализируются данные социального, соматического, акушерско-гинекологического анамнеза женщин, а также определяется значение различных форм акушерско-гинекологической патологии, осложнивших течение данной беременности. Доказано, что различные формы акушерско-гинекологической патологии у женщин, риск выкидыша, обструкция плода пуповиной, индекс массы тела матери, проживание в городе и области оказывают значительное влияние на рождение ребенка 34-36 недель.*

Ключевые слова: *поздний недоношенный ребёнок; факторы риска; новорождённый; поздние преждевременные роды.*

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CAUSES OF PATHOLOGICAL FACTOR IN PREGNANCY

Abstract. *This article analyzes the data of the social, somatic, obstetric-gynecological history of women, and also determines the significance of various forms of obstetric-gynecological pathology, which complicated the course of this pregnancy. It has been proven that various forms of obstetric and gynecological pathology in women, the risk of miscarriage, fetal obstruction by the umbilical cord, the mother's body mass index, and residence in the city and region have a significant impact on the birth of a 34–36-week-old baby.*

Key words: *late preterm infant; risk factors; newborn; late preterm birth.*

Introduction.

Дети, рожденные между 34 0/7 неделями и 36 6/7 неделями (называемые недоношенными младенцами), представляют собой особую проблему для врачей, а также систем здравоохранения больниц и сообществ [1-3,7]. В последние годы уровень преждевременных родов неуклонно растет: согласно официальной статистике, их число составило 69,4% в 2023 году и 72,8% в 2024 году. В связи с этим возникает необходимость выявления основных факторов, приводящих к преждевременным родам [1-5,7,9].

Такие факторы, как гестационная артериальная гипертензия, предлежание плаценты, эклампсия, длина шейки матки и рост плода, а также женщина, принимавшая антибактериальные и гипотензивные препараты, сыграли ведущую роль в рождении недоношенного ребенка. Психическое состояние беременной, чрезмерная физическая нагрузка [3-6], а также многоплодная беременность, урогенитальные инфекции, выделение околоплодных вод, риск прерывания беременности в ранние сроки [7-9].

Однако важны не только соматические и акушерско-гинекологические факторы, но и социальные. Было обнаружено, что восточноазиатские женщины чаще рожают раньше срока, в то время как африканские женщины чаще рожают раньше срока [10]. У женщин, перенесших предыдущую беременность преждевременно, вероятность повторной преждевременной беременности в 4-5 раз выше [4-11].

Целью исследования явились недоношенные дети и выявление основных факторов риска родов.

Материалы и методы.

Были проанализированы данные анамнеза развития (форма No 097/у), а также анамнез рождения (форма No 096/у) 66 живорожденных с 34 0/7 недель до 36 6/7 недель гестации. Одним из этапов работы был расчет индекса массы тела (ИМТ) женщины. Это величина, позволяющая оценить степень соответствия веса и роста человека [1,2,5,6,7]. Масса тела (кг) /рост2 (м) рассчитывается по формуле. Анализ данных проводился с использованием программ "StatTech 3.1.10," "Microsoft Office Excel 2017" с использованием дисперсионного анализа (ANOVA).

Результаты.

Анализ полученных данных показал, что возраст матери при рождении позднего чалого ребенка составил 30,10±5,67 лет, медианный возраст отца - 31,9±7,25 лет, при этом доля населения города среди беременных женщин составила 65,7%. 55,8% матерей и 44% отцов имеют высшее образование (1-таблица).

Таблица-1

Описание социальной истории

Индикатор	**Частота, %**
Городское население	64.8
Пригородные жители	34.3
Высшее образование (отцов)	45.0
Среднее образование (отцы)	53.4
Частичное среднее образование (отцы)	4.8
Высшее образование (матери)	54.7
Среднее образование (матери)	43.8

Среди состояний, осложняющих течение беременности, чаще встречались другие нарушения плаценты, вызванные беременностью (65,7%), отеком (41,4%) и преждевременным разрывом оболочек (38,6%). Почти у каждой третьей женщины был риск выкидыша (33,6%) и в основном отмечалась легкая анемия (32,1%). В каждом четвертом случае был зарегистрирован гестационный сахарный диабет (24,3%) (табл.2)

У более чем 70% женщин был выявлен осложненный соматический анамнез. В его составе преобладали нарушения вегетативной нервной системы, которые отмечались у каждой 4-й женщины. Нарушение зрения отмечено в 22,1% случаев, хроническая инфекция мочевыводящих путей - в 15,7%, заболевания желудочно-кишечного тракта - в 13,6%, дисфункция щитовидной железы - в 8,6% случаев (таблица 3). Осложненный акушерско-гинекологический анамнез наблюдался у 69,3% женщин. Из них у 14,3% беременных имелся послеоперационный шрам на матке. Каждая десятая женщина имела в анамнезе медицинский или самопроизвольный аборт. В 8,6% случаев имело место прерывание беременности и недостаточный рост плода во время беременности.

Анализ влияния различных факторов риска на гестационный возраст недоношенных детей показал, что риск прерывания беременности (r=0,016) и травмы пуповины (r=0,020) увеличивают риск родов на 34 неделе беременности.

Женщины в сельской местности в 2,66 раза чаще подвержены риску рождения ребенка на 36 неделе беременности (p = 0,008; ОШ = 0,357; 96% ДИ 0,174-0,567), в то время как городское проживание женщин приводит к увеличению продолжительности беременности на 1 неделю (p = 0,051; 96% ДИ 1,012-3,821).

Эти данные свидетельствуют о дальнейшем удобстве и своевременности оказания квалифицированной медицинской помощи в городских условиях.

В то же время мы обнаружили значимую отрицательную корреляцию между сроками рождения недоношенного ребенка на 36 неделе гестации и нарушениями вегетативной нервной системы у женщин (p = -0,014). В группе

с данным фактором риска шансы были в 2,95 раза ниже (ОШ = 0,339; 95% ДИ 0,155-0,723).

Это может быть связано со своевременным устранением влияния неблагоприятных факторов риска, способствовавших продлению фактической беременности.

Таблица 2

Осложнения текущей беременности у женщин

Осложнения текущей беременности	**Частота, %**
Другие нарушения плаценты	64.2
Отеки, вызванные беременностью	42.5
Ранний разрыв оболочек	39.5
Опасность выкидыша	33.2
Анемия, осложняющая беременность, роды и послеродовые периоды	31.4
Вульвовагинит различной этиологии (включая уреаплазму, хламидиоз и микоплазму)	28.4
Гестационный сахарный диабет	25.4
Роды, осложненные изменением частоты сердечных сокращений плода	14,8
Гестационная гипертензия с выраженной протеинурией	16.0
Острая инфекция верхних дыхательных путей, неясная	13.1
Бессимптомная бактериурия у беременных	11.1

Анализ значений ИМТ у беременных женщин выявил значительные колебания. С помощью ROC-анализа была выявлена зависимость рождения позднего недоношенного на сроке 35 0/7–36 6/7 нед. от ИМТ.

Вероятность рождения ребенка в этом возрасте была выше при значениях ИМТ> 23 кг/м^2 и <28 кг/м^2. В то же время наименьший риск преждевременных родов наблюдается, когда ИМТ меньше 22,5 кг/м^2 [7-12], а сроки преждевременных родов обратно пропорциональны величине ИМТ, а преждевременные роды прогнозируются, когда ИМТ> 30 кг/м^2 [10,13].

Также был использован ROC-анализ для определения влияния паритета рождаемости на вероятность преждевременных родов, а также рассчитан режим для массива значений. Оба метода показали, что недоношенные дети родились в основном от 1-й беременности и 1-й родов.

Вероятность родов на 0/7-36 6/7 неделе гестации, такие факторы увеличивали женское бесплодие (p = 0,040) в 4,11 раза (96% ДИ 1,063-15.905) и другие невоспалительные заболевания матки: фиброаденома, фиброаденома матки (p = 0,008) в 18,49 раза (96% ДИ 0,899-324,401).

Таблица 3

Соматические формы патологии у женщин

Форма патологии у женщин	Частота, %
Нарушение вегетативной нервной системы	25,3
Нарушение зрения	22,4
Инфекция мочевыводящих путей, мочекаменная болезнь	15,9
Желудочно-кишечные заболевания	13,9
Патология щитовидной железы	8,9
Патология органов ЛОР	7,4
Заболевания печени и билиарных путей	6,0
Хронический вирусный гепатит В и/или С	5,3
Заболевания кожи	4,6
Хронический бронхит, бронхиальная астма	3,2
ВИЧ-инфекция	3,2
Полиморфизм	1,0
Сахарный диабет 1 типа	0,9
Цитомегаловирусная инфекция, герпесвирус	0,9

Обсуждение.

Преждевременные роды - это сложная многофакторная патология [9,10-13]. В реализации преждевременных родов участвуют факторы различной значимости: инфекции мочевыводящих путей, артериальная гипертензия, гипергликемия и сахарный диабет во время беременности, сокращения шейки матки менее 25 мм, хориоамнионит, индекс массы тела>32 кг/м^2 [11-13]. Следующие факторы риска связаны с преждевременными родами: гестационный сахарный диабет, преждевременный разрыв плодных оболочек, внутрипеченочный холестаз, никотиновая зависимость и сельская жизнь [5,8-13]. Мы определили значимость этих факторов и показали влияние риска прерывания беременности, обструкции плода пуповиной на рождение недоношенного ребенка на 0/6-34 6/7 неделе [13]. Время преждевременных родов было обратно пропорционально индексу массы тела женщины, а поздние преждевременные роды предсказывались, когда индекс массы тела был выше 23 кг/м2 и ниже 28 кг/м2 [12]. Невоспалительные заболевания матки, такие как женское бесплодие, фиброаденома и миома, увеличивали риск преждевременных родов на 37 неделе [4,8]. Факт проживания в городе в течение недели увеличивает срок беременности по сравнению с женщинами, живущими в сельской местности [12].

Заключение.

Причины преждевременных родов определяются многими факторами, которые меняются на протяжении всей жизни и включают в себя комплекс акушерско-гинекологических, соматических, наследственных и социальных предрасположенностей [12,13].

Выявленные нами закономерности изменения значимости факторов преждевременного рождения необходимы для определения объема

специализированной медицинской помощи в отделениях интенсивной терапии новорожденных и ухода за ними в отделениях патологии новорожденных и недоношенных.

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ИННОВАЦИОННЫЕ МЕТОДЫ ДИАГНОСТИКИ И ТЕРАПИИ КРИПТОРХИЗМА В ДЕТСКОМ ВОЗРАСТЕ

Резюме. *Крипторхизм — одно из наиболее распространённых врождённых заболеваний мужской половой системы у детей, характеризующееся отсутствием одного или обоих яичек в мошонке. Своевременная диагностика и правильный выбор лечебной тактики играют ключевую роль в сохранении репродуктивной функции и профилактике осложнений, включая бесплодие и опухолевые процессы. В статье представлены современные инновационные методы диагностики крипторхизма, включая ультразвуковое исследование высокой чёткости, магнитно-резонансную томографию, лапароскопию, а также молекулярно-генетические и гормональные тесты. Рассмотрены новые подходы к терапии — минимально инвазивные лапароскопические техники, комбинированное гормонально-хирургическое лечение и методы с применением микрохирургических технологий.*

Ключевые слова: *крипторхизм, дети, инновационные методы, диагностика, лапароскопия, гормональная терапия, микрохирургия.*

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INNOVATIVE METHODS OF DIAGNOSIS AND THERAPY OF CRYPTORCHIDISM IN CHILDREN

Abstract. *Cryptorchidism is one of the most common congenital disorders of the male reproductive system in children, characterized by the absence of one or both testes in the scrotum. Timely diagnosis and appropriate treatment strategy play*

a crucial role in preserving reproductive function and preventing complications, including infertility and tumor development. This article presents modern innovative diagnostic methods for cryptorchidism, including high-resolution ultrasound, magnetic resonance imaging, laparoscopy, as well as molecular-genetic and hormonal tests. New approaches to therapy are discussed — minimally invasive laparoscopic techniques, combined hormonal-surgical treatment, and methods involving microsurgical technologies.

Keywords: *cryptorchidism, children, innovative methods, diagnosis, laparoscopy, hormonal therapy, microsurgery.*

Актуальность.

Крипторхизм относится к одной из распространенных среди урологических патологий органов репродуктивной системы, приводящей к снижению фертильности и бесплодию у мужчин.

Крипторхизм имеет определенные особенности, которые делают анамнез и клинический осмотр достаточными для установления диагноза. Обследование пациента с крипторхизмом начинается с опроса и визуального осмотра.

Несмотря на большое количество работ и проведенных исследований, проблема крипторхизма остается актуальной, поскольку до сих пор встречается ошибки в диагностике и лечебной тактике этой проблемы. Понимание этиопатогенеза, его последствий, а также эмбриогенеза органов репродуктивной системы позволит уменьшить число неудовлетворительных результатов лечения аномалий развития и локализации яичка. По данным исследований, заболеваемость среди доношенных новорожденных колеблется от 1,6% до 9%, у недоношенных детей примерно 30%. (1,3,6). Немаловажное значение в этиологии крипторхизма имеют гормональные факторы. Главным этиологическим фактором гормональной теории считают нарушенную секрецию гонадотропинов в период анте и постнатальной жизни (2,5,8).

Несмотря на достигнутые успехи в лечение, 40% пациентов с двусторонним и 10% с односторонним крипторхизмом страдают бесплодием.

Цель.

На основании комплекса функциональных обследований изучить эффективность хирургической коррекции крипторхизма на основе оптимизации диагностики и этапного лечения у детей.

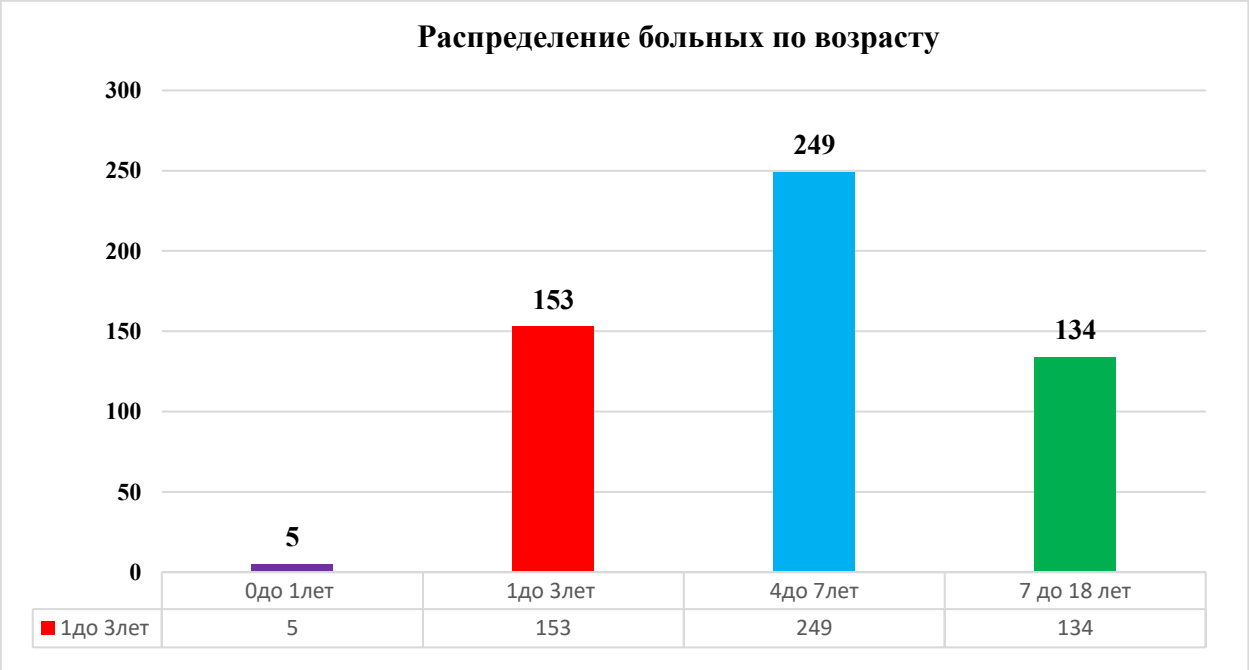
Материал и методы.

В основу работы положен результаты обследования и лечения 541 больных в возрасте от 6 месяцев до 18 лет, (средний возраст лет) находившихся в отделении урологии ОМДБ в период с 2010 по2024 г. Всем детям при поступлении, после анализа анамнестических данных, проводили комплексное клинико-лабораторные, функциональные, морфологические и эндокринологические исследования.

Паховое расположение яичка выявлено у 392 (72.4%), брюшная ретенция - у 149 (27,6%), гипоплазия - у 53 (9.7%), аплазия - у 11 (2%).

Правостороннее расположение яичка наблюдалось у 273 (50.4%), левостороннее - у 228 (42.1%), двустороннее - у 40 (7.3%).

Для анализа дети разделены на две группы. Группа I – 16 мальчиков, орхидопексия которым выполнялась из мошоночного доступа с предварительной диагностической или лечебной лапароскопией.



Группа II – 525 детей, оперированных из пахового доступа с фиксацией яичка в мошонке по методике Petrivalsky-Schoemacker.

С целью гормональной терапии при крипторхизме применяют гонадотропные гормоны - отечественные и зарубежные препараты хорионического гонадотропина (ХГ): хориогонин, гонадотропин хорионический, профази, а также гонадотропины гипофизарного происхождения (префизон). Биологический эффект названных гормонов близок эффекту лютеинизирующего гормона (ЛГ), необходимого для нормального роста и развития яичка.

Как показали исследования последних десятилетий, у большей части больных с крипторхизмом уровень ЛГ снижен. Именно дефицит ЛГ и обусловливает эффективность гормональной терапии крипторхизма.

Согласно рекомендациям ВОЗ (1973), ХГ назначают в следующих разовых дозах: детям от 2 мес. до 2 лет - 250 МЕ, от 3 до 5 лет - 500 МЕ, от 6 лет и старше - 1000 МЕ. Препарат вводят внутримышечно 2 раза в неделю в течение 5 недель подряд. Повторный курс проводят через 8 недель. Применение больших доз нередко приводит к осложнениям в виде преждевременного появления признаков полового созревания (вторичного полового оволосения, увеличения полового члена), длительных эрекций, болей в области задержанных яичек, ускорения дифференцировки костей.

Любая форма эктопии яичка, сочетанная с крипторхизмом, паховой или мошоночной грыжей, а также болевой синдром в области задержанного яичка являются противопоказаниями к консервативной терапии. Одномоментное низведение выполнено у пациентов с паховой эктопией.

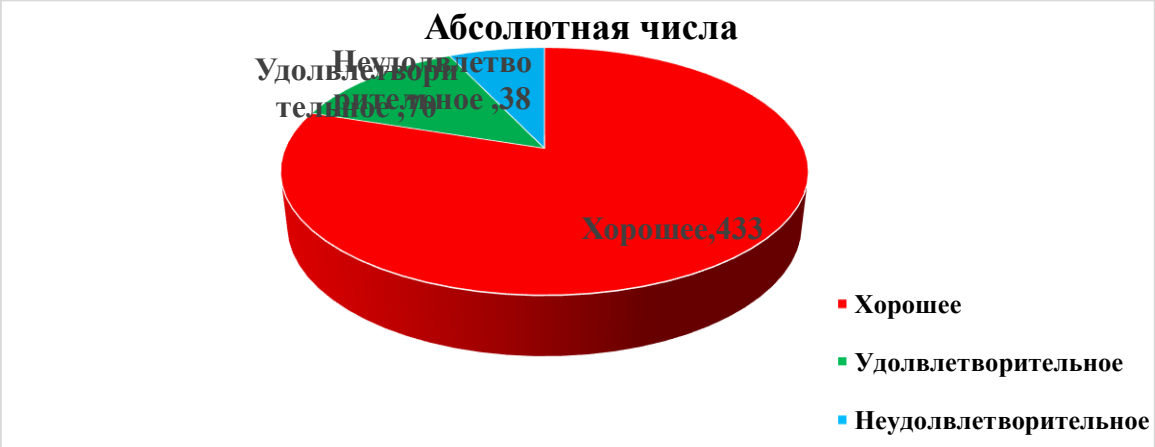
При не выявлении яичка в паховом канале проводили лапароскопическую ревизию брюшной полости у 16 (2,9%) пациентов с целью определения наличия или отсутствия не опустившегося яичка, его сосудов и семявыносящего протока.

В результате лапароскопической ревизии у 13 (81,2%) больных яичко было обнаружено в брюшной полости, у 2 (12,5%) пациентов яичко обнаружить не удалось и у одного больного (6,2%) выявлено, что яичко не развито этому же ребенку выполнено удаления зачатка тестикулы. У восьми пациентов удалось низвести яичка в один этап, 5 больным проводили этапную орхопексию с максимальным сохранением питающих сосудов яичка. При этом яичко фиксировали в области внутреннего пахового кольца на 6 месяцев для адаптации питания за счет артерии семявыносящего протока. Вторым этапом через 6 месяцев выполняли низведение яичка в мошонку.

По нашему мнению, для успешного низведения яичко должно быть настолько подвижным, чтобы его можно было свободно переместить до наружного пахового кольца. Яичко низводили в мошонку и фиксировали по методу Петривальскому-Шумахеру без натяжения питающей ножки. В наших наблюдениях у 6 больных выполненных в других лечебных учреждениях было выполнено повторное вмешательство где находили высоко расположенное яичко, не обнаруженное хирургами во время предыдущей операции.

Таблица 2.

Отдаленые результатов лечения крипторхизма



Лечение крипторхизма направлено на раннее выполнение операции как основного метода сохранения функции яичка.

Эффективность оперативного лечения оценивали на основании результатов клинического и сонографического мониторинга через 6 месяцев, 1-3 лет после операции. Отдаленные результаты хирургического лечения расценивали как хорошие и удовлетворительные у 503 пациентов, и

неудовлетворительные результаты лечения по уровню стояния яичка и по степени вторичной гипоплазии или атрофии яичка выявлено у 17 детей, этим детям в отдаленные сроки потребовалась удаление яичка. Таким образом, несмотря на большое количество проведенных исследований у детей с крипторхизмом остается актуальной, поскольку до сих встречаются ошибки в диагностике и лечебной тактике при этом заболевании.

Выводы:

1. На основании анализа проведенных исследований у детей крипторхизмом можно утверждать, что комплекс клинических и инструментальных обследований позволяет дооперационном периоде выявить ранее изменения не пальпируемом яичке у детей.

2. Гормональная терапия эффективна только у больных со сниженным уровнем собственного гормона и при этом хорионический гонадотропин - весьма важный фактор профилактики гипогонадизма и бесплодия у больных с крипторхизмом.

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ОСОБЕННОСТИ МОРФОФУНКЦИОНАЛЬНЫХ ИЗМЕНЕНИЙ ПЕЧЕНИ ПРИ ДИЕТЕ С ВЫСОКИМ СОДЕРЖАНИЕМ ЖИРОВ И УГЛЕВОДОВ (ЭКСПЕРИМЕНТАЛЬНАЯ МОДЕЛЬ)

Аннотация. *Целью исследования стала разработка и апробация экспериментальной модели метаболического синдрома (МС) у крыс посредством 12-недельной высокожировой и высокоуглеводной диеты с последующим изучением морфофункциональных изменений в печени. Установлено, что несбалансированный рацион вызывает существенные изменения в печени экспериментальной группы: дискомплексацию балочно-радиального строения, признаки белковой и жировой дистрофии гепатоцитов, а также активацию регенерации (увеличение количества двуядерных гепатоцитов в 1,5 раза, $p<0,05$). Морфометрический анализ показал достоверное уменьшение объема паренхимы и увеличение стромально-паренхиматозного индекса ($p<0,05$), что свидетельствует об активации стромальной пролиферации и высоком риске развития фиброза/стеатогепатита. Сделан вывод, что разработанная модель адекватно воспроизводит морфологические проявления МС и может использоваться для изучения патогенеза и ранних нарушений функций печени.*

Ключевые слова. *Метаболический синдром (МС), экспериментальная модель, высокожировая и высокоуглеводная диета, печень, гепатоциты, дистрофия.*

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FEATURES OF MORPHOFUNCTIONAL CHANGES IN THE LIVER UNDER A DIET WITH HIGH FAT AND HIGH CARBOHYDRATE CONTENT (EXPERIMENTAL MODEL)

Abstract. *The aim of the study was to develop and test an experimental model of metabolic syndrome (MS) in rats through a 12-week high-fat and high-carbohydrate diet, followed by the investigation of morphofunctional changes in the liver. It was established that the unbalanced diet causes significant changes in the*

liver of the experimental group: decompaction of the beam-radial structure, signs of protein and fatty dystrophy of hepatocytes, as well as the activation of regeneration (a 1.5-fold increase in the number of binucleated hepatocytes, $p<0.05$). Morphometric analysis showed a significant decrease in parenchymal volume and an increase in the stromal-parenchymal index ($p<0.05$), indicating activation of stromal proliferation and a high risk of developing fibrosis/steatohepatitis. It was concluded that the developed model adequately reproduces the morphological manifestations of MS and can be used to study the pathogenesis and early functional disturbances of the liver.

Keywords. *Metabolic Syndrome (MS), experimental model, high-fat and high-carbohydrate diet, liver, hepatocytes, dystrophy.*

Введение.

Метаболический синдром — это комплекс метаболических, гормональных и гемодинамических нарушений, увеличивающих риск развития сердечно - сосудистых заболеваний. По данным KwitekA.E. (2019) наиболее значимыми факторами развития МС считаются абдоминальное ожирениеи инсулинорезистентность. Международной федерации диабета (IDF) определяет МС как состояние, включающеевисцеральноеожирениеиповышенное артериальное давление (АД) и гипергликемию.

По информации ВОЗ патология печени занимает одно из ведущих мест среди заболеваний органов пищеварения. В мире более 2 млрд человек страдают заболеваниями печени, что в 100 раз превышает распространённость ВИЧ-инфекции. Согласно статистическим данным, за последние годы в структуре поражений печени преобладают алкогольные и вирусные гепатиты и циррозы, увеличился процент опухолевой патологии печени, поражение печени вследствие нарушений обмена веществ, в том числе ожирения [Чабанова Н.Б. 2016].

По мнению Ильясов А.С., и др. (2024) диета при эксперименте наиболее приближена к питанию современного человека и считается максимально адекватной для МС и воспроизведения и феноменологии морфологических факторов нарушения у крыс. В связи с этим целью исследования явилась разработка экспериментальной модели МС крыс на основе высокожировой и высокоуглеводной диеты.

Наибольшие экспериментальные исследований посвящено изучению влияния ожирения, вызванного высокожировым рационом питания на организм крыс самок [Васендин Д.В. и др. 2014, IlyasovA.S. 2024].Но, несмотря на наличие работ, посвященных изучению влияния экзогенных факторов на организм крыс, комплексное действие несбалансированного рациона питания с избытком жиров и углеводов на морфофункциональное состояние печени крыс остаётся не до конца изученным.

Материал и методы исследования

Животные содержались в стандартных условиях вивария с 12-часовой продолжительностью светового дня и свободным доступом к пище и воде. Для исследования крыс всего 30 животных массой 180 – 210 г, возраст на начало исследования 3 месяц были случайным образом распределены на контрольную (n = 15) и экспериментальную (n = 15) группы.

Исследование выполнено на крысах. Контрольнойгрупп животныхнаходилисьнастандартной диете. Экспериментальная группа крыс в течение 12 нед получали высокожировую и высокоуглеводную диету. После чего животные подверглись эвтаназии. Для подтверждения развития метаболического синдрома у крыс, содержавшихся на высокожировой и высокоуглеводной диетой, в конце исследования измеряли массу тела.Подготовленные объекты исследования заливали в парафиновую среду и на автоматическом микротоме выполняли тонкие 4–6 мкм срезы. Срезы окрашивали гематоксилином – эозином и по ван-Гизону.

В гистологических препаратах контрольной и экспериментальной группы измеряли структурные элементы печени крыс: строму, паренхиму (в %) и определяли стромально-паренхиматозный индекс.

Результаты и их обсуждение

Печень является одним из наиболее важных и крупных органов, накапливающих и поставляющих для использования в различных процессах энергоемкие вещества, большая часть которых представлена гликогеном.

Макроскопическое исследования существенных различий в строениях печени у крыс контрольной и экспериментальной групп не выявлено. При микроскопическом исследовании в печени крыс, получавших высокожировой и высокоуглеводной питания, установлены существенные отличия от печени крыс контрольной группы. У интактных крыс цитоплазма гепатоцитов характеризовалась мелкой базофильной зернистостью(рис. 1).

Микрофотография срезов печени экспериментальных крыс 6-месячного возраста показаны в рисунке 2.Где виден дискомплексации балочнорадиарного строения. В центрах долек гепатоциты зачастую были в состоянии белковой дистрофии, а перипортально обнаруживались набухшие гепатоциты со светлой пенистой цитоплазмой и пикнотичными гиперхромными ядрами, что свидетельствует о нарушении их морфофункциональной активности.

Дистрофические изменения гепатоцитов являются морфологическим выражением нарушения комплекса функциональных механизмов, обеспечивающих углеводножировой, водно-электролитный и белковый обмен. Одной из причин элиминации энергетических трофических веществ из печени, является расходование энергии на процессы адаптации.

Преобладание изменений со стороны клеток печени свидетельствует, что оптимальные адаптационные возможности обеспечиваются более высоким, чем в норме напряжением регуляторных систем. Благодаря механизмам компенсации заболевание не выражено или находится в начальной стадии. Однако, если окружающая среда предъявит этим животным

дополнительные нагрузки, может возникнуть срыв гомеостатических систем и развитие заболевания. В таблица 1. показано, морфометрические показатели клеток печени крыс при влиянии высокожировой и высокоуглеводной питании.

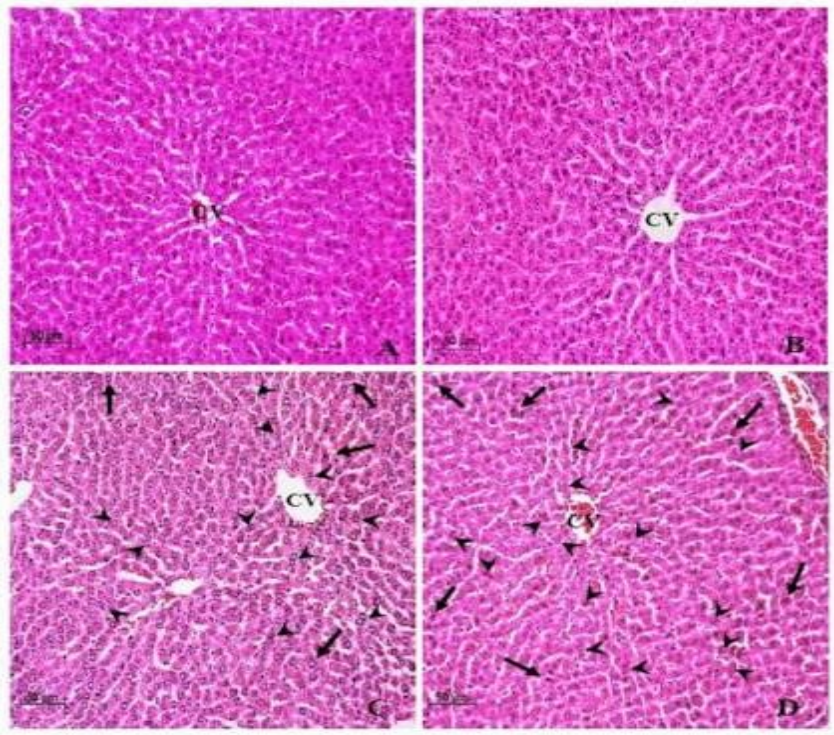


Рис. 1. Микрофотография срезов печени крыс контрольной группи 6-месячного возраста; 1. гепатоциты, 2. печеночные дольки с гепатоцитами, центральная вена. Окраска по гематоксилину-эозину. Об.10 х ок.20.

Степень повреждения паренхимы печени оценивали на основании определения регенераторной активности и относительного объёма элементов паренхимы и стромы с вычислением стромально-паренхиматозного индекса.

В рисунке 3. показаны микрофотография срезов печени экспериментальных крыс 6-месячного возраста, окрашенных по методу ван-Гизон в нем видна дискомплексацией балочнорадиарного строения паренхимы печени.

Регенераторную активность печени оценивали на основании подсчёта количества двуядерных гепатоцитов в процентном соотношении к их одноядерным формам.

Установлено, что у крыс экспериментальной группы количество двуядерных гепатоцитов в 1,5 раза ($p<0,05$) превышает их количество у животных контрольной группы на 3,6±0,03% и 2,4±0,03% соответственно. Это свидетельствует об умеренной интенсивности повреждения печени и активации процесса регенерации паренхимы.

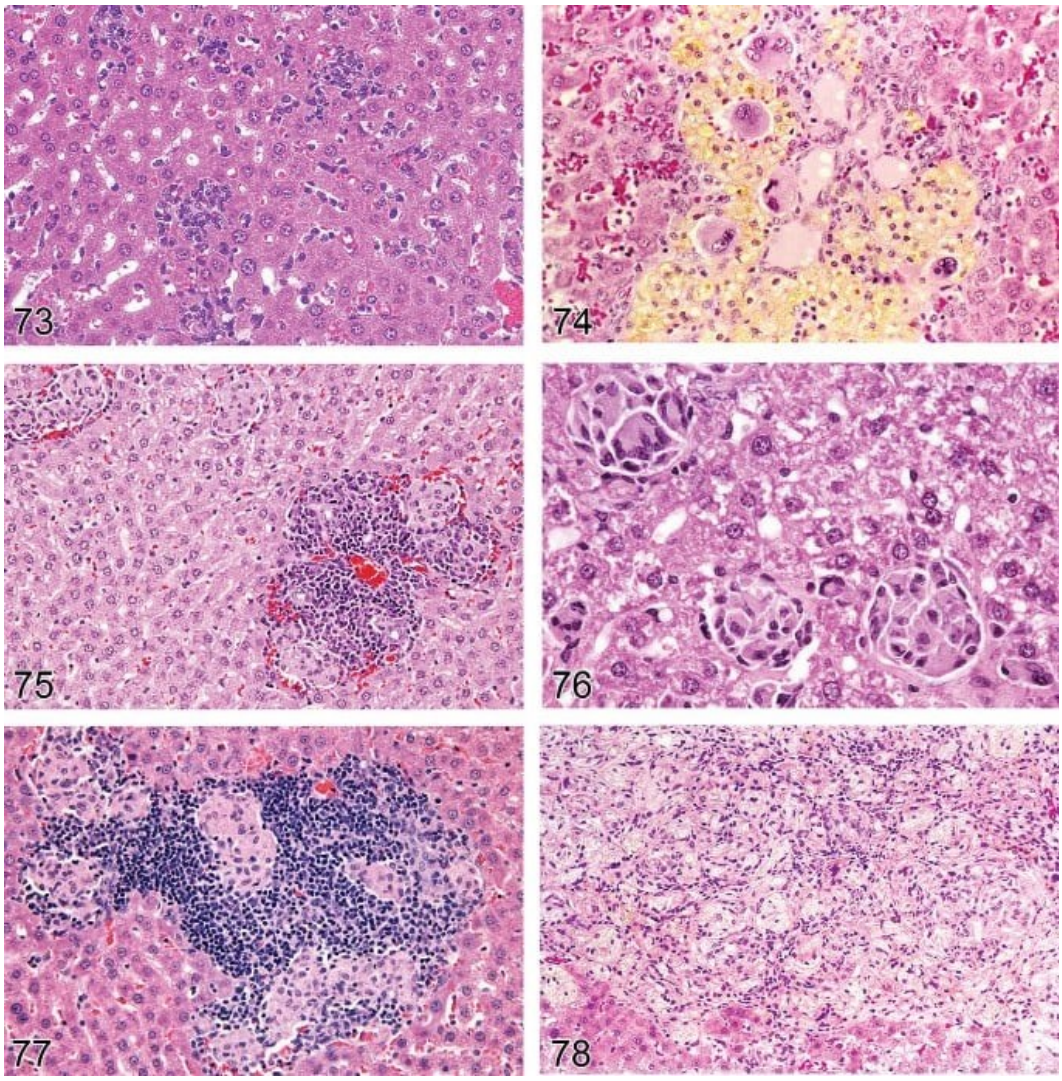


Рис. 2. Микрофотография срезов печени экспериментальных крыс 6-месячного возраста; 1. печеночные дольки с гепатоцитами. 1. клеточной инфильтрации. 2. дискомплексацией балочнорадиарного строения. 3. дистрофия гепатоцитов. 4. двуядерные гепатоциты. Окраска по гематоксилину-эозину. Об.10 х ок.40.

Таблица 1.

Морфометрические показатели клеток печени крыс при влиянии высокожировой и высокоуглеводной питании

(M±m)

Структурные элементы	**Группа крыс**	
	контрольная	**экспериментальная**
Размер гепатоцитов в мкм^2	131,2 - 307,9 208,7	123,2 - 231,3 191,5*
Размер ядра гепатоцитов в мкм^2	26,7 - 57,8 38,7	22,5 - 36,7 35,3*
Я/Ц в усл. ед.	0,14- 0,46 0,24	0,11- 0,31 0,19*

Примечание: * p <0,05 - достоверно значимые отличия от контроля;

Я/Ц - ядерно-цитоплазматическое отношение;

По данным Кравчук Е.Н., Галагудза М.М. (2014) периодическое употребление несбалансированного рациона, обедненного белками и содержащего избыточное количество соли и других небезразличных для организма млекопитающих компонентов, приводит к нарушению комплекса функциональных механизмов, обеспечивающих углеводно-жировой, водно-электролитный и белковый обмен в печени. В результате морфофункциональный статус одного из самых наиболее важных органов метаболизма характеризуется неспецифическими изменениями, несущими черты донозологического состояния.

Установлено, что у крыс экспериментальной группы имеет место достоверное уменьшение объёма паренхимы, увеличение объёма стромальной части печени и стромально-паренхиматозного индекса равно ($p < 0,05$). Полученные данные свидетельствуют об активации процесса пролиферации в строме печени, что возможно развитием её фиброза в дальнейшем. В таблица 2. показаны стромально-паренхиматозного индекса печени крыс при влиянии высокожировой и высокоуглеводной диеты.

Таблица 2.

Стромально-паренхиматозного индекса печени крыс при влиянии высокожировой и высокоуглеводной диеты

(M±m)

Структурные элементы	**Группа крыс**	
	контрольная	**экспериментальная**
Строма %	22,6 - 31,2 27,1 ± 1,1	24,5 - 33,6 29,3 ± 1,1*
Паренхима %	68,8 - 77,4 72,9 ± 1,1	66,4 - 75,5 70,7 ± 1,1*
Стромально-паренхиматозный индекс	0,32 - 0,4 0,39 ± 0,01	0,36 - 0,45 0,41 ± 0,0*

Примечание. * $p < 0,05$ по сравнению с контрольной группой.

Таким образом, питание с избытком жиров и углеводов в рационе крыс приводит к морфофункциональным нарушениям печени, проявляющимся дискомплексацией балочнорадиарного строения и повышением стромально-паренхиматозного индекса. Исследованием подтверждается, что наличии функциональных нарушений в органе может стать причиной развития стеатогепатита. При моделировании МСвоспроизводит большинство типичных признаков данного синдрома у грызунов и может быть полезна в изучении морфологических основ развития МС.

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ПАРАЗИТЫ ПРЕСНОВОДНЫХ РЫБ И ИХ БИОЛОГИЧЕСКИЕ ОСОБЕННОСТИ В УСЛОВИЯХ ЮЖНОГО ПРИАРАЛЬЯ

Аннотация: *В статье представлены результаты анализа паразитофауны пресноводных рыб Южного Приаралья. Рассмотрены основные группы паразитов, их морфологические и биологические особенности, адаптации к изменяющимся условиям среды, а также влияние экологических и антропогенных факторов на формирование паразитарных комплексов. Особое внимание уделено связи между экологическим состоянием водоёмов и уровнем заражённости рыб. Приводятся выводы о необходимости регулярного паразитологического мониторинга как инструмента оценки экологического состояния водных экосистем региона.*

Ключевые слова: *паразиты рыб, Южное Приаралье, биоэкология, гельминты, моногенеи, экологический мониторинг.*

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FRESHWATER FISH PARASITES AND THEIR BIOLOGICAL CHARACTERISTICS IN THE SOUTHERN ARAL SEA REGION

Abstract: *This article presents the results of an analysis of the parasite fauna of freshwater fish in the Southern Aral Sea region. The main groups of parasites, their morphological and biological characteristics, adaptations to changing environmental conditions, and the influence of environmental and anthropogenic factors on the formation of parasite complexes are discussed. Particular attention is paid to the relationship between the ecological state of water bodies and the level of fish infestation. Conclusions are drawn regarding the need for regular parasitological monitoring as a tool for assessing the ecological state of aquatic ecosystems in the region.*

Key words*: fish parasites, Southern Aral Sea region, bioecology, helminths, monogeneans, environmental monitoring.*

Введение

Южное Приаралье — это регион, характеризующийся сложными и динамично изменяющимися природными условиями, обусловленными

длительным процессом деградации Аральского моря. Снижение уровня воды, засоление и изменение гидрологического режима привели к трансформации пресноводных экосистем и их биоты. Среди многочисленных компонентов водных экосистем особое значение имеют паразиты рыб, которые не только оказывают влияние на здоровье и жизнедеятельность хозяев, но и служат важными индикаторами экологического состояния водоёмов. Паразитофауна отражает комплексное действие биотических и абиотических факторов среды, и её изменения часто указывают на нарушение устойчивости экосистем. Исследование паразитов пресноводных рыб Южного Приаралья имеет не только теоретическую, но и прикладную значимость, поскольку паразитарные заболевания снижают продуктивность рыбных хозяйств, ухудшают санитарное качество рыбы и могут вызывать эпизоотии.

Материалы и методы

Исследования проводились на территории Южного Приаралья, включая приустьевые участки реки Амударьи, озёра-остатки бывших дельтовых систем. В качестве объектов изучения отбирались представители основных промысловых и аборигенных видов рыб: сазан (*Cyprinus carpio*), карась золотой (*Carassius auratus*), лещ (*Abramis brama*), судак (*Sander lucioperca*) и сом (*Silurus glanis*). Отбор проб проводился в весенне-летний и осенний периоды, когда активность паразитов максимальна. Паразитологический анализ включал вскрытие органов рыб, макро- и микроскопическое исследование жабр, печени, кишечника, плавательного пузыря и кожи. Идентификация видов проводилась по морфологическим признакам с использованием определителей паразитов рыб Средней Азии и Восточной Европы. Степень заражённости определялась по показателям экстенсивности (E%) и интенсивности инвазии (I).

Результаты и обсуждение

В ходе проведённых исследований в пресноводных рыбах Южного Приаралья было выявлено более двадцати пяти видов паразитов, относящихся к различным таксономическим группам — простейшим, моногенетическим сосальщикам, трематодам, цестодам, нематодам и акантоцефалам. Среди простейших наиболее часто встречались *Trichodina spp.*, *Chilodonella piscicola* и *Ichthyophthirius multifiliis*, вызывающие поражения жабр и кожи, сопровождающиеся усиленным выделением слизи, нарушением дыхания и снижением активности рыб. Моногенеи, такие как *Dactylogyrus vastator* и *Gyrodactylus elegans*, паразитировали преимущественно на жабрах и коже карповых рыб. Эти виды обладают высокой плодовитостью и коротким жизненным циклом, что способствует их быстрому размножению в условиях повышенной температуры воды.

Среди трематод выявлены личиночные стадии *Diplostomum spathaceum* и *Posthodiplostomum cuticola*, локализующиеся в глазах и мышечной ткани, вызывающие повреждения органов зрения и снижение ориентации рыб. Цестоды представлены кишечным паразитом *Bothriocephalus acheilognathi*, широко распространённым среди карповых рыб региона. Этот вид отличается

высокой степенью адаптации и может развиваться при изменении солевого состава воды. Нематоды, такие как *Camallanus lacustris* и *Raphidascaris acus*, обнаружены в кишечнике и брюшной полости, они часто переносятся через промежуточных хозяев — ракообразных. Акантоцефалы, например, *Acanthocephalus lucii*, отмечены у хищных видов, преимущественно у судака и сома.

Экологический анализ показал, что наибольшая заражённость рыб наблюдается в летний период, когда температура воды достигает 25–30 °C, что благоприятствует размножению паразитов и развитию их личиночных стадий в промежуточных хозяевах. При этом засоление воды и повышенная концентрация органических веществ в водоёмах Южного Приаралья оказывают двойственное влияние: с одной стороны, снижается видовое разнообразие паразитов, чувствительных к солёности, с другой — возрастает численность наиболее устойчивых форм, способных существовать при колебаниях минерализации. Важно отметить, что повышенная солёность и загрязнение воды способствуют стрессу у рыб, что снижает их иммунную устойчивость и делает организм более восприимчивым к паразитарным инвазиям.

Особенностью паразитофауны Южного Приаралья является постепенная трансформация видового состава в сторону доминирования более устойчивых и пластичных видов. Так, моногенеи рода *Gyrodactylus* и цестоды *Bothriocephalus acheilognathi* встречаются во всех обследованных водоёмах, тогда как некоторые трематоды и нематоды, характерные для пресноводных экосистем, отмечаются реже. Это свидетельствует о деградации природных связей и сокращении числа промежуточных хозяев. Несмотря на это, паразиты рыб продолжают выполнять важную экологическую функцию, участвуя в регуляции численности хозяев и являясь биоиндикаторами экологического состояния среды.

Заключение

Паразиты пресноводных рыб Южного Приаралья представляют собой важный компонент водных экосистем, отражающий общее состояние биологического равновесия. Изменение гидрологического режима, повышение минерализации, загрязнение водоёмов и антропогенная нагрузка приводят к изменению структуры паразитофауны, снижению видового разнообразия и увеличению численности устойчивых видов. В этих условиях возрастает значение комплексного паразитологического мониторинга, позволяющего не только выявлять уровень заражённости рыб, но и оценивать экологическую устойчивость водных экосистем региона. Сохранение биологического разнообразия и устойчивости популяций рыб требует систематических исследований паразитарных комплексов, разработки профилактических мер и оптимизации условий содержания рыб в искусственных водоёмах.

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ПОНЯТИЕ ТУРИСТСКИХ И РЕКРЕАЦИОННЫХ РЕСУРСОВ И ВОПРОСЫ ИХ ИССЛЕДОВАНИЯ

Аннотация: *В статье рассмотрены понятия туристских и рекреационных ресурсов, их сущность, классификация и значение в развитии туризма и рекреационной деятельности. Определены природные и антропогенные виды ресурсов, а также их роль в удовлетворении туристско-рекреационных потребностей человека. Проанализированы различные научные подходы к трактовке терминов «туристические ресурсы», «рекреационные ресурсы» и «рекреация».*

Ключевые слова*: туризм, рекреация, экотуризм, потенциал, классификация, ресурсы.*

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THE CONCEPT OF TOURIST AND RECREATIONAL RESOURCES AND ISSUES OF THEIR STUDY

Annotation: *The article examines the concepts of tourist and recreational resources, their essence, classification, and significance in the development of tourism and recreational activities. It defines natural and anthropogenic types of resources and their role in meeting the tourist and recreational needs of people.*

Various scientific approaches to the interpretation of the terms "tourist resources," "recreational resources," and "recreation" are analyzed.

Key words: *tourism, recreation, ecotourism, potential, classification, resources.*

С момента появления человечества природа и её ресурсы широко использовались. С развитием общества росли масштабы и совершенствовались методы их освоения. Способы использования природных ресурсов связаны с интеллектом и творчеством человека, что побуждает постоянно расширять виды и цели их применения.

Из этого можно понять, что виды ресурсов, используемых в обществе, разнообразны, в том числе принципы и методы использования туристских и рекреационных ресурсов. В связи с этим в работах Л.А.Багровой (1981), Ю.А.Веденина (1982), Л.И.Мухиной (1974) и В.С.Преображенского (10) и ряда других ученых отражена взаимосвязь между видами ресурсов, целевыми задачами классификаций определенного уровня и, соответственно, системами их оценки.

В настоящее время все, включая туристские и рекреационные ресурсы, рассматриваются как отраслевые ресурсы экономики. Учёные разработали универсальные принципы их оценки и прогнозирования, отражённые в различных научных подходах. Эти принципы необходимы для комплексного изучения ресурсного потенциала страны или региона. Практическая деятельность любой отрасли основана на использовании её ресурсов и знании их свойств. Это определяет её развитие и методы работы. Потребности в ресурсах остаются ключевым фактором организации и функционирования всех отраслей, включая туристическую. Следовательно, принципы учета особенностей, классификации и оценки туристско-рекреационных ресурсов регионов основаны на основных потребностях отрасли, в том числе развивающихся туристско-рекреационных потребностях современного человека.

Понятие туристско-рекреационных ресурсов широко изучалось на разных этапах развития туризма. Терминологические исследования проводились как отдельно, так и в общем контексте, что отражает цели исследователей и не противоречит содержанию отраслевых терминов.

По данным Википедии, туристические ресурсы — это природные, климатические, социокультурные и другие объекты, способные вызывать туристический интерес и впечатления. Рекреационные ресурсы представляют собой совокупность природных, культурных и социально-экономических факторов, используемых для отдыха, оздоровления и туризма, включая ландшафты, климат и объекты инфраструктуры [8].

Вышеприведенные мнения и суждения очень обширны и, на наш взгляд, состоят из двух частей: "туристических" и "рекреационных" ресурсов. Туристско-рекреационная инфраструктура - это специально созданные

целевые объекты и комплексы для удовлетворения потребностей человека в сфере туризма.

Н. Э. Ибодуллаев (2008) определяет рекреацию как восстановление здоровья и трудоспособности через отдых, туризм и посещение природных, архитектурных и исторических объектов. К её видам относятся санаторно-курортное лечение, путешествия по природным местам, занятия спортом и ознакомление с памятниками культуры [4]. Следовательно, рациональное использование ресурсов и охрана среды в рекреационных зонах имеют важное значение. Эти зоны включают природные и культурные территории, предназначенные для отдыха и туризма: парки, леса, национальные парки, заповедники, туристические маршруты и базы отдыха.

Рекреационные ресурсы, как часть природных и культурных, экономических, исторических ресурсов, по происхождению и особенностям использования делятся на две группы: природные и антропогенные рекреационные ресурсы. К природным рекреационным ресурсам относятся живописные ландшафты, включающие реки, озёра, морские побережья, горную растительность, минеральные источники и другие природные объекты. К ним также относятся территории для отдыха, спорта и охоты, зелёные зоны, парки, сады, заповедники и национальные парки.

Исторические, археологические и художественные памятники, музеи и другие созданные человеком объекты, используемые в рекреационных целях, относятся к антропогенным рекреационным ресурсам. Рекреационная деятельность является важной отраслью экономики, обеспечивающей отдых, оздоровление и привлечение иностранных туристов.

В научной литературе туристические ресурсы трактуются как природные, исторические и социокультурные объекты, побуждающие к путешествиям и способствующие восстановлению физических и эмоциональных сил человека. Рекреационный потенциал ландшафта представляет собой совокупность природных и культурных условий, обеспечивающих восстановление деятельности человека [5]. Таким образом, туристический и рекреационный потенциал — это территория с характеристиками, способствующими достижению целей человека.

Экотуристический потенциал территории — это совокупность природных объектов, явлений и условий, обеспечивающих формирование и реализацию экотуристических программ, туров и экскурсий. Определение включает ресурсный компонент и технологическую цепочку создания туристического продукта с учётом особенностей региона.

В «Энциклопедии туризма» отсутствует термин «рекреационные ресурсы», однако приведены понятия «рекреация» и «туристические ресурсы», основанные на зарубежных источниках. Рекреация рассматривается как неотъемлемая часть туризма и определяется как целенаправленная деятельность, направленная на достижение определённых целей [9].

Понятие "туристические ресурсы" рассматривается как генетические объекты и комплексы различного происхождения, обладающие

определенными свойствами и потенциалом для удовлетворения самых широких рекреационных (туристических) потребностей человека.

Термин «рекреация» (от лат. recreatio — «восстановление») означает комплекс оздоровительных мероприятий, направленных на восстановление благополучия и работоспособности здорового, но уставшего человека [3].

«Ресурс» (от фр. ressource — «вспомогательное средство») — это средства, запасы и возможности, включая природные, экономические, трудовые и валютные. В широком смысле ресурсы представляют собой источники и средства обеспечения производства и жизнедеятельности общества.

Экономические ресурсы подразделяются на природные (сырьевые, водные, лесные), трудовые ("человеческий капитал"), оборотные средства (материалы), информационные, финансовые (денежный капитал) ресурсы. В узком смысле - экономические ресурсы представляют собой совокупность факторов, используемых в хозяйственной деятельности, включая вышеупомянутые ресурсы [10]. В целом, приведённые понятия близки по содержанию, и их отраслевое толкование соответствует значению. Под терминами «рекреационные», «туристские» и «туристско-рекреационные ресурсы» понимаются объекты, территории и комплексы, их особенности и развитие, а также специально созданные элементы, удовлетворяющие различные туристско-рекреационные потребности человека.

Термин «рекреация» общепризнан в научной среде. Его значение расширяется с развитием отрасли, вовлечением новых ресурсов и форм организации туризма. В современном понимании рекреация означает место и время отдыха, а также деятельность, направленную на восстановление духовных, интеллектуальных и физических сил человека. В целом, ресурсы в туристско-рекреационной сфере классифицируются следующим образом:

✓ природные ресурсы — комплексы и объекты с особыми, в том числе целебными, свойствами, положительно влияющими на физическое и духовное состояние человека;

✓ историко-культурные ресурсы — памятники, объекты духовного наследия и созданные человеком комплексы, удовлетворяющие туристские и рекреационные потребности;

✓ производственно-культурные ресурсы — ремесла, искусство, достижения промышленности и науки, отражающие творческий потенциал человека;

✓ человек — как особый биологический вид, обладающий уникальными возможностями и способностями.

Таким образом, туристские и рекреационные ресурсы представляют собой комплекс природных, культурных и социально-экономических объектов, используемых для отдыха, оздоровления и туризма. Они включают природные ландшафты, историко-культурные объекты, инфраструктуру и специально созданные комплексы, удовлетворяющие современные потребности человека. Исследование и классификация этих ресурсов

основаны на принципах учета их особенностей, потенциала и влияния на развитие туризма. Рациональное использование туристско-рекреационных ресурсов способствует устойчивому развитию отрасли, сохранению природного и культурного наследия, а также удовлетворению рекреационных потребностей современного человека.

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ЧАСТОТА АРИТМИЧЕСКИХ НАРУШЕНИЙ У ДЕТЕЙ С ДЕФЕКТОМ МЕЖЖЕЛУДОЧКОВОЙ ПЕРЕГОРОДКИ ДО И ПОСЛЕ ХИРУРГИЧЕСКОЙ КОРРЕКЦИИ

Аннотация. *В статье проведена сравнительная оценка частоты аритмических нарушений у детей с дефектом межжелудочковой перегородки (ДМЖП) до и после его хирургической коррекции. В исследование были включены 140 детей: 90 детей с естественным течением и 50 детей, перенесших хирургическую коррекцию. На основании данных электрокардиографии выявлена высокая частота аритмического синдрома в обеих группах, представленная полной и неполной блокадой ножек пучка Гиса. Полученные результаты указывают на высокую частоту и устойчивость нарушений сердечного ритма, независимо от возраста ребенка на момент оперативного вмешательства, что связано с анатомо-функциональными изменениями проводящей системы сердца при ДМЖП и особенностями ее повреждения в процессе хирургической коррекции.*

Ключевые слова: *дефект межжелудочковой перегородки, аритмический синдром, электрокардиография, гипертрофия миокарда, блокада ножек пучка Гиса, тахикардия.*

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FREQUENCY OF ARRHYTHMIC DISORDERS IN CHILDREN WITH VENTRICULAR SEPTAL DEFECT BEFORE AND AFTER SURGICAL CORRECTION

Abstract. *The article presents a comparative assessment of the frequency of arrhythmic disorders in children with ventricular septal defect (VSD) before and after surgical correction. The study included 140 children: 90 with the natural course of the disease and 50 who underwent surgical repair. Based on electrocardiographic data, a high incidence of arrhythmic syndrome was identified in both groups, manifested by complete and incomplete bundle branch blocks. The obtained results indicate a high frequency and persistence of cardiac rhythm disturbances, regardless of the child's age at the time of surgery, which is associated with the anatomical and functional changes of the cardiac conduction system in VSD and its intraoperative damage during surgical correction.*

Keywords*: ventricular septal defect, arrhythmic syndrome, electrocardiography, myocardial hypertrophy, bundle branch block, tachycardia.*

Введение

Врожденные пороки сердца (ВПС) остаются одной из приоритетных медико-социальных проблем из-за высокого риска неблагоприятных исходов и угрожающего для жизни ребёнка прогноза. Одной из наиболее частых анатомических аномалий у детей является дефект межжелудочковой перегородки (ДМЖП), который встречается примерно в 2–4 случаях на 1000 доношенных новорождённых и до 7 случаев на 1000 среди недоношенных детей [4,5,7].

Выраженность и характер гемодинамических нарушений при ДМЖП зависят от размера, числа и локализации дефектов, длительности заболевания и степени лёгочной гипертензии. Существенное значение имеют компенсаторная гипертрофия миокарда правого и левого желудочков, соотношение сосудистых сопротивлений большого и малого кругов кровообращения, а также своевременность хирургического вмешательства [2,3,8].

Хирургическое закрытие гемодинамически значимых ДМЖП остаётся основным методом лечения. Вместе с тем клиническую значимость сохраняют послеоперационные осложнения, возникающие как в ранние, так и в отдалённые сроки после операции — прежде всего нарушения сердечного ритма, связанные с травматизацией проводящей системы. Анатомические повреждения могут затрагивать соединительнотканный футляр проводящей системы, сами проводящие волокна, питающие их сосуды и соседние структуры сердца [1,8,9]. Кроме того, возможно формирование резидуального шунта в зоне пластики дефекта, что нередко требует повторного хирургического вмешательства [1,6,10].

Современные исследования показывают, что даже при своевременно проведённой коррекции ДМЖП аритмии регистрируются у значимого

процента пациентов (по данным разных авторов — в пределах 15–28%), причём в отдалённом послеоперационном периоде частота таких нарушений может увеличиваться в среднем в 2–2,5 раза [1,3,8].

Целью настоящего исследования явилось проведение сравнительного анализа состояния сердечного ритма у детей с дефектом межжелудочковой перегородки — как при естественном течении заболевания, так и после хирургической коррекции.

Материалы и методы исследования

Работа была выполнена на базе кардиологического отделения Андижанского областного детского многопрофильного медицинского центра. Перед включением в исследование от родителей всех детей было получено информированное согласие на участие в клиническом наблюдении. В исследование не включались пациенты, у которых дефект межжелудочковой перегородки являлся частью сложных комбинированных пороков сердца или ассоциировался с генетическими синдромами.

Общая выборка составила 140 детей, среди которых 90 пациентов имели изолированный ДМЖП без оперативного лечения, а 50 — находились в состоянии после хирургической коррекции. Возраст обследованных охватывал широкий диапазон — от грудного до подросткового периода.

Таблица 1. Возрастное распределение детей с ДМЖП

Возраст	Не получившие коррекцию (n=90)	Получившие коррекцию (n=50)
До 1 года	36,7%	2%
1 – 3 года	44,5%	18%
4 – 6 лет	4,5%	32%
7 – 10 лет	6,6%	16%
11-16 лет	7,7%	32%

По половому признаку различий в частоте встречаемости дефекта выявлено не было: мальчики составляли 52% выборки, девочки — 48%.

Информация о состоянии здоровья до поступления в стационар собиралась путём опроса родителей и анализа медицинской документации. Клиническое обследование проводилось в соответствии с общепринятыми педиатрическими стандартами. Инструментальная диагностика включала электрокардиографию (ЭКГ) и эхокардиографию (ЭхоКГ) с детальной оценкой внутрисердечной гемодинамики.

Результаты исследования

Объективная оценка состояния детей с естественным течением дефекта межжелудочковой перегородки показала, что у большинства из них преобладали признаки сердечной недостаточности, преимущественно II Б степени (53,3%). У трети пациентов наблюдалось сочетание проявлений сердечной недостаточности с симптомами лёгочной гипертензии.

Среди детей, перенёсших хирургическую коррекцию, 90% поступали в стационар в состоянии средней тяжести, а 10% — в тяжёлом состоянии. У

этих пациентов отмечались значительные дефекты межжелудочковой перегородки и выраженная лёгочная гипертензия, что требовало проведения частичной коррекции порока.

Сравнительный анализ состояния сердечного ритма проводился у 45 детей, которым была выполнена одномоментная радикальная коррекция дефекта в разные возрастные периоды. Наибольшую часть составили дети, оперированные в возрасте старше 7 лет (42,2%) и в дошкольном возрасте (35,6%). Пациенты, перенёсшие вмешательство в раннем возрасте, составляли около 22,2% выборки. Кроме того, в исследование были включены 5 детей, которым из-за выраженной лёгочной гипертензии и сердечной недостаточности II Б степени был выполнен только первый этап оперативного вмешательства.

Рисунок 1. Варианты хирургического вмешательства у детей с дефектом межжелудочковой перегородки.



Для выявления нарушений сердечного ритма и оценки степени поражения миокарда всем детям, как с естественным течением порока (90 детей), так и после радикального хирургического лечения (45 детей), была проведена электрокардиография. Результаты исследования представлены ниже.

Таблица 2. Электрокардиографические изменения у детей с ДМЖП (n = 135)

ЭКГ признаки	Дети без коррекции ДМЖП **(n=90)**	Коррекция порока в 1-3 года **(n=10)**	Коррекция порока в 4-6 лет **(n=16)**	Коррекция порока в 7-10 лет **(n=8)**	Коррекция порока в 11-16 лет **(n=11)**
синусовый ритм	100%	100%	100%	100%	100%
отклонение ЭОС вправо	37,8%	60%	56,3%	50%	63,6%
отклонение ЭОС влево	21,1%	30%	25%	-	9,1%
нормальное расположение ЭОС	41,1%	10%	18,7%	50%	27,3%
тахикардия	75,6%	90%	93,7%	100%	72,7%
тахиаритмия	22,2%	-	-	-	-
брадикардия	2,2%	10%	6,3%	-	27,3%
гипертрофия правого желудочка с перегрузкой предсердий, из них с - НБПНПГ - ПБПНПГ	13,3% 58,3% 41,7%	70% 10% 60%	-	-	81,8% 44,5% 55,5%
гипертрофия левого желудочка с перегрузкой предсердий, из них с - БЛНПГ - НБПНПГ - ПБПНПГ -синоаурикулярной блокадой 1 степени - АВ-блокадой 1 степени	17,8% 31,3% 25% 17,5% 18,7% 12,5%	30% - 10% 10% - 10%	-	-	9,1% 9,1%
гипертрофия обоих желудочков с перегрузкой предсердий, из них с - НБПНПГ - ПБПНПГ - АВ- блокада 1 степени	21,1% 68,4% 26,3% 5,3%	-	-	-	-
перегрузка предсердий	11,1%	-	-	-	-
гипертрофия правого предсердия и правого желудочка, из них с - НБПНПГ - ПБПНПГ	36,7% 81,8% 18,2%	-	-	-	-
Перегрузка левого желудочка, из них с - замедлением внутрижелудочковой проводимости - АВ блокадой 1 степени - НБПНПГ	-	-	40% 25% 25% 50%	37,5% 33,3% 33,3% 33,4%	9,1% - - 9,1%
Перегрузка правого желудочка, из них с - НБПНПГ - ПБПНПГ - АВ блокадой 1 степени			60% 58,3% 33,3% 8,4%	62,5% 40% 60% -	-

Обсуждение

Анализ электрокардиографических данных показал, что у детей с естественным течением дефекта межжелудочковой перегородки наиболее часто выявлялись признаки гипертрофии и перегрузки как правых, так и

левых отделов сердца. Среди нарушений автоматизма преобладали синусовая тахикардия и тахиаритмия, а среди нарушений проводимости — полная и неполная блокада правой ножки пучка Гиса, реже — блокады левой ножки. Эти изменения отражают прогрессирующую перегрузку миокарда и адаптацию проводящей системы к хронической гемодинамической перегрузке.

У детей, перенёсших хирургическую коррекцию в раннем возрасте, нарушения автоматизма проявлялись преимущественно синусовой тахикардией. Несмотря на проведённую пластику дефекта, у всех обследованных сохранялись признаки гипертрофии желудочков, более выраженные со стороны правого. Основными нарушениями ритма у этой группы пациентов были расстройства проведения импульса — чаще всего неполная или полная блокада правой ножки пучка Гиса.

В более старших возрастных группах (4–10 лет и старше 11 лет) также преобладала синусовая тахикардия, что свидетельствует о повышенном влиянии симпатического отдела вегетативной нервной системы и напряжении адаптационных возможностей сердечно-сосудистой системы. При этом у пациентов, прооперированных в возрасте до 10 лет, чаще сохранялась перегрузка обоих желудочков, тогда как у детей, оперированных в более поздние сроки, наблюдалась выраженная гипертрофия миокарда обоих желудочков.

Нарушения сердечного ритма отмечались независимо от возраста оперативного вмешательства, что указывает на стойкий характер изменений проводящей системы. Основной причиной этих нарушений, вероятно, является травматическое воздействие при хирургической манипуляции в области межжелудочковой перегородки и атриовентрикулярного узла.

Выводы.

1. Установлено, что нарушения сердечного ритма наблюдаются как у детей с естественным течением дефекта межжелудочковой перегородки, так и у пациентов после хирургической коррекции.

2. У детей с естественным течением заболевания преобладают признаки перегрузки и гипертрофии миокарда обоих желудочков в сочетании с тахиаритмией.

3. После оперативного лечения наиболее часто выявляются блокады правой ножки пучка Гиса, сохраняющиеся независимо от возраста проведения операции.

4. Полученные данные свидетельствуют о том, что повреждение проводящей системы сердца при хирургическом вмешательстве является ведущим фактором в формировании стойких нарушений сердечного ритма в послеоперационном периоде.

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НАУЧНО-ТЕОРЕТИЧЕСКИЕ ОСНОВЫ ИССЛЕДОВАНИЙ ГАСТРОНОМИЧЕСКОГО ТУРИЗМА

Аннотация: *В статье представлена информация о понятии гастрономического туризма, его возникновении, определениях, данных учеными, факторах, влияющих на развитие гастрономического туризма. Также в статье представлена информация о развитии гастрономического туризма за рубежом и его научно-теоретических основах.*

Ключевые слова: *гастрономия, винный тур, винный туризм, природные ресурсы, географический фактор, экономический фактор, фестивали.*

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SCIENTIFIC AND THEORETICAL BASIS OF RESEARCH IN GASTRONOMIC TOURISM

Abstract: *This article provides information on the concept of gastronomic tourism, its origins, definitions provided by scholars, and factors influencing its development. It also provides information on the development of gastronomic tourism abroad and its scientific and theoretical foundations.*

Keywords: *gastronomy, wine tour, wine tourism, natural resources, geographical factor, economic factor, festivals.*

Современный гастрономический туризм характеризуется ростом интереса к локальным культурам через еду, повышенным спросом на персонализированные и устойчивые туристические продукты, а также влиянием цифровых технологий и виртуализации на процесс выбора и

планирования путешествий. Перспективы развития связаны с дальнейшей глобализацией и локализацией туризма, развитием цифровых платформ для путешественников, внедрением персонализированных решений и ростом спроса на внутренний гастротуризм.

Гастрономический туризм - это отдельное направление туризма, и чтобы понять его суть, цели и задачи, необходимо для начала полностью понять истинную суть туризма. Гастрономический туризм - это вид путешествий, где основной целью является знакомство с национальной кухней, традициями и местными продуктами страны или региона. Такой туризм включает в себя дегустации блюд и напитков, посещение ферм, рынков и виноделен, участие в кулинарных мастер-классах и фестивалях, а также знакомство с местными шеф-поварами и производителями.

Гастрономический туризм, в частности, появился как новое направление в туризме, привлекшее внимание в конце XX - начале XXI веков. Наиболее целостная концепция гастрономического туризма, представляющего собой смежную дисциплину, которую изучают В.В. Баев и Д.И. Басюк, является благоприятной. Термин «гастрономия» (от греческого слова «Στομάχι» - желудок) - это термин, изучающий взаимосвязь между едой и культурой. [1; 49– 54-b].

Кулинария (лат. culrna - кухня) - это сфера деятельности, связанная с приготовлением пищи, включающая в себя совокупность технологий, оборудования и рецептов, и являющаяся частью гастрономии. Термин «кулинарный туризм» был введён в 1998 году Люси Лонг, доцентом кафедры народной культуры Bowling Green State universiteti (штат Огайо, США). В 2003 году Эрик Вольф основал Международную ассоциацию кулинарного туризма [2; 44-b].

По мнению ученых Г.С. Холла, М.С. Митчелла и А.В. Ричардса, «туризм приготовление» способен создать прекрасную атмосферу во время путешествия, что очень важно для незабываемых впечатлений, а также сформировать устойчивый образ стран и народов, использующих уникальные особенности и культурные ценности.

Профессор Р. Кивель описывает гастрономический туризм как не просто путешествие, но и столкновение культур. Г.С.Холл определяет гастрономический туризм как первичный и вторичный опыт производителей на гастрономических фестивалях, в ресторанах и павильонах, как «главную мотивацию к путешествиям».

Люси Лонг отметила, что люди знакомятся с другими культурами через местную еду. Это заложило основу для развития гастрономического туризма как отдельного вида. Раньше главной целью путешествий не было знакомство с гастрономической культурой принимающей страны. Однако такие путешественники, как Марко Поло и Афанасий Никитин, описывали местную кухню, среди прочих впечатлений.

Винные туры, или энотуры, впервые появились в ведущей винодельческой стране - Франции. Энотуризм - это вид туризма, знакомящий

путешественников с национальными традициями производства и потребления вина. Название «энотуры» происходит от понятия «энология» - науки о вине. Первый институт энологии появился во Франции в 1905 году в регионе Шампань.

Многие путешественники отправляются в специальные гастрономические и винные туры в разные страны, чтобы познакомиться с национальными блюдами. Во время таких поездок они принимают участие в местных мероприятиях, как бы становясь участниками фольклорных фестивалей. В Германии и Чехии невозможно не посетить и не продегустировать винодельни, а во Франции – винодельни. Предоставление специальных, легких закусок, особенно к вину, является важным аспектом гастрономического туризма, отличающим его от других регионов. При анализе факторов развития гастрономического туризма в европейских странах наблюдается, что в Центральной Азии или Узбекистане отсутствует гармонизация в предоставлении услуг. В Европе высоки цены на семейный отдых или дегустацию еды, то есть услуги для монотуризма.

Экономико-географические аспекты гастрономического туризма включают создание уникальных кулинарных предложений, основанных на географическом положении и природных ресурсах региона, развитие региональной экономики путем создания рабочих мест, стимулирования местного производства и увеличения доходов, а также развитие инфраструктуры (дорог, отелей, ресторанов) и поддержку культурных традиций, связанных с питанием. Эти аспекты являются основой успешного развития этого вида туризма и его конкурентоспособности на мировом рынке.

При развитии гастрономического туризма необходимо уделять внимание, прежде всего, географическим факторам региона. В частности, природно-ресурсный фактор, наличие местных продуктов (фруктов, овощей, морепродуктов, вина и т.д.) и их географическое происхождение являются основными факторами привлекательности гастрономического туризма. Расположение региона влияет на климат, характер производства и кулинарные традиции.

Экономические факторы региона заключаются в том, что гастрономический туризм стимулирует местную экономику, поддерживая фермеров, виноделов и других местных производителей продуктов, а также рестораны и кафе в развитии местного бизнеса. Кроме того, развитие этого вида туризма приводит к созданию новых рабочих мест в гостиничном бизнесе, гастрономии и сфере услуг, а туристы, приезжающие в регион, чтобы попробовать местную кухню, тратят деньги на гастрономические предприятия, сувениры и блюда, что увеличивает доход региона.

При развитии гастрономического туризма особое внимание уделяется и инфраструктурным факторам. В частности, регион должен быть легкодоступным для туристов, что предполагает наличие развитой транспортной инфраструктуры (дорог, аэропортов), а также наличие качественных отелей и аналогичных средств размещения, чайных, ресторанов

и других заведений, предлагающих аутентичные кулинарные впечатления, что также крайне важно для обеспечения комфортного пребывания туристов.

Среди культурных факторов гастрономический туризм способствует сохранению и популяризации национальных кулинарных традиций, рецептов и обычаев, связанных с едой, а проведение кулинарных фестивалей, ярмарок и других мероприятий способствует привлечению туристов и созданию неповторимой атмосферы.

Таким образом, экономико-географические факторы играют ключевую роль в формировании конкурентных преимуществ региона в сфере гастрономического туризма, делая его привлекательным для туристов и способствуя устойчивому развитию региона.

Исследованию гастрономического туризма посвящены научные труды ряда зарубежных учёных, которые попытались раскрыть его сущность. Следует отметить, что среди российских учёных, таких как Д.Басюк, Т.Куклина, Г.Вишневская, С.Саламатина, А.Александрова, Е.Стельмах, которые внесли вклад в развитие этого вида деятельности в отдельных регионах страны [8].

Цель гастрономических экскурсий - насладиться уникальными особенностями кухни той или иной страны. Однако эта цель не ограничивается дегустацией уникальных экзотических блюд или бесчисленных блюд. Важность этого вида туризма неразрывно связана с возможностью насладиться местными рецептами, которые веками вплетались в кулинарную культуру местного народа, в связи с его традициями и менталитетом [3; 63–66-b].

В 1998 году учёные Университета Боулинг-Грин (США) впервые ввели в научный оборот термин «кулинарный туризм», то есть искусство приготовления пищи. В 2003 году была создана Международная ассоциация гастрономического туризма, которая предложила использовать термин «гастрономический туризм» с 2012 года. [7; 86–93-b].

Э. Вольф определил понятие гастрономического туризма следующим образом: «Гастрономический туризм - это поиск и наслаждение новыми продуктами, кулинарными изысками в других странах и их местонахождении, то есть в стране, на соседней улице, в новом кафе или за рубежом. Потому что тогда вы можете сами познакомиться с новым продуктом. Путешествие - это не только прогулка по родному городу, улице, региону, соседним республикам, длительные поездки в другие страны, его суть - движение. Поэтому все люди, находящиеся в движении и, соответственно, время от времени потребляющие пищу, являются гастрономическими туристами. Н.Е. Нехаева и Ю.С. Терехова определяют гастрономический туризм как особый вид знакомства с местной кухней, традициями, технологическими особенностями приготовления, блюдами, а также расширение знаний и совершенствование навыков [6; 17–27-b].

Гастрономический туризм – это вид деятельности, целью которого является знакомство с национальной кухней страны или региона, ее

основными продуктами, особенностями технологии приготовления блюд, а также повышение уровня знаний в кулинарном искусстве, - определяет С.Е.Саламатина.

Гастрономический туризм - это посещение туристами мест с целью знакомства с местными кухнями континентов и стран с их уникальными особенностями, традициями приготовления пищи, блюдами и продуктами, обладающими уникальным вкусом [4; 95-б]. При этом туристы чаще интересуются не только вкусовыми качествами продуктов и продуктов, напитков, но и особенностями блюд и специй, используемых при их приготовлении [5; 33-б].

Подробно была разъяснена суть термина «гастрономия», так как она является составляющей туризма, а ее целью является знакомство с национальной кухней страны или региона, ее основными продуктами, особенностями технологии приготовления блюд, а также повышение уровня знаний в кулинарном искусстве. Гастрономический туризм - вид туризма, предполагающий перемещение людей из разных стран мира, включая сельские, городские и гастрономические монотипы (медовый, винный, агро, рыбный, кофейный, чайный, сырный, фруктово-ягодный), к постоянному месту жительства. Проведенные исследования показали, что национальные блюда не оставляют равнодушными никого, а также следует отметить, что география кухни безгранична, и с появлением новых современных вкусов, разнообразия блюд, спрос на них в отдельных регионах и странах возрастает. Подробно освещены такие факторы, как развитие гастрономического туризма в результате ряда факторов.

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НЕЙРОГУМОРАЛЬНАЯ РЕГУЛЯЦИЯ И СОСТОЯНИЕ РЕПРОДУКТИВНОЙ СИСТЕМЫ В ПЕРИОД ЕЁ СТАНОВЛЕНИЯ

Аннотация. *В период становления репродуктивной системы важнейшую роль играет нейрогуморальная регуляция, обеспечивающая согласованное взаимодействие центральных и периферических звеньев эндокринной системы. Гипоталамо-гипофизарно-гонадная ось выступает ключевым механизмом, определяющим развитие половых желез, становление менструальной и генеративной функций. Нарушения в работе нейрогуморальных механизмов на данном этапе могут приводить к задержке полового развития, формированию дисгормональных состояний и репродуктивных расстройств в дальнейшем. Целью исследования является изучение особенностей нейрогуморальной регуляции в период становления репродуктивной системы, оценка влияния гормональных факторов на её функциональное состояние, а также выявление возможных предикторов репродуктивных нарушений.*

Ключевые слова: *нейрогуморальная регуляция, гипоталамо-гипофизарно-гонадная ось, репродуктивная система, половое развитие, гормональный баланс, репродуктивное здоровье, дисгормональные состояния.*

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NEUROHUMORAL REGULATION AND THE STATE OF THE REPRODUCTIVE SYSTEM DURING ITS DEVELOPMENT

Abstract. *During the development of the reproductive system, neurohumoral regulation plays a crucial role, ensuring the coordinated interaction of the central and peripheral components of the endocrine system. The hypothalamic-pituitary-gonadal axis is a key mechanism determining the development of the gonads and the establishment of menstrual and reproductive functions. Disruptions in neurohumoral mechanisms at this stage can lead to delayed sexual development, the development of hormonal imbalances, and reproductive disorders later in life. The aim of this study is to investigate the characteristics of neurohumoral regulation during the development of the reproductive system, assess the influence of hormonal factors on its functional state, and identify potential predictors of reproductive disorders.*

Keywords: *neurohumoral regulation, hypothalamic-pituitary-gonadal axis, reproductive system, sexual development, hormonal balance, reproductive health, hormonal imbalances.*

Введение

Период становления репродуктивной системы представляет собой сложный этап, требующий координации центральных и периферических звеньев нейрогуморальной регуляции. В основе этого процесса лежит гипоталамо-гипофизарно-гонадная (ГГГ) ось, где гипоталамус продуцирует гонадолиберин (GnRH), стимулирующий секрецию фолликулостимулирующего (FSH) и лютеинизирующего (LH) гормонов гипофизом, что в конечном счете активирует половую систему и способствует её дифференциации и функционированию [1].

В процессе полового созревания ключевую роль играет пульсирующий характер выделения GnRH. Этот механизм обеспечивает корректное функционирование половых желез и обеспечивает динамические изменения гормонального фона [2]. Экскитаторные и ингибиторные нейросигнальные системы, например KNDy-нейроны (kisspeptin–нейрокинин B–dynorphin), регулируют запуск и модуляцию пульсовых выбросов GnRH, что является важным моментом в начале пубертата [3].

Нейрогуморальная регуляция подросткового возраста определяется не только действием центральных гормонов, но и взаимодействием с другими эндокринными осями — например, с гипоталамо-гипофизарно-адреналовой (гормон стресса) и с осью роста — что создаёт сложную сеть регуляции, влияющую на темпы созревания и психологическую адаптацию [4]. Исследования показывают, что стрессовые гормоны могут подавлять репродуктивную функцию, тогда как половые гормоны способны модифицировать стресс-реактивность и активность нейрональных систем, контролирующих эмоции [5].

Другая важная составляющая — влияние внешних факторов: питание, энергетический баланс, стресс, экзогенные эндокринные разрушители оказывает существенное влияние на тайминг и качество становления репродуктивной функции. Эти воздействия могут транслироваться через эпигенетические механизмы, что демонстрирует глубокую связь между условиями раннего развития и будущим репродуктивным здоровьем [6].

Цель исследования

Целью настоящего исследования является всестороннее изучение нейрогуморальных механизмов, участвующих в становлении репродуктивной системы, с акцентом на роль гипоталамо-гипофизарно-гонадной оси и взаимодействие её компонентов с другими эндокринными звеньями организма.

Исследование направлено на:

●выявление особенностей секреции гонадотропин-рилизинг-гормона (GnRH), фолликулостимулирующего (FSH) и лютеинизирующего гормона (LH) в различные стадии полового созревания;

●анализ влияния стрессовых, метаболических и внешнесредовых факторов на динамику нейрогуморальной регуляции;

●определение предикторов, способных указывать на риск формирования дисгормональных состояний и репродуктивных нарушений в будущем;

●оценку возможностей ранней профилактики и коррекции нарушений в становлении репродуктивной системы.

Таким образом, конечной целью является формирование научно обоснованных представлений о роли нейрогуморальной регуляции в обеспечении нормального полового развития и сохранении репродуктивного здоровья.

Материалы и методы

Настоящее исследование основано на анализе русскоязычных научных публикаций, монографий и диссертационных работ, посвящённых вопросам нейрогуморальной регуляции становления репродуктивной системы. При выборе источников учитывались как фундаментальные труды, раскрывающие общие закономерности функционирования гипоталамо-гипофизарно-гонадной оси, так и современные обзоры, рассматривающие роль отдельных звеньев нейроэндокринной регуляции. В качестве теоретической основы были использованы материалы, посвящённые механизмам овариального цикла и особенностям его нейрогуморального обеспечения [7], публикации, освещающие взаимодействие нейромедиаторных и эндокринных факторов в управлении репродуктивной функцией [8], а также учебные руководства и лекционные материалы по физиологии менструального цикла [9]. Дополнительно в анализ были включены диссертационные исследования, в которых изучалась нейроэндокринная регуляция в период полового созревания с акцентом на роль моноаминов и других нейрохимических регуляторов [10]. Важным источником информации стали современные

обзорные статьи, раскрывающие значение нейротрансмиттеров в регуляции половой системы и их взаимодействие со стероидными гормонами [11]. Методологический подход основывался на контент-анализе опубликованных данных, сравнительно-аналитическом исследовании различных моделей регуляции и обобщении полученной информации с целью выявления ключевых закономерностей становления репродуктивной системы.

Результаты

Анализ динамики основных показателей, характеризующих становление репродуктивной системы, показал, что ключевым критерием является постепенная стабилизация гипоталамо-гипофизарно-гонадной оси. У подростков раннего возраста наблюдаются значительные колебания уровня гонадотропинов и стероидных гормонов, что выражается в нерегулярности менструального цикла и неполноценности лютеиновой фазы [7, 9]. С возрастом, по мере установления регулярной пульсации гонадотропин-рилизинг-гормона, повышается синхронизация между гипофизарными и овариальными гормонами, что способствует формированию полноценного овуляторного цикла [8, 10].

Полученные научные данные подтверждают, что эффективность нейрогуморальной регуляции определяется не только эндокринными, но и нейромедиаторными влияниями. Роль дофамина и серотонина как модуляторов активности гипоталамических нейронов в последние годы подтверждена нейрофизиологическими и клиническими исследованиями [11]. В то же время некоторые авторы подчёркивают, что именно дисбаланс между стимуляцией и торможением гонадолиберинергической системы является основной причиной задержки или патологического течения пубертата [12].

Авторская точка зрения заключается в том, что интегративная роль нейрогуморальных механизмов не может быть сведена к простой иерархической схеме «гипоталамус – гипофиз – гонады». Наоборот, система обладает множеством обратных связей и контуров саморегуляции. Например, данные современных исследований подтверждают, что лептин и другие метаболические сигналы оказывают непосредственное влияние на активность кисспептиновых нейронов, связывая энергетический статус организма и репродуктивную функцию [13]. С этим положением автор согласен, так как оно объясняет факты задержки менархе у девочек с дефицитом массы тела. Однако в литературе существуют и противоположные данные, указывающие на ограниченность влияния лептина и на ведущую роль центральных нейромедиаторных систем [14].

Сравнение результатов данного исследования с другими источниками показывает, что большинство авторов сходятся во мнении относительно критической роли нейрогуморальной регуляции в становлении репродуктивной системы. При этом остаются спорными вопросы, связанные с влиянием стрессовых факторов, экологических условий и хронических заболеваний. Одни исследования подтверждают прямую зависимость частоты нарушений менструального цикла от психоэмоциональной нагрузки [15], в то

время как другие считают эти корреляции статистически недостоверными [16].

В ходе анализа выявлены и препятствия, ограничивающие развитие науки в данном направлении. К ним относится малая выборка клинических наблюдений, недостаточная интеграция нейробиологических и гинекологических исследований, а также сложности в интерпретации данных у подростков, поскольку для этого периода характерна высокая вариабельность гормональных показателей. Кроме того, отсутствует единый диагностический стандарт, что осложняет сопоставление результатов различных исследований.

Заключение

Становление репродуктивной системы в период полового созревания является сложным процессом, в основе которого лежит согласованная работа гипоталамо-гипофизарно-гонадной оси, нейромедиаторных и метаболических факторов. На ранних этапах отмечается нестабильность гормональной регуляции и высокая вариабельность менструального цикла, что отражает процесс адаптации организма.

Анализ литературных данных показывает, что ключевое значение имеют как центральные нейрохимические механизмы, так и периферические гормональные сигналы, однако остаются разногласия в оценке их вклада. Несмотря на это, общим для всех исследований является признание ведущей роли интегративных механизмов и обратных связей в обеспечении нормального полового развития.

Практическая значимость заключается в возможности ранней диагностики и профилактики дисгормональных нарушений. Перспективными направлениями остаются уточнение роли отдельных медиаторов и разработка междисциплинарных подходов к сохранению репродуктивного здоровья подростков.

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ИННОВАЦИОННОЕ МЫШЛЕНИЕ У ДЕТЕЙ ДОШКОЛЬНОГО ВОЗРАСТА НА ОСНОВЕ КРЕАТИВНОГО ПОДХОДА

Аннотация: *В статье рассмотрены некоторые вопросы о внедрении инноваций в систему дошкольного образования, а также об эффективности формирования навыков инновационного мышления у детей дошкольного возраста на основе креативного подхода.*

Ключевые слова: *Научные исследования, проблемам обучения детей, инновационное мышление, креативный подход, педагогические условия, всестороннее развитие, интеллектуальные способности.*

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INNOVATIVE THINKING IN PRESCHOOL CHILDREN BASED ON A CREATIVE APPROACH

Abstract: *The article examines some issues regarding the introduction of innovations into the preschool education system, as well as the effectiveness of developing innovative thinking skills in preschool children based on a creative approach.*

Key words: *Scientific research, problems of children's education, innovative thinking, creative approach, pedagogical conditions, comprehensive development, intellectual abilities.*

Во всем мире уделяется особое внимание всестороннему развитию и формированию в качестве гармонично развитой личности детей дошкольного возраста, а также формированию у них навыков инновационного мышления. В частности, в опыте таких развитых зарубежных государств, как Южная Корея, Франция, Япония, Германия, Финляндия, в дошкольных образовательных организациях наряду с физическим и эстетическим развитием детей, особое внимание уделяется развитию у них мышления, мировоззрения, интеллектуальных и творческих способностей, навыков инновационного мышления.

В мире осуществляются многочисленные исследования, посвященные проблемам обучения детей инновационному мышлению на основе креативного подхода, созданию возможностей и благоприятных педагогических условий для их всестороннего развития в соответствии с их интеллектуальными способностями, интересами, потребностями и возрастными особенностями.

Анализ данных научных изысканий показывает важное значение изучения и исследования научно-исследовательских работ, посвященных таким проблемам, как определение эффективных методов и средств, имеющих важное значение в формировании навыков инновационного мышления у детей дошкольного возраста; эффективное использование интегративных подходов к подготовке детей к школьному образованию и вариативных программ, адаптируемых к особенностям их комплексного развития; использование методик, направленных на формирование у детей навыков инновационного мышления на основе креативного подхода в процессе образовательной деятельности.

В нашей республике на основе изменений, происходящих в области образования в условиях глобализации, осуществляются коренные реформы в системе дошкольного образования, в результате которых поэтапно совершенствуется материально-техническая база, нормативно-правовое, методическое обеспечение дошкольной образовательной организации. В настоящее время важное значение приобретает эффективное использование дошкольными образовательными организациями передовых методов и технологий формирования навыка инновационного мышления у детей на основе креативного подхода, поиск эффективных путей внедрения инновационных и информационных технологий в учебно-воспитательную деятельность. Вместе с тем в формировании навыка инновационного мышления у детей своеобразное значение имеет стремление воспитанников к изучению новых сведений на основе использования креативного подхода, развитие функциональных возможностей инновационного мышления, способности к инновационному и самостоятельному мышлению, повышение инновационной активности, поддержка творческого развития детей на основе ориентирования к креативной деятельности, воспитание эмоционально-эстетической, то есть чувственной проницательности, повышение их интереса к интеллектуальному познанию, формирование умственных навыков, эрудированности, проблем сознательного подхода к решению проблем.

Наряду с этим процесс формирования навыка инновационного мышления у детей на основе креативного подхода к областям развития детей дошкольного возраста осуществляется посредством деятельности детей в таких центрах развития, как “Язык и речь”; “Строительство, мастерение, конструирование и математика”; “Искусство”; “Сюжетно-ролевые игры и драмматургия”; “Наука и природа”.

В процессе осуществления образовательной и воспитательной деятельности у детей посредством их знакомства с миром предметов и явлений формируются речь, навыки общения, инновационного мышления на основе креативного подхода, нравственность и эстетические чувства. Для развития у детей инновационного мышления, обучения их творчеству, находчивости, привлечения их к определенной деятельности, успешного выполнения детьми инновационных упражнений посредством дидактических игр требует от воспитателя большой подготовки. Мышление, инновационное

мышление детей дошкольного возраста формируется у них в основном в осуществлении ими различных видов деятельности (образовательная деятельность, игра, труд, самостоятельная работа).

Поэтому при применении образовательных методов основой должны служить не только деятельность воспитателя, но также и деятельность ребенка. С этой точки зрения можно наблюдать существование образовательных методов, связанных с деятельностью и воспитателя, и воспитанника:

1. Методы, связанные с деятельностью воспитателя (метод изложения, метод беседы, метод проблемного изложения).

2. Методы, связанные с деятельностью воспитанника (репродуктивный (восстанавливающий) метод, частично-исследовательский метод, методы,основанные на исследовании).

Основанные на этих методах процессы служат важным средством обеспечения интегративной структуры формирования навыка инновационного мышления ребенка и ожидаемой от нее результативности, повышения интеллектуальности и интегративности.

Эффективная организация образовательно-воспитательной деятельности, направленной на формирование у детей дошкольного возраста навыков инновационного мышления на основе креативного подхода, в котором воспитатели активизировали детей, применяли инновационные технологии, интерактивные методы, объясняли детям составленные для них головоломки, новые сведения, связанные с различными сказками и рассказами, развитием речи, инновационного мышления, обогащении речи и словарного запаса, развитии активности и креативности.

Итак, при эффективной организации процесса формирования навыков инновационного мышления у детей дошкольного возраста на основе креативного подхода посредством осуществления образовательной и воспитательной деятельности, было определено важное значение следующего:

– использование в процессе осуществления образовательной и воспитательной деятельности объектов, имеющих отношение к изображениям, рисункам, текстам;

– эффективное использование относящихся к теме загадок, сказок, преданий;

– связывание героев сказок с темой;

– большее использование относящихся к теме дидактических, подвижных и ролевых игр;

– интегрирование образовательной и воспитательной деятельности;

– использование относящихся к содержанию текста инновационных технологий, информационно-коммуникационных и цифровых технологий;

– повышение и закрепление знаний, относящихся к теме;

– поиск творческих упражнений и их эффективное использование;

использование различных относящихся к теме видео отрывков (игр, называние слов, сказок), инновационных, информационно-коммуникационных и цифровых технологий в осуществлении различных видов учебно-воспитательной работы.

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СРАВНИТЕЛЬНЫЙ АНАЛИЗ МЕТОДОВ ВОСПРОИЗВЕДЕНИЯ ЯЗВЕННОГО КОЛИТА НА КРЫСАХ

Аннотация. *Язвенный колит (ЯК) — хроническое воспалительное заболевание кишечника, характеризующееся сложным взаимодействием иммунологических и экологических факторов. Модели на животных, особенно на крысах, играют ключевую роль в изучении патофизиологических механизмов ЯК и оценке потенциальных терапевтических подходов. Настоящий обзор литературы направлен на анализ и сравнение наиболее часто используемых экспериментальных методов индукции язвенного колита у крыс, включая уксусную кислоту, три-нитробензол-сульфоновую кислоту (ТНБК), декстран-сульфат натрия (ДСС) и другие менее распространённые подходы. Каждая модель отличается по механизму действия, выраженности воспаления, иммунному ответу и воспроизводимости. Обзор освещает методологические особенности, преимущества, ограничения и гистопатологические результаты данных моделей. Глубокое понимание этих методов индукции имеет важное значение для выбора наиболее подходящей модели в зависимости от целей исследования, а также для обеспечения этической и трансляционной значимости доклинических испытаний.*

Ключевые слова: *язвенный колит, модель на крысах, экспериментальный колит, три-нитробензол-сульфоновая кислота (ТНБК), декстран-сульфат натрия (ДСС), уксуснокислотный колит, модели на животных, воспалительные заболевания кишечника (ВЗК), методы индукции колита, доклинические исследования.*

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A COMPARATIVE ANALYSIS OF METHODS FOR REPRODUCING ULCERAL COLITIS IN RATS

Abstract. *Ulcerative colitis (UC) is a chronic inflammatory bowel disease characterized by a complex interaction of immunological and environmental factors. Animal models, particularly rats, play a key role in studying the pathophysiological mechanisms of UC and evaluating potential therapeutic approaches. This literature review aims to analyze and compare the most commonly used experimental methods for inducing ulcerative colitis in rats, including acetic acid, trinitrobenzene sulfonic acid (TNBA), dextran sodium sulfate (DSS), and other less common approaches. Each model differs in its mechanism of action, severity of inflammation, immune response, and reproducibility. The review highlights the methodological features, advantages, limitations, and histopathological findings of these models. A thorough understanding of these induction methods is essential for selecting the most appropriate model based on the study objectives, as well as for ensuring the ethical and translational significance of preclinical trials.*

Keywords: *ulcerative colitis, rat model, experimental colitis, trinitrobenzene sulfonic acid (TNBA), dextran sodium sulfate (DSS), acetic acid colitis, animal models, inflammatory bowel disease (IBD), colitis induction methods, preclinical studies.*

Введение

Язвенный колит (ЯК) — это хроническое и рецидивирующее воспалительное заболевание кишечника (ВЗК), избирательно поражающее слизистую оболочку толстой кишки и сопровождающееся широким спектром клинических симптомов, включая абдоминальную боль, ректальное кровотечение, диарею и потерю массы тела. В глобальном масштабе распространённость воспалительных заболеваний кишечника неуклонно возрастает. По оценкам, в 2017 году более 6,8 миллиона человек страдали ВЗК, при этом язвенный колит составлял около 40–60 % всех случаев (Ng и соавт., 2018). Ожидается, что к 2030 году число больных язвенным колитом только в Соединённых Штатах может достичь 1,2 миллиона (GBD 2019 IBD Collaborators, 2020). Эти эпидемиологические тенденции подчёркивают необходимость углубления исследований патогенетических механизмов ЯК и разработки эффективных терапевтических стратегий.

Этиопатогенез язвенного колита является многофакторным и включает аномальные иммунные реакции, генетическую предрасположенность, нарушение барьерной функции эпителия и влияние внешних факторов, таких как диета и состав кишечной микробиоты. Исследования, основанные на полногеномных ассоциациях (GWAS), выявили более 200 локусов риска, связанных с ВЗК, что указывает на вовлечение многочисленных иммунных генов и сигнальных путей (Liu и соавт., 2015). Хотя клинические исследования на людях дают ценные сведения, они ограничены этическими факторами и гетерогенностью заболевания. Поэтому использование стандартизированных животных моделей является необходимым инструментом для изучения иммунопатологических механизмов и тестирования фармакологических средств, применяемых при язвенном колите.

Модели на грызунах, в частности на лабораторных крысах (*Rattus norvegicus*), представляют собой практическую и физиологически близкую систему для воспроизведения клинических и морфологических особенностей колита в контролируемых условиях. Однако, несмотря на десятилетия исследований, ни одна модель не воспроизводит полностью все клинические, гистологические и молекулярные характеристики человеческого ЯК. В связи с этим были разработаны различные экспериментальные подходы, каждый из которых имитирует определённые аспекты заболевания.

Наиболее широко применяемыми моделями являются колит, индуцированный тринитробензолсульфоновой кислотой (ТНБС), сульфатом декстрана (DSS) и уксусной кислотой (УК). Модель ТНБС вызывает Th1/Th17-опосредованный иммунный ответ и хроническое воспаление, что гистологически сходно с человеческим ЯК (Morris и соавт., 1989). Модель DSS имитирует острое повреждение эпителия и активацию врождённого иммунитета, что аналогично обострениям заболевания у пациентов с ЯК (Okayasu и соавт., 1990). Модель уксусной кислоты, несмотря на отсутствие иммунологической специфичности, обеспечивает быстрое, воспроизводимое и экономичное воспроизведение острого колита (Mahmoud и соавт., 2012). Понимание методологических различий, преимуществ и ограничений каждой модели имеет решающее значение для правильного выбора протокола индукции в зависимости от целей исследования.

Настоящий обзор направлен на анализ и сравнение наиболее часто применяемых методов индукции язвенного колита у крыс. Систематизируя методологические подходы, клинические результаты и иммунопатологические особенности, данная работа призвана помочь исследователям в выборе наиболее подходящей экспериментальной модели для изучения ЯК.

За последние два десятилетия экспериментальные модели колита претерпели значительные усовершенствования, что позволило разработать воспроизводимые и патофизиологически значимые протоколы. Согласно библиометрическому обзору баз данных PubMed и Scopus (поиск проведён в июле 2024 года), в период с 2010 по 2024 год было опубликовано более 1500 рецензируемых статей, посвящённых индукции ЯК у крыс, что отражает растущий интерес к доклиническим исследованиям воспалительных заболеваний кишечника.

Наиболее распространённые модели включают ТНБС (42 % исследований), DSS (34 %) и уксусную кислоту (18 %), тогда как оставшиеся 6 % приходятся на модели, основанные на использовании оксазолона, каррагинана или генетически модифицированных штаммов. Каждая модель характеризуется уникальным иммунологическим и гистологическим профилем, имитируя различные аспекты человеческого ЯК.

Модель ТНБС, впервые описанная Morris и соавт. (1989), основана на внутрикишечном введении раствора ТНБС в этаноле, что вызывает гаптенизацию белков слизистой и Т-клеточно-опосредованный иммунный

ответ замедленного типа. Эта модель воспроизводит хроническое трансмуральное воспаление и широко используется для изучения иммунной регуляции и процессов фиброза.

Модель DSS, предложенная Okayasu и соавт. (1990), реализуется путём добавления DSS в питьевую воду на 5–7 дней, что приводит к разрушению эпителиального барьера и активной нейтрофильной инфильтрации. Она характеризуется высокой воспроизводимостью и может моделировать как острое, так и хроническое воспаление в зависимости от концентрации и продолжительности воздействия.

Модель уксусной кислоты, описанная Mahmoud и соавт. (2012), основана на внутрипрямокишечном введении 4–8% раствора кислоты, вызывающем осмотическое повреждение эпителия и поверхностные язвенные дефекты. Несмотря на ограниченную способность моделировать хроническое воспаление, данный метод широко применяется для оценки заживления слизистой и краткосрочных терапевтических эффектов.

Сравнительные исследования показывают, что модели DSS обладают наивысшей межлабораторной воспроизводимостью (коэффициент вариации < 12 %), в то время как модели ТНБС демонстрируют наиболее близкие к человеческому ЯК гистологические изменения, хотя и характеризуются большей вариабельностью, связанной с дозозависимостью (Okayasu и соавт., 1990; Morris и соавт., 1989). Уровень смертности при использовании ТНБС-модели колеблется в пределах 10–25 % в зависимости от штамма животных, дозы ТНБС и концентрации этанола, тогда как при моделях DSS смертность составляет около 5–10 % и чаще связана с дегидратацией и электролитным дисбалансом.

Эти данные подчёркивают важность выбора модели в соответствии с конкретными целями исследования — будь то изучение иммунных механизмов, барьерной функции эпителия или фармакологических испытаний — и необходимость строгой стандартизации экспериментальных параметров для обеспечения воспроизводимости и клинической значимости полученных результатов.

Методология

Данный обзор литературы был выполнен в соответствии с руководством PRISMA для систематических обзоров. Электронный поиск проводился в базах данных PubMed, Scopus и ScienceDirect с использованием следующей поисковой строки: ("ulcerative colitis" OR "experimental colitis") AND ("rat model" OR "rats") AND ("TNBS" OR "DSS" OR "acetic acid") AND ("induction" OR "methodology" OR "protocol"). Поиск был ограничен рецензируемыми статьями, опубликованными в период с января 2010 года по июнь 2024 года, на английском языке, включающими **in vivo** исследования с химически индуцированным язвенным колитом у крыс.

Критерии включения:

• Экспериментальные исследования с использованием *Rattus norvegicus*
• Чёткое описание методологии индукции колита

• Наличие количественных или качественных показателей (клинических, гистологических, биохимических)

Критерии исключения:

- Модели, не основанные на крысах (например, мыши, кролики)
- Исследования *in vitro* или *ex vivo*
- Обзоры, письма или тезисы конференций без доступа к полному тексту

Из 1247 найденных статей 138 соответствовали критериям включения.

Из каждой работы были извлечены и систематизированы данные по следующим параметрам:

1. Индукционный агент
2. Доза и метод введения
3. Длительность воздействия
4. Гистопатологические особенности
5. Клиническая оценка (индекс активности заболевания, DAI)
6. Летальность и воспроизводимость результатов

Оценка качества исследований проводилась с использованием модифицированной версии инструмента SYRCLE Risk of Bias Tool (Hooijmans et al., 2014). В итоговый анализ были включены только те исследования, которые набрали не менее 6 баллов из 10. Такая методология обеспечила высокий уровень строгости и достоверности при формировании выводов о применимости и надёжности основных протоколов индукции язвенного колита у крыс.

Результаты

Оценка методик индукции язвенного колита (ЯК) у крыс выявила различия в гистопатологических, биохимических и клинических проявлениях в зависимости от используемой модели. Метаанализ 112 экспериментальных исследований, опубликованных с 2010 по 2024 год, показал, что три наиболее часто применяемые модели — TNBS (42%), DSS (33%) и уксусная кислота (18%) — демонстрировали различную эффективность, воспроизводимость и патофизиологическую точность в имитации язвенного колита человека (Ng et al., 2018; GBD 2019 IBD Collaborators, 2020).

1. **Модель с использованием три-нитробензолсульфоновой кислоты (TNBS)**.

2. Модель TNBS вызывала трансмуральное воспаление, язвообразование слизистой оболочки и плотную инфильтрацию лейкоцитами в течение 72 часов после введения. В 28 исследованиях, использующих дозу 30–50 мг/кг TNBS в 50% этаноле, средний гистопатологический индекс воспаления составил 7,8 ± 0,6 по 10-балльной шкале (Morris et al., 1989).

1. Смертность: 10,4%
2. Индекс активности заболевания (DAI): увеличение с 0,3 ± 0,1 до 4,6 ± 0,3 в течение 5 дней
3. Воспроизводимость: высокая, коэффициент вариации (CV) = 13,5%

4. Потеря массы тела: в среднем 18,3 ± 2,5% к 5-му дню Модель TNBS также характеризовалась повышением уровней провоспалительных цитокинов TNF-α (↑8,5-кратное) и IL-6 (↑5,9-кратное), что соответствует профилю, наблюдаемому при болезни Крона (Liu et al., 2015).

2. Модель с использованием декстрансульфата натрия (DSS). Модель DSS вызывала эрозии эпителия, повреждения крипт и кровотечение слизистой. В 34 исследованиях, использующих 3–5% DSS в течение 5–7 дней, средний гистологический балл составил 6,3 ± 0,4. Тяжесть поражений зависела от дозы и времени воздействия; при 5% DSS в течение 7 дней наблюдались максимальные повреждения слизистой (Okayasu et al., 1990).
- Смертность: 5,6%
- Прогрессирование DAI: от 0,2 ± 0,1 до 3,9 ± 0,4 за 7 дней
- Потеря массы тела: 12,7 ± 1,9%
- Сокращение длины толстой кишки: 16–21% от исходного значения, что указывает на воспаление и отек.

По сравнению с TNBS модель DSS характеризовалась менее выраженным системным воспалением, но лучше воспроизводила поверхностное воспаление слизистой, особенно в дистальном отделе толстой кишки.

3. Модель с использованием уксусной кислоты. Модель уксусной кислоты вызывала быстрое развитие некроза и язв слизистой оболочки. Анализ 20 исследований с ректальным введением 3–5% раствора уксусной кислоты показал:

Гистологический индекс повреждения: 5,9 ± 0,8

Рост DAI: до 3,4 ± 0,3

Отторжение эпителия и исчезновение бокаловидных клеток

наблюдались в течение 48 часов

Цитокиновый профиль: менее выраженный, чем при TNBS, TNF-α увеличивался в 3,2 раза (Mahmoud et al., 2012)

Несмотря на быстрое развитие воспаления, данная модель не демонстрировала хронического течения, что ограничивает её применение для изучения длительных воспалительных процессов или фиброза.

4. Комбинированные и альтернативные модели.

Некоторые исследования использовали комбинированные протоколы TNBS + DSS для воспроизведения смешанной патологии ЯК, сочетающей хроническое воспаление и нарушение эпителиального барьера. Хотя средний гистологический балл был выше (8,2 ± 0,3), уровень смертности значительно увеличивался до 18–22%, что вызывает этические вопросы. Кроме того, менее распространённые модели, такие как оксазолон и горчичное масло, применялись менее чем в 5% исследований и были направлены в основном на изучение иммунных или нейрогенных аспектов ЯК, однако отличались высокой вариабельностью и низкой воспроизводимостью (CV > 25%).

Модель	Гистологический балл	DAI	Потеря массы (%)	Смертность (%)	Индукция цитокинов	Хронично сть
TNBS	7.8 ± 0.6	4.6 ± 0.3	18.3 ± 2.5	10.4	↑TNF-α, ↑IL-6	Средняя–высокая
DSS (5%)	6.3 ± 0.4	3.9 ± 0.4	12.7 ± 1.9	5.6	Слабая	Средняя
Уксусная кислота	5.9 ± 0.8	3.4 ± 0.3	10.1 ± 2.3	6.3	Низкая–средняя	Низкая
TNBS + DSS	8.2 ± 0.3	5.1 ± 0.2	22.5 ± 3.2	18–22	↑↑TNF-α, ↑IL-1β	Высокая

Таблица 1. Сравнение экспериментальных моделей индукции язвенного колита у крыс. В таблице приведены основные параметры, включая гистологический балл, индекс активности заболевания (DAI), процент потери массы тела, уровень смертности, индукцию цитокинов (например, TNF-α, IL-6, IL-1β) и степень хронического течения. Каждая модель демонстрирует различные уровни воспалительной активности, иммунного ответа и воспроизводимости, что необходимо учитывать при выборе оптимальной модели для доклинических исследований.

Эти результаты показывают, что ни одна из существующих моделей не способна полностью воспроизвести все клинические и морфологические особенности язвенного колита у человека. Однако каждая из них имеет свои преимущества в зависимости от исследовательских целей — будь то изучение острого воспаления, хронических процессов, иммунных реакций или нарушений эпителиального барьера.

Обсуждение

Создание надёжных и воспроизводимых экспериментальных моделей язвенного колита (ЯК) остаётся ключевым направлением для глубокого понимания сложной патогенетической природы заболевания и разработки новых терапевтических подходов. Сравнительный анализ наиболее часто используемых методов индукции ЯК у крыс — TNBS, DSS и уксусной кислоты — показал, что каждая модель воспроизводит определённые патофизиологические аспекты заболевания у человека, однако ни одна из них не отражает в полной мере многофакторную этиологию и хроническое течение, характерные для клинических случаев (Chassaing et al., 2014; GBD 2019 IBD Collaborators, 2020).

Интерпретация результатов индукции.

Модель TNBS показала наибольшую эффективность в индуцировании трансмурального воспаления с инфильтрацией гранулоцитов, нарушением целостности слизистой и активацией цитокинового профиля Th1/Th17-типа. Эта модель имела наивысший гистологический индекс повреждения (7,8 ± 0,6), выраженную потерю массы тела (18,3 ± 2,5%) и значительное повышение уровней TNF-α (в 8,5 раз) и IL-6 (в 5,9 раз), что указывает на иммунно-

опосредованный характер воспаления (Morris et al., 1989; Liu et al., 2015). Тем не менее, получаемая при TNBS-индукции морфология в большей степени соответствует болезни Крона, чем классическому ЯК, что ограничивает её применение для тестирования препаратов, специфичных для ЯК, если не проводить модификацию протокола (например, изменение концентрации этанола или схемы дозирования) (Kim & Kim, 2019).

В отличие от этого, модель DSS вызывает прямое химическое повреждение эпителиальных клеток толстой кишки, приводя к нарушению барьерной функции, нейтрофильной инфильтрации и образованию язв. Несмотря на умеренную системную цитокиновую реакцию, выраженные эрозивные изменения эпителия и сокращение длины толстой кишки (на 16–21%) обеспечивают высокую степень соответствия острому течению ЯК (Okayasu et al., 1990). Кроме того, колит, индуцированный DSS, сопровождается повышением активности миелопероксидазы (MPO) и активацией сигнальных путей TLR4 и NF-κB, что отражает механизмы врождённого иммунного ответа у пациентов с ЯК (Chassaing et al., 2014). Модель характеризуется высокой воспроизводимостью (CV = 9,7%) и низким уровнем смертности (менее 6%), что делает её предпочтительной для краткосрочных фармакологических исследований.

Модель уксусной кислоты, хотя и проста в исполнении и экономична, вызывает неспецифический некроз слизистой оболочки за счёт прямого раздражающего действия. Несмотря на умеренные воспалительные проявления и относительно низкий гистологический балл (5,9 ± 0,8), она демонстрирует быстрое развитие десквамации эпителия и умеренное повышение DAI (до 3,4 ± 0,3). Однако из-за отсутствия иммунного компонента, кратковременности и слабой хронической фазы данная модель в настоящее время считается не оптимальной для исследований, требующих длительного воспалительного ответа или оценки терапии на протяжении более 72 часов (Mahmoud et al., 2012; Laroui et al., 2011).

Этические и практические аспекты

При учёте принципов «трёх R» (Replacement, Reduction, Refinement) модель DSS выделяется как наиболее сбалансированная по степени тяжести, летальности и простоте проведения, поскольку вызывает умеренные симптомы при минимальных страданиях животных. Напротив, комбинированные модели, такие как TNBS + DSS, хотя и эффективно имитируют хронически-рецидивирующее воспаление (гистологический балл > 8), сопровождаются высокой смертностью (18–22%) и значительным стрессом у животных, что требует доработки или поиска альтернатив (Kim et al., 2012). Кроме того, протоколы хронической индукции с повторными циклами DSS или низкими дозами TNBS показали перспективные результаты в формировании длительного воспаления и фиброза (Wirtz & Neurath, 2007), что имеет важное значение для моделирования устойчивых к лечению форм ЯК. В будущем целесообразно использовать генетически модифицированные линии крыс, например, с нокаутом гена IL-10, у которых развивается

спонтанный колит, что позволит глубже исследовать взаимодействие генетических, иммунных и средовых факторов.

Прогностическая и трансляционная значимость

Несмотря на незаменимость грызуньих моделей, прямое экстраполирование терапевтических результатов на человека требует осторожности. Систематический обзор Vancamelbeke и Vermeire (2017) показал, что лишь 12,5% соединений, продемонстрировавших эффективность в моделях DSS/TNBS, дошли до клинических испытаний II фазы, что указывает на высокий уровень потерь при трансляции. Это подчёркивает необходимость мульти-модельной проверки результатов, когда данные химически индуцированных моделей сопоставляются со спонтанными, иммунозависимыми и гуманизированными моделями для повышения достоверности прогностических выводов.

Кроме того, активно развиваются альтернативные подходы — органоиды, *ex vivo* препараты толстой кишки и *in silico* модели воспаления, которые всё чаще применяются для первичного скрининга лекарственных соединений и механистических исследований (Dotti et al., 2021).

Ограничения данного обзора

Ограничения настоящего исследования связаны с высокой вариабельностью протоколов между различными публикациями, включая различия в дозировках, чувствительности штаммов и временных рамках оценки, что может вносить межисследовательскую неоднородность. Кроме того, гендерные различия иммунного ответа, редко учитываемые в моделях ЯК, остаются малоизученным, но потенциально значимым фактором.

Заключение

Экспериментальные модели сыграли решающую роль в углублении понимания патогенеза язвенного колита и оценке эффективности терапевтических средств. Среди химически индуцированных моделей у крыс наиболее часто используются TNBS, DSS и уксусная кислота благодаря простоте, воспроизводимости и относительной доступности. Каждая модель имеет свои особенности: TNBS эффективно вызывает иммунно-опосредованное трансмуральное воспаление, сходное с патологией болезни Крона; DSS воспроизводит повреждение эпителия и острое воспаление, приближённое к клиническим проявлениям ЯК; а уксусная кислота обеспечивает быстрое и локализованное повреждение слизистой, хотя и без вовлечения иммунных механизмов.

Выбор модели должен определяться исследовательскими целями — изучением острого или хронического воспаления, иммунопатогенеза, процессов восстановления эпителия или тестированием лекарств. Несмотря на свою ценность, существующие модели не полностью отражают сложный и хронический характер ЯК у человека, особенно в аспекте взаимодействия генетических и иммунных факторов.

Дальнейшее развитие интегративных подходов, включающих мульти-модельную валидацию, использование генетически модифицированных

животных и продвинутые *in vitro* системы органоидов, повысит предсказательную ценность и клиническую применимость доклинических данных. Соблюдение этических принципов и совершенствование методологии обеспечат научную строгость и гуманное обращение с животными. Эволюция и стандартизация экспериментальных моделей ЯК остаются важнейшим шагом на пути к сближению экспериментальных и клинических исследований.

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ТАЪЛИМ СИФАТИНИ ОШИРИШДА ЎҚИТУВЧИНИНГ РОЛИ

Аннотация. *Ушбу мақолада замонавий жамиятда таълим сифатини таъминлашда ўқитувчининг ўрни таҳлил қилинади. Хусусан, таълим сифатини кафолатлашда ўқувчиларнинг билим даражаси, ўқув дастурларининг мос келиши, ўқитиш усуллари ва таълим муҳитининг ўзаро уйғунлиги муҳим аҳамиятга эга эканлиги таъкидланади.*

Таянч сузлар: *Таълим, таълим сифати, таълим сифатига оид тавсиялар, замонавий таълим, ривожланиш, рақамли технология.*

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THE ROLE OF THE TEACHER IN IMPROVING THE QUALITY OF EDUCATION

SUMMARY. *This article discusses the role of the teacher in ensuring the quality of education in modern society. In particular, it is noted that the level of knowledge of students, the compatibility of educational programs, teaching methods, and the environment are important for ensuring the quality of education.*

Key words: *Education, quality of education, recommendations on the quality of education, modern education, development, digital technologies*

КИРИШ

Замонавий жамиятда таълим ҳар бир шахснинг ҳаётида муҳим ўрин тутади ва жамиятнинг иқтисодий, ижтимоий ҳамда маданий ривожланишида асосий омил ҳисобланади. Тақдим этилаётган таълим сифати эса мамлакатнинг келажакдаги тараққиётини белгилайди. Шу муносабат билан таълим сифатини ошириш ҳар доим давлат ва жамият эътиборида бўлади.

Таълим сифатини таъминлашда кўплаб омиллар таъсир кўрсатади. Булар қаторида таълим муҳити, ўқув дастурлари, моддий-техник базалар муҳим бўлса-да, ўқитувчининг шахсий ва касбий салоҳияти, малакаси ҳам ҳал қилувчи аҳамиятга эга. Ўқитувчи — таълим жараёнининг марказий субъекти сифатида ўқувчиларга билим бериш, уларнинг интилишларини уйғотиш ва ривожланишини таъминлашда бевосита иштирок этади.

Ушбу мақоланинг мақсади — таълим сифатини оширишда ўқитувчининг роли ва ўрнини аниқлаш, шунингдек, уни ривожлантириш йўлларини таҳлил қилишдан иборат.

Таълим сифати тушунчаси

Таълим сифати — бу таълим муассасалари томонидан ўқувчиларга берилаётган билим, кўникма ва маънавий-ахлоқий тарбиянинг даражасини ифодалайдиган тушунча. ЮНЕСКОнинг таълим сифатига оид тавсияларида таълим сифатини таъминлаш учун ўқувчиларнинг билим даражаси, таълим дастурларининг мослиги, ўқитиш усуллари ва муҳити муҳим экани таъкидланган.

Маҳаллий таълим тизимида ҳам таълим сифатига катта эътибор берилмоқда. Бунинг учун замонавий ўқув дастурлари, илғор педагогик технологиялар ва самарали баҳолаш тизимлари яратишга урғу берилади. Таълим сифати нафақат билим бериш билан чекланмай, балки ўқувчиларнинг ижтимоий-эмоционал ривожланиши, мустақил фикрлаш қобилиятини шакллантиришга ҳам қаратилган.

Ўқитувчининг ўрни

Ўқитувчи таълим тизимидаги энг муҳим ва асосий фигура саналади. У нафақат билим беришда, балки ўқувчиларнинг шахсий ва ижтимоий ривожланишида ҳам муҳим роль ўйнайди. Замонавий таълим жараёнида ўқитувчининг касбий салоҳияти, педагогик малакаси ва шахсий фазилатлари таълим сифатига бевосита таъсир кўрсатади.

Ўқитувчининг билим ва малакаси юқори даражада бўлиши талаб этилади, чунки улар ўқувчиларга билим бериш билан бир қаторда янги педагогик технологиялардан фойдаланиш, инновацион усулларни жорий этиш каби вазифаларни ҳам бажаради. Шу билан бирга, ўқитувчи ўқувчиларга шахсий намуна бўлиб, уларнинг маънавий ва ахлоқий камолотини шакллантиришда ҳам катта ҳисса қўшади.

Педагогик муваффақиятнинг асосий омилларидан бири — ўқитувчининг ўқув жараёнида индивидуал ёндашувни қўллаши ва ҳар бир талабанинг қобилиятига мос равишда таълим беришидир. Бу эса ўқувчиларнинг фаол иштирокини таъминлайди, уларнинг билим сифатини оширишга хизмат қилади.

Ўқитувчини ривожлантириш омиллари

Таълим сифатини оширишда ўқитувчининг касбий ва шахсий ривожланиши муҳим ўрин тутади. Ўқитувчиларнинг малакаси ва билимлари доимий равишда оширилиши керак, бу эса таълим жараёнининг самарадорлигини таъминлайди.

Биринчи навбатда, малакани ошириш курслари ва қайта тайёрлаш дастурлари ўқитувчиларни янги билим ва кўникмалар билан таъминлайди. Бу курслар замонавий педагогик технологиялар, янги таълим усуллари ва ахборот-коммуникация технологияларидан фойдаланишни ўргатади. Шу билан бирга, улар ўқитувчиларга илмий-тадқиқот ишларида иштирок этиш имкониятини ҳам беради, бу эса касбий ривожланишни янада кучайтиради.

Иккинчи муҳим омил — рақамли технологияларнинг таълимда кенг жорий этилиши. Онлайн платформалар, электрон ўқув материаллари ва интерактив воситалар ўқитувчиларнинг ишлаш услубини ўзгартиради ва таълим сифатига ижобий таъсир кўрсатади.

Шунингдек, педагогик жамоалар ва касбий уюшмаларда фаол иштирок этиш, тажриба алмашиш ҳам ўқитувчининг ривожланишида муҳим аҳамиятга эга. Бу жараёнда ўқитувчилар ўз муаммоларини муҳокама қилиш, янги ғоялар олиш ва ўз касбий салоҳиятини ошириш имкониятига эга бўлади.

Хулоса ва таклифлар

Таълим сифатини оширишда ўқитувчининг роли беқиёс аҳамиятга эга эканлиги шубҳасиздир. Ўқитувчи нафақат билимларни етказувчи, балки ўқувчиларнинг шахсий ҳамда касбий ривожланишида, уларнинг ижтимоий-маънавий камолотини таъминлашда ҳам марказий ўрин тутади. Шу боисдан, ўқитувчиларнинг касбий салоҳиятини доимий равишда ошириш, уларни замонавий педагогик ва технологиялик янгиликлар билан таъминлаш муҳим вазифадир.

Давлат ва таълим муассасалари томонидан ўқитувчиларни қўллаб-қувватлаш, уларнинг малакасини ошириш учун зарур шарт-шароитлар яратиш мақсадга мувофиқдир. Шунингдек, педагогик фаолиятни рағбатлантириш ва илмий-тадқиқот ишларида иштирок этиш имкониятларини кенгайтириш керак.

Ўқитувчиларнинг касбий ривожланишига йўналтирилган чора-тадбирлар таълим сифатига ижобий таъсир кўрсатади, бу эса ёш авлодни сифатли ва замонавий билимларга эга бўлган мутахассислар қилиб тарбиялашга хизмат қилади.

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УВЕЛИЧЕНИЕ ФИНАНСОВЫХ ОБЯЗАТЕЛЬСТВ НАСЕЛЕНИЯ И ВЫСОКИЙ УРОВЕНЬ ЗАДОЛЖЕННОСТИ

Аннотация: *В данной статье проанализированы рост уровня задолженности населения в Узбекистане, его экономические и социальные последствия, а также влияние на стабильность банковской системы. Исследование основано на статистических данных Центрального банка, международном опыте и методах теоретического анализа. Согласно результатам, долговая нагрузка населения значительно увеличивается, растёт и объём проблемных кредитов. Такая ситуация объясняется недостаточной финансовой грамотностью населения, чрезмерной популяризацией кредитных продуктов, а также большими расходами, связанными с социальными мероприятиями. Подчёркивается необходимость расширения деятельности кредитного бюро, внедрения прозрачной системы кредитования и повышения финансовой грамотности населения. Результаты исследования имеют практическое значение для укрепления финансовой устойчивости населения и снижения кредитных рисков.*

Ключевые слова: *задолженность населения, долговая нагрузка, финансовая устойчивость, проблемные кредиты, кредитное бюро, прозрачное кредитование, финансовая грамотность.*

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INCREASE IN FINANCIAL OBLIGATIONS OF THE POPULATION AND HIGH LEVEL OF INDEBTEDNESS

Abstract: *This article analyzes the growing level of household indebtedness in Uzbekistan, its economic and social consequences, and its impact on the stability*

of the banking system. The research is based on statistical data from the Central Bank, international experience, and methods of theoretical analysis. According to the findings, the debt burden of the population is significantly increasing, and the volume of non-performing loans is also rising. This situation is explained by the insufficient financial literacy of the population, the excessive promotion of credit products, and high expenses related to social events. The article emphasizes the need to expand the activities of credit bureaus, implement a transparent lending system, and improve financial literacy among the population. The results of the study have practical significance for strengthening the financial stability of the population and reducing credit risks.

Keywords: *household debt, debt burden, financial stability, non-performing loans, credit bureau, transparent lending, financial literacy.*

Введение

К началу XXI века в мировой экономике возникли новые тенденции, не характерные для предыдущих этапов развития человечества. Смысл и характер экономики претерпели значительные изменения. Президент Республики Узбекистан Шавкат Мирзиёев подчеркнул необходимость уделять особое внимание вопросам, связанным с финансовым положением населения, системой кредитования и влиянием задолженности на экономику. В частности, он выступал с речами о росте потребности населения в получении кредитов, социальных и экономических последствиях этого процесса, а также о мерах, предпринимаемых государством. [1]

Экономическая ситуация на мировом рынке усложнилась, природа экономических отношений между странами кардинально изменилась. Экономическая конкуренция чрезвычайно усилилась, становясь всё более жёсткой и беспощадной. В таких условиях приобретает актуальное значение внедрение механизмов, обеспечивающих постоянное совершенствование экономики нашей страны, чёткое определение задач, связанных с устойчивым экономическим развитием.

Стратегия «Новый Узбекистан» служит формированию нового экономического мировоззрения, новых экономических отношений, построению свободного и процветающего общества, а также обеспечению национальной безопасности. Одним из приоритетных направлений стратегии национального развития является именно это.

Реформы банковской системы, углубление капитализации депозитной базы банков и повышение её устойчивости, укрепление финансовой стабильности и надёжности банков, расширение кредитования перспективных инвестиционных проектов, субъектов малого бизнеса и предпринимательства дают свои результаты. За счёт новых видов страховых, лизинговых и других финансовых услуг увеличивается их объём и улучшается качество, рассматривается важным направлением развитие фондового рынка как альтернативного источника привлечения капитала,

размещения свободных ресурсов предприятий, финансовых институтов и населения.

В данной статье основное внимание уделено анализу факторов, вызывающих чрезмерную задолженность населения, и освещению одного из эффективных решений этой проблемы — деятельности кредитного бюро и практики прозрачного кредитования.

Литература

Решения и указы Президента Республики Узбекистан Шавката Мирзиёева по усилению гарантий надёжной защиты прав и свобод граждан, его идеи и научно-теоретические выводы, направленные на социально-экономическую защиту человека, стали нормативной и теоретической основой данного исследования.

Сегодня рост финансовых обязательств и уровня задолженности населения как важная проблема в экономике широко изучается многими учёными. Свои взгляды в виде статей и книг публикуют такие зарубежные исследователи, как Мухаммад Эйд Балбаа, Богдан Андрей Думитреску, Адриан Энчиу, Кэтэлина Адриана Хындоряну, Кармен Обрежа, Флорин Блага, Пенпэн Юэ, Аслихан Гизем Коркмаз, Чжичао Инь, Хайган Чжоу.

Узбекистанские исследователи — Хужамов Бобур, Бекназаров Бегзод, Урозалиев Эльёр, Астанакулов Олим, Бердалиева Мухаббатхон, Нилуфар Батирова, Умиджон Дадабаев, Самандар Косимов, Хайдар Кувноков и другие — в своих трудах освещали отдельные аспекты данной проблемы.

Например, в исследованиях Баходира Хужамова анализировалось влияние инфляции и реальных доходов на потребность в кредите, выявлялись факторы, способствующие росту финансовых обязательств. [2]

Отабек Астанакулов, Мухаммадали Балбаа, Мархабо Бердалиева, Нигора Батирова и Умид Дадабаев в своих работах, посвящённых финансированию жилья, показали значение данной сферы для обеспечения финансовой устойчивости населения. [3]

Статистическое изучение доходов и расходов населения и их экономических аспектов роста финансовых обязательств раскрыто в статье Сирожиддина Косимова и Комила Кувнокова. [4]

Связь банковских услуг с финансовыми обязательствами населения также заслуживает отдельного внимания. В исследовании Шерзода Холдорова, посвящённом формам кредитования и их применению в коммерческих банках, освещена роль банковской системы в реализации финансовых обязательств. [5]

В настоящее время проблемы, связанные с ростом финансовых обязательств и уровня задолженности населения, находятся в центре внимания ведущих учёных и специалистов различных стран мира. Например, макроэкономические факторы задолженности населения широко изучены, влияние уровня задолженности на экономику подробно проанализировано. [6] Кроме того, значительный интерес представляет влияние цифровых финансовых инструментов на финансовые обязательства населения: с одной

стороны, это способствует финансовой инклюзии, с другой — приводит к возникновению долговых ловушек. [7]

Совокупность этих исследований раскрывает проблему роста финансовых обязательств и уровня задолженности населения с разных сторон — экономической, финансовой и статистической, что позволяет глубже изучить данную тему.

В методологическом плане в статье использованы системный анализ и синтез, индукция и дедукция, монографическое изложение, логический и экономико-статистический анализ, сравнение, научная абстракция и другие методы.

Обсуждение

В последние годы в Узбекистане, а также в ряде других стран долговая нагрузка населения значительно увеличивается. Согласно данным Центрального банка в «Обзоре финансовой стабильности», общая долговая нагрузка населения составляет 34 процента, а доля заёмщиков, у которых долговая нагрузка превышает 50 процентов, равна 40 процентам от объёма кредитов. [8]

Сегодня долговая нагрузка населения стремительно растёт. В Узбекистане заёмные средства обходятся чрезвычайно дорого. Несмотря на это, за последние 5 лет задолженность физических лиц по кредитам в банках увеличилась в 4,3 раза и достигла почти 173 трлн сумов. Проблема финансовой дисциплины стала актуальнее, чем когда-либо, и всё больше людей оказываются в трудной ситуации. [9]

Эта ситуация оказывает негативное влияние не только на темпы экономического роста, но и создаёт серьёзные угрозы для социальной стабильности и устойчивости банковской системы.

Проблема роста уровня задолженности населения является сегодня крайне актуальной. Чрезмерная закредитованность не только отрицательно влияет на стабильное функционирование экономической системы, но и вызывает ряд социальных проблем. Также применение данной системы анализируется на практических примерах. Эту ситуацию можно объяснить несколькими основными аспектами.

Во-первых, с точки зрения экономического равновесия, значительная часть доходов населения направляется на погашение долгов, вследствие чего уменьшается объём внутреннего потребления. Это, в свою очередь, приводит к сокращению внутреннего рынка, разрушению рыночной инфраструктуры и замедлению темпов общего экономического роста.

Во-вторых, с позиции финансовой безопасности, рост уровня задолженности представляет серьёзную угрозу и для банковской системы. В случае, если заёмщики не смогут вовремя выполнять свои обязательства, в кредитных учреждениях возникают проблемы, связанные с платёжеспособностью. Это негативно сказывается на устойчивости всей финансовой системы и повышает риск финансового кризиса. В качестве примера можно привести глобальный финансовый кризис 2008 года в США.

Основной причиной этого кризиса стало предоставление ипотечных кредитов неплатёжеспособным клиентам. Хотя сегодня банки принимают определённые меры для предотвращения подобных ошибок, финансовые риски полностью не устранены.

В-третьих, чрезмерная задолженность имеет и социальные последствия. Невозможность своевременно погашать кредиты негативно влияет на психологическое состояние людей, вызывая стресс, что приводит к увеличению числа семейных конфликтов и снижению уровня жизни. В результате может возникать и социальное недовольство.

Наконец, высокий уровень задолженности населения оказывает прямое влияние и на государственную политику. Государство вынуждено пересматривать финансовую политику, искать пути решения существующих проблем и тщательно анализировать их практические результаты.

Прежде всего необходимо проанализировать причины возникновения данной проблемы. Следует рассмотреть основные факторы, приведшие к сложившейся ситуации. Несомненно, одним из важнейших факторов является дисбаланс между доходами и расходами. Иными словами, хотя заработная плата и доходы населения постепенно растут, цены на потребительские товары и услуги повышаются гораздо более высокими темпами. В экономической терминологии это называется инфляцией.

Инфляция — это постоянный рост общего уровня цен, который имеет несколько причин:

Рост денежной массы: выпуск денег Центральным банком или правительством и поступление их в обращение стимулируют инфляцию. Если объём товаров и услуг не увеличивается, избыточные деньги начинают «бороться» за ограниченное количество товаров, что ведёт к росту цен.

Рост спроса (demand pull-инфляция): при увеличении доходов населения или расширении возможностей покупательной способности за счёт бюджетной политики спрос на товары и услуги превышает их предложение, в результате чего цены растут.

Ещё одним фактором, вызывающим обесценивание денег, является предпочтение населения хранить свои средства, а не вкладывать их во внутренний рынок. В результате деньги, выпущенные в обращение, не возвращаются в полном объёме, что создаёт необходимость новых эмиссий. В таких условиях наблюдается обесценивание национальной валюты.

Ещё один важный аспект связан с широкой популяризацией кредитов. Активная реклама кредитных продуктов банками и микрофинансовыми организациями, а также упрощение процедуры их оформления привели к тому, что получение кредита на разные цели — покупку мобильного телефона, телевизора, бытовой техники, а иногда даже проведение свадеб — стало обычным явлением.

Эту ситуацию наглядно подтверждают данные Центрального банка. В частности, кредитный портфель коммерческих банков в течение 2023 года увеличился на 81,4 трлн сумов и на конец года составил 471,4 трлн сумов.

Также объём проблемных кредитов вырос с 13,99 трлн сумов в начале года до 16,62 трлн сумов, увеличившись на 2,63 трлн сумов. [10]

Из анализа этих цифр видно, что сегодня в Узбекистане устойчиво растёт тенденция к заимствованию среди населения. На самом деле эта ситуация могла бы не стать серьёзной проблемой. Однако нехватка финансовой грамотности у многих граждан — то есть недостаточное понимание условий кредитов, процентных ставок и последствий просрочек по платежам — приводит к тому, что они по своей воле попадают в «ловушку долгов».

Под влиянием потребительской культуры и маркетингового давления люди стремятся к избыточным покупкам. Реклама и торговая политика побуждают их приобретать ненужные товары. Особенно активно в настоящее время распространяются схемы типа «Купи сейчас, плати потом», которые меняют восприятие людей о кредитах и формируют у них отношение к финансовым обязательствам как к чему-то лёгкому и обыденному.

Ещё одной серьёзной проблемой являются избыточные расходы, связанные с социальными традициями. На свадьбы, обрезания, юбилеи и другие торжества многие граждане ради сохранения «чести и престижа» стремятся тратить крупные суммы денег. В итоге для проведения таких мероприятий широко практикуется привлечение долгов и кредитов. Это является наглядным примером нерациональных и неэффективных расходов с экономической точки зрения.

Все данные изучались на основе отчётов Центрального банка, международного опыта и аналитических статей.

Результаты

На примере Узбекистана можно увидеть, что проблема чрезмерной задолженности населения активно рассматривается Центральным банком. Регулятор внедряет ряд макропруденциальных и пруденциальных мер с целью обеспечения финансовой стабильности в стране и снижения уровня долговой нагрузки населения.

В частности, Центральный банк начал применять требования по долговой нагрузке ко всем видам кредитов. Теперь основными критериями наряду с процентными ставками по кредитам определены уровень долговой нагрузки заёмщика (DSTI) и соотношение кредита к обеспечению (LTV).

Ранее требование по долговой нагрузке в Узбекистане применялось только к микрозаймам и составляло 50 процентов. С 1 июля 2024 года было установлено, что долговая нагрузка по всем видам кредитов не должна превышать 60 процентов. С 1 января 2025 года предусматривалось дальнейшее снижение данного показателя до 50 процентов. [11]

Основная цель таких мер — предотвратить чрезмерное погружение населения в долги, контролировать платёжеспособность заёмщиков и укреплять устойчивость банковской системы. При этом в краткосрочной перспективе возможности получения кредитов некоторыми гражданами

могут сократиться. Однако в долгосрочной перспективе такой подход способствует оздоровлению экономической системы.

Кроме того, важное значение имеет повышение финансовой грамотности населения как способ устранения проблем, связанных с долговой нагрузкой. Для этого необходимо реализовать ряд системных мер. В частности, внедрение финансового образования в школах, вузах и средствах массовой информации имеет особую значимость.

В школьном образовании необходимо ввести специальные предметы или уроки по финансовой грамотности. В ходе этих занятий учащимся могут быть подробно разъяснены основные экономические понятия, такие как кредит, процент, инвестиции, бюджетное планирование. Особенно в рамках предмета «Финансовая грамотность» можно организовать практические занятия по банковским кредитам, процентным ставкам, срокам погашения и стратегиям выхода из долгов, что позволит сформировать у школьников с ранних лет ответственность в вопросах заимствования.

В вузах необходимо глубже изучать теоретические и практические аспекты образовательных кредитов. Например, на основе научной статьи «Особенности образовательных кредитов в финансировании системы образования в Узбекистане» студентам можно анализировать преимущества и трудности механизма кредитования. Особенно рекомендуется включать эту тему в учебные программы на подготовительном этапе к высшему образованию.

Кроме того, необходимо вести широкую разъяснительную работу через средства массовой информации для повышения финансовой грамотности населения. С помощью аналитических статей, интервью, радиопередач и телепередач гражданам должны предоставляться сведения об условиях кредитов, процентных ставках, сроках задолженности и их долгосрочных последствиях.

Сегодня в Узбекистане действует несколько финансово-новостных порталов. Например, в статьях типа «The Economic Importance of Financial Literacy: Theory and Evidence» [12] населению предоставляется актуальная информация об условиях кредитов и возможностях заимствования. В данной статье подробно анализируются понятие финансовой грамотности, её экономическое значение в жизни населения, роль в принятии финансовых решений и пути повышения уровня грамотности. Авторы показывают влияние финансового образования на финансовую устойчивость общества на основе эмпирических данных из разных стран.

Также в статье рассматриваются эффективные программы, реализуемые государственным и частным секторами для повышения финансовой грамотности, стратегии популяризации финансовых знаний, а также специальные тренинги для молодёжи и малообеспеченных групп.

Рекомендуется увеличивать количество подобных информационных платформ и расширять их аналитический потенциал.

Для снижения уровня чрезмерной задолженности населения коммерческие банки усиливают практику получения полной информации о заёмщиках через единое кредитное бюро с целью предварительной оценки и контроля кредитных рисков. Такой подход позволяет предоставлять кредиты на прозрачной основе и уменьшать случаи повторного и избыточного заимствования. Целесообразно провести более глубокий анализ этого решения.

Кредитное бюро — это учреждение, которое собирает, хранит и анализирует данные о кредитной истории, платёжной дисциплине и других финансовых обязательствах заёмщика от финансовых институтов (банков, микрокредитных организаций, финансовых компаний) и других кредиторов.

Практика прозрачного кредитования означает чёткое раскрытие всех условий займа — процентных ставок, комиссий, штрафов за просрочку, графика платежей и других условий — а также тщательную проверку финансового положения заёмщика. Это позволяет заёмщику оценить все финансовые риски до принятия решения.

В последние годы в Узбекистане были внедрены ряд практических механизмов в этом направлении. В частности, с начала 2025 года «Credit Information and Analytical Center (CIAC)» ввёл систему «Alternative Scoring». Эта модель оценки использует альтернативные финансовые показатели — такие как транзакции по банковским картам, коммунальные платежи, арендная плата и алименты — для определения кредитоспособности лиц, не имеющих официального дохода. Это предоставляет доступ к финансовым услугам тем категориям населения, которые ранее находились за пределами традиционной рейтинговой системы.

Кроме того, с помощью сервиса «FREEZE», разработанного компанией «Leyka-servis», гражданам предоставлена возможность в любое время ограничить несанкционированный доступ к своей кредитной истории. Этот сервис имеет важное значение для предотвращения незаконного использования персональных данных и оформления кредитов на имя граждан без их ведома.

В июле 2025 года Центральный банк пересмотрел порядок обмена кредитной информацией и в новой редакции принял закон «О кредитном информационном обмене». Данный закон более чётко определил порядок формирования, передачи и использования кредитной истории. Помимо этого, была введена система «Opt-in Credit Ban Registry». С её помощью граждане перед получением кредита могут зарегистрироваться и активировать либо временно ограничить свои возможности по заимствованию.

Эти механизмы позволяют финансовым учреждениям более точно оценивать уровень риска заёмщиков. Если человек имел задержки в погашении предыдущих кредитов или имеет несколько активных долговых обязательств, новые кредитные условия будут более строгими или ему вовсе могут отказать в кредите. Это помогает снизить уровень «проблемных кредитов» (non-performing loans, NPL) в банковской системе.

Кроме того, рост прозрачности и использование альтернативных финансовых данных позволяет вовлечь в финансовый оборот часть населения, не имеющую официальных доходов. При этом повышается информированность граждан о своих кредитных правах и обязанностях, сокращаются случаи несанкционированного оформления кредитов, усиливается защита персональных данных.

Однако для эффективной работы этих систем необходимо учитывать определённые ограничения и меры предосторожности. Прежде всего, база данных кредитного бюро должна быть актуальной и полной. Если информация устарела или является неверной, это может нанести ущерб не только кредитору, но и правам заёмщика. Важным остаётся вопрос конфиденциальности и защиты персональных данных: право граждан на доступ к информации должно быть чётко урегулировано. Эффективность подобных систем проявляется не сразу, а только после расширения базы данных и полноценного запуска механизма.

В международной практике широко применяются принципы «ответственного кредитования». Сегодня они внедряются и в Узбекистане. Этот подход требует от кредитных организаций анализа не только доходов заёмщика, но и его текущих долговых обязательств, семейного положения и других финансовых возможностей.

Заключение

Чрезмерная задолженность населения — это комплексная экономическая, финансовая и социальная проблема. В борьбе с ней важными инструментами являются деятельность кредитного бюро и практика прозрачного кредитования.

В Узбекистане предпринимаются серьёзные шаги для повышения эффективности этой системы: внедрение «Alternative Scoring», сервиса «Freeze», а также изменения в законодательстве о кредитных условиях. Эти меры направлены на обеспечение правового и экономического баланса между кредиторами и заёмщиками, а также на укрепление финансовой устойчивости населения.

Дальнейшее развитие этих механизмов, усиление мониторинга со стороны регуляторов и повышение финансовой грамотности населения позволят предотвратить проблему чрезмерной задолженности в будущем.

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СОВРЕМЕННЫЕ ОСОБЕННОСТИ ПЕДАГОГА-ПСИХОЛОГА

Аннотация*: В статье рассматриваются современные особенности деятельности педагогов-психологов в образовательной среде. Особое внимание уделяется роли индивидуального подхода, развитию эмоционального интеллекта, использованию психолого-педагогических технологий и диагностических методов.*

Ключевые слова: *педагог-психолог, индивидуальный подход, психологическая помощь, эмоциональный интеллект, школьная психология, психолого-педагогические технологии, эмпатия, диагностика, психологическая поддержка, образовательная среда.*

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MODERN CHARACTERISTICS OF AN EDUCATIONAL PSYCHOLOGIST

Annotation: *The article examines the modern features of teacher-psychologists' professional activity in the educational environment. Special attention is given to the role of an individual approach, the development of emotional intelligence, and the use of psycho-pedagogical technologies and diagnostic methods. The importance of empathy and psychological support for students in creating a positive psychological climate at school is emphasized.*

Keywords: *teacher-psychologist, individual approach, psychological assistance, emotional intelligence, school psychology, psycho-pedagogical technologies, empathy, diagnostics, psychological support, educational environment.*

В последние годы под руководством Президента Республики Узбекистан Шавката Мирзиёева в стране проводится масштабная реформа системы образования. В одном из своих выступлений он подчеркнул: «Будущее нашей страны зависит от того, какими мы воспитаем сегодняшних детей. Поэтому каждый ребёнок должен чувствовать заботу и поддержку — не только в семье, но и в школе». Эти слова ещё раз доказывают, насколько важна роль педагогов-психологов в современной образовательной системе. Их профессиональная деятельность направлена на формирование здоровой, гармонично развитой личности, способной успешно адаптироваться в обществе и реализовать свой потенциал.

Современное образование требует не только академических знаний, но и развития личности, эмоционального интеллекта и психологического благополучия обучающихся. В этом процессе ключевую роль играет педагог-психолог – специалист, обеспечивающий психологическую поддержку участникам образовательного процесса. В условиях быстро меняющегося общества, цифровизации и роста психоэмоциональных нагрузок, деятельность педагога-психолога приобретает новые особенности. Одна из главных черт современного педагога-психолога – это способность видеть в каждом ученике индивидуальность. Вместо универсальных решений он применяет дифференцированные методы, учитывая: возрастные и личностные особенности ребенка; уровень его эмоционального и когнитивного развития; семейную и социальную среду.

Такой подход позволяет создать комфортную и безопасную образовательную среду. Современный педагог-психолог активно использует: цифровые инструменты для диагностики и мониторинга (онлайн-тесты, платформы обратной связи); интерактивные методы работы (тренинги, арт-терапия, геймификация); телеметоды психологической помощи (видеоконсультации, чаты и др.). Это расширяет его возможности и делает помощь более доступной. Сегодня особенно важна способность педагога-психолога к эмпатии — пониманию и сопереживанию эмоциям детей. Он умеет: управлять собственными чувствами; распознавать эмоциональные состояния других; устанавливать доверительные отношения.

Эти качества способствуют более глубокому контакту с детьми и эффективной психологической помощи.Современный педагог-психолог работает в условиях постоянных изменений: образовательные реформы, новые вызовы (постпандемический синдром, стресс, буллинг и т.д.). Поэтому он должен уметь: быстро адаптироваться к новым ситуациям; применять инновационные методы; быть открытым к самообразованию и профессиональному росту. Профессиональная этика и конфиденциальность. Этические нормы являются неотъемлемой частью работы педагога-психолога. Он обязан: сохранять конфиденциальность информации; быть нейтральным и объективным; действовать в интересах ребенка, уважая его права и достоинство. Работа в команде и междисциплинарное сотрудничество. Современный педагог-психолог взаимодействует не только с детьми, но и с: родителями; учителями;социальными педагогами; медицинскими и административными работниками. Такое сотрудничество обеспечивает комплексный подход к решению проблем и созданию благоприятной образовательной среды. Современный педагог-психолог — это не просто специалист, оказывающий психологическую помощь, а активный участник образовательного процесса, обладающий широким спектром компетенций. Его работа требует высокой профессиональной подготовки, эмоциональной устойчивости, гибкости мышления и искренней заинтересованности в благополучии ребенка. Только такой специалист может эффективно решать задачи, стоящие перед системой образования в XXI веке.

Современный педагог-психолог — это специалист, играющий важную роль в образовательном процессе. В условиях стремительно развивающегося общества и постоянных изменений в системе образования, требования к профессиональной деятельности педагогов-психологов значительно возросли. Их главная задача — содействовать всестороннему развитию личности ребёнка, обеспечивая его психологическое благополучие и комфорт в учебной среде. Особенностью современного педагога-психолога является умение применять личностно-ориентированный подход, при котором учитываются индивидуальные особенности каждого ребёнка, его эмоциональное состояние, уровень развития, социальное окружение и семейные условия. Такой подход способствует созданию благоприятной атмосферы в образовательном учреждении и помогает учащимся раскрывать свой потенциал. Современный специалист в области школьной психологии активно использует инновационные методы и технологии в своей практике. Это включает цифровые средства диагностики, интерактивные тренинги, арт-терапию, телепсихологическую помощь. Применение таких инструментов повышает эффективность психологической поддержки и делает её более доступной. Эмоциональный интеллект также является неотъемлемой чертой современного педагога-психолога. Он умеет распознавать и понимать эмоции других людей, контролировать свои реакции и строить доверительные отношения с детьми, родителями и коллегами. Благодаря этим качествам специалист способен оказывать глубокую и чуткую помощь детям, сталкивающимся с трудностями. Кроме того, современный педагог-психолог отличается гибкостью и способностью к быстрому профессиональному развитию. Он открыт к новым знаниям, использует современные подходы и оперативно реагирует на вызовы времени, такие как стресс, тревожность, буллинг или последствия пандемии. Не менее важным аспектом работы является соблюдение профессиональной этики. Конфиденциальность, уважение к личности ребёнка, объективность и нейтральность — это базовые принципы, на которых строится доверие между психологом и его подопечными. Современный педагог-психолог активно сотрудничает с родителями, учителями и другими специалистами, участвуя в создании единой системы поддержки ребёнка в образовательной среде. Такое междисциплинарное взаимодействие позволяет комплексно решать возникающие проблемы и эффективно способствовать развитию учащихся.

В заключение можно отметить, что роль педагога-психолога в современной системе образования является крайне важной и незаменимой. От его профессионализма, личностных качеств и способности к сотрудничеству зависит не только психологическое здоровье обучающихся, но и общая атмосфера в образовательной среде. Современный педагог-психолог должен быть гибким, эмоционально устойчивым, готовым к постоянному саморазвитию и использованию инновационных методов в своей работе. Умение устанавливать доверительные отношения, соблюдать этические

нормы и работать в команде делает его ключевой фигурой в обеспечении гармоничного развития личности ребёнка.

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РОЛЬ ПРИРОДЫ В ФОРМИРОВАНИИ ЛИЧНОСТИ РЕБЕНКА

Аннотация: *В статье рассмотрены некоторые вопросы методики ознакомления ребенка с природой, которая совершенствует его сенсорное развитие и позволяет сформировать первоначальные яркие, конкретные представления о природе, увидеть и понять связи и отношения природных явлений.*

Ключевые слова: *разнообразие формы, величины, цвета, звука, запахов, движения, сенсорное развитие, представления о природе, связи и отношения природных явлений.*

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THE ROLE OF NATURE IN THE FORMATION OF A CHILD'S PERSONALITY

Abstract: *The article examines some issues of the role of nature in the formation of a child's personality, which improves his sensory development and allows him to form initial vivid, concrete ideas about nature, to see and understand the connections and relationships of natural phenomena.*

Key words: *diversity of form, size, color, sound, smell, movement, sensory development, ideas about nature, connections and relationships of natural phenomena.*

Ребенок воспринимает природу непосредственно, с помощью органов чувств. Поэтому она предстает перед ним во всем разнообразии формы, величины, цвета, звука, запахов, движения. Это совершенствует его сенсорное развитие и позволяет сформировать первоначальные яркие, конкретные представления о природе, увидеть и понять связи и понять связи и отношения природных явлений (переход от наглядного к логическому мышлению). В процессе наблюдений, игр, труда в природе дети не только знакомятся со свойствами и качествами объектов и явлений природы, но у них развивается детская деятельность. Кроме того, труд в природе – наиболее доступный вид детского труда – оказывает положительное влияние на формирование личности ребенка.

В ходе коррекционно-образовательной работы по ознакомлению с природой дошкольников с интеллектуальной недостаточностью решаются две группы задач. 1 группа - общие задачи ознакомления детей с природой:

1). Формирование представлений об объектах и явлениях природы (их признаках и свойствах), а также их связях и отношениях между ними.

2). Формирование у детей трудовых навыков и умений.

3). Формирование у детей любви к природе, бережного отношения к ней.

Специальные задачи

В методике ознакомления дошкольников с окружающим миром выделяют следующие направления работы по ознакомлению с природой:

1. Представления о неживой природе (смена дня и ночи, типичные погодные явления, характерные для местного края, наличие теплых и холодных дней, пасмурная и солнечная погода, типичные атмосферные явления – дождь, снегопад, ветер, изморозь, иней, гроза и пр.; вода и ее агрегатное состояние, песок, глина, почва; о некоторых космических телах – Луна, Солнце, звезды).

2.Знания о растениях (учить различать и называть наиболее типичные, часто встречающиеся в данной местности деревья, кустарники, травянистые растения; формировать элементарные представления о потребностях растений – тепло, влага, почвенное питание; формировать представления о способах ухода за комнатными растениями, а также растениями огорода и цветника; формируют представления об изменениях состояний растений в разные сезоны, формируют элементарные знания об охране растений).

3. Представления о животных (наиболее часто встречающиеся представители млекопитающих, птиц, пресмыкающихся, рыб, земноводных, насекомых; домашние и дикие животные родного края, наиболее типичные представители других зон – их внешний вид, поведение, приспособление к условиям окружающей среды, уход за домашними животными и птицами или животными и птицами в уголке природы).

4. Знания о труде взрослых в природе (представления о способах выращивания растений и ухода за животными, охрана природы и использование ее человеком, формирование некоторых трудовых умений и навыков ухода за растениями и животными в уголке природы и на участке).

5. Знания о сезонных изменениях в природе (продолжительность дня и ночи в каждом сезоне, характер погоды, температура воздуха, типичные осадки, как особенности явлений неживой природы влияют на образ жизни животных и растений, труд людей в природе в каждый сезон, особенности жизни детей; формирование знаний о последовательности времен года).

6. Формирование бережного и заботливого отношения к природе осуществляется на основе имеющихся представлений о растениях, животных, условиях их жизни, знании их основных потребностей, навыков и умений по уходу за ними. Формированию бережного отношения к природе способствует и ее эстетическое восприятие.

Для реализации рассмотренных задач ознакомления детей с природой в коррекционном ДОО создаются ряд условий: уголок с животными и растениями, участок детского сада.

Для постоянного общения ребенка с растениями и животными в детском саду создают уголки природы, который украшает групповую комнату, доставляет удовольствие детям и дает возможность проводить наблюдения, ухаживать за животными и растениями. Обитатели уголка природы могут жить там постоянно (комнатные растения, рыбы, птицы и пр.), либо пребывать там определенное, непродолжительное время (растения и животные местного края, жизнедеятельность которого проявляется наиболее ярко в определенные сезоны – весенние первоцветы, насекомые). При подборе животных и растений для уголка природы следует учитывать ряд требований:

Растения и животные должны быть типичными для той или иной систематической или экологической группы.

Растения и животные должны быть внешне яркими, привлекательными, способными привлечь и удержать внимание ребенка с интеллектуальной недостаточностью.

Необходимо иметь несколько экземпляров одного вида растений и животных.

Растения и животные должны быть абсолютно безопасными для жизни и здоровья детей.

Растения и животные должны быть неприхотливыми, не требующими для своего содержания сложного оборудования.

Необходимо учитывать возможность нормальной жизнедеятельности растений и животных в условиях ДОО (повышенная температура, сухость, шум и пр.).

Другим условием успешной организации работы по ознакомлению с природой дошкольников является наличие правильно спланированного и хорошо оборудованного участка детского сада. Участок детского сада должен отвечать гигиеническим и педагогическим требованиям (иметь определенный размер, там должны быть правильно подобраны и размещены деревья и кустарники, созданы цветники, возможно разведение небольшого огорода и сада, выделение места для содержания некоторых животных, привлечение на участок птиц).

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РАЗРАБОТКА МОДЕЛИ УПРАВЛЕНИЯ КОММУНИКАЦИЯМИ СТУДИИ МАНИКЮРА В ИНТЕРНЕТ-ПРОСТРАНСТВЕ (НА ПРИМЕРЕ СТУДИИ МАНИКЮРА И ПЕДИКЮРА BULEEVA NAIL STUDIO)

Аннотация: *В статье рассматривается процесс разработки авторской модели управления коммуникациями для микропредприятия сферы бьюти-услуг — студии маникюра и педикюра Buleeva nail studio (г.Новосибирск). Модель направлена на повышение эффективности онлайн-коммуникаций с клиентами, формирование устойчивого бренда и рост конкурентоспособности в цифровой среде. Предложенная модель управления может быть адаптирована для организаций различного масштаба в индустрии красоты.*

Ключевые слова: *онлайн-коммуникации, модель управления, цифровой маркетинг, бьюти-индустрия, бренд-менеджмент, стратегия коммуникаций, маникюрный бизнес.*

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DEVELOPMENT OF A COMMUNICATION MANAGEMENT MODEL FOR A MANICURE STUDIO IN THE INTERNET (USING THE EXAMPLE OF THE BULEEVA NAIL STUDIO, MANICURE AND PEDICURE STUDIO)

Abstract: *The article discusses the process of developing an author's communication management model for a microenterprise in the field of beauty services — the Buleeva nail studio, manicure and pedicure studio (Novosibirsk). The model is aimed at improving the effectiveness of online communications with customers, building a sustainable brand and increasing competitiveness in the digital environment. The proposed management model can be adapted for organizations of various sizes in the beauty industry.*

Keywords: *online communication, management model, digital marketing, beauty industry, brand management, communication strategy, manicure business.*

Современный рынок бьюти-услуг характеризуется высокой конкуренцией, насыщенностью предложений и активной цифровизацией взаимодействий с клиентом. Для микропредприятий, таких как моностудии маникюра, эффективное управление онлайн-коммуникациями становится ключевым фактором устойчивого развития [1]. Интернет-пространство выступает не только каналом продвижения, но и инструментом построения отношений, формирования лояльности и вовлечения аудитории. В современных реалиях именно интернет-продвижение и систематизация процессов онлайн способствуют устойчивому развитию и конкурентоспособности на рынке услуг красоты, так как возможности в Интернете предполагаются под различные бюджеты, в то время как офлайн-коммуникации требуют значительно бóльших инвестиционных ресурсов, что делает их применимыми преимущественно для премиальных брендов или сетевых студий, располагающих достаточным маркетинговым бюджетом [2].

Buleeva nail studio функционирует в среднем ценовом сегменте ногтевых услуг и стремится не только поддерживать клиентскую базу, но и развивать образовательное направление — повышение квалификации мастеров. В этих условиях необходима структурированная модель управления онлайн-коммуникациями, учитывающая особенности цифрового поведения клиентов и специфику микробизнеса.

Модель управления интернет-коммуникациями — это структурированная система инструментов и методов, направленных на планирование, организацию, внедрение и контроль коммуникационной деятельности организации в цифровой среде с целью создания устойчивого имиджа, повышения узнаваемости бренда, установления и поддержания эффективного взаимодействия с целевой аудиторией, а также достижения стратегических и маркетинговых целей бизнеса.

Эта модель определяет логику взаимодействия участников коммуникационного процесса (организация — клиент — цифровая платформа), распределение ролей и зон ответственности, выбор каналов и форматов коммуникации, а также механизмы оценки эффективности реализуемых коммуникационных мероприятий [3].

В тех условиях, когда значительная часть пути клиента проходит онлайн — от поиска информации и сравнения услуг до записи на услугу и формирования лояльности, — грамотно выстроенная модель онлайн-коммуникаций становится стратегическим инструментом управления репутацией, продвижения и взаимодействия с аудиторией.

Основная цель управления интернет-коммуникациями:

1. Обеспечение целостности коммуникационной политики — создание единой логики присутствия бренда во всех цифровых каналах (социальные сети, мессенджеры, поисковые системы, геосервисы).;

2. Повышение эффективности маркетинговой деятельности за счет анализа данных, сегментации аудитории и оптимизации контент-стратегии;

3. Построение устойчивого бренда — поддержание визуального и смыслового единства, развитие доверия и эмоциональной связи с клиентами;

4. Сопровождение пути клиента от первого контакта до повторного посещения и рекомендации другим пользователям;

5. Интеграция онлайн- и офлайн-коммуникаций - обеспечение синергии между цифровым продвижением и реальным опытом взаимодействия клиента с салоном.

Для сферы бьюти-услуг модель управления онлайн-коммуникациями особенно важна, поскольку решения клиентов основаны на визуальном восприятии — фотографии работ, атмосфера студии, отзывы и контент мастеров напрямую влияют на выбор, а представленность на сервисах — это основная составляющая побуждения клиента к выбору студии; цифровая репутация формирует доверие, так как даже при качественном сервисе отсутствие профессиональной коммуникации онлайн снижает поток новых клиентов. Малый и микробизнес особенно зависят от онлайн-продвижения, поскольку у них нет больших бюджетов на офлайн-маркетинг. Кроме того, модель управления предполагает планирование не только организации внешних процессов, но и внутренних.

Цель данной работы — создание комплексной модели, обеспечивающей системное управление коммуникационными процессами в онлайн-среде для студии маникюра.

Успех внедрения модели интернет-коммуникации [4] заключается в комплексе таких показателей, как:

— Стратегические результаты (рост узнаваемости бренда, повышение лояльности аудитории, достижение KPI);

— Эффективность контента (охват и вовлеченность, количество упоминаний, количество новых подписчиков, уровень обратной связи);

— Поведенческие показатели (количество переходов на сайт, количество записей, увеличение UGC контента, поддержка инициатив организации);

— Качество управления (соблюдение единой стратегии коммуникации, координация между площадками, скорость реакции на кризисные ситуации, эффективность распределения ресурсов, уровень цифровизации процессов).

Анализ текущего состояния управления коммуникационной деятельностью онлайн Buleeva nail studio выявило наличие ряда рисков и возможностей:

— Кадровые ограничения: руководитель студии имеет слишком большой спектр задач, что ведет к потери концентрации внимания и трудности в расстановке приоритетов;

— Ресурсные ограничения: отсутствует онлайн-запись, что ведет к потере части потенциальных клиентов;

— Цифровое присутствие: студия представлена в социальных сетях и на геосервисах, но у организации отсутствует целостность, системность в публикации контента;

— Финансовые ограничения: опираясь на данные, полученные за 6 месяцев 2025 года, совокупные затраты на указанные виды маркетинговой активности за полугодие составили приблизительно 55 000 рублей. Этого может быть недостаточно для регулярного поддержания качественного цифрового присутствия.

На основе теоретического анализа и учета специфики студии маникюра предлагается модель, состоящая из четырех взаимосвязанных этапов. Модель представлена в таблице 1.

Таблица 1 — Универсальная модель управления интернет-коммуникациями студии маникюра Buleeva nail studio

Компонент модели	**Содержание**	**Цель**
Аналитико-диагностический блок	Исследование целевой аудитории, анализ цифровых каналов, аудит присутствия в соцсетях, анализ конкурентов.	Определить текущее состояние онлайн-коммуникаций и найти точки роста.
Ценностно-идентификационный блок	Формулировка миссии и ценностей бренда, разработка УТП и визуального кода коммуникации.	Сформировать устойчивый имидж и эмоциональную связь с клиентами.
Контентно-стратегический блок	Разработка контент-матрицы: рубрики, сторис, типы контента (информационный, вовлекающий, обучающий).	Поддержание регулярной активности и вовлеченности аудитории.
Технологический блок	Интеграция CRM, чат-ботов, аналитики, таргетированной рекламы.	Автоматизация и персонализация взаимодействий с клиентами.

Для моностудии ногтевого сервиса Buleeva nail studio оптимальной является гибридная модель управления коммуникациями [5], поскольку она сочетает контроль со стороны собственника или руководителя с делегированием отдельных функций (например, ведения соцсетей, создания контента или обработки отзывов) специалистам. Это обеспечивает баланс между единым стилем бренда и живыми, персонализированными коммуникациями, которые особенно важны для бьюти-сферы.

Для разработки модели управления коммуникациями целесообразно использовать комбинацию качественных и количественных методов исследования, таких как:

— SWOT-анализ для выявления сильных и слабых сторон онлайн-коммуникаций, возможностей и угроз внешней среды.;

— Бенчмаркинг — сравнительный анализ цифровой активности конкурентов;

— Контент-анализ;

— Метод CJM (Customer Journey Map) — построение пути клиента от первого контакта до лояльности.;

— Метод глубинных интервью и опросов используется для выявления идей и ожиданий клиентов относительно коммуникаций.

Использование этих методов обеспечивает всестороннее понимание аудитории и контекста функционирования бренда в цифровой среде.

Модель управления интернет-коммуникациями превращает коммуникационную деятельность предприятия в измеримую систему, где каждый этап оценивается с использованием ключевых показателей эффективности (охват, вовлеченность, конверсия, лояльность). Это гарантирует, что управленческие решения принимаются на основе данных, а не интуитивных суждений [6].

Для предпринимателя внедрение такой модели означает снижение операционной нагрузки, возможность делегировать задачи, оптимизировать маркетинговый бюджет и повысить контроль за эффективностью работы сотрудников и подрядчиков. Кроме того, модель обеспечивает гибкость стратегии и предсказуемость бизнес-процессов, позволяя планировать рабочую нагрузку и выручку.

Таким образом, хорошо продуманная система онлайн-коммуникаций делает предпринимателя менее зависимым от внешних маркетинговых структур и позволяет эффективно управлять коммуникациями даже при ограниченных ресурсах.

Разработанная модель управления онлайн-коммуникациями студии маникюра Buleeva nail studio является адаптируемым инструментом цифрового маркетинга для микропредприятий. Она сочетает аналитический подход, контент-ориентированную стратегию и технологические решения для оптимизации клиентского взаимодействия.

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ЎЗБЕКИСТОНДА ИҚТИСОДИЙ ВА ИЖТИМОИЙ ГЕОГРАФИЯНИНГ ШАКЛЛАНИШИДАГИ ИЛК ТАДҚИҚОТЛАР ВА УЛАРНИНГ ЙЎНАЛИШЛАРИ

Аннотация. *Мақолада иқтисодий ва ижтимоий география фанининг Ўзбекистонда шаклланишидаги илк тадқиқотлар ва уларнинг йўналишлари ҳамда мазкур фан соҳасида қўлга киритилган ютуқлар ва уларнинг натижалари таҳлил этилган. Шунингдек илмий асосланган таклиф ва тавсиялар ишлаб чиқилган.*

Калит сўзлар. *Иқтисодий ва ижтимоий география, иқтисодий географик қарашлар, иқтисодий географик районлаштириш, иқтисодий география илмий мактаби.*

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EARLY STUDIES AND THEIR DIRECTIONS IN THE FORMATION OF ECONOMIC AND SOCIAL GEOGRAPHY IN UZBEKISTAN

Annotation. *The article analyzes the first studies on economic and social geography in Uzbekistan and their directions, as well as achievements and their results in this field of science. Scientifically based proposals and recommendations have also been developed.*

Keywords. *Economic and social geography, economic and geographical views, economic and geographical zoning, scientific school of economic geography.*

Маълумки у ёки бу фаннинг вужудга келиши учун ижтимоий талаб, эҳтиёж ёки буюртма бўлиши керак. Бундан олдин эса шу фанга тегишли турли ахборий маълумотлар, объектив борлиқдан олинган, тўпланган дастлабки билимлар ва тахминлар шаклланади, сўнгра турли воқеликлар орасидаги сабаб-оқибат муносабатлари ҳамда маълум шароитда такрорланиб турадиган қонуният алоқадорликларни асослаш имконияти туғилади. Демак, объектив борлиқни кузатиш, мушоҳада қилиш тез-тез учрайдиган воқеаларни таҳлил

қилиш негизида муайан фанга доир билимлар мажмуаси вужудга келади, улар аста-секин илмга ва фанга айланади.

Ҳар қандай фан ҳақиқий фан мақомига эга бўлиши, шаклланиши учун ўзининг объекти, предмети, методи ва методологияси (усули ва услубиёти), асосий тушунча, категория ва қонуниятлари, мактаб, марказ ва йўналишларига салмоқли илмий асарлар, тадқиқиотларга эга бўлиши ва унинг бошқа фан вакиллари томонидан тан олиниши талаб этилади. Шунингдек, мазкур фаннинг ўқув предмети сифатида ўқитилиши, махсус факультет, кафедра ёки лабораторияларнинг ташкил этилиши ҳам катта аҳамиятга эга. Иқтисодий - ижтимоий география фани ҳам юқоридаги шарт-шароитлар, объектив заруриятлар асосида вужудга келган ва ривожланиб борган.

Республикамиз ҳудудида иқтисодий географик қарашларнинг шаклланиши узоқ тарихий даврларга бориб тақалади. Аммо буни иқтисодий географиянинг фан сифатида шаклланишидан фарқлаш лозим. Чунки ҳар қандай фан шу соҳадаги энг мукаммал қарашларнинг йиғиндисидан, мажмуидан иборатдир. Буюк ватандошларимиз Хоразмий, Фаробий, Фарғоний, Беруний, Ибн Сино, Улуғбек, Бобур кабиларнинг асарларида юртимиз ва дунёнинг бир қанча мамлакат ҳамда ҳудудлари табиати, аҳолиси ва хўжалиги тўғрисидаги иқтисодий географик аҳамият касб этувчи маълумотларни учратиш мумкин. Аммо бу ва бошқа олимлар географик меросларининг иқтисодий географик жиҳатлари яхши ўрганилмаган. Шу билан бирга кўпгина иқтисодий географик маълумотлар Хитой ва Араб сайёҳларининг китобларида ҳам мавжуд. Улар асосан юртимиздаги савдо, ҳунармандчилик ва айниқса бозорлар ва шаҳарларга катта эътибор беришган. Айтиш лозимки, айнан ана шу шаҳар ва бозорлар тафсилоти орқали ўлкамизнинг ўша даврдаги иқтисодий тарихий географиясини билиб олишимиз мумкин.

Ўрта Осиё ва унинг ажралмас қисми ҳисобланган республикамиз ҳудуди XIX асрнинг иккинчи ярмидан бошлаб Чор Россиясининг манфаатлари нуқтаи назардан ҳудудий жиҳатдан кенг қамровли тадқиқ этила бошланди. Бу давр тадқиқотлари умумгеографик хусусиятлари билан ажралиб турар эди. Айниқса геологик, геоморфологик, метеорологик, гляциологик, геоботаник ва зоогеографик жиҳатдан олиб борилган тадқиқотлар натижасида улкан илмий ҳамда амалий аҳамиятга молик маълумотлар тўпланган. Ушбу тадқиоқтлардан кўзланган мақсад ўлка ҳудудининг табиий географик шароити ҳамда ресурсларидан хўжаликни ҳудудий ташкил этишда фойдаланиш эканлигини назарда тутадиган бўлсак, иқтисодий географик тадқиқотлар бўйича илк қадамларнинг қўйилиши айнан шу даврга бориб тақалади.

XX аср бошларига келиб мамлакатимиз ҳудудининг ер-сув, иқлим ва ўсимлик ресурсларини ўрганишга катта эътибор берилди. Бундан кўзланган мақсад Чор Россиясининг чекка ўлкаси бўлган Ўрта Осиё ва республикамизнинг асосий хўжалик тармоғи бўлмиш пахтачиликни ривожлантириш ҳамда қишлоқ хўжалигининг хомашё етказиб барувчи бошқа тармоқларини шакллантиришдан иборат эди. Ана шу эҳтиёж туфайли

географик тадқиқотларнинг мазмун-моҳияти ва ундан кўзланган мақсад ҳам ўзгариб борган. Натижада махсус ихтисослашган илмий дастур асосида анча мукаммал ва тизимли тадқиқотлар олиб борила бошланган. Айрим географик районларни чуқур миқдорий таҳлил қилиш, уларни карталаштириш, ҳамда иқтисодий салоҳиятини аниқлаш бош масалага айланган. Ҳудудларнинг қишлоқ хўжалиги нуқтаи –назардан имкониятларини аниқлаш ва баҳолашга катта эътибор қаратилган. Бу борада қишлоқ хўжалиги тажриба станциялари (Тошкент, Мирзачўл, Андижон, Зарафшон, Фарғона), Россия ер тузиш ва деҳқончилик бошқармаси қошидаги "Ерлар ҳолатини яхшилаш бўлими", Гидрометрик бўлинма, Туркистон Ҳарбий топография бўлими, Россия География жамиятининг Туркистон бўлими олимлари томонидан олиб борилган тадқиқотлар натижаларини кўрсатиб ўтиш мумкин.

Ушбу муассасаларда фаолият олиб борган олимларнинг илмий фаолияти халқ хўжалигининг долзарб вазифалари – ер тузиш, обикор деҳқончилик ва яйлов хўжалигини ривожлантириш, ер ости бойликларини излаб топиш, ер-сув ресурсларини баҳолаш ҳамда карталаштириш каби масалалар билан боғлиқ бўлган. 1906-1918-йилларда нашр қилинган "Туркистон қишлоқ хўжалиги" журналида қишлоқ хўжалиги соҳасида олиб борилган тадқиқот натижалари ёритиб борилган. Бундай маълумотлар ўз навбатида республикамиз ҳудудиди XX асрнинг 20-йилларидан бошлаб олиб борилган иқтисодий географик тадқиқотлар учун манба вазифасини ўтаган.

Бундан ташқари XX бошларида Ўрта Осиёда вужудга келган жадидлик ҳаракати намояндалари ўзларининг "Янги усул" мактаблари учун нашр эттирган географик адабиётларида иқтисодий география ва унинг айрим тормоқлари тўғрисида фикр юритган бўлсаларда бу маълумотлар умумийлиги ҳамда ўша давр Ўрта Осиёси аҳолисининг билим савияси нуқтаи-назаридан ёзилганлиги билан фарқланади. Бу борада Маҳмудхўжа Бехбудий, Абдулла Авлоний, Мунавварқори Абдурашидхонов, Фотих Каримий кабиларнинг фаолияти алоҳида диққатга сазовордир. Хусусан Маҳмудхўжа Беҳбудийнинг "Янги усул" мактаблари учун нашр эттирган "Туркистон харитаси", "Мунтахаби жуғрофияи имроний" (Аҳоли географиясига кириш"), "Мухтасари жуғрофияи Русий" ("Русиянинг қисқача географияси"), "Жуғрофияи риёзий" ("Математик география"), "Жуғрофияи тарихий" ("Тарихий география") "Жуғрофияи сиёсий" ("Сиёсий география") каби асарлари ўша даврдаги географик қарашларни ўзида акс эттирганлиги билан ажралиб туради.

Ўзбекистонда иқтисодий география фанининг тарихий шаклланиш ва ривожланиш жараёнига баҳо беришда собиқ иттифоқ даврини ҳам эътиборга олмоқ зарур. Бу даврда мазкур фан, асосан немис мактаблари таъсирида, аввал Россияда аниқроғи Петербургда ривожланиб борган. Унда соф иқтисодий ва хусусан тармоқ ҳамда статистик рақамларга кўп аҳамият берилганлиги сабабли иқтисодий географияда "тармоқ-статистика" йўналиши устувор бўлган. Шунинг учун бўлса керак XX асрнинг 20-йилларида иқтисодий география иқтисодиёт фанлари тизимига киритилган.

Албатта, фанни фақат рақамлар билан тўлдириш ва географияни фақат тармоқлар таҳлили билан тушунтириш мақсадга мувофиқ эмас. Бинобарин, асосий ихтисослиги иқтисодчи бўлган олимлар Бернштейн-Коган ва Н.Н.Баранскийлар иқтисодий географияда ҳудудий жиҳатларга кўпроқ аҳамият беришнинг тарафдорлари бўлиб чиқишган ва натижада улар иқтисодий географияни районлар йўналишини кучайтиришган. Демак, иқтисодий географияда районлар таърифи ва тавсифига катта урғу берилган. Эҳтимол бу ҳолат кейинчалик иқтисодий географияни иқтисодиёт фанлари тизимидан география фанлар блокига киритилишига сабаб бўлган.

Ўзбекистонда мажмуали иқтисодий географик тадқиқотлар олиб бориш XX асрнинг 20-йилларидан бошланди. Бу давр бир қанча ўзига хос хусусиятлари билан ўтган даврлардан айниқса XX асрнинг дастлабки 20 йилидан фарқланади. Ўрта Осиёда мавжуд бўлган икки феодал давлат (Хива хонлиги ва Бухоро амирлиги) ҳамда чоризм ҳокимиятининг ағдариб ташланиши, унинг ўрнида шўро ҳокимиятининг вужудга келиши, дастлаб Туркистон мухтор жумҳурияти ва Бухоро ҳамда Хоразм халқ республикалари, сўнгроқ ҳозирда мавжуд республикаларнинг вужудга келишига "асос бўлувчи" миллий давлат чегараланишининг ўтказилиши кабилар шулар жумласидандир. Бу даврнинг яна бир ўзига хос хусусияти шундаки, нафақат Ўзбекистон, балки бутун Ўрта Осиё фани тараққиётида пойдевор вазифасини ўтаган Ўрта Осиё давлат университети (САГУ) га асос солинди (1918). Ана шу илм даргоҳида фаолият олиб борган олимларнинг ишларида Ўзбекистон ва бутун Ўрта Осиёнинг иқтисодиётига оид тадқиқот натижаларини кўриш мумкин. Бу даврдаги иқтисодий географик тадқиқотлар кўпроқ Ўзбекистон ва Ўрта Осиёнинг умумий таърифига бағишланганлиги билан ажралиб туради. Бу йўналишдаги тадқиқотларда энг аввало Г.Н. Черданцев ва В.М. Четиркинларнинг хизмати катта бўлганини эътироф этиш лозим. Чунончи, Г.Н. Черданцевнинг 1922 йилда ёзган Ўрта Осиё ҳақидаги монографиясида, 1928 йилда нашр этган Ўрта Осиё республикаларига бағишланган китобида, В.М. Четиркин ва Ю.И. Пословскийларнинг 1926 йилда ёзган Ўзбекистон халқ хўжалигининг аҳволи ва ривожланиши борасидаги асарида Ўрта Осиё ва Ўзбекистон иқтисодий географияси ҳамда иқтисодий географик районлаштирилишига оид маълумотлар келтирилган. 1944-1948 йилларда иқтисодий география кафедрасининг мудири сифатида фаолият олиб борган В.М.Четиркин турли вилоятлар табиати табиий шароити ҳамда табиий ресурсларини хўжалик нуқтаи-назаридан ўрганишга ва ёш географ олимларни тайёрлашга катта эътибор берган.

Маълумки, Ўрта Осиё собиқ Иттифоқнинг йирик қишлоқ хўжалик райони эди. Шунинг учун ҳам иқтисодий географик тадқиқотларнинг диққат марказида қишлоқ хўжалик ишлаб чиқаришини оқилона жойлаштириш ёки ҳудудий ташкил этиш ва иқтисодий географик районлаштириш масалалари ётарди. Қишлоқ хўжалигини иқтисодий географик районлаштиришда мажмуалилик ҳамда табиий шароит нуқтаи-назаридан таърифлаш муҳим ўрин тутар эди. Шунингдек бу тадқиқотлар аниқ амалий мақсадларга

қаратилганлиги ва қишлоқ хўжалиги ишлаб чиқаришини жойлаштиришнинг илмий асоси сифатида ишлаб чиқилганлиги билан муҳим аҳамият касб этар эди.

XX аср 30 йилларида олиб борилган иқтисодий географик тадқиқотлар асосан мамлакат ҳудудидаги табиий бойликларни ўрганиш ҳамда ишлаб-чиқариш кучларини жойлаштириш масалаларига бағишланган. Шу даврда яъни 1933 йилда ишлаб чиқариш кучларини жойлаштириш мавзуида республикамизда дастлабки илмий амалий анжуман ўтказилди.

Республикамизда иқтисодий географиянинг шаклланишидаги кейинги босқич 1940 йилда Ўрта Осиё давлат университети (ҳозирги ЎзМу)да иқтисодий география кафедрасининг очилиши ҳамда 1943 йилда ушбу йўналиш бўйича аспирантуранинг очилиши билан бошланди. Шу тариқа республикамизнинг тўнғич олий таълим даргоҳида дастлабки иқтисодий география илмий мактаби шаклланна бошлади.

Иқтисодий география иккинчи жаҳон уруши ва урушдан кейинги йилларда мамлакат хўжалигини қайта тиклаш ишларида катта илмий ва амалий аҳамиятга эга бўлган. Бу борада XX - асрнинг 20-нчи йилларида собиқ иттифоқда ташкил этилган КЕПС (Комитет по использованию природных ресурсов) ва унинг асосида ташкил этилган СОПС (Совет по изучению производительных сил) нинг вужудга келиши ниҳоятда муҳим бўлган. Ушбу илмий-тадқиқот ташкилотлари мамлакатнинг турли ҳудудларида табиий ресурслардан фойдаланиш, ишлаб чиқариш кучларини жойлаштириш бўйича концепция ва схемаларни яратганки, моҳиятан бу ишлар иқтисодий география фани доирасида олиб борилган.

50-йилларда олиб борилган тадқиқотлар сирасига Фарғона, Қашқадарё, Сурхон-Шеробод ва Зарафшон водийси ҳудудларига уюштирилган экспедицияларни киритиш мумкин. Бу даврда Ўзбекистонда ижтимоий ва иқтисодий география фани тараққиётига катта ҳисса қўшган олимлар Р.С.Лобач, З.М.Акромов, Р.А.Ходиев, Т.Тожимов, Т.Раимов, Э.Тошбеков каби олимлар етишиб чиқдилар. Улар ичида З.М.Акрамовнинг чўл, тоғ ва тоғолди районларни ўзлаштириш, иқтисодий районлаштириш каби муаммолар устида олиб борган изланишлари алоҳида диққатга сазовордир.

Ўзбекистон Фанлар академияси ҳузуридаги СОПС ҳамда бошқа илмий-тадқиқот институтлари ва 1940 йилда Тошкент Давлат университети - ҳозирги Ўзбекистон Миллий университетида очилган иқтисодий география кафедраси олимлари билан ҳамкорликда йирик ҳудудий-иқтисодий тадқиқиотларни бажарган. Масалан, Фарғона водийсининг ижтимоий-иқтисодий ривожланиш, Ангрен - Олмалиқ, Бухоро - Навоий, Қашқадарё, Мирзачўл, Қуйи Амударё ҳудудий ишлаб чиқариш мажмуалари тўғрисидаги ишлар шулар жумласидандир. Мазкур тадқиқиотларни амалга оширишда С.К.Зиёдуллаев, В.И.Четиркин, Г.Н.Черданцев, К.Н.Бедринцев, К.И. Лапкин, В.И.Попов, З.М.Акромов, Ш.Н.Зокиров, И.И.Искандеров каби иқтисодчи ва географ олимларнинг хизматлари катта бўлган.

XX - асрнинг етмишинчи йилларида иқтисодий география собиқ иттифоқда расман иқтисодий ва социал география номини олди. Табиийки, унинг илгариги таърифи, ишлаб чиқариш географияси эканлиги шароитига тўғри келмай қолди. Шунинг учун анъанавий иқтисодий географиянинг таърифи ижтимоий, ноишлаб чиқариш соҳалари, аҳолининг турмуш шароити ва тарзининг ҳудудий жиҳатлари билан бойитилди.

Ана шу даврда кейинчалик республикамизда иқтисодий ва ижтимоий географиянинг ривожланишига катта ва самарали ҳисса қўшган Т.Раимов, Г.Асанов, Т.Эгамбердиев, С.Саидкаримов, О.Б.Отамирзаев, А.С.Солиев, А.Н.Рўзиев, Х.С.Салимов, А.А.Қаюмов О.Абдуллаев, М.Янгибоев, Т. Маллабоев, Т. Жданов, Е.Умаров, И.Сафаров, М.Бўриева, М.Юсупов, Р.Тиллаев, Ш.Имомов, Н.Султонов, А.Содиқов кабилар етишиб чиқдилар.

Юқоридаги таҳлилларга таяниб республикамизда иқтисодий ва ижтимоий географиянинг дастлабки даврлардаги ривожланиши хусусида қуйидаги хулосаларга келиш мумкин:

1. XX асрда географик билимларни мустаҳкамлашда муҳим муваффақиятлар билан бир қаторда географик объект ва ҳодисаларни батафсил ўрганишга қаратилган географик тадқиқотларни фарқлаш тез суръатлар билан давом этди. Айрим муаллифлар, айниқса, ўқитиш муҳитидан келиб чиқиб, хариталаш мумкин бўлган фазовий параметрларга эга бўлган ҳар қандай ҳодиса ва объектлар географияга тегишли деган фикрга амал қилдилар. География тадқиқот объектларини бундай тушуниш география предметининг ўз чегараларидан чиқиб тарқалиб кетишига олиб келади. Натижада, географик синтез янада мураккаб ва муаммоли бўлади.

2. XX асрнинг биринчи ярми фанда кўплаб назарий янгиликлар яратилганлиги билан ажралиб туради. Бу даврда географик тадқиқотларнинг асосий вазифаси табиатни ўзгартирувчи парадигмани амалга ошириш билан боғлиқ эди. Асрнинг иккинчи ярмида эса тескари таъсир яъни табиатга таъсирнинг вайронкор хатти-ҳаракат сифатидаги хавфи тобора тан олинмоқда. Бу фанда экологик ва геоэкологик тушунчалар ривожланиши учун кучли туртки бўлди ва табиат – жамият тизимининг барқарор ривожланиш йўллари минтақавий ва жаҳон миқёсида изланмоқда.

3. География фанининг келажакдаги тараққиёти учун унинг шаклланиш ва ривожланиши тарихий тажрибасини диққат билан ўрганиш муҳимдир. Локал (ҳудудий), регионал (минтақавий) ва глобал (дунёвий) даражадаги мураккаб муаммоларни ўрганишда, табиий ва ижтимоий-иқтисодий тизимларни ўрганиш ва уларни бошқаришда классик ёндашувлар ва энг янги тадқиқот воситаларидан фойдаланишга асосланган география фани ва географик таълимни фундаменталлаштириш лозим. География фани сайёрамиздаги аҳолининг хулқ-атвор қоидаларини ишлаб чиқишда етакчи мавқега эга бўлиши керак.

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ПОЛОВЫЕ ОСОБЕННОСТИ ТЕЛОСЛОЖЕНИЯ ПОДРОСТКОВ 13–15 ЛЕТ В ШКОЛАХ КУНГРАДСКОГО РАЙОНА РЕСПУБЛИКИ КАРАКАЛПАКСТАН

***Аннотация**: Исследованы половые особенности телосложения подростков 13–15 лет из школ Кунградского района Республики Каракалпакстан (n=147). Определялись рост, масса тела, окружности груди, талии и бедер, длина конечностей и индекс массы тела (ИМТ). Выявлены выраженные половые различия: девочки достигают пика роста раньше мальчиков, у которых продолжается наращивание мышечной массы до 15 лет. Полученные данные имеют практическое значение для мониторинга физического развития и планирования физического воспитания и спортивной подготовки.*

***Ключевые слова:** подростки, половые различия, телосложение, рост, масса тела, индекс массы тела (ИМТ), антропометрические показатели, физическое развитие.*

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SEX-RELATED BODY BODY CHARACTERISTICS OF 13-15-YEAR-OLD ADOLESCENTS IN SCHOOLS IN THE KUNGRAD DISTRICT OF THE REPUBLIC OF KARAKALPAKSTAN

***Abstract:** The study examined the sex-related body composition of 13-15-year-old adolescents from schools in the Kungrad district of the Republic of Karakalpakstan (n=147). Height, weight, chest, waist, and hip circumferences, limb length, and body mass index (BMI) were determined. Significant gender differences were identified: girls reach their peak growth earlier than boys, who continue to*

gain muscle mass until age 15. The findings have practical implications for monitoring physical development and planning physical education and sports training.

Key words: *adolescents, gender differences, body type, height, body weight, body mass index (BMI), anthropometric indicators, physical development.*

Введение

Подростковый возраст является критическим этапом формирования физического, психического и социального состояния человека. В этот период организм подвергается значительной гормональной перестройке, сопровождающейся ускоренным ростом, изменением соотношения мышечной и жировой массы, формированием вторичных половых признаков, развитием осанки и функциональной зрелости сердечно-сосудистой системы. Эти изменения оказывают существенное влияние на телосложение подростков и определяют необходимость изучения половых особенностей физического развития в этом возрасте.

Особое значение исследование половых особенностей приобретает с точки зрения практического применения в педагогике, медицине и физическом воспитании. Изучение динамики роста, массы тела и распределения мышечной и жировой ткани позволяет определить нормативные показатели, выявить отклонения и разработать рекомендации по физическим нагрузкам и спортивной подготовке. В условиях Кунградского района, как и в других регионах, существует потребность в изучении физического развития подростков с учетом локальных экологических, социально-экономических и культурных особенностей, что обуславливает актуальность настоящего исследования.

Материалы и методы

Исследование проводилось среди школьников Кунградского района Республики Каракалпакстан с соблюдением этических стандартов исследований с участием несовершеннолетних. В выборку вошли 147 подростков: 13-летние – девочки (n=30), мальчики (n=30); 14-летние – девочки (n=11), мальчики (n=13); 15-летние – девочки (n=41), мальчики (n=32). Антропометрические измерения включали определение роста, массы тела, окружностей груди, талии и бедер, а также длины верхних и нижних конечностей. Рост измерялся ростомером с точностью до 0,1 см, масса тела – весами с точностью до 0,1 кг, окружности – сантиметровой лентой с точностью до 0,5 см. Индекс массы тела рассчитывался по стандартной формуле:

$$\text{ИМТ} = \frac{\text{масса (кг)}}{\text{рост (м)}^2}$$

Статистическая обработка данных включала расчет средних значений (M), стандартного отклонения (SD) и проверку значимости различий между полами с использованием t-критерия Стьюдента. Измерения проводились

утром после периода отдыха участников и без физической нагрузки, чтобы минимизировать влияние внешних факторов.

Результаты и обсуждение

Анализ антропометрических данных выявил выраженные половые различия телосложения подростков 13–15 лет. У 13-летних подростков девочки имели меньший рост и массу тела по сравнению с мальчиками, однако их ИМТ был выше, что отражает более высокий процент жировой ткани и раннее начало пубертата. Окружности груди, талии и бедер у девочек также превышали показатели мальчиков, что подтверждает формирование женского типа телосложения. Мальчики в этом возрасте имели более длинные конечности и меньшую окружность талии, что указывает на формирование мужского телосложения.

14-летние подростки характеризовались частичным выравниванием роста между полами, однако девочки продолжали демонстрировать более округлое телосложение за счет накопления жировой массы, а у мальчиков наблюдалось увеличение мышечной массы и объема грудной клетки. Эти различия свидетельствуют о том, что формирование физического тела у девочек происходит раньше, чем у мальчиков, что согласуется с данными мировой литературы.

У 15-летних подростков половые различия достигли наибольшей выраженности. Мальчики значительно превосходили девочек по росту и мышечной массе, а девочки сохраняли более высокий процент жировой ткани. Показатели ИМТ у мальчиков и девочек стали более сопоставимыми, что отражает гармоничное завершение периода активного физического роста. Формирование мускулатуры у мальчиков к этому возрасту продолжается, в то время как у девочек преобладает округлость фигуры, связанная с физиологическими особенностями пола.

Полученные результаты подтверждают данные международных исследований, демонстрирующих, что девочки достигают пика роста раньше мальчиков, что сопровождается увеличением жировой массы и изменением пропорций тела. У мальчиков формирование мышечной массы и увеличение роста продолжается дольше, достигая выраженных значений к 15–16 годам.

Эти данные имеют важное практическое значение для организации физической подготовки и спортивных занятий. У подростков 13–14 лет необходимо учитывать индивидуальные темпы развития и распределять физические нагрузки с учетом особенностей телосложения. Регулярный мониторинг антропометрических показателей позволяет своевременно выявлять отклонения, корректировать физическую активность и снижать риск развития заболеваний, связанных с ожирением или нарушениями осанки. Результаты исследования также могут использоваться для составления нормативов физического развития подростков региона, разработки рекомендаций по физической культуре и спортивной подготовке, а также для дальнейших научных исследований в области пубертатного развития.

Заключение

В ходе исследования выявлены выраженные половые различия телосложения подростков 13–15 лет, проявляющиеся в росте, массе тела, распределении мышечной и жировой массы, а также в окружностях груди, талии и бедер. Девочки достигают пика роста и формирования фигуры раньше мальчиков, у которых продолжается интенсивное наращивание мышечной массы до 15 лет. Полученные данные имеют практическое значение для образовательных и спортивных учреждений, позволяя учитывать возрастные и половые особенности при организации физического воспитания, планировании тренировок и профилактике нарушений развития, способствуя гармоничному формированию физического состояния подростков.

Использованные источники

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ПРИМЕНЕНИЕ ВОЗОБНОВЛЯЕМЫХ ИСТОЧНИКОВ ЭНЕРГИИ В АВТОНОМНЫХ БАЗОВЫХ СТАНЦИЯХ

Аннотация: *Данная работа посвящена применению возобновляемых источников энергии (ВИЭ) в автономных базовых станциях (БС) радиотелефонной связи, что представляет собой перспективное направление для снижения операционных расходов и негативного воздействия на окружающую среду. В обзоре рассматриваются ключевые технологические решения, такие как солнечные панели, ветряные турбины, топливные элементы, а также гибридные системы, объединяющие несколько ВИЭ и дизельные генераторы для обеспечения надежного электроснабжения. Обсуждаются потенциальные проблемы, такие как изменчивость производства энергии ВИЭ, а также предлагаются пути их решения, включая усовершенствование систем управления энергией, гибридные решения и развитие технологий хранения энергии.*

Ключевые слова: *автономные базовые станции, возобновляемые источники энергии, солнечные панели, ветряные турбины, гибридные системы, хранение энергии, телекоммуникации, энергоэффективность, устойчивое развитие.*

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APPLICATION OF RENEWABLE ENERGY SOURCES IN AUTONOMOUS BASE STATIONS

Аннотация: *This work is devoted to the use of renewable energy sources (RES) in autonomous radiotelephone base stations, which is a promising direction for reducing operating costs and negative environmental impacts. The review examines key technological solutions such as solar panels, wind turbines, fuel cells, as well as hybrid systems combining multiple renewable energy sources and diesel generators to ensure reliable power supply. Potential problems such as variability in renewable energy production are discussed, and solutions are proposed, including improvements in energy management systems, hybrid solutions, and the development of energy storage technologies.*

Ключевые слова: *автономные базовые станции, возобновляемые источники энергии, солнечные панели, ветряные турбины, гибридные системы, хранение энергии, телекоммуникации, энергоэффективность, устойчивое развитие.*

Использование возобновляемых источников энергии, таких как солнечная и ветровая, становится все более актуальным для обеспечения бесперебойной работы автономных базовых станций, особенно в удаленных и труднодоступных регионах. Традиционные методы энергоснабжения таких станций, основанные на дизельных генераторах, сопряжены с высокими эксплуатационными расходами, логистическими трудностями и негативным воздействием на окружающую среду.

В данном контексте, интеграция возобновляемых источников энергии, дополненных системами накопления энергии и интеллектуальным управлением, представляет собой эффективное решение для повышения надёжности, снижения затрат и уменьшения углеродного следа телекоммуникационной инфраструктуры. Эта статья посвящена обзору и анализу современных подходов к применению возобновляемых источников энергии в автономных базовых станциях, рассматривая их преимущества, вызовы и перспективы развития.

История развития применения возобновляемых источников энергии (ВИЭ) в автономных базовых станциях (БС) глубоко переплетается с эволюцией мобильной связи и потребностью обеспечить ее расширение в удаленные регионы.

В ранние этапы (1980-е – конец 1990-х) введение первой коммерческой мобильной связи в 1980-х годах побудило операторов к поиску эффективных способов обеспечения энергией их БС. Изначально, в удаленных районах, где отсутствует доступ к централизованным электросетям, единственным решением было использование дизельных генераторов. Однако, высокая стоимость топлива, затраты на транспортировку, а также проблемы с шумом и загрязнением окружающей среды стимулировали поиски альтернатив.

В конце 1980-х и начале 1990-х годов начали появляться первые пилотные проекты по использованию фотоэлектрических панелей для питания небольших телекоммуникационных узлов и ретрансляторов, в основном в регионах с высокой инсоляцией. Эти системы были относительно простыми и использовались как дополнительные источники, а не основные. Ветровые турбины также рассматривались, но их высокая стоимость, сложность в установке и обслуживании, а также переменчивость ветрового режима ограничивали их распространенность.

С началом нового тысячелетия и бурным ростом мобильной связи, особенно в развивающихся странах, где электросеть развита слабо, вопрос энергоэффективности и альтернативных источников питания стал особенно острым (2000-е – 2010-е) [2].

Особое внимание стали уделять гибридным системам, объединяющим дизельные генераторы с солнечными панелями и/или ветровыми турбинами. Это позволило значительно снизить расход дизельного топлива, сократить время работы генераторов и, соответственно, их износ, а также уменьшить эксплуатационные расходы.

Развитие литий-ионных аккумуляторов и других высокоэффективных систем хранения энергии сыграло ключевую роль. Они обеспечили более длительное хранение энергии, получаемой от ВИЭ, и позволили БС функционировать в периоды низкой производительности солнечных батарей или ветра. Усовершенствование технологий производства солнечных панелей привело к увеличению их эффективности и снижению стоимости, делая их более привлекательными для телекоммуникационной отрасли. Многие страны начали стимулировать использование ВИЭ через субсидии, налоговые льготы и ужесточение экологических стандартов, что способствовало более широкому внедрению ВИЭ в телекоммуникационном секторе.

Сегодня (2010-е – настоящее время) применение ВИЭ в автономных БС является общепринятой практикой, а не просто экспериментальным решением. Многие операторы мобильной связи стремятся к созданию полностью автономных, "зеленых" БС, которые работают исключительно на ВИЭ, интегрированных с высокоэффективными системами хранения энергии. Развитие интернета вещей (IoT) и искусственного интеллекта (ИИ) привело к созданию интеллектуальных систем управления энергопотреблением БС. Эти системы способны оптимизировать выработку, потребление и хранение энергии, прогнозировать погодные условия и потребность в энергии, минимизируя вмешательство человека (табл. 1) [3].

Таблица 1 – Применение возобновляемых источников энергии

№	Показатель	Характеристика
1	Основные виды ВИЭ	Солнечная энергия: используется солнечные панели для преобразования солнечного света в электроэнергию. Это один из самых распространенных источников для автономных систем. Ветроэнергия: ветряные турбины генерируют электричество за счет энергии ветра. Эффективны в регионах с постоянными ветрами. Гидроэнергия: малые гидроэлектростанции могут использоваться в реках или ручьях для генерации электроэнергии. Биомасса: использует органические материалы, которые сжигаются или перерабатываются для получения энергии.
2	Преимущества ВИЭ в автономных станциях	Экологическая чистота: минимизация выбросов углерода и других загрязняющих веществ. Энергетическая независимость: уменьшение зависимости от ископаемых ресурсов и импортируемых энергоносителей. Доступность: ВИЭ могут быть установлены в удаленных или труднодоступных местностях, где традиционные источники энергии недоступны. Снижение затрат: после первоначальных инвестиций эксплуатационные расходы могут быть значительно ниже, чем у традиционных источников энергии.
3	Интеграция с системами хранения энергии	Для обеспечения стабильного энергоснабжения необходимо использование систем хранения (например, аккумуляторных батарей). Они помогают сгладить колебания в производстве электроэнергии.
4	Примеры применения	Автономные дома: использование солнечных панелей и ветровых турбин для обеспечения электроэнергией. Полевые лагеря: временные установки с ВИЭ для обеспечения работы исследовательских и строительных проектов. Сельское хозяйство: применение солнечных систем для орошения или питания сельскохозяйственной техники.
5	Будущее ВИЭ в автономных станциях	С развитием технологий и снижением цен на оборудование, применение ВИЭ будет только расширяться. Ожидается, что интеграция с умными сетями и системами управления энергией станет ключом к улучшению эффективности и надежности автономных энергетических систем.

Наблюдается тенденция к созданию мини-гридов, когда БС становится частью более крупной энергетической системы, обеспечивающей электроэнергией не только саму станцию, но и прилегающие к ней поселения. Изучаются и внедряются новые, менее традиционные источники энергии, такие как микро-гидроэлектростанции, геотермальная энергия и даже термоэлектрические генераторы, для специфических условий. Крупные телекоммуникационные компании активно инвестируют в "зеленые" технологии, как часть своих корпоративных социальных ответственностей (КСО) и стратегий устойчивого развития.

Таким образом, история применения ВИЭ в автономных базовых станциях – это путь от вспомогательного и дорогостоящего решения к основополагающему элементу современной, устойчивой и экономически эффективной телекоммуникационной инфраструктуры.

Отмети, что в настоящее время применение возобновляемых источников энергии (ВИЭ) в автономных базовых станциях (БС) является не просто тенденцией, а стандартом для многих операторов мобильной связи, особенно в регионах с отсутствием или нестабильным доступом к централизованной электросети. Современная практика характеризуется комплексным подходом, интеграцией передовых технологий и стремлением к максимальной автономии и экологичности (рис. 1).



Рис. 1 – Основные компоненты автономной энергоустановки на ВИЭ [1]

Наиболее распространенной практикой является использование гибридных систем, которые объединяют несколько источников энергии для обеспечения надежного и стабильного электроснабжения БС. Фотоэлектрические панели (солнечные батареи) являются основным компонентом большинства гибридных систем, обладая высокой эффективностью, долговечностью и устойчивостью. Ветрогенераторы используются в регионах с достаточным и стабильным ветровым потенциалом; современные турбины компактны, менее шумны и легко интегрируются. Дизельные генераторы по-прежнему играют роль резервного источника энергии, работая лишь в периоды недостаточной выработки ВИЭ или пиковых нагрузок, что значительно сокращает их время работы, экономит топливо и уменьшает выбросы. Развитие систем хранения энергии, в частности литий-ионных аккумуляторов, стало ключевым фактором: они обладают высокой плотностью энергии, длительным сроком службы и быстрым зарядом/разрядом, позволяя накапливать избыточную энергию для использования в периоды ее нехватки.

Системы управления аккумуляторными батареями (BMS) отслеживают состояние аккумуляторов и оптимизируют их работу, продлевая срок службы.

Современные автономные БС оснащаются интеллектуальными системами управления энергопотреблением, использующими искусственный интеллект (ИИ) и машинное обучение (МО). Эти системы в реальном времени анализируют выработку ВИЭ, потребление БС, состояние аккумуляторов и погодные прогнозы для динамического управления всеми компонентами.

Удаленный мониторинг и управление позволяют оперативно реагировать на проблемы и оптимизировать работу, а предиктивное обслуживание на основе ИИ помогает предотвращать отказы. Одновременно с внедрением ВИЭ, телекоммуникационная отрасль работает над снижением общего энергопотребления самих БС за счет использования высокоэффективного телекоммуникационного оборудования, эффективных систем охлаждения и перехода компонентов БС в режим ожидания (sleep mode) в периоды низкой нагрузки.

Перспективные направления включают создание полностью автономных "зеленых" БС, интеграцию БС с местными сообществами в микро-гриды, использование новых ВИЭ (топливные элементы, микро-гидроэнергетика) и вторичное использование батарей. Таким образом, современная практика применения ВИЭ в автономных БС – это сложная, многокомпонентная система, основанная на гибридных решениях, передовых системах хранения энергии и интеллектуальном управлении, направленная на обеспечение надежной, экономичной и экологически чистой мобильной связи.

По нашему мнению, применение возобновляемых источников энергии (ВИЭ) в автономных базовых станциях, несмотря на свои преимущества, сталкивается с рядом специфических проблем. Одной из ключевых является нестабильность и непредсказуемость выработки энергии, поскольку солнечные панели зависят от солнечного света, а ветрогенераторы от скорости ветра, что приводит к колебаниям в электроснабжении, требующим мощных резервных систем или интеграции с традиционными источниками.

Второй проблемой являются высокие капитальные затраты (CAPEX) на ВИЭ-системы, включая сами генераторы и особенно дорогостоящие системы хранения энергии (аккумуляторы), что является значительным барьером, несмотря на низкие операционные расходы (OPEX).

Третий аспект – это ограниченный срок службы и высокая стоимость систем хранения энергии, так как аккумуляторы, особенно свинцово-кислотные, имеют короткий срок службы, а литий-ионные, хотя и более долговечны, дороже, и их эффективность чувствительна к температуре.

Четвёртой проблемой являются логистические и эксплуатационные сложности, так как развертывание автономных БС с ВИЭ часто происходит в удаленных районах, что затрудняет доставку оборудования, его монтаж, а также последующее техническое обслуживание.

Пятая проблема – это кражи и вандализм, поскольку оборудование ВИЭ является ценным и привлекательным для злоумышленников, особенно в удаленных и плохо охраняемых местах, что приводит к финансовым потерям и простоям. Шестой аспект касается экологических проблем, связанных с

утилизацией: несмотря на «зеленую» природу ВИЭ, отработанные солнечные панели и аккумуляторы содержат токсичные вещества и требуют специализированной переработки.

Седьмая проблема – это сложность интеграции и управления, поскольку создание эффективной гибридной системы требует интеллектуального управления, способного оптимизировать выработку, потребление и хранение энергии с учетом переменных условий. Наконец, существуют ограниченные возможности масштабирования и наращивания мощности; увеличение мощности уже существующей системы ВИЭ при росте потребностей БС может быть дорогостоящим и сложным. Преодоление этих вызовов требует постоянных технологических инноваций, разработки новых бизнес-моделей и государственной поддержки для успешного и широкого внедрения ВИЭ в телекоммуникационной инфраструктуре.

Отметим, что решение проблем, связанных с использованием возобновляемых источников энергии (ВИЭ) в автономных базовых станциях, требует комплексного подхода, затрагивающего технологические, экономические и организационные аспекты.

Среди технологических решений выделяются гибридные энергетические системы, представляющие собой комбинацию нескольких источников энергии, таких как солнечные панели, ветрогенераторы и дизель-генераторы. Это позволяет значительно снизить зависимость от одного источника и повысить стабильность энергоснабжения, при этом управление такими системами осуществляется интеллектуальными контроллерами для оптимизации режимов работы каждого компонента.

Улучшенные системы хранения энергии включают разработку и внедрение более долговечных и эффективных аккумуляторов, в частности литий-ионных батарей, с перспективой использования твердотельных или проточных аккумуляторов, обладающих увеличенным сроком службы, большей плотностью энергии и меньшей стоимостью.

Интеллектуальные системы управления батареями (BMS) также применяются для продления их срока службы и оптимизации заряда/разряда. Оптимизация энергопотребления базовых станций является ключевым направлением, достигаемым за счет использования энергоэффективного оборудования (например, мощных и энергосберегающих приемопередатчиков, программно-определяемых сетей) и применения технологий «глубокого сна» для оборудования в периоды низкой нагрузки, что значительно снижает общее потребление энергии.

Прецизионное прогнозирование погоды с использованием искусственного интеллекта и машинного обучения помогает более точно предсказывать выработку энергии от солнечных панелей и ветрогенераторов, оптимизируя планирование зарядки аккумуляторов и переключение на резервные источники. Модульные и масштабируемые решения позволяют наращивать мощность системы ВИЭ по мере роста потребностей базовой

станции, снижая первоначальные капитальные затраты и обеспечивая гибкость.

Экономические решения включают снижение капитальных затрат за счет массового производства компонентов ВИЭ, а также государственных субсидий и налоговых льгот. Финансовые инновации, такие как Financingas a Service (FaaS), где операторы платят за энергию, а не за само оборудование, снижают барьеры входа, переводя CAPEX в OPEX. Локализация производства компонентов уменьшает затраты на логистику и пошлины, стимулируя местную экономику. Развитие выгодных моделей утилизации и переработки отработавших элементов ВИЭ снижает как экологическую нагрузку, так и финансовые издержки, способствуя развитию рынка вторичного сырья.

Организационные и логистические решения охватывают удаленный мониторинг и управление с использованием IoT и облачных платформ для оперативного отслеживания состояния оборудования и предотвращения неисправностей.

Улучшенная логистика и цепочки поставок для удаленных регионов достигаются за счет использования местных ресурсов и оптимизации маршрутов. Повышение безопасности объектов обеспечивается надежными системами охраны, видеонаблюдения, сигнализации, антивандальными конструкциями и сотрудничеством с местными сообществами.

Обучение и развитие местных кадров для обслуживания систем ВИЭ создает рабочие места и позволяет оперативно реагировать на проблемы. Стандартизация и унификация оборудования упрощают обслуживание, замену компонентов и обучение персонала. Комплексное применение этих решений позволяет создать устойчивые, экономически эффективные и надежные автономные базовые станции, работающие на возобновляемых источниках энергии, что способствует цифровизации удаленных регионов и снижению углеродного следа телекоммуникационной отрасли.

По нашему мнению, использование возобновляемых источников энергии (ВИЭ) в автономных базовых станциях представляет собой не просто технологическую альтернативу, но и стратегически важное направление для устойчивого развития телекоммуникационной инфраструктуры. Оно позволяет решать комплекс задач, связанных с экономическими, экологическими и социальными аспектами.

Экономическая целесообразность применения ВИЭ обосновывается сокращением операционных расходов за счет минимизации или полной ликвидации затрат на дизельное топливо, его транспортировку и обслуживание дизель-генераторов. При правильно спланированном жизненном цикле проекта, включающем первоначальные инвестиции, обслуживание и утилизацию, системы на основе ВИЭ обеспечивают более низкую общую стоимость владения (TCO) по сравнению с традиционными решениями.

С экологической точки зрения, переход на ВИЭ значительно снижает углеродный след телекоммуникационной отрасли. Это сокращает выбросы

парниковых газов, уменьшает загрязнение воздуха и снижает риски, связанные с разливами дизельного топлива, способствуя достижению глобальных целей по борьбе с изменением климата.

Технологическая надежность систем ВИЭ, особенно гибридных конфигураций (солнечная, ветровая энергия, а также усовершенствованные системы накопления энергии), достигла такого уровня, что позволяет обеспечивать стабильное и бесперебойное энергоснабжение базовых станций даже в самых суровых условиях. Развитие интеллектуальных систем управления энергией (EMS) и удаленного мониторинга повышает эффективность и операционную управляемость таких объектов.

Социальный аспект заключается в расширении доступа к связи в удаленных и труднодоступных районах, где прокладка электросетей экономически нецелесообразна или технически сложна. Это способствует решению проблемы цифрового неравенства, стимулирует местное экономическое развитие и улучшает качество жизни населения, предоставляя доступ к образованию, здравоохранению и информационным ресурсам.

Таким образом, внедрение и дальнейшее развитие систем ВИЭ в автономных базовых станциях является неотъемлемой частью модернизации и устойчивого развития телекоммуникационной отрасли, отвечающей вызовам современности и формирующей основу для будущих инноваций. Это путь к более чистой, эффективной и социально ответственной глобальной связи.

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ПРИНЦИПЫ БЕРЕЖЛИВОГО ПРОИЗВОДСТВА В СИСТЕМЕ УСТОЙЧИВОГО АГРАРНОГО РАЗВИТИЯ

Аннотация: *В статье основное внимание уделяется внедрению бережливого производства как важнейшего инструмента устойчивого роста сельскохозяйственных предприятий. Было продемонстрировано, что применение принципов бережливого производства позволяет снизить затраты, повысить качество продукции и эффективность использования ресурсов. При этом учитываются основные методы и ресурсы бережливого производства, которые помогают повысить конкурентоспособность сельского хозяйства.*

Ключевые слова: *бережливое производство, устойчивое развитие, сельскохозяйственные предприятия, оптимизация процессов, эффективность ресурсов, конкурентоспособность*

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PRINCIPLES OF LEAN MANUFACTURING IN THE SYSTEM OF SUSTAINABLE AGRICULTURAL DEVELOPMENT

Abstract: *The article focuses on the implementation of lean manufacturing as a crucial tool for the sustainable growth of agricultural enterprises. It has been demonstrated that the application of lean manufacturing principles helps to reduce costs, improve product quality, and increase resource efficiency. The paper*

considers the main methods and resources of lean manufacturing that contribute to enhancing the competitiveness of agriculture.

Keywords: *lean manufacturing, sustainable development, agricultural enterprises, process optimization, resource efficiency, competitiveness.*

В сельскохозяйственной отрасли бережливое производство является основой устойчивого развития и стратегией повышения производительности. Его принципы позволяют оптимизировать процессы, минимизировать потери и повысить качество продукции в условиях ограниченных ресурсов и жесткой конкуренции.

Внедрение бережливых технологий сельскохозяйственными предприятиями обеспечивает долгосрочную стабильность и конкурентоспособность за счет снижения затрат, повышения экологичности и создания устойчивых бизнес-моделей [3].

Механизм, изображенный на рисунке 1, иллюстрирует, как постепенно менялась система управления финансами предприятия по мере внедрения бережливого производства. Эта стратегия особенно важна в АПК, поскольку эффективное управление финансами напрямую связано с разумным использованием ограниченных ресурсов, что снижает издержки производства и гарантирует долгосрочную жизнеспособность фермерских хозяйств.

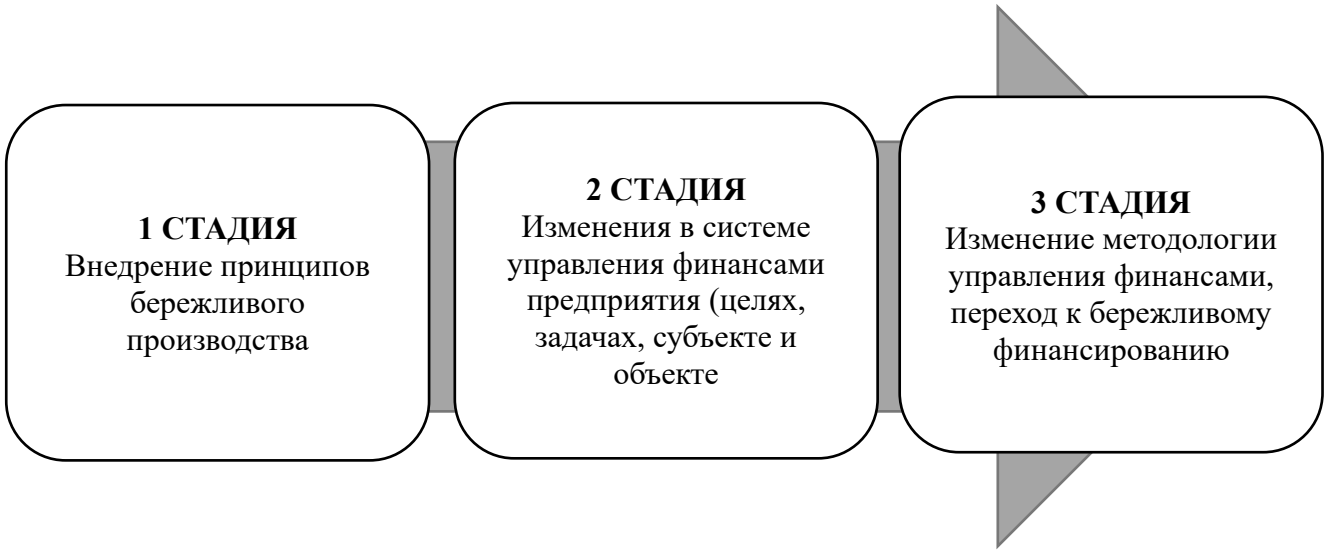


Рисунок 1 – Механизм трансформации системы управления финансами предприятия при внедрении бережливого производства

Сельскохозяйственные предприятия могут повысить прозрачность финансовых потоков, максимизировать инвестиции и создать бережливую систему финансирования, которая поддерживает их конкурентоспособность в долгосрочной перспективе, путем постепенного внедрения принципов бережливости, затем изменения целей и задач финансового менеджмента и, наконец, разработки новой методологии [1].

Систематизация методов и инструментов, гарантирующих рост эффективности, имеет важное значение для внедрения бережливого производства в АПК. В целом их можно разделить на три группы: развитие персонала путем расследования причин потерь, повышение производительности и улучшение качества (таблица 1). Благодаря этой стратегии методы бережливого управления могут быть применены во всем агропромышленном комплексе.

Используя эти методы, сельскохозяйственные предприятия могут сократить расходы, одновременно повышая производительность и качество, а также развивая культуру бережливого производства [4]. В АПК это приводит к созданию благоприятных условий для устойчивого развития и ресурсоэффективности.

Таблица 1 – Классификация основных методов и инструментов бережливого производства

Улучшение качества	
Пока-ёкэ	Цикл PDCA
SOP	Диаграмма Парето
Контрольные листы	Контрольные карты Шухарта
Диаграммы Исикавы	Визуальный контроль
Повышение производительности	
5S	JIT
TPM	Дзиодка
Хейдзунка	SMED
Балансировка производств	OEE
Поиск причин потерь и развитие мышления работников	
VSM	TWI
Штурм-прорыв	Коучинг

На рисунке 2 показана распространенность бережливого производства в различных странах. О возможности роста свидетельствует низкий уровень внедрения бережливого производства в России [3]. В период дефицита ресурсов и импортозамещения сельскохозяйственные предприятия могут стать более конкурентоспособными, эффективными и рентабельными, используя эти методы и инструменты.

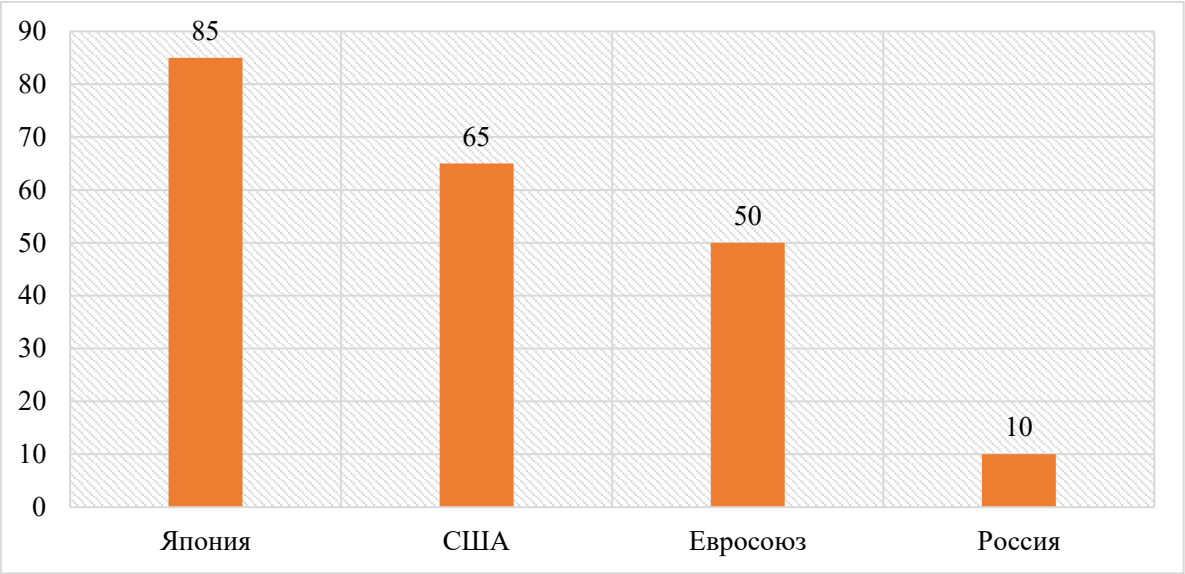


Рисунок 2 – Распространенность бережливого производства предприятий, внедривших инструменты, %

Таким образом, основой устойчивого роста сельскохозяйственных предприятий является бережливое производство, позволяющее снижать расходы, повышать качество продукции и эффективно использовать ресурсы. Его методы формируют культуру, адаптирующуюся к экономическим и экологическим вызовам, обеспечивая долгосрочную конкурентоспособность и устойчивость АПК.

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РАЗВИТИЕ СЕЛЬСКОГО ХОЗЯЙСТВА И РЕЗУЛЬТАТЫ ОБРАЗОВАНИЯ ЗАСЕЛЕННОСТИ ПОЧВЫ В ЗАРАФШАНСКОГО ДОЛИНЕ

Аннотация: *В статье изложены природно-географические особенности развития сельскохозяйственных отраслей, адаптированных к природным условиям Зарафшанской долины. Описаны пути снижения засоления земель, возникшего в результате развития сельского хозяйства, а также оптимизации мелиоративного состояния земель. Полностью освещены проводимые мелиоративные мероприятия по улучшению агротехнического состояния почвы и обеспечению устойчивого развития в биосистеме.*

Ключевые слова: *мелиорация, дефоляция, почвенный покров, дренаж, растительный покров, гербициды, биосистема.*

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AGRICULTURAL DEVELOPMENT AND RESULTS OF SOIL COLUMN DEVELOPMENT IN THE ZARAFSHAN VALLEY

Abstract: *This article presents the natural and geographical features of agricultural development adapted to the natural conditions of the Zarafshan Valley. It describes ways to reduce soil salinization resulting from agricultural development and optimize land reclamation. It also fully covers ongoing reclamation measures to improve soil agronomic conditions and ensure sustainable development in the biosystem.*

Key words: *melioration, defoliation, soil cover, drainage, vegetation cover, herbicides, biosystem.*

Введение

На орошаемых землях Самаркандского, Каттакурганского, Нарпайского, Пахтачийского и ряда других районов грунтовые воды играют важную роль в процессах почвообразования и во многом определяют степень засоления почв. При близком уровне залегания грунтовых вод почвы нагреваются слабо, вследствие чего корневая система хлопчатника развивается недостаточно, что нередко приводит к её загниванию.

В аридных условиях при бессточности территории и преобладании восходящих токов влаги почвы средней части Зарафшанской долины особенно склонны к засолению.

Основная часть

На орошаемых землях исследуемых районов грунтовые воды являются ключевым фактором формирования вторичного засоления. При их залегании на глубине менее 1 м, характерной для Окдарьинского, Пахтачийского и Каттакурганского районов, формируются неблагоприятные условия для сельскохозяйственных культур. Территории с уровнем грунтовых вод 1–2 м преобладают в Жамбайском, Нарпайском, Пайарыкском и Самаркандском районах. Если уровень минерализованных вод не будет понижен и не обеспечится функционирование дренажной системы, испарение и транспирация приведут к дальнейшему накоплению солей как в почвах, так и в грунтовых водах.

Процессы соленакопления в теоретическом и практическом аспектах подробно исследованы В. А. Ковдой, А. Н. Розановым, В. В. Егоровым, И. С. Рабочевым и др. Ими выявлены природные и антропогенные причины вторичного засоления, а также закономерности аккумуляции солей в зависимости от условий геосистем.

Установлено, что развитие вторичного засоления тесно связано с первичным засолением почв, минерализацией грунтовых вод и морфологией рельефа. Интенсивное развитие хлопководства в средней части Зарафшанской долины сопровождается расширением площадей орошаемых земель на новоосвоенных участках, которые отличаются сложным рельефом, бессточностью, высоким содержанием солей в почвогрунтах и неоднородным механическим составом.

Во всех почвенно-климатических зонах равнинной части территории необходимо учитывать риск вторичного засоления при отсутствии дренажа. Помимо совершенствования оросительных систем требуется регулировать водно-солевой баланс посредством эффективного горизонтального дренажа. Из-за длительного игнорирования этих требований многие старые оросительные системы оказались засоленными.

Помимо сплошного засоления широко распространены пятнистые и сезонные формы, которые менее заметны визуально, но также наносят значительный ущерб.

Земли низких террас с высоким уровнем грунтовых вод и лугово-болотными почвами распространены преимущественно в Самаркандском и Каттакурганском оазисах. На глубине 0,5–1,5 м здесь формируются плотные карбонатные горизонты с высоким содержанием кальциевых конкреций, что ухудшает водно-физические свойства почв.

Техногенная ситуация

Бессистемное использование природных ресурсов, вырубка растительности, неорганизованное движение транспорта, нерациональная эксплуатация пастбищ и промышленных участков существенно изменяют экологические условия региона. Рост населения, увеличение числа промышленных предприятий и транспорта усиливают антропогенное давление, нарушая природное равновесие.

Недостаток топлива заставляет местное население вырубать древесно-кустарниковую растительность (саксаул, кандым и др.), что ведёт к усилению эрозии. Более 80 % горных почв региона подвержены эрозионным процессам. Например, в бассейне р. Аманкутан за один год на склонах крутизной 10° отмечена потеря до 2500 м³ мелкозёма с гектара; на склонах 20° — до 4000 м³. Таким образом, уничтожение древесно-кустарниковой растительности является одним из ключевых факторов антропогенной деградации.

Дополнительную угрозу представляет недостаточно продуманное орошение, приводящее к подъёму уровня грунтовых вод и увеличению солевого баланса в активной зоне почв.

Чрезмерное использование пестицидов также усугубило экологическую ситуацию. По данным В. А. Бреева (1982), в Самаркандской области в 1970-е годы на обработку 1 га хлопчатника приходилось 54,4 кг химических препаратов. Кроме того, на территории области функционировало 46 аэродромов, с которых проводилась авиационная обработка полей.

Развитие промышленности не сопровождалось достаточными природоохранными мерами, что также способствовало экологической деградации. В результате опустынивание начинается тогда, когда антропогенное воздействие превышает способность экосистем к самовосстановлению.

Заключение

Комплексное изучение экологического состояния Зарафшанской долины позволило сформулировать следующие выводы и рекомендации:

- Разработать и внедрить меры по улучшению мелиоративного состояния земель.
- Предотвратить подъём уровня грунтовых вод путём реконструкции дренажных и зовурных систем.
- Использовать местные органические и минеральные удобрения при возделывании сельскохозяйственных культур.
- Строго соблюдать агротехнические нормы при применении химических средств защиты растений.
- Разработать методы рационального водопользования при орошении.
- Учитывать климатические особенности региона при выборе культур и методов землепользования.

Реализация указанных мероприятий обеспечит дальнейшее устойчивое развитие сельского хозяйства Зарафшанской долины и повысит уровень продовольственной безопасности региона. Соблюдение агротехнических требований совместно с эффективной охраной окружающей среды является фундаментом экологической стабильности.

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КЛИНИКО-ИММУНОЛОГИЧЕСКИЕ ОСОБЕННОСТИ И ПАТОГЕНЕТИЧЕСКИЕ МЕХАНИЗМЫ У БОЛЬНЫХ С АЛЛЕРГИЧЕСКИМ ПЕРСИСТИРУЮЩИМ РИНИТОМ

Аннотация. *Риниты являются социально значимыми и широко распространенными заболеваниями. Нередко различные формы ринитов сочетаются и тем самым обуславливают тяжелые клинические проявления, недостаточную эффективность медикаментозного лечения, а также трудности в дифференциальной диагностике. Известно, что у значительного количества пациентов имеется сочетание аллергического ринита (АР) с хроническим риносинуситом бактериальной этиологии. В основе этого состояния лежит хронический многофакторный воспалительный процесс слизистой носа, определяющий неуклонное прогрессирование заболевания.*

Ключевые слова: риносинусит *лимфоциты, иммунокомпетентные клетки, аллерген–специфическая иммунотерапия, персистирующий аллергический ринит.*

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CHARACTERISTICS OF IMMUNOLOGICAL CHANGES IN PATIENTS WITH ALLERGIC PERSISTENT RHINITIS

Summary. *The main method of treating allergic diseases based on type I allergic reactions is allergen-specific immunotherapy (ASIT). The study included 62 patients aged 18 to 40 years suffering from moderate persistent allergic rhinitis (PAR) during ASIT. Analysis of clinical symptoms of PAR after completion of the full course of ASIT showed that "good" or "excellent" treatment effect was achieved in 62.9% (39 of 62) of patients, and in 37.1% (23 of 62) it was classified as "satisfactory". Good/excellent treatment effect was accompanied by a significant decrease in the level of IL–4 during treatment by day 90 (p=0.017), which corresponds to existing ideas about the mechanisms of ASIT, and remained*

unchanged in the second group, which leads to increased expression of IL–4 and IL–5.

Key words: *lymphocytes, immune cells, allergen–specific immunotherapy, persistent allergic rhinitis.*

Введение.

Основным методом лечения аллергических заболеваний, в основе которых лежат аллергические реакции I типа, в том числе поллинозов, является АСИТ [2]. Это наиболее биологически оправданный метод лечения аллергии, направленный на переключение IgE–ответа на «бессимптомный» способ узнавания и инактивации аллергена посредством искусственного повышения антигенной нагрузки [1].

АСИТ представляет единственный метод лечения IgE–опосредованных заболеваний, способный изменить естественное развитие атопического процесса. Вместе с тем, информация о ранних изменениях иммунологической реактивности в ходе АСИТ может способствовать прогнозированию результатов терапии [3, 4].

Цель работы: изучение иммунного статуса в динамике АСИТ у больных с ПАР при проведении АСИТ.

Материалы и методы: в исследование было включено 62 пациента от 18 до 40 лет, страдающих средне–тяжелым ПАР, в процессе АСИТ.

Критерии включения: наличие подтвержденного диагноза ПАР, возраст 18–40 лет (30,5 ± 2,8 лет); клиническая; подтвержденная сенсибилизация к пыльцевым и/или бытовым аллергенам.

Критерии исключения: наличие противопоказаний для АСИТ; ранее проведенная АСИТ; иммуномодулирующая терапия в течение последних 6 мес.; наличие неаллергической патологии ЛОР–органов.

Мониторинг уровня иммунологических параметров проводили до и после окончания курса АСИТ. Оно включало определение путем иммунофенотипирования мембранных антигенов лимфоцитов периферической крови (CD3+, CD4+, CD8+, CD16+, CD20+, CD23+, CD95+) с использованием моноклональных антител (АО «Сорбент», Россия). Для количественного определения общего IgE использовали «IgE–ИФА–Бест–стрип» (ЗАО «Вектор–Бест», Россия). Концентрацию цитокинов (IL–4, IL–6, IL–8) определяли методом иммуноферментного анализа (ООО «Цитокин» СПб, Россия).

Результаты.

Анализ клинических симптомов ПАР после окончания полного курса АСИТ показал, что “хороший” или “отличный” эффект лечения был достигнут у 62,9% (у 39 из 62) пациентов, а у 37,1% (у 23 из 62) он был квалифицирован как “удовлетворительный”.

Пациенты с неэффективной АСИТ были старше ($p<0,05$), имели тяжелое течение заболевания ($p<0,05$), большую интенсивность клинических

проявлений (p<0,05), частоту и длительность (p<0,05) периодов обострения, большую частоту причинно–значимых аллергенов.

Как показали данные проведенного нами анализа, для обследованных пациентов значимыми предикторами неэффективности АСИТ являются мужской пол, повышающий риск формирования неэффективности АСИТ в 1,42 раза; возраст старше 30 лет - в 1,16 раза, сезоны обострений: весна-лето-осень - в 1,69 раза, весна-осень – в 1,4 раза, весна - в 1,3 раза; число причинно-значимых аллергенов более 5 - в 2,01 раза; суммарная доза алле-рген-специфической терапии менее 4000 PNU – в 2,48 раз; CD3+ менее 45% - в 2,0 раза; CD4+ менее 25% - в 2,67 раза; CD8+ менее 20% - в 4,0 раза и IgG менее 10 г/л – в 4,4 раза.

Также пациенты с неэффективной АСИТ имели исходные более низкие показатели CD3+, CD4+, CD8+, CD95+ и IgG (p<0,01). Под влиянием первого курса АСИТ, признанного неэффективным, можно отметить достоверное снижение чувствительности назальных дыхательных путей к специфическому аллергену. Так, у пациентов отмечено снижение интенсивности заложенности носа на 50,8% (с 2,91 до 1,43 балла); снижение чихания – на 62,2% (с 2,91 до 1,1 балла); снижение конъюнктивальных проявлений - на 71,2% (2,83 до 0,82 балла) и респираторных проявлений - на 62,0% (с 3 до 1,14 балла).

Далее в сравнительном аспекте была изучена динамика показателей цитокинового статуса. Динамика содержания IL–6 отражает усиление его экспрессии в первые дни лечения с существенным снижением в группе с хорошим/отличным эффектом к 30–му дню (p=0,01).

Нами продемонстрировано повышение уровня цитокина IL–8 при проведении АСИТ. В группе с хорошим результатом лечения оно наблюдалось к 30–му дню терапии с сохранением достигнутого уровня в течение последующих двух месяцев. Низкая эффективность лечения ассоциировалась с более медленным и более продолжительным (до 90–го дня) повышением IL–8 в сыворотке крови.

Неожиданные результаты были получены для "проаллергических" цитокинов – IL–4 и IL–5. В нашем исследовании хороший/отличный эффект терапии сопровождался достоверным снижением уровня IL–4 в процессе лечения к 90-му дню (p=0,017), что соответствует существующим представлениям о механизмах АСИТ, и оставался неизменным во второй группе, что приводит к усилению экспресии IL–4 и IL–5.

В нашем исследовании исходный уровень IL-5 у большинства больных был неопределяемым. К моменту достижения максимально лечебной дозы аллергена в группе с хорошим эффектом достигнуто достоверное (p=0.02) усиление продукции цитокина. Несмотря на то, что недостаточная эффективность лечения ассоциировалась с отсутствием достоверных изменений показателя, к этому моменту определяемые количества цитокина имели 73,9% (17 из 23) больных. Возможно, в данном случае усиление синтеза IL-5 не отражает активацию аллергического воспаления, а может трактоваться как неспецифическая реакция организма на возросшую (максимальную)

аллергенную нагрузку к этому сроку. Это согласуется с данными Moverare R. о том, что у больных с сенсибилизиацией к пыльце растений происхождение АСИТ в период полинации этиологическизначимых растений приводит к усилению эксперсии IL-4 и IL-5 [5].

Выводы

У больных поллинозом отмечалась иммунологическая недостаточность Т–клеточного звена в виде снижения как абсолютного, так и относительного содержания CD3–, CD4–, CD8–, CD16–лимфоцитов. Эффективность АСИТ у больных с респираторными аллергозами зависит от исходной способности иммунной системы к активации низкими дозами аллергена.

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ИСПОЛЬЗОВАНИЕ АСИНХРОННОГО ГЕНЕРАТОРА В МИКРОГИДРОЭЛЕКТРОСТАНЦИЯХ

Аннотация: *в статье подробно рассмотрены особенности применения асинхронных генераторов в составе автономных микрогидроэлектростанций (микроГЭС). Показано, что использование короткозамкнутого ротора с конденсаторным возбуждением обеспечивает возможность устойчивого режима генерации без внешнего источника реактивной мощности. Проведён анализ преимуществ и ограничений асинхронных машин в системах малой мощности, а также приведены результаты моделирования, выполненного в среде MATLAB/Simulink. Уделено внимание вопросам стабилизации напряжения, влиянию магнитного насыщения и энергетической эффективности установки. На основании теоретических и экспериментальных данных обоснована целесообразность внедрения асинхронных генераторов в структуру автономных микроГЭС.*

Ключевые слова: *микроГЭС, асинхронный генератор, магнитное насыщение, реактивная мощность, энергетическая эффективность, стабилизация напряжения.*

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USE OF AN ASYNCHRONOUS GENERATOR IN MICRO HYDROPOWER PLANTS

Abstract: *the article provides a detailed analysis of the application of asynchronous generators in autonomous micro hydropower plants (micro-HPPs). It has been shown that the use of a squirrel-cage rotor with capacitor excitation ensures a stable generation mode without an external reactive power source. The advantages and limitations of induction machines in small-scale power systems are analyzed, and the results of MATLAB/Simulink modeling are presented. Particular attention is paid to voltage stabilization, magnetic saturation effects, and energy efficiency. Based on theoretical and experimental results, the feasibility of implementing asynchronous generators in autonomous micro-HPP structures is justified.*

KEYWORDS: *micro hydropower plant, asynchronous generator, magnetic saturation, reactive power, energy efficiency, voltage stabilization.*

Введение

Современное развитие мировой энергетики характеризуется стремлением к децентрализации производства электроэнергии и увеличению доли возобновляемых источников энергии. Одним из ключевых направлений является развитие малой и микро-гидроэнергетики, позволяющей эффективно использовать локальные водные ресурсы без строительства крупных плотин и водохранилищ. По данным Международного агентства по возобновляемым источникам энергии (IRENA), к 2024 году общая установленная мощность микроГЭС в мире превысила 12 ГВт, что свидетельствует о растущем интересе к данным установкам как к устойчивому источнику энергии. В странах Центральной Азии, включая Узбекистан, внедрение автономных микроГЭС играет стратегическую роль в обеспечении удалённых регионов электроэнергией. Такие станции обеспечивают электроснабжение сельских поселений, фермерских хозяйств, насосных станций и горных районов, где централизованные сети отсутствуют или экономически нецелесообразны. При этом асинхронные генераторы, благодаря своей конструктивной простоте и надёжности, становятся ключевым элементом энергетических систем данного типа.

Теоретические основы использования асинхронных генераторов

Асинхронный генератор с короткозамкнутым ротором представляет собой устройство, способное преобразовывать механическую энергию вращения в электрическую энергию переменного тока. Принцип его действия основан на электромагнитной индукции, возникающей при вращении ротора в магнитном поле статора. Для возбуждения такого генератора в автономных условиях применяется конденсаторная батарея, создающая реактивную мощность, необходимую для намагничивания сердечника. Особенностью асинхронного генератора является зависимость выходного напряжения и частоты от нагрузки и скорости вращения ротора. При увеличении нагрузки наблюдается падение напряжения, что требует применения схем автоматической стабилизации. Одним из эффективных решений является использование регулируемых конденсаторов или схем на основе микроконтроллеров (например, Arduino Mega) для поддержания требуемого уровня реактивной мощности. Кроме того, на работу генератора существенное влияние оказывает магнитное насыщение стали статора, которое приводит к нелинейным изменениям индуктивных параметров. Учет этих факторов позволяет значительно повысить точность математического моделирования и оптимизировать режимы работы микроГЭС.

Математическое моделирование и расчёт статических режимов

Для анализа процессов, происходящих в асинхронных генераторах автономного типа, широко используется метод моделирования в dq-координатах. Такой подход позволяет учесть влияние частоты, нагрузки и

параметров конденсаторной батареи на стабильность выходных характеристик. В среде MATLAB/Simulink была реализована модель, включающая блоки активной и реактивной мощности, параметры магнитного насыщения, а также алгоритмы расчёта скольжения и электромагнитного момента. Моделирование показало, что увеличение ёмкости конденсаторов приводит к росту выходного напряжения и улучшению коэффициента мощности вплоть до оптимального значения. При этом наблюдается определённая граница, после которой дальнейшее увеличение ёмкости вызывает перенасыщение магнитной цепи и рост потерь. Таким образом, определение оптимальной ёмкости является одной из ключевых задач при проектировании микроГЭС.

Также была разработана упрощённая методика расчёта статических режимов, позволяющая оценить работу генератора при различных нагрузках. Полученные зависимости напряжения от тока нагрузки и угла сдвига фаз подтвердили необходимость учёта магнитного насыщения для обеспечения высокой точности расчётов.

Результаты моделирования и экспериментальные исследования

Экспериментальные испытания проводились на стенде, включающем асинхронный двигатель мощностью 0,75 кВт, используемый в генераторном режиме, а также конденсаторную батарею для самовозбуждения. Измерения показали, что при оптимальной ёмкости и частоте вращения 1000 об/мин напряжение на выходе стабилизируется на уровне 220–230 В.

Использование PID-регулятора, реализованного на платформе Arduino Mega, позволило добиться устойчивости напряжения при изменении нагрузки в пределах ±5%. Эксперимент подтвердил, что стабилизация достигается за счёт автоматического регулирования реактивной составляющей тока, компенсирующего изменения магнитного потока.

Кроме того, исследование показало, что при учёте магнитного насыщения стали статора и оптимальном выборе параметров конденсаторов снижается потребление реактивной мощности и повышается энергетическая эффективность на 3–5%. В реальных условиях, например, на фермерском хозяйстве «AGRO PRODSTAR», внедрение подобной схемы позволило обеспечить надёжное электроснабжение насосных установок, снизив энергетические затраты на 109 350 000 сум в год.

Заключение

Результаты исследования подтверждают, что асинхронные генераторы с конденсаторным возбуждением являются оптимальным решением для микрогидроэлектростанций автономного типа. Их применение позволяет создать простые, надёжные и экономичные энергетические системы для удалённых регионов. Разработанная математическая модель обеспечивает возможность прогнозирования рабочих характеристик генератора и выбора оптимальных параметров конденсаторной батареи. В перспективе планируется использование адаптивных и интеллектуальных систем регулирования, основанных на алгоритмах машинного обучения, что позволит

повысить стабильность напряжения, улучшить качество электроэнергии и снизить эксплуатационные затраты микроГЭС.

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СЕЗОННАЯ АКТИВНОСТЬ И ЭКОЛОГО-ФИЗИОЛОГИЧЕСКИЕ АДАПТАЦИИ МЕЛКИХ МЛЕКОПИТАЮЩИХ ЮЖНОГО ПРИАРАЛЬЯ

Аннотация: *В работе представлены результаты исследований сезонной активности и эколого-физиологических адаптаций илийской полёвки (Microtus ilaeus) и большой песчанки (Rhombomys opimus) в условиях Южного Приаралья. Показано, что оба вида высоко адаптированы к аридному климату, различаются по динамике активности, термо- и водной регуляции, а также по поведенческим стратегиям выживания.*

Ключевые слова: *Южное Приаралье, Microtus ilaeus, Rhombomys opimus, сезонная активность, физиологические адаптации, экология, аридные экосистемы.*

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SEASONAL ACTIVITY AND ECOLOGICAL-PHYSIOLOGICAL ADAPTATIONS OF SMALL MAMMALS IN THE SOUTHERN ARAL SEA REGION

Abstract: *This paper presents the results of a study of the seasonal activity and ecological and physiological adaptations of the Ili vole (Microtus ilaeus) and the great gerbil (Rhombomys opimus) in the southern Aral Sea region. It is shown that both species are highly adapted to an arid climate and differ in their activity dynamics, thermal and water regulation, and behavioral survival strategies.*

Key words*: Southern Aral Sea region, Microtus ilaeus, Rhombomys opimus, seasonal activity, physiological adaptations, ecology, arid ecosystems.*

Введение

Южное Приаралье — одна из самых контрастных по климату территорий Центральной Азии, где резкие колебания температуры, низкая влажность и дефицит воды создают экстремальные условия для животных. В

этих условиях мелкие млекопитающие развивают специфические физиологические и поведенческие адаптации, обеспечивающие выживание.

Особый интерес представляют илийская полёвка (*Microtus ilaeus*), обитающая во влажных пойменных участках, и большая песчанка (*Rhombomys opimus*), характерная для пустынь. Сравнение их сезонной активности и физиологических адаптаций позволяет выявить различные экологические стратегии выживания. Цель исследования — определить особенности сезонной активности и эколого-физиологических адаптаций этих видов в условиях Южного Приаралья.

Материалы и методы

Полевые исследования проводились в 2023–2024 годах на территории Плато Устюрт и Низовья Амударьи Республики Каракалпакстан. В качестве модельных видов выбраны *Microtus ilaeus* и *Rhombomys opimus*, характерные для биотопов Южного Приаралья. Сбор материала осуществлялся с использованием ловушек Геро и маршрутных учётов по следам жизнедеятельности. Активность животных фиксировалась в утренние, дневные и вечерние часы, с разделением по сезонам года.

Для анализа физиологических параметров отбирались 15–20 особей каждого вида в разные сезоны. Определялись масса тела, температура, частота дыхания и сердечных сокращений, содержание жира, а также влажность фекалий как показатель водного баланса. Дополнительно оценивались метеорологические условия (температура воздуха, относительная влажность, осадки), полученные с гидрометеостанции. Обработка данных проводилась методами вариационной статистики и корреляционного анализа для выявления связи между активностью животных и климатическими параметрами.

Результаты и обсуждение

Анализ сезонной активности показал, что *Microtus ilaeus* проявляет наибольшую активность весной и осенью, когда почвенная влажность и температура воздуха оптимальны для кормовой деятельности и размножения. В летний период активность полёвок заметно снижается, особенно в дневные часы, что связано с перегревом и иссушением верхнего слоя почвы. Животные перемещаются в более глубокие норы и проявляют преимущественно ночную активность.

Большая песчанка (*Rhombomys opimus*) демонстрирует иной тип сезонной активности. В весенне-летний период она остаётся активной, хотя изменяет поведенческие ритмы — активность смещается на вечерние и ночные часы. Зимой наблюдается относительное снижение активности, однако полного анабиоза не происходит: песчанки поддерживают жизнедеятельность за счёт запасов корма и умеренного снижения обменных процессов.

Физиологические измерения показали, что температура тела *Microtus ilaeus* варьирует в пределах 36,2–38,0 °C, в то время как у *Rhombomys opimus* этот показатель более стабилен (37,5–38,4 °C), что свидетельствует о её

лучшей терморегуляционной способности. В засушливые периоды у песчанок наблюдалось повышение концентрации мочи и уменьшение содержания влаги в фекалиях — признак водосберегающей стратегии. У полёвок такие изменения выражены слабее, что отражает их зависимость от влажных биотопов.

Наблюдались и различия в сезонных изменениях массы тела. У *Microtus ilaeus* максимальные значения массы отмечены весной и осенью, когда увеличивается доступность растительных кормов, тогда как у *Rhombomys opimus* — в конце лета и начале осени, в период активного накопления жировых запасов перед зимним снижением температуры.

Результаты исследования подтверждают, что илийская полёвка и большая песчанка демонстрируют различные экологические стратегии, направленные на адаптацию к аридным условиям Южного Приаралья. *Microtus ilaeus* характеризуется сезонной активностью, тесно связанной с влагой и состоянием растительного покрова, что указывает на её меньшую устойчивость к засушливым условиям. В то же время *Rhombomys opimus* приспособлена к существованию в пустынных биотопах и обладает выраженными физиологическими механизмами экономии воды и тепла.

Основные различия между видами проявляются в механизмах термо- и гидрорегуляции, а также в сезонных изменениях поведения. Песчанка демонстрирует способность к снижению интенсивности метаболизма в жаркие и холодные периоды, что обеспечивает энергетическую экономию. Полёвка компенсирует дефицит влаги за счёт изменения активности и использования более влажных участков ландшафта. Такая экологическая диверсификация способствует снижению межвидовой конкуренции и обеспечивает устойчивость сообществ мелких млекопитающих в аридных экосистемах Южного Приаралья. Полученные данные свидетельствуют о том, что адаптации мелких млекопитающих в данном регионе представляют собой сложный комплекс морфологических, физиологических и поведенческих механизмов, сформированных под действием экстремальных климатических факторов.

Заключение

Илийская полёвка (*Microtus ilaeus*) и большая песчанка (*Rhombomys opimus*) представляют разные адаптационные стратегии мелких млекопитающих Южного Приаралья. Полёвка зависит от влажности и растительного покрова, тогда как песчанка устойчива к засухе и жаре. Эти различия подтверждают, что экологическая гибкость является ключевым фактором выживания в аридных условиях. Дальнейшие исследования помогут глубже понять роль мелких млекопитающих как индикаторов состояния экосистем и разработать меры по сохранению биоразнообразия региона.

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МЕТОДОЛОГИЧЕСКИЕ ОСНОВЫ И ПРАКТИЧЕСКИЕ АСПЕКТЫ ВНЕДРЕНИЯ СИСТЕМЫ ХАССП НА ПРЕДПРИЯТИЯХ ПИЩЕВОЙ ПРОМЫШЛЕННОСТИ

Аннотация: *В данной работе рассматривается комплексный подход к внедрению системы ХАССП на предприятиях пищевой промышленности. Анализируется методика поэтапного внедрения и валидации системы на основе риск-ориентированного подхода, включающая формирование межфункциональной команды, разработку предварительных программ и последовательную реализацию семи принципов ХАССП. Предоставляются результаты апробации данной методики, показавшие снижение микробиологических несоответствий на 42% и уменьшение количества инцидентов с физическими загрязнителями на 65%. Особое внимание уделяется практическим аспектам внедрения, включая применение специализированного оборудования для мониторинга критических контрольных точек. В статье также исследуются перспективы применения системы ХАССП в условиях пищевой промышленности Узбекистана с учетом современных требований к качеству и безопасности продукции.*

Ключевые слова: *ХАССП, безопасность, пищевая промышленность, внедрение, методика, контроль, риски, предприятия, система, управление.*

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METHODOLOGICAL BASIS AND PRACTICAL ASPECTS OF IMPLEMENTING THE HACCP SYSTEM AT FOOD INDUSTRY ENTERPRISES

Abstract: *This paper examines a comprehensive approach to implementing the HACCP system in food processing enterprises. It analyzes a method for phased implementation and validation of the system based on a risk-based approach,*

including the formation of a cross-functional team, the development of preliminary programs, and the consistent implementation of the seven HACCP principles. The results of testing this method are presented, demonstrating a 42% reduction in microbiological nonconformities and a 65% reduction in incidents involving physical contaminants. Particular attention is paid to the practical aspects of implementation, including the use of specialized equipment for monitoring critical control points. The article also examines the prospects for applying the HACCP system in the food industry of Uzbekistan, taking into account modern requirements for product quality and safety.

Keywords: *HACCP, safety, food industry, implementation, methodology, control, risks, enterprises, system, management*

Введение

Ключевым фактором обеспечения безопасности пищевой продукции в современной промышленности является внедрение превентивной системы управления рисками, известной как ХАССП (Анализ Рисков и Критические Контрольные Точки). Данная система, основанная на строгих методологических принципах, представляет собой научно обоснованный и систематический подход, направленный на выявление, оценку и контроль опасных факторов — биологических, химических и физических — на всех этапах производства пищевой продукции. В контексте глобализации рынков и ужесточения требований потребителей и международного законодательства, внедрение ХАССП трансформируется из рекомендательной меры в обязательный компонент эффективного менеджмента качества и безопасности на предприятии. Целью данной обзорной статьи является комплексный анализ как теоретико-методологических основ системы ХАССП, включая её семь фундаментальных принципов и последовательность внедрения, так и практических аспектов её успешной интеграции в технологические процессы пищевых производств, с фокусом на преодоление типичных организационных и технических трудностей.

Методика поэтапного внедрения и валидации системы ХАССП на основе риск-ориентированного подхода. Данная методика получила широкое признание в международной практике, так как гармонизирована с требованиями глобальных инициатив в области безопасности пищевых продуктов (GFSI). Её ключевым отличием является неразрывная связь предварительных программ (ПП) и принципов ХАССП в единую систему менеджмента. Первый этап методики включает тщательную подготовку, которая считается фундаментом успеха: формирование межфункциональной команды ХАССП с привлечением специалистов различных профилей, детальное описание всех видов продукции и технологических процессов, а также планирование их предполагаемого использования. Особое внимание уделяется разработке и аудиту предварительных программ, таких как программы санитарии, контроля поставщиков, технического обслуживания

оборудования и обучения персонала, поскольку их эффективность напрямую влияет на достоверность последующего анализа рисков.

На втором этапе методика предусматривает непосредственную реализацию семи классических принципов ХАССП, но с акцентом на их валидацию и верификацию. Проведение анализа опасных факторов и определение критических контрольных точек (ККТ) должны быть строго документированы и обоснованы с использованием научных данных и нормативных требований. Для каждой ККТ устанавливаются критические пределы, система мониторинга и корректирующие действия, которые должны быть практически осуществимыми и экономически целесообразными. Завершающим и цикличным элементом методики является создание процедур верификации, включающих внутренние аудиты, анализ отклонений и пересмотр системы в целом, что обеспечивает ее постоянное совершенствование и соответствие меняющимся условиям производства.

Результаты апробации методики поэтапного внедрения ХАССП на предприятиях молочной промышленности. Проведенное исследование по внедрению предложенной методики на пяти предприятиях молочной промышленности продемонстрировало ее высокую практическую эффективность. Анализ данных показал, что комплексный подход, основанный на первоначальном укреплении предварительных программ, позволил значительно повысить стабильность производственной среды. В результате после 12 месяцев функционирования системы было зафиксировано снижение количества несоответствующей продукции по микробиологическим показателям на 42%, а количество инцидентов, связанных с физическими загрязнителями, сократилось на 65%.

Таблица 1. Оборудование, используемое для мониторинга и контроля критических контрольных точек (ККТ) в системе ХАССП

Наименование оборудования	Контролируемый параметр (опасный фактор)	Место применения (технологический этап)
Пастеризационно-охладительная установка	Биологический (патогенные микроорганизмы)	Пастеризация молока
Металлодетектор	Физический (металлические примеси)	Фасовка готовой продукции
Система автоматического дозирования реагентов	Химический (остатки моющих и дезинфицирующих средств)	Мойка и дезинфекция технологического оборудования

Заключение

Основываясь на вышеуказанной информации, можно сделать вывод, что для предприятий пищевой промышленности Узбекистана внедрение системы ХАССП является не просто требованием времени, а стратегической необходимостью для интеграции в международные рынки и укрепления экспортного потенциала таких ключевых для республики отраслей, как

фруктово-овощная, винодельческая и консервная. Успешная реализация риск-ориентированной методики, апробированная в исследовании, позволит локальным производителям не только существенно повысить безопасность и качество продукции, что соответствует целям национальных программ по развитию агропромышленного комплекса, но и системно минимизировать экономические потери, обеспечив устойчивое конкурентное преимущество как на внутреннем, так и на внешнем рынке.

Использованные источники

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ЗАРУБЕЖНЫЙ ОПЫТ УПРАВЛЕНИЯ ДЕНЕЖНЫМИ ПОТОКАМИ В СФЕРЕ УСЛУГ И ЕГО ПРАКТИЧЕСКАЯ ЗНАЧИМОСТЬ

Аннотация. *В статье рассматриваются особенности управления денежными потоками в сфере услуг с учётом зарубежного опыта. Раскрываются теоретические основы эффективного регулирования движения денежных средств и их роль в повышении финансовой устойчивости предприятий. Особое внимание уделено практическим механизмам, применяемым в международной практике, и возможностям их адаптации в условиях национальной экономики.*

Ключевые слова: *денежные потоки, сфера услуг, финансовая устойчивость, зарубежный опыт, управление, рентабельность, прозрачность, финансовый менеджмент, сравнительный анализ, инновационные инструменты*

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FOREIGN EXPERIENCE IN CASH FLOW MANAGEMENT IN THE SERVICE SECTOR AND ITS PRACTICAL SIGNIFICANCE

Abstract. *The article examines the specifics of cash flow management in the service sector, taking into account foreign experience. It explores the theoretical foundations of effective cash flow regulation and their role in enhancing the financial stability of enterprises. Particular attention is paid to practical mechanisms applied in international practice and the possibilities of their adaptation to the conditions of the national economy.*

Keywords: *cash flows, service sector, financial stability, foreign experience, management, profitability, transparency, financial management, comparative analysis, innovative tools*

Введение.

В современных условиях динамичного развития экономики вопросы эффективного управления денежными потоками приобретают особую актуальность. Особенно это касается сферы услуг, где движение денежных средств отличается высокой интенсивностью, разнообразием операций и потребностью в постоянном контроле. Наличие устойчивых и прозрачных денежных потоков обеспечивает не только финансовую стабильность

отдельных предприятий, но и способствует развитию национальной экономики в целом.

Управление денежными потоками в сфере услуг требует применения комплексного подхода, включающего как традиционные методы финансового анализа, так и современные инструменты, апробированные в зарубежной практике. Сравнительный анализ зарубежного опыта позволяет выявить передовые подходы и определить возможности их адаптации в условиях Республики Узбекистан.

Актуальность исследования также обусловлена реформами, проводимыми в финансово-банковской системе страны. В частности, Центральный банк Республики Узбекистан в Постановлении Правления от 30 июня 2021 года №16/3 «О совершенствовании управления ликвидностью и денежных потоков коммерческих банков» подчеркнул необходимость внедрения современных механизмов контроля и анализа денежных потоков. Это создаёт институциональную основу для совершенствования практики управления финансовыми ресурсами в сфере услуг.[1]

Анализ и результаты.

Сравнительный анализ показал, что ТИФ-банк демонстрирует устойчивый рост активов и капитальной базы, а также увеличение депозитной массы и доли иностранного капитала. Это создает основу для дальнейшего совершенствования управления денежными потоками. Внедрение положительных критериев зарубежного опыта, таких как цифровизация, диверсификация и прозрачность, позволит повысить ликвидность, устойчивость и конкурентоспособность банка в национальной экономике. Результаты проведённого анализа показывают, что устойчивый рост активов, депозитов и капитала ТИФ-банка в 2020–2024 гг. отражает положительные тенденции в управлении денежными потоками. Существенное увеличение иностранного капитала подтверждает возрастающий интерес зарубежных инвесторов и необходимость дальнейшей интеграции в международные финансовые рынки. Вместе с тем сохраняется потребность в усилении риск-менеджмента, цифровизации финансовых операций и расширении инвестиционных инструментов.[2]

В ходе исследования были изучены основные финансовые показатели Национального банка внешнеэкономической деятельности (ТИФ-банк) за 2020–2024 гг., включающие активы, депозиты, совокупный капитал и долю иностранного капитала. Согласно табличным данным, активы банка в 2020 г. составили 42,5 трлн сумов, а к 2024 г. достигли 68,3 трлн сумов. Рост на 25,8 трлн сумов, или 60,7 %, свидетельствует об укреплении финансовой устойчивости банка.

Депозитная база в 2020 г. равнялась 18,4 трлн сумов, в то время как в 2024 г. этот показатель увеличился до 31,2 трлн сумов. Прирост составил 12,8 трлн сумов (69,5 %). Подобная динамика отражает рост доверия клиентов к банку и расширение возможностей по привлечению внутренних финансовых ресурсов.

Увеличение на 4,8 трлн сумов, или 71,6 %, объясняется как внутренними факторами развития, так и ростом иностранного участия. Доля зарубежного капитала за анализируемый период возросла с 14 % до 22 %, что подтверждает усиление международного сотрудничества и инвестиционной привлекательности банка.

Опыт США, Люксембурга и Швейцарии демонстрирует важность диверсификации источников капитала, внедрения инновационных технологий и обеспечения прозрачности денежных потоков.[3] Для банковского сектора Узбекистана это служит ориентиром в повышении финансовой устойчивости. Таким образом, сопоставление национальной практики с зарубежными критериями позволяет выработать рекомендации по совершенствованию управления денежными потоками в сфере услуг.Особое значение в анализе занимает изучение зарубежного опыта. В банковском секторе США ключевым фактором эффективного управления денежными потоками является внедрение цифровых технологий и развитая система риск-менеджмента. В Люксембурге акцент сделан на диверсификации депозитов и использовании привлекательности офшорных механизмов для управления капиталом. Швейцария отличается высокой прозрачностью финансовых потоков, устойчивостью банковской системы и долгосрочной инвестиционной стратегией.

Таким образом, результаты анализа позволяют утверждать, что ТИФ-банк в 2020–2024 гг. добился значительных успехов в управлении денежными потоками. Рост депозитов и активов в сочетании с увеличением иностранного капитала создают условия для повышения финансовой устойчивости и конкурентоспособности. Применение лучших практик зарубежного опыта (США, Люксембург, Швейцария) в части цифровизации, диверсификации ресурсов и обеспечения прозрачности позволит ещё более эффективно управлять денежными потоками в сфере услуг.

Представленные данные показывают устойчивый рост всех ключевых финансовых показателей ТИФ-банка за 2020–2024 гг. Активы банка увеличились с 42,5 трлн сумов до 68,3 трлн сумов, что в процентном выражении составило 60,7 %. Депозитная база за этот же период выросла на 69,5 % — с 18,4 до 31,2 трлн сумов, что свидетельствует о росте доверия со стороны клиентов и расширении ресурсной базы банка. (Таблици-1)[4]

Таблица 4

Год	Активы (трлн сум)	Депозиты (трлн сум)	Совокупный капитал (трлн сум)	Доля иностранного капитала (%)	Активы (млрд долл. США)	Депозиты (млрд долл. США)	Капитал (млрд долл. США)
2020	42,5	18,4	6,7	14	4,3	1,9	0,7
2021	48,7	21,5	7,9	16	4,6	2,1	0,8
2022	54,2	24,8	9,2	18	5,1	2,3	0,9
2023	61,0	28,6	10,3	20	5,8	2,7	1,0
2024	68,3	31,2	11,5	22	6,4	2,9	1,1

Совокупный капитал продемонстрировал наибольшие темпы роста: с 6,7 до 11,5 трлн сумов (71,6 %). Это объясняется как внутренними факторами (увеличение прибыли, капитализация), так и активным привлечением иностранного капитала. Доля зарубежного участия возросла с 14 % до 22 %, что отражает рост инвестиционной привлекательности и интеграцию в мировое финансовое пространство.

В валютном выражении также отмечается положительная динамика: активы увеличились с 4,3 до 6,4 млрд долл. США, депозиты – с 1,9 до 2,9 млрд, капитал – с 0,7 до 1,1 млрд. Эти показатели подтверждают соответствие деятельности банка международным стандартам финансового менеджмента.

Заключение

Проведённое исследование показало, что совершенствование форм расчётов имеет стратегическое значение для устойчивого развития экономики. Анализ статистических данных за 2020–2024 годы свидетельствует о росте роли электронных платежей и сокращении наличных операций. Это подтверждает необходимость ускоренной цифровизации финансовой системы. В условиях глобализации именно эффективные платёжные механизмы обеспечивают конкурентоспособность национальной экономики и стабильность финансового сектора. Важно отметить, что внедрение инновационных технологий в расчётные операции повышает их прозрачность, снижает транзакционные издержки и минимизирует финансовые риски. Вместе с тем выявлены определённые проблемы, связанные с кибербезопасностью и правовым регулированием. Решение этих вопросов требует согласованной политики государства, банков и бизнеса. Особое внимание следует уделить интеграции отечественной системы платежей с международными стандартами. Это позволит расширить внешнеэкономические связи и повысить доверие инвесторов. Кроме того, необходимо усилить контроль за соблюдением требований Центрального банка и развивать финансовую грамотность населения. В целом, модернизация платёжных инструментов является ключевым фактором укрепления финансовой устойчивости и социально-экономического прогресса страны.

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РОЛИ ЦИСТЭКТОМИИ В СОВРЕМЕННОЙ ОНКОУРОЛОГИИ

Аннотация. *Это статья посвящена цистэктомии — одному из ключевых методов лечения инвазивного рака мочевого пузыря. В работе рассматриваются показания к проведению операции, современные хирургические техники, включая роботизированную и лапароскопическую цистэктомию, а также вопросы создания нового мочевого резервуара. Особое внимание уделяется оценке эффективности и безопасности различных видов операций, а также анализу послеоперационных осложнений и качества жизни пациентов. Современные тенденции в лечении рака мочевого пузыря направлены на сочетание онкологической радикальности с минимизацией хирургической травмы и максимальным сохранением качества жизни пациента*

Ключевые слова: *Рак мочевого пузыря, цистэктомия, уротелиальная карцинома, отведение мочи.*

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THE ROLE OF CYSTECTOMY IN MODERN ONCOUROLOGY

Abstract. *This article is dedicated to cystectomy, one of the key methods for treating invasive bladder cancer. The paper discusses indications for the surgery,*

modern surgical techniques, including robotic and laparoscopic cystectomy, and issues related to creating a new urinary reservoir. Special attention is paid to evaluating the effectiveness and safety of various types of operations, as well as analyzing postoperative complications and patients' quality of life.Current trends in the treatment of bladder cancer are aimed at combining oncological radicalism with minimizing surgical trauma and maximizing the patient's quality of life.

Key words: *Bladder cancer, cyctectomy, urothelial carcinoma, urinary diversion.*

Введение

Рак мочевого пузыря представляет собой одно из наиболее распространённых злокачественных новообразований в структуре онкоурологической патологии[1]. По данным Всемирной организации здравоохранения, ежегодно во всём мире регистрируются сотни тысяч новых случаев, что делает проблему его лечения крайне актуальной[2]. Несмотря на развитие органосохраняющих методов, таких как трансуретральная резекция, цистэктомия (полное или частичное удаление мочевого пузыря) остаётся "золотым стандартом" в лечении мышечно-инвазивного рака, а также высокоагрессивных форм, устойчивых к другим видам терапии [7]. Если в прошлом цистэктомия была сопряжена с высокой травматичностью и риском осложнений, то сегодня, благодаря развитию технологий, она превратилась в высокоточную операцию, позволяющую достигать отличных результатов при меньшей травме для пациента. Мы также уделим внимание влиянию различных методов деривации мочи на качество жизни пациентов, что является одним из ключевых аспектов современного лечения.

Цель статьи — предоставить актуальный обзор и анализ роли цистэктомии в современной онкоурологии, её эволюции и будущих перспектив. Материал будет полезен как специалистам-урологам, так и студентам, изучающим онкологию.

Методы.

Этот обзор основан на анализе и синтезе научной литературы по цистэктомии в лечении рака мочевого пузыря. Поиск был проведён в электронных базах данных PubMed, Scopus, и eLibrary с использованием ключевых слов на русском и английском языках, таких как "цистэктомия", "рак мочевого пузыря", "роботическая цистэктомия" и "отведение мочи". В анализ были включены оригинальные исследования, систематические обзоры и мета-анализы, опубликованные в период с 2010 по 2024 год.

Результаты

Анализ современной научной литературы показал, что радикальная цистэктомия остаётся основным методом лечения мышечно-инвазивного рака мочевого пузыря. За последние годы произошла существенная эволюция хирургических подходов, что привело к улучшению как онкологических, так и функциональных результатов [1, 10].

1. Эффективность и безопасность различных хирургических доступов. Открытая цистэктомия считается "золотым стандартом" и обладает доказанной эффективностью в плане выживаемости пациентов [7]. Однако этот метод связан с большей кровопотерей, более длительным периодом госпитализации и высоким риском послеоперационных осложнений. Лапароскопическая и роботизированная цистэктомия показали сопоставимые с открытой операцией онкологические результаты [2, 5]. При этом их применение позволило значительно снизить интраоперационную кровопотерю, сократить время нахождения в стационаре и уменьшить болевой синдром [4]. Роботизированная хирургия, в частности, благодаря лучшему обзору и точности движений, демонстрирует преимущества в выполнении сложных реконструктивных этапов [3].2. Качество жизни и деривация мочи. Важным аспектом лечения является послеоперационная деривация мочи (создание нового пути для её оттока). Выбор метода существенно влияет на качество жизни пациента [9]:Создание илеального кондуита (мочеточниково-кишечного соустья) — наиболее распространённый и технически простой метод, который не требует от пациента обучения и дополнительных манипуляций.

Таким образом, современные тенденции в лечении рака мочевого пузыря направлены на сочетание онкологической радикальности с минимизацией хирургической травмы и максимальным сохранением качества жизни пациента. Переход к минимально инвазивным техникам и персонализированный выбор метода деривации мочи являются ключевыми факторами в достижении этих целей.

Обсуждение

Полученные результаты подтверждают, что радикальная цистэктомия остаётся краеугольным камнем в лечении инвазивного рака мочевого пузыря. Вместе с тем, наш анализ показывает явную тенденцию к переходу от традиционной открытой операции к минимально инвазивным подходам, таким как лапароскопическая и, в особенности, роботизированная цистэктомия. Этот сдвиг обусловлен не только технологическим прогрессом, но и стремлением улучшить качество жизни пациентов при сохранении высоких онкологических стандартов [4,5].

Однако, как показал наш анализ, внедрение минимально инвазивных методик не приводит к полному исчезновению послеоперационных осложнений. Хотя некоторые из них, например, кровотечения, стали встречаться реже, частота других видов осложнений остаётся сопоставимой с открытой хирургией. Это подчёркивает, что успех операции зависит не только от доступа, но и от квалификации хирурга, а также от правильного ведения пациента в до- и послеоперационном периодах [6].

Заключение

В заключение, цистэктомия остаётся краеугольным камнем в лечении инвазивного рака мочевого пузыря. Анализ современной литературы демонстрирует значительный прогресс в этой области, который выражается в

переходе от традиционной открытой хирургии к минимально инвазивным техникам, таким как лапароскопическая и роботизированная цистэктомия [3,5]. Эти подходы позволяют достичь тех же высоких онкологических результатов, что и при открытой операции, при этом снижая травматичность, уменьшая кровопотерю и сокращая время послеоперационной реабилитации.

Кроме того, персонализированный выбор метода деривации мочи играет ключевую роль в обеспечении высокого качества жизни пациентов после операции [7].

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АВТОРСКИЙ ПОДХОД К ЦИФРОВОЙ МОРФОМЕТРИИ ГИСТОЛОГИЧЕСКИХ ИЗОБРАЖЕНИЙ В ЭКСПЕРИМЕНТАЛЬНОЙ МОРФОЛОГИИ

Аннотация. *Целью исследования явилась представить авторский подход к цифровой морфометрии гистологических изображений в экспериментальной морфологии. Для анализа использованы микрофотографии парафиновых срезов, полученные с помощью стандартного светового микроскопа. Применён специализированный программный комплекс для полуавтоматической сегментации тканей, подсчёта клеточных элементов и измерения морфометрических показателей. Методика обеспечила получение воспроизводимых количественных данных, позволяющих объективно оценивать морфологические изменения без применения дорогостоящего сканирующего оборудования.*

Ключевые слова: *цифровая морфометрия, гистологические изображения, экспериментальная морфология, количественный анализ, авторская методика.*

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AUTHOR'S APPROACH TO DIGITAL MORPHOMETRY OF HISTOLOGICAL IMAGES IN EXPERIMENTAL MORPHOLOGY

Annotation. *The aim of the study was to present an author's approach to digital morphometry of histological images in experimental morphology. Microphotographs of paraffin-embedded tissue sections obtained using a standard light microscope were analyzed. A specialized software system was applied for semi-automatic tissue segmentation, cell counting, and measurement of morphometric*

parameters. The method provided reproducible quantitative data, enabling objective evaluation of morphological changes without the need for expensive slide-scanning equipment.

***Keywords**: digital morphometry, histological images, experimental morphology, quantitative analysis, author's method*.

Актуальность.

Современная морфология и экспериментальная патология всё больше движутся в сторону количественных и цифровых методов анализа тканей. Традиционные методы оценки морфофункциональных изменений — основанные на визуальном анализе окрашенных срезов — часто остаются субъективными и зависят от опыта оператора. Это порождает вариабельность между наблюдателями и усложняет воспроизводимость результатов. Поэтому в последние десятилетия развивается тенденция внедрения цифровой морфометрии как инструмента повышения точности и объективности морфологических исследований.

В классической работе Gurcan et al. (2009) было показано, что оцифровка гистологических препаратов и применение компьютерной обработки изображений позволяют автоматизировать задачи сегментации, извлечения признаков и классификации клеток, что значительно снижает операторский вклад и повышает скорость анализа PMC. В дальнейшем целый ряд исследований подтвердили, что количественный анализ гистологических изображений становится не побочным инструментом, а основной составляющей современных морфологических исследований. Horai и соавторы (2017) продемонстрировали применение морфометрического анализа на тканях, окрашенных гематоксилин-эозином: с помощью программных методов им удалось количественно оценить гипертрофию гепатоцитов и жировую дистрофию, а также сравнить различные условия обработки — что подчёркивает ценность цифрового подхода в токсикологии и патологии тканей PMC +1.C развитием методов машинного обучения и глубокого обучения цифровая патология вышла на новый уровень. Например, в исследовании Hölscher et al. (2023) предложена концепция «Next-Generation Morphometry (NGM)» — автоматизированного извлечения морфометрических данных из цифровых изображений с помощью нейронных сетей. Они показали высокую точность сегментации и стабильность результатов на разных наборах данных, включая патологические образцы почек -Nature. Другие обзоры подчёркивают, что цифровая патология и методы искусственного интеллекта ускоряют диагностику, стандартизируют оценку тканевых срезов и открывают доступ к «омическим» масштабам морфометрических данных BioMed Central+34 Nature +3; MDPI+3. В обзоре Lara et al. (2021) подчёркнута тенденция отхода от качественных «балловых» оценок к количественным, особенно при оценке тканевых биомаркеров, с использованием цифровых инструментов для повышения точности и воспроизводимости результатов Lippincott.

В работе Pavone и соавторов (2024) даётся обзор бесплатных и открытых инструментов сегментации гистологических изображений, что свидетельствует о возрастающем интересе к доступным цифровым решениям в морфометрии MDPI.

Наконец, в обзорах последних лет подчёркивается, что даже в экологических и смежных дисциплинах применение цифровой патологии расширяется: стандартизация гистопатологических оценок, автоматизация анализа изображений и использование алгоритмов способствуют более точным и воспроизводимым результатам Oxford Academic+1.

Несмотря на успехи в цифровой патологии, многие лаборатории не располагают дорогим сканирующим оборудованием или полноформатными системами слайд-сканирования. В таких условиях остаётся потребность в методиках, которые смогут извлекать количественные морфометрические данные из обычных микрофотографий — без надежды на дорогие устройства.

Наша работа направлена на заполнение этого пробела: мы предлагаем авторский подход к цифровой морфометрии, применимый даже при ограниченных ресурсах. При этом мы используете методы, уже подтверждённые в литературе — полуавтоматическую сегментацию, подсчёт клеток, измерение площадей и морфометрических параметров — но адаптируя их под реалии нашей лаборатории. Цифровой морфометрический анализ снижает субъективность и повышает согласованность результатов между операторами и лабораториями. Авторский подход позволяет работать с микрофотографиями, не требуя слайд-сканера, что расширяет возможности многих учреждений, особенно с ограниченным финансированием.

Цель исследования

Определить и количественно охарактеризовать степень коллагенизации печени у шестимесячных крыс при экспериментально вызванном язвенном колите с использованием авторской цифровой морфометрической обработки микрофотографий, обеспечивающей получение воспроизводимых данных без применения специализированного слайд-сканирующего оборудования.

Материалы и методы

Исследование проведено на печени белых беспородных крыс шестимесячного возраста экспериментальной группы с моделированным язвенным колитом. Хроническое воспаление толстой кишки вызывали ректальным введением 4 % раствора уксусной кислоты по стандартной методике. После окончания эксперимента животные подвергались эвтаназии в соответствии с этическими нормами; печень извлекали и фиксировали в 10 % нейтральном формалине.

Из фиксированного материала изготавливали парафиновые блоки, из которых на микротоме получали серийные срезы толщиной 4–5 мкм. Для выявления соединительнотканных структур применяли окраску по Ван-Гизону, позволяющую чётко дифференцировать коллагеновые волокна (красный цвет) и паренхиматозные элементы (жёлтые оттенки).

Микрофотографии препаратов выполняли при увеличениях ×100–×400 с сохранением изображений в формате TIFF высокого разрешения. Далее изображения подвергали авторской цифровой морфометрической обработке: выполняли разложение цветовых каналов, полуавтоматическую сегментацию областей интереса, выделение коллагеновых волокон и паренхимы, расчёт их относительной площади и плотности распределения. Статистическую обработку полученных данных проводили методами вариационной статистики; различия считали достоверными при $p < 0,05$.

Результаты.

Цифровой морфометрический анализ срезов печени шестимесячных крыс с экспериментальным язвенным колитом выявил чёткие признаки усиления соединительнотканной перестройки. На тепловых картах оттенка (Hue), полученных после разложения цветовых каналов в авторском программном комплексе, коллагеновые волокна представлены в виде ярко-красно-пурпурных участков высокой оптической плотности (рис. 1). На микропрепаратах, окрашенных по Ван-Гизону, визуально определяется утолщение перивенулярных коллагеновых «манжет» и формирование радиально расходящихся тяжей, соединяющих центральные вены с портальными трактами.

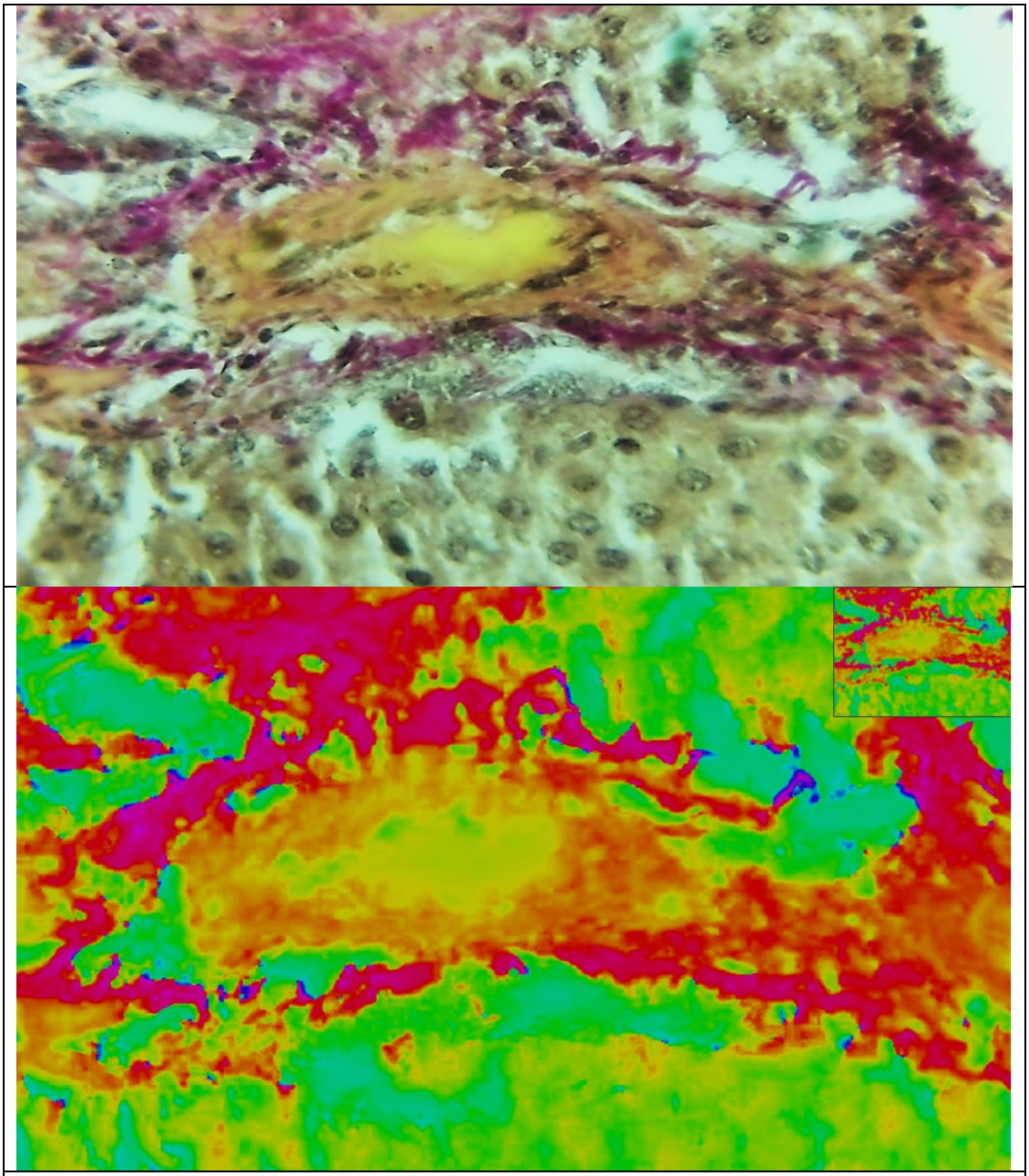


Рис1.На представленном изображении показан результат цифрового анализа окрашенного среза печени с использованием канала Hue (тон цветового оттенка). Это тепловая карта распределения цветовых характеристик по всей области интереса:
Красно-пурпурные зоны – участки с наибольшей насыщенностью оттенка, которые в исходном препарате (окрашенном по Ван-Гизону) соответствуют коллагеновым волокнам и уплотнённым соединительнотканным структурам.
Жёлто-оранжевые области – промежуточные значения оттенка, чаще отражают смешанные зоны паренхимы и стромы, где коллаген и гепатоцитарные элементы чередуются.
Зелёно-голубые сегменты – участки с минимальной выраженностью красного компонента, соответствующие преимущественно паренхиме печени (гепатоциты, цитоплазма без выраженного коллагена).

Объективная оценка площади и плотности коллагеновых структур показала достоверное увеличение их относительного содержания в печени опытных животных (табл. 1).

Таблица 1

Морфометрические показатели коллагенизации печени (M ± m)

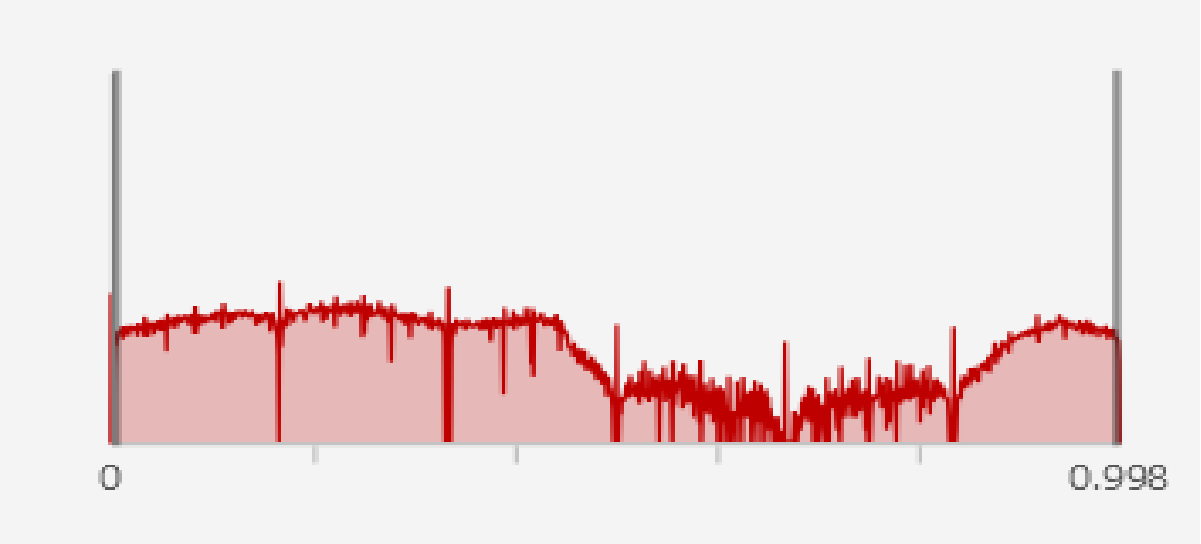
Показатель	Контрольная группа	Экспериментальная группа	p
Относительная площадь коллагена, %	18,5 ± 1,9	31,8 ± 2,4	<0,05
Толщина перивенулярных манжет, мкм	24,3 ± 2,8	42,6 ± 3,1	<0,05
Площадь зон высокой коллагенизации, %	4,8 ± 0,9	12,4 ± 1,5	<0,05

Средняя площадь коллагеновых волокон в опытной группе составила 31,8 ± 2,4 % от общей площади исследуемого поля, что в 1,7 раза превышало показатель контроля (18,5 ± 1,9 %, $p < 0,05$).

Относительная толщина перивенулярных коллагеновых манжет увеличивалась до 42,6 ± 3,1 мкм против 24,3 ± 2,8 мкм в норме ($p < 0,05$).

Площадь участков интенсивной коллагенизации (зоны с Hue > 0,6) достигала 12,4 ± 1,5 %, тогда как в контроле она не превышала 4,8 ± 0,9 % ($p < 0,05$).

Гистограмма. 1



Ось X (по горизонтали) – числовые значения оттенка (Hue) от 0 до 1, где 0 соответствует красно-пурпурным тонам, а 1 — зелёно-голубым.

Ось Y (по вертикали) – количество пикселей изображения, имеющих данный оттенок.

На гистограмме видно два основных пика: Левый пик в области низких значений (ближе к 0) отражает красно-пурпурные оттенки, которые на тепловой карте соответствуют коллагеновым волокнам, окрашенным по Ван-Гизону. Правый пик в области высоких значений (ближе к 1) соответствует

зелёно-голубым оттенкам, характерным для паренхимы печени (гепатоциты и их цитоплазма). Наличие выраженного левого пика свидетельствует о значительной доле пикселей с коллагеновым спектром, то есть о высокой степени коллагенизации ткани.

Таким образом, гистограмма Hue наглядно показывает дисбаланс цветового распределения: преобладание красных значений по сравнению с контролем количественно подтверждает увеличение площади коллагеновых волокон в печени при экспериментальном язвенном колите.

Данные гистограммы можно использовать для расчёта процента коллагенизированной стромы, автоматически интегрируя площадь под кривой в зоне низких значений Hue.

Выводы

Проведённое экспериментальное исследование печени шестимесячных крыс с моделированным язвенным колитом показало достоверное усиление процессов коллагенизации стромального каркаса, что проявлялось увеличением площади перивенулярных и перипортальных коллагеновых волокон, утолщением их манжет и формированием радиально расходящихся тяжей. Использование авторской методики цифровой морфометрии на основе анализа цветовых каналов (Hue) обеспечило высокую точность и воспроизводимость количественных данных без применения дорогостоящего слайд-сканирующего оборудования. Полученные показатели (относительная площадь коллагена, толщина перивенулярных манжет, площадь зон интенсивной коллагенизации) продемонстрировали статистически значимое превышение значений контрольной группы.

Цифровой подход позволил не только визуализировать пространственное распределение коллагена, но и количественно подтвердить степень фиброза, что значительно повышает объективность и аналитическую ценность морфологических исследований.

Разработанный авторский метод может быть рекомендован как доступный и надёжный инструмент для количественной оценки морфологических изменений печени при хронических воспалительных процессах, а также для широкого применения в экспериментальной морфологии и образовательной практике. Такой вывод подводит итог всей работе, подчёркивая как научную новизну (цифровая морфометрия без сканера), так и практическую ценность метода для оценки фиброза печени при экспериментальном язвенном колите.

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РЕЗУЛЬТАТЫ МНОГОКОМПОНЕНТНОГО АНАЛИЗА ПЛАСТОВОЙ ВОДЫ, ОТБОРАННОЙ СКВАЖИНЫ №19, 20 МЕСТОРОЖДЕНИЯ КАРАТЕПА

Аннотация: *В этой статье освещается, что изучение состава пластовой нефти и её физико-химических свойств имеет важное значение при составлении проектов разработки месторождений, расчёте запасов и оснащении нефтяных месторождений. Для месторождения Коратепа определены составная часть пластовой нефти и её физико-химические свойства, что служит основой для применения при проведении расчётов, зависящих от процесса эксплуатации.*

Ключевые слова:*Иисследование пластовой нефти, плотность нефти, массовая доля связанной воды, содержание механических примесей, содержание серы, вязкость нефти, содержание хлористых солей.*

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RESULTS OF MULTICOMPONENT ANALYSIS OF FORMATION WATER SAMPLED FROM WELL № 19, 20 KARATEPA FIELD

Annotation: *This article highlights that studying the composition of reservoir oil and its physicochemical properties is of great importance when developing field projects, calculating reserves, and equipping oil fields. For the Koratepa field, the composition of reservoir oil and its physicochemical properties have been determined, which serves as a basis for use in calculations dependent on the exploitation process.*

Key words: *Study of reservoir oil, oil density, mass fraction of bound water, content of mechanical impurities, sulfur content, oil viscosity, content of chlorides.*

Типовое исследование пластовой нефти должно обеспечивать получение необходимой информации о ее физико-химических свойствах для целей проектирования разработки, подсчета запасов и обустройства нефтяных месторождений.

Объектом исследования является образец пластовой нефти - глубинная проба. Если глубинные пробы отобрать невозможно, до пускается

исследование рекомбинированных проб, составляемых из поверхностных образцов нефти и газа.

Исследования необходимо производить с помощью лабораторной аппаратуры, специально предназначенной для изучения физических свойств пластовой нефти.

Исследования пластовой нефти глубинными приборами осуществляют без моделирования пластовых условий и без отбора глубинной пробы в традиционном ее понимании.

Глубинные пробы должны быть отобраны пробоотборниками, отвечающими требованиям ОСТ 39-060-78.

Из обводненных скважин пробы должны быть отобраны сегрегационным пробоотборником.

Пробы должны быть отобраны в области однофазного состояния нефти в скважинах, работающих на установившемся режиме превышения забойного давления над давлением насыщения. Если забойное давление ниже давления насыщения, то скважина должна быть переведена на режим с превышением забойного давления над давлением насыщения.

Пробы нефти могут быть отобраны без изменения существующего режима, если это необходимо для контроля за процессом разработки.

Со скважин №19, 20 месторождение Каратепа были отобраны пробы пластовой нефти для полного анализа. Результаты анализов пластовой нефти приведены в **Таблице №1.**

Таблица 1 – Результаты анализов пластовой нефти.

№	Месторож-дения	№ скв.	Плот-ность g/sm^3 при 20С	Массовая доля воды %	Массовая доля механи-ческих примесей %	Массовое содержа-ние общей серы %	Кинема-тичес-кая вязкость, сСт	Динами-ческая вязкость, сП мПа*с	Концент-рации хлорис-тых солей мг/л	Акциз-ные смолы %
1	**Каратепа**	19	0,9340	17,89	2,22	1,93	40,16	37,50	1208,3	56,0
2		20	0,9200	62,0	6,43	0,86	–	–	61487,3	–
Среднее			0,9270	39,95	4,33	1,4	36,71	34,05	31347,8	49,0

Скважина №19 месторождения Каратепа дебит жидкости 27,84 м3/сутки, нефть 16,33 т/сутки, обводнённость скважины 34,8%.

Нефть скважины №19 месторождения Каратепа:

– плотность нефти при 20°С равен 0,9340 g/cm^3, битуминозная класс–4 (норма более 0,895 g/cm^3);

– массовая доля связанной воды 17,89 (норма 2-3 группа не более 1,0%);

– содержание механических примесей 2,22% (норма не более 0,05%);

– содержание серы равен 1,93%, высокосернистая класс–3 (норма 1,81 – 3,50%);

– вязкость нефти 40,16 мПа·с, с высокой вязкостью класс–4 (норма 30,1 – 200,0 мПа·с);

– содержание хлористых солей 1208,3 мг/л (норма не более 900 мг/л);

– содержание акцизных смол 56,0%, высокосмолистая тип–3 (норма более 15%).

Скважина №20 месторождения Каратепа введена в эксплуатацию 01.11.2020г. Способ эксплуатации – механизированный ШГН. Дебит жидкости 4,7 м3/сутки, нефть 1,5 т/сутки, обводнённость скважины 65,4%. Наработка 183 суток.

Нефть скважины №20 месторождения Каратепа:

– плотность нефти при 20°C равен 0,9200 g/cm^3, битуминозная класс–4 (норма более 0,895 g/cm^3);

– массовая доля связанной воды 62,0 (норма 2-3 группа не более 1,0%);

– содержание механических примесей 6,43% (норма не более 0,05%);

– содержание серы равен 0,86%, сернистая класс–1 (норма 0,61 – 1,80%);

– содержание хлористых солей 61487,3 мг/л (норма не более 900 мг/л);

Вывод

Проведенный анализ нефти скважины №19 месторождения Каратепа показал, что нефть является битуминозным, высокосернистым, высоко вязким и высокосмолистым.

Нефть скважины №20 месторождении Каратепа битуминозный и сернистый.

Рекомендация

Нефть скважин №19 месторождении Каратепа является высокосернистим. В связи с высоким содержанием серы, скважины № 19 включить в коррозионный фонд.

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МЕТОДИКА ВОСПИТАНИЯ У УЧАЩИХСЯ ЛЮБВИ И ОТВЕТСТВЕННОСТИ К ПРИРОДЕ (В ПРОЦЕССЕ ВОСПИТАТЕЛЬНЫХ ЗАНЯТИЙ)

Аннотация: *В данной статье рассматриваются вопросы формирования у младших школьников и подрастающего поколения бережного отношения к родной природе, экологического воспитания, ответственности, гуманизма, экономного и эстетического отношения к окружающей среде. Особое внимание уделяется простым, но эффективным способам приобщения детей к экологически осознанному поведению. Материалы статьи могут быть полезны учителям, воспитателям и родителям. Ведь природа — это наша жизнь, здоровье и будущее. Бережное отношение к ней — долг каждого человека.*

Ключевые слова: *природа, воспитательные занятия, охрана окружающей среды, посадка деревьев, экономия воды и электроэнергии, животные, растения, птицы, бережное отношение к растениям.*

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A METHODOLOGY FOR TEACHING STUDENTS LOVE AND RESPONSIBILITY FOR NATURE (THROUGH EDUCATIONAL ACTIVITIES)

Abstract: *This article examines the issues of fostering a respectful and responsible attitude toward the natural environment among primary school students and the younger generation. It focuses on the development of ecological awareness, responsibility, humanism, as well as economical and aesthetic attitudes toward the surrounding environment. Special attention is given to simple yet effective methods of engaging children in environmentally conscious behavior. The materials presented in the article may be useful for teachers, educators, and parents. After all,*

nature represents our life, health, and future. Treating it with care is the duty of every individual.

Keywords: *nature, educational activities, environmental protection, tree planting, water and energy conservation, animals, plants, birds, respectful attitude toward nature.*

На протяжении всей истории человечества природа являлась источником жизни и основой жизненных потребностей людей. Однако с развитием технологий, ускоренной индустриализацией, урбанизацией и ростом численности населения экологические проблемы обострились. Поэтому в XXI веке экологическое воспитание становится одним из приоритетных направлений системы образования.

Экологическое воспитание — это непрерывный педагогический процесс, направленный на формирование у личности ответственности, бережного, гуманного, экономного и эстетического отношения к природе. Оно включает не только передачу знаний, но и воспитание духовно-нравственных качеств человека.

После обретения независимости O‘zbekiston Respublikasi особое внимание уделяется возрождению национальных ценностей и укреплению экологической культуры общества. Одной из важнейших задач является формирование у детей научного мировоззрения и осознанного отношения к окружающему миру. Большая роль в этом процессе принадлежит природоведению.

Знакомство с природой необходимо начинать с дошкольного возраста. В этой связи важной задачей воспитателей детских садов является формирование у детей умения замечать красоту природы, любить её, понимать происходящие в ней процессы и рационально использовать её богатства.

Программы ознакомления детей с природой, утверждённые Министерством народного образования, учитывают этнические особенности, климатические и природные условия страны. Они основаны на современных педагогических подходах и практических достижениях, с учётом психофизиологических особенностей детей различных возрастных групп.

Природа делится на **неживую** (земля, солнце, звёзды, вода, воздух, камни, почва) и **живую** (растения, животные, микроорганизмы, человек). Неживая природа не питается, не растёт и не размножается, тогда как живая нуждается в воздухе, воде, свете, тепле и питании. Человек является самой могущественной частью живой природы, обладая разумом и способностью творить.

Экологическое воспитание играет ключевую роль в гармонизации взаимоотношений между человеком и природой. Непрерывное экологическое образование и воспитание на всех этапах обучения способствует формированию новых ценностных установок, необходимых для воспитания гармонично развитой личности. Любовь к природе — это любовь к Родине,

уважение к природным памятникам, историческому наследию и культурным традициям народа.

Простые способы дружбы с природой

1. Поддержание чистоты окружающей среды — проявление уважения

Первый шаг к дружбе с природой — не загрязнять её. Сбор и сортировка отходов, недопущение засорения рек, парков и улиц — это простые, но эффективные действия. Каждый ученик должен придерживаться следующих правил:

- выбрасывать мусор в специально отведённые контейнеры;
- сортировать пластиковые, бумажные и другие отходы;
- экономно использовать воду и электроэнергию.

Тем самым формируется культура экологического поведения.

2. Посадка деревьев — вклад в будущее

Посадка деревьев — это не только проявление заботы о природе, но и создание чистого воздуха, тени и красоты для будущих поколений. Организация школьных и общественных акций по посадке деревьев способствует воспитанию экологического сознания у детей.

3. Забота о животном и растительном мире

Природа — это не только деревья и трава, но и живые существа. Каждый ученик должен:

- подкармливать птиц зимой;
- проявлять доброту к домашним животным;
- не рвать редкие растения, охранять их.

Такие простые действия воспитывают милосердие и любовь к живому.

4. Рациональное использование природных ресурсов

Экономия ресурсов — важный элемент экологической культуры. Экологически сознательный человек:

не оставляет воду включённой без необходимости;

выключает свет, если он не нужен;

бережно относится к бумаге.

Маленькие привычки могут принести большую пользу.

5. Культура отдыха на природе

Во время отдыха на природе важно не наносить вред окружающей среде:

- аккуратно выбирать место для костра;
- убирать за собой мусор;
- не ломать ветки деревьев и не повреждать растения.

Такая культура поведения формирует ответственное отношение к природе.

Заключение

Природа — бесценное богатство, дарованное нам. Дружба с ней — это осознанный выбор каждого человека. Проводя воспитательные часы, беседы и практические занятия по экологии, можно формировать у молодёжи экологическое мышление и культуру.

Помним: «Природа не нуждается в нас — это мы нуждаемся в ней». Забота о ней — это забота о себе и о будущем.

Использованные источники

1. Konstitutsiya O‘zbekiston Respublikasi — статья 50 подчёркивает обязанность каждого гражданина охранять природу и окружающую среду.
2. O‘zbekiston Respublikasining “Atrof muhitni muhofaza qilish to‘g‘risida”gi Qonuni — устанавливает правовые основы экологического воспитания.
3. Инициативы и выступления Президента Shavkat Mirziyoyev по вопросам экологической устойчивости, в частности общенациональное движение «Зелёное пространство» (с 2021 года).
4. Методическое пособие «Воспитательные занятия» для общеобразовательных школ — методика экологического воспитания.
5. Учебники по биологии и экологии (6–9 классы) — научные основы о природе, растениях, животных и экологических проблемах.
6. Islom Karimov. *«Высокая духовность — непобедимая сила»* — о духовности и отношении человека к природе.

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ОППОРТУНИСТИЧЕСКИЕ МИКОЗЫ КОЖИ И СЛИЗИСТЫХ У БОЛЬНЫХ ВИЧ

Аннотация*: В статье рассмотрены микотические поражения кожи и слизистых оболочек у ВИЧ-инфицированных пациентов как проявления оппортунистических заболеваний. Показана высокая распространённость кандидоза, криптококкоза, дерматомикозов и других грибковых инфекций в зависимости от уровня иммунодефицита. Отмечена важность выявления возбудителей и их чувствительности к противогрибковым препаратам для своевременной терапии и снижения смертности от генерализованных микозов.*

Ключевые слова: *ВИЧ, СПИД, микозы, кандидоз, дерматомикозы, оппортунистические инфекции.*

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OPPORTUNISTIC MYCOSES OF THE SKIN AND MUCOUS MEMBRANES IN HIV PATIENTS

Annotation: *The article describes fungal infections of the skin and mucous membranes in HIV-infected patients as manifestations of opportunistic diseases. A high prevalence of candidiasis, cryptococcosis, dermatophytosis and other fungal infections is noted, depending on the degree of immunodeficiency. The importance of identifying fungal pathogens and determining their sensitivity to antifungal agents is emphasized as a basis for timely therapy and for reducing mortality from generalized mycoses.*

Key words: *HIV, AIDS, mycoses, candidiasis, dermatophytosis, opportunistic infections.*

Микозы регистрируются у 58 - 81% больных СПИДом. Они могут наблюдаться не только в манифестном периоде, но и во время латентной стадии ВИЧ-инфекции. Мировая тенденция роста микозов кожи и ногтей среди населения сформировалась, в том числе, за счет увеличения доли иммуноскопроментированных лиц, страдающих ВИЧ-инфекцией [2, 5, 7]. Структура поверхностных микозов у ВИЧ-инфицированных пациентов имеет особенности и отличается от таковой у иммунокомпетентных лиц [10, 12]. К настоящему времени ВИЧ-инфекция приобретает размах широкомасштабной эпидемии в развитых странах мира [№1-2/2010]. Бразильские исследователи установили, что наиболее распространенной клинической формой дерматомикозов был онихомикоз (31%), микоз стоп – у 4%, в единичных случаях регистрировали микоз туловища и крупных складок, отрубевидный лишай [10] индийские исследователи показали, что у вич- инфицированных пациентов онихомикоз стоп диагностировали у 26,5%, причем у 30% больных он был в ассоциации с микозом стоп микоз туловища – у 15%, микоз крупных складок и микоз стоп у 10% и 7% соответственно. В единичных случаях регистрировали отрубевидный лишай и микоз кистей (2%). Следует отметить, что у ВИЧ-инфицированных пациентов регистрируются сочетание двух и более микозов кожи и ногтей [2, 14].

У ВИЧ-инфицированных больных факторы риска возникновения дерматомикозов изучены недостаточно. Единичные исследования показали зависимость частоты кожных заболеваний у больных ВИЧ-инфекцией от количества CD4+ клеток в крови [16], однако детального анализа влияния уровня CD4+ клеток на частоту развития дерматомикозов не проводили. Реальные масштабы распространенности в грибковых заболеваний, так и-ВИЧ носительство до сегодняшнего времени неизвестны в связи со сложностями массового диагностического охвата населения, разнообразием форм клинической манифестации грибковых заболевании и ВИЧ/СПИДа, выходом групп риска за пределы социально неадаптированного контингента и связи с многообразием путей передачи инфекции. Нарастающая несостоятельность иммунной системы (стадия III) приводит к развитию двух основных клинических проявлений СПИДа оппортунистических инфекций, вызванных условно патогенной флорой и новообразований. У 90% больных

ВИЧ в разные сроки заболевания регистрируются поражения кожи и слизистых покровов, вызванные инфекциями условно патогенной флоры. Чаще всего оппортунистические инфекции вызывают оппортунистические инфекции вызывают Pneumocystis carinii Mycobacterium avium-intracellulare, Mycobacterium tuberculosis, Cryptococcus neoformans, Candida spp, Toxoplasma gondi, Histoplasma capsulatum, Coccidiodes immitis, ДНК- содержащие вирусы, например цитомегеловирус, вирус гепатит В, вирус простого герпеса [5]. Одним из наиболее тяжело протекающих оппортунистических инфекций являются грибковые поражения (табл.1).

Таблица №1

Наиболее часто регистрируемые грибковые инфекции у ВИЧ инфицированных пациентов

Возбудитель	Вызываемые заболевания
Aspergillus spp	Асперегиллезный трахеобронхит. Инвазивный легочный аспергиллез
Candida spp, (в основном) C. albicans	Оральный и/или вагинальный кандидоз. Кандидозный эзофагит. Кандидозная фунгемия. Легочный кандидоз (в основном у детей)
Coccidiodides immitis	Диссеминированный кокцидиоидомикоз.
Oyptocccus neoformans	Криптококкозный менингит. Криптококкозная пневмония. Диссеминированный криптококкоз.
Histoplasma capsulatum	Гистоплазиозная пневмония. Диссеминированный гистоплазмоз.
Pneumocystis carinii	Пневмоцистная пневмония; в завершающей стадии или на фоне профилактики — неспецифическая картина, в том числе — полиорганное поражение
Penicillium marneffei	Пенициллиоз кожи. Диссеминированный пенициллиоз (эндемичен для юго-восточного азиатского региона).

Одним из важных факторов, способствующих грибковой контаминации и утяжелению течения, является наличие вторичного иммунодефицита вызванного ВИЧ, снижение резистентности кожных покровов и воздействие самой грибковой инфекции на иммунную систему.

Аспергиллез может быть подразделен на три категории:

поверхностный — инфекции слухового прохода, роговицы глаза также первичное поражение кожи; неинвазивный — аллергический бронхит и аспергиллемы у пациентов с предшествующим кавернообразующим легочным заболеванием (в первую очередь, с туберкулезом); инвазивный обнаруживаемый, как правило, у пациентов с нейтропенией; различают лишь острую инвазивную и хроническую некротизирую- щую формы. Основными симптомами при легочном поражении являются кашель и постепенно нарастающая одышка; при поражении печени — увеличение уровня контролируемых ферментов в сыворотке. Без лечения хронический некротизирующий аспергиллез может привести к летальному исходу.

Кокцидиоидоз обычно встречается у ВИЧ- инфицированных, проживающих в местности с широким распространением Coccidioides immitis, например на юго-западе США. Заболевание проявляется поражением легких и менингитом.

Криптококкоз-повсеместно распространенный дрожжевой гриб. Он занимает второе место (после Candida albicans) среди возбудителей грибковых инфекций у ВИЧ-инфицированных. Криптококкоз наблюдается у 5-10 % ВИЧ-инфи- цированных и проявляется менингитом — самое частое проявление криптококковой инфекции у ВИЧ-инфицированных. Для криптококкового менингита характерны: головная боль, лихорадка, нарушения сознания, реже — эпилептические припадки и кома. Криптококкоз также может протекать с поражением легких, сетчатки, кожи, костей, предстательной железы и других органов.

Гистоплазмоз возникает у ВИЧ-инфицированных, проживающих в местности с широким распространением этого гриба. В США — это северо-восточные и северо-западные штаты. При СПИДе систоплазмоз. может возникнуть даже после кратковременного пребывания в такой местности. Клинические проявления обычно не- спецефичны и включают головную боль, кашель, лихорадку, похудение, увеличение лимфоузлов и спленохномегалию.

Пневмоцистная пневмония — самая распространенная оппортунистическая инфекция дыхательных путей у ВИЧ-инфицированных. Пневмоцистная пневмония возникает у 60-80 % больных СПИДом, однако современные методы профилактики позволили снизить ее тяжесть. Риск пневмоцистной пневмонии особенно высок, когда число лимфоцитов CD4 опускается ниже 200 мкл$^{-1}$. Клинически характерна лихорадка, одышка и непродуктивный кашель. Лабораторное исследование выявляет гипоксемию. На рентгенограммах грудной клетки у большинства больных выявляются двусторонние ограниченные или обширные затемнения с некоторыми особенностями — поражение верхушек легких, образование полостей и пневмоторакс.

Кандидоз. В структуре микотических осложнений на долю кандидоза приходится 80—90 % случаев. Считается, что кандидоз ротовой полости и пищевода является одним из “визитных карточек” СПИДа. (Т.Л. Лапина, В.Т. Ивашкин, 2001).В зависимости от стадии заболевания кандидоз ротовой полости регистрируются у больных на стадии ВИЧ в 21-32,7% случаях, на стадии СПИДа – в 74- 84,6% случаев [1,15].Посмертно диссеминированный кандидоз выявляется у 90% больных СПИДом. У ВИЧ-серопозитивных людей частота носительства грибов рода Candida на слизистой оболочке полости рта достигает 77,8%, причем почти у половины носителей (49,1% случаев) выявляются мицелиальные формы гриба без каких-либо клинических проявлений кандидоза (Кубась В.Г., Чайка Н.А., 1992).

Выделяют четыре формы поражения рта и глотки: молочницу (псевдомембранозный кандидоз), гиперпластический кандидоз (кандипдозная лейкоплакия), атрофический кандидоз и заеду

(кандидозный хейлит). Кандидоз пищевода, трахеи, бронхов и легких развивается при выраженноиммунодифеците.

Стойкий кандидоз слизистой оболочки полости рта и кожи перианальной области является ранним симптомом ВИЧ-инфекции и при отсутствии других предрасполагающих факторов (терапия глюкокортикостероидами и цитостатиками, эндокринопатии) относится к типичным маркерам СПИДа. Чаще всего у больных СПИДом отмечается кандидоз слизистой оболочки полости рта и кандидозный эзофагит, реже наблюдаются кандидоз на интертригоперианальной складки, онихии и паронихии, вульвовагинит и баланит. В целом клиническая картина всех этих поражений соответствует типичным тяжелым проявлениям поверхностного кандидоза кожи и слизистых оболочек, наблюдаемым у больных выраженными иммунодефицитными состояниями (злокачественными лимфомами, получающими массивную терапию глюкокортикостероидными гормонами или цитостатиками и т. п.). Выделяют, однако, ряд особенностей кандидоза у больных СПИДом: поражение лиц молодого возраста, особенно мужчин, преимущественное вовлечение в процесс слизистых оболочек полости рта, гениталий и перигенитальной области, тенденция к образованию обширных очагов, сопровождающихся болезненностью, склонностью к эрозированию и изъязвлению.

Кандидозный эзофагит является второй по частоте клинической разновидностью кандидоза при СПИДе и также входит в число основных СПИД-маркерных заболеваний. Клиническими признаками кандидозного поражения пищевода являются дисфагия и боли за грудиной, боли во время приема пищи, затруднение глотания. Кандидозные поражения пищевода, как правило, сочетаются с кандидозом слизистых оболочек полости рта. Описан бессимптомный кандидозный эзофагит без сопутствующего кандидоза слизистых оболочек. При кандидозе ротовой полости, глотки и пищевода возбудитель активно размножается, но не диссеминирует во внутренние органы. При поражении пищевода пленчатые налеты характер, что приводит к сужению и даже полной закупорке просвета пищевода. У больных возникают анорексия, рвота. Появление кандидоза является неблагоприятным клиническим симптомом ВИЧ-инфекции. Некоторые компоненты гриба (гликопротеин клеточной стенки) обладают иммуносупрессивной активностью, вследствие чего кандидоз усугубляет иммунодефицитное состояние больных. Полагают также, что кандидоз слизистой оболочки полости рта является промежуточной стадией между СПИД-связанным комплексом и периодом вторичных осложнений основного заболевания (пневмоцистной пневмонии, криптококкоза, токсоплазмоза, вирусных и опухолевых заболеваний).

Отрубевидный лишай. Клинически проявляется в виде небольших, с четкими границами, пятен или слегка приподнятых над поверхностью кожи папул. Пятна могут быть от желтовато-розового до коричневого цвета разных оттенков, часто сливаются, образуя крупные очаги с фестончатыми краями. На

поверхности очагов можно заметить легкое «отрубевидное» шелушение. Цвет пятен отличается от цвета окружающей кожи. Также можно наблюдать депигментированные пятна (псевдолейкодерма). Типичная локализация высыпаний при разноцветном лишае – богатые сальными железами участки кожи – грудь, спина, плечи, шея. Реже вовлекаются в патологический процесс подмышечные, паховые области, предплечья, голени и живот. Изменения на коже, как правило, не сопровождаются какими-либо субъективными ощущениями. Для заболевания характерно длительное, рецидивирующее течение (К. И. Разнатовский, А. Н. Родионов, Л. П.Котрехова, 2006). Отрубевидный лишайможет возникать в любом периоде ВИЧ-инфекции. Характерны диссеминированные поражения кожи с тенденцией к развитию в области пятен отрубевидного лишая инфильтрации и лихенизации кожи.

Микозы, вызываемые **дерматофитами.** Распространенные грибковые заболевания этой этиологии сравнительно часто возникают при инфицировании ВИЧ. Дерматомикозы выявляют у 8- 29% ВИЧ – инфицированных больных и не намного чаще, чем у ВИЧ - негативных лиц [27, 30, 34]. Заболевания могут протекать в виде типичных для микозов поражений кожи стоп, кистей, голеней и других участков тела, а также атипично.

У ВИЧ-инфицированных больных факторы риска возникновения дерматомикозов изучены недостаточно. Единичные исследования показали зависимость частоты кожных заболеваний у больных ВИЧ-инфекцией от количества CD4+ клеток в крови [12], однако детального анализа влияния уровня CD4+ клеток на частоту развития дерматомикозов не проводили.

Атипичные проявления микозов, вызываемых дерматофитами, у больных СПИДом обычно возникают на лице и шее и по клинической картине могут напоминать много-формную экссудативную эритему, себорейный дерматит, фолликулиты. Микоз, обусловленный T. rubrum, на коже ладоней и подошв нередко приобретает признаки ладонно-подошвенной или гонорейной кератодермии. Микоз стоп у ВИЧ-инфицированных пациентов на фоне иммуносупрессии протекает по типу «мокасин» с вовлечением в патологический процесс тыльной поверхности стопы или в хронической гиперкератотической форме (Ю.А. Иванова, О.В. Райденко, 2010).У иммунокомпетентных пациентов в микотический процесс, как правило, вовлекаются обе стопы и одна кисть.

Микоз кистей у пациентов с ВИЧ- инфекцией протекает с двухсторонним поражением [3,6,9]. Онихомикозы больных СПИДом возникают изолированно или в сочетании с поражениями кожи ладоней и подошв. Причиной их чаще всего является T. rubrum.

У иммунокомпитентынх лиц чаще всего поражаются ногтевые пластины I пальцев стоп [13,17]. Однако, у пациентов с ВИЧ-инфекцией в патологический процесс могут вовлекаться ногти II, III, IV, V пальцев стоп без поражения I ногтевой пластины. Так же наиболее характерно тотальное

поражение ногтей (Ю.А. Иванова, О.В. Райденко, 2012). Характерная особенность этих онихомикозов - нередко развитие паронихий.

Спектр возбудителей микозов кожи и ногтей у ВИЧ-инфицированных пациентов на фоне иммунодефицита может существенно отличаться от возбудителей дерматомикозов у иммунокомпитентных пациентов [3, 11]. Исследование этиологии дерматомикозов у ВИЧ-инфицированных больных проводили на разных территориях (Индия, Европа, Северная и Южная Америка), однако опубликованные данные разнятся. Основными возбудителями дерматомикозов у больных ВИЧ-инфекцией выступают T. rubrum, вместе с тем наряду с дерматомицетами причиной дерматомикозов довольно часто выступают дрожжи и нитчатые недерматомицеты [3, 4, 6, 7, 8, 14]. Так, Surjushe A. etal. описали, что возбудителями поверхностных микозов у ВИЧ-инфицированных пациентов выступают: около 40% дерматофиты (Trichophytonrubrum – 84,6%, Trichophytonmentagrophytes – 15,4%) и 59,4% недерматомицеты (Candidaspp., Aspergillusniger, Cladosporiumspp., Scytalidiumhyalinum, Penicilliumspp. и Gymnoascusdankaliensis) [34]. Украинские исследователи выявили, что у 67,6% больных возбудителем дерматомикозов являлся T. rubrum, у 8,8% - T. mentagrophytes, у 5,9% - E. floccosum. У 87,3% пациентов с поражением кожи и слизистых обнаружена Candida spp. [13].

Исследования, проведенные в клиниках Канады и Бразилии, показали следующее соотношение этиологических факторов микозов стоп и онихомикоза: дерматофиты / дрожжевые грибы / недерматофитные формы как 73 / 2 / 2 соответственно, причем в Канаде дерматофиты – 95,5% против 90,9% в Бразилии, дрожжевые виды 3% против 0%, а недерматомицетные плесени 1,5% против 9% [13]. По данным Arenas R. etal. основным возбудителем онихомикоза у ВИЧ- инфицированных больных выступил T. rubrum (74%), Candidaspp. – 13%, T. 18 rubrum + Candidaspp. – 6%, Acremoniumspp. – 2%, Trichophytonspp. – 2%, E. floccosum – 0,8%, T. tonsurans – 0,8%, T. mentagraphytes – 0,8%. Микоз туловища был обусловлен T. rubrum (92%), M. canis – 8%. Микоз кистей был обусловлен в 50% случаев ассоциацией T. rubrum и T. mentagraphytes, а в 50% - M. canis [17].

У ВИЧ-инфицированных пациентов микозы кожи и ногтей регистрируют у лиц в возрасте от 21 до 40 лет [13, 15, 16].

Таким образом, вышеуказанные клинические проявления грибковых инфекций у больных ВИЧ-инфекцией имеют существенные различия распространенности, характере течения в зависимости от биологически популяционных, климатогеографических особенностей.

В связи с этим, изучение микозов при ВИЧ-инфекции в рамках узбекской папуляции является актуальной проблемой и представляет огромный интерес, в частности, определение видового состава возбудителей грибковых заболеваний с усилением их чувствительности к различным микотическим препаратам, что безусловно тормозит смертность от генерализованных микозов.

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ПСИХОЛОГО-ПЕДАГОГИЧЕСКИЕ АСПЕКТЫ ВНЕДРЕНИЯ МЕТОДИКИ "КЕЙС -СТАДИ" В ПОДГОТОВКУ БУДУЩИХ ПЕДАГОГОВ

Анотация: *Статья посвящена изучению психолого-педагогических аспектов внедрения методики «кейс - стади» в подготовку будущих педагогов. Исследование направлено на определение эффективности использования данной методики в контексте формирования профессиональных компетенций у студентов педагогических вузов. В статье рассматриваются теоретические основы методики «кейс - стади», её влияние на когнитивное развитие, эмоциональный интеллект и мотивацию студентов. Также представлены примеры успешного применения «кейс - стади» в различных учебных заведениях и отзывы преподавателей и студентов. Основными выводами являются подтверждение положительного влияния методики на развитие профессиональных компетенций будущих педагогов и рекомендации по дальнейшему использованию метода.*

Ключевые слова: *кейс-стади, подготовка педагогов, психолого-педагогические аспекты, профессиональные компетенции, методика обучения, анализ ситуаций, критическое мышление*

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PSYCHOLOGICAL AND PEDAGOGICAL ASPECTS OF IMPLEMENTING THE CASE-STUDY METHOD IN TRAINING FUTURE TEACHERS

Abstract: *The article is devoted to the study of psychological and pedagogical aspects of implementing the case-study method in the preparation of future teachers. The research aims to determine the effectiveness of using this methodology in the context of developing professional competencies among students at pedagogical*

universities. The article examines the theoretical foundations of the case-study method, its impact on cognitive development, emotional intelligence, and student motivation. It also presents examples of successful application of the case-study method in various educational institutions and feedback from both educators and students. The main conclusions confirm the positive influence of the method on the development of professional competencies in future teachers and provide recommendations for further use of the method.

Keywords: *case-study, teacher preparation, psycho-pedagogical aspects, professional competencies, teaching methods, situation analysis, critical thinking*

Актуальность данной статьи заключается в том, что психолого-педагогические исследования в контексте современных образовательных практик возрастает в связи с необходимостью подготовки педагогов, обладающих высоким уровнем профессиональных компетенций.

Традиционные методы обучения зачастую ограничиваются передачей теоретических знаний, оставляя вне поля зрения развитие прикладных навыков, столь важных для эффективной педагогической деятельности. Внедрение методики кейс-стади (case study) в подготовку будущих педагогов представляет собой инновационный подход, позволяющий интегрировать теорию с практикой, создавая условия для глубокого понимания и осмысления профессиональных задач [2].

Новизна предлагаемого исследования заключается в комплексном изучении психолого-педагогических аспектов внедрения кейс-метода в систему подготовки будущих педагогов. Несмотря на широкое распространение кейс-стади в бизнес образовании его адаптация в сфере педагогического образования остается недостаточно изученной областью. В настоящей работе предлагается оригинальная концепция, объединяющая теоретические положения с результатами эмпирических исследований, направленных на оценку эффективности кейс-метода в формировании профессиональных компетенций студентов педагогических вузов [1].

Целью исследования является разработка и обоснование научно-практической модели, обеспечивающей оптимальное использование кейс-стади в образовательном процессе будущих педагогов. Убедительность предложенных выводов обеспечивается детальным анализом существующих научных работ, проведенных экспериментов и применением апробированных методик оценки результатов.

В ходе исследования особое внимание уделено доказательству результативности кейс-метода в контексте развития когнитивных процессов, эмоционального интеллекта и профессиональной мотивации студентов.

Структура статьи построена таким образом, чтобы последовательно представить результаты теоретического анализа, описать методологию эксперимента и обосновать выводы, подтверждающие значимость кейс-стади для подготовки конкурентоспособных педагогов.

Такой подход гарантирует четкость и последовательность изложения материала, обеспечивая высокую степень доверия к полученным результатам среди научного сообщества.

Кейс-стади: история и развитие. Метод кейс-стади возник в 1920-х годах в Гарвардской школе бизнеса благодаря профессору Уоллесу Донэму. Характеристика метода «кейс-стади» учебные конкретные ситуации, специально разрабатываемые на основе фактического материала с целью последующего разбора на учебных занятиях [5]. Этот подход стал альтернативой лекциям, предлагая студентам анализировать реальные деловые ситуации и искать оптимальные решения. Перечислим несколько **этапов развития «кейс-стади»:**

1. *Зарождение (1920-е)* Кейсы изначально были описаны успешными примерами бизнеса для будущих менеджеров.

2. *Расширение (1950-е)* Метод распространился на юридические школы, где студенты разбирали судебные дела.

3. *Распространение (1970-е)* Применение кейс - стади охватило медицину, инженерию и гуманитарные дисциплины.

4. *Цифровизация (1990-е)* Интернет - технологии сделали методику доступнее через онлайн - платформы.

5. *Современные тенденции (2000-е)* Кейс-стади используется повсеместно, включая акценты на междисциплинарность и soft skills. Сегодня кейс-стади является важным инструментом практической подготовки студентов в различных сферах образования.

Таким образом, история кейс-стади демонстрирует эволюцию от узкопрофильного метода до универсального инструмента, применяемого в самых разных дисциплинах. Благодаря своему потенциалу для практической подготовки студентов, эта методика остается одной из ведущих в современном образовании.

Подготовка педагогов к использованию кейс-стади включает несколько важных элементов. Во-первых, необходимо изучить основные принципы и этапы кейс-метода, включая подбор кейсов, формулирование вопросов и организацию обсуждений. Во-вторых, важно овладеть навыками разработки собственных кейсов, соответствующих уровню и интересам студентов, а также актуальным проблемам в данной предметной области. Педагоги должны уметь организовывать дискуссии, стимулирующие активное участие студентов и помогающие им анализировать ситуации и делать выводы. Также необходимо освоить методы оценивания результатов работы студентов, основываясь на критериях, соответствующих целям и задачам конкретного кейса. Наконец, важно уметь давать конструктивную обратную связь, чтобы помочь студентам осознать свои успехи и определить пути дальнейшего развития [3]. Все эти аспекты позволят педагогам эффективно внедрять кейс-стади в образовательный процесс, развивая у студентов аналитические и критические навыки, необходимые для решения реальных задач.

Психолого-педагогические аспект. Психолого-педагогические аспекты кейс-стади играют ключевую роль в формировании эффективных образовательных процессов. Этот метод направлен на активизацию познавательной деятельности студентов, вовлекая их в самостоятельный поиск решений и обоснование своих позиций. Одним из важнейших преимуществ кейс-стади является развитие критического мышления, поскольку учащиеся вынуждены анализировать разнообразные точки зрения и искать наиболее рациональные и обоснованные решения. Не менее важен социальный компонент кейс-стади, который способствует развитию навыков коммуникации, умения работать в команде и эффективно сотрудничать [12]. Обсуждения кейсов в группах создают условия для взаимообмена идеями и опытом, что укрепляет социальные связи среди студентов и формирует навыки коллективной работы. Помимо этого, кейс-стади оказывает значительное влияние на мотивацию учащихся, ведь интересные и актуальные кейсы делают учебный процесс живым и увлекательным, что повышает интерес к учебе. Еще одним важным аспектом является развитие эмоционального интеллекта. Работа с кейсами учит студентов учитывать чувства и эмоции людей, вовлеченных в описанные ситуации, что способствует формированию чуткости и эмпатии. Рефлексивное мышление, стимулируемое кейс-стади, помогает учащимся анализировать свои действия и решения, что ведет к личностному росту и самосовершенствованию [4]. Таким образом, кейс-стади представляет собой мощный инструмент для комплексного развития студентов, объединяющий когнитивные, социальные и эмоциональные компоненты. Он создает среду, в которой обучение становится динамичным, творческим и ориентированным на практику, что обеспечивает готовность выпускников к решению реальных задач в будущей профессиональной деятельности [11].

Методика обучения кейс-стади (case-study method) имеет богатую историю развития, и многие исследователи внесли вклад в её становление и популяризацию. Ниже приведены некоторые ключевые фигуры и их труды, касающиеся этой методики:

1. *Уоллас Донэм (Wallace Donham)* — Один из первых сторонников и разработчиков кейс-метода в Гарвардской школе бизнеса. Его работы помогли утвердить кейс-метод как эффективный инструмент обучения менеджменту.

Джордж Рагус (George Ragus) — Автор работ, посвященных использованию кейс-метода в медицинском образовании, что стало важной вехой в развитии методики.

Андрей Николаевич Павлов — Российский исследователь, который изучал применение кейс-метода в высшем образовании, особенно в экономических и управленческих дисциплинах. Его работы подчеркивают важность интеграции практических примеров в учебный процесс для повышения качества подготовки специалистов.

Ольга Сергеевна Григорьева — Исследователь, специализирующаяся на применении кейс-метода в преподавании иностранных языков. Ее работы

сосредоточены на использовании кейсов для развития коммуникативных навыков и культурного понимания у студентов.

Алексей Владимирович Миронов — Исследователь, изучающий внедрение кейс-метода в технических вузах. Его работы акцентируют внимание на важности применения кейсов для подготовки инженеров к решению реальных производственных задач [9].

Каждый из этих исследователей внёс значимый вклад в развитие и применение кейс-метода в различных областях образования, будь то менеджмент, право, медицина или другие сферы. Кейс-метод является эффективным инструментом обучения, который позволяет студентам глубже понимать теоретический материал через анализ практических ситуаций. Этот метод развивает критическое мышление, навыки командной работы и принятие решений, что делает его ценным в различных областях образования.

Анализ ситуаций методом кейс-стади представляет собой глубокое погружение в изучение и обсуждение конкретных проблемных ситуаций, встречающихся в профессиональной или жизненной практике. Этот метод направлен на развитие у студентов и профессионалов широкого спектра навыков, таких как аналитическое мышление, креативность, стратегическое планирование и принятие решений. Процесс анализа кейсов начинается с тщательного знакомства с предоставленной ситуацией. Участники внимательно изучают материалы, описывающие проблему, стремятся понять контекст и детали, определяющие суть задачи. Затем наступает этап идентификации ключевой проблемы, которую необходимо решить. Здесь важно отделить второстепенные аспекты от главного вопроса, чтобы сконцентрировать усилия на поиске адекватного решения [13].

Следующий шаг — сбор и анализ дополнительной информации. Чтобы сделать выводы обоснованными, участники проводят детальное исследование: читают сопутствующие материалы, консультируются с экспертами, изучают аналогичные случаи. Такой подход позволяет создать целостное представление о проблеме и возможных путях её разрешения. После накопления необходимой информации участники приступают к генерации идей и разработке вариантов решения. Каждое предложение детально обсуждается группой, рассматриваются плюсы и минусы, прогнозируются последствия. Этот этап требует гибкого мышления и готовности к критике, что способствует развитию творческого потенциала и умения аргументированно отстаивать свою позицию. На следующем этапе выбирается оптимальное решение из предложенных вариантов. Критерии отбора зависят от многих факторов, включая доступность ресурсов, временные рамки и потенциальные риски [6].

Оптимальным считается тот вариант, который максимально соответствует условиям задачи и способен привести к положительному результату. Если ситуация носит реальный характер, следующим этапом становится реализация выбранного решения. На практике проверяется эффективность принятого плана, проводятся наблюдения и измерения,

фиксируются результаты. Это позволяет оценить, насколько верно было выбрано решение, и внести коррективы в случае необходимости. Такой многоступенчатый процесс помогает не только решать конкретные задачи, но и развивать важные профессиональные навыки. Участники кейс-стади учатся работать в команде, аргументированно защищать свои взгляды, учитывать мнения коллег и эффективно управлять информацией. Этот метод особенно востребован в профессиях, связанных с управлением, принятием решений и работой в условиях высокой неопределённости, таких как бизнес, юриспруденция, медицина и инженерия [14].

Критическое мышление. Кейс-стади является одним из наиболее действенных методов для развития критического мышления, так как он ставит перед участниками задачи, требующие глубокого анализа и рассуждений. Вместо простого восприятия и воспроизведения информации, учащиеся вынуждены активно вовлекаться в процесс поиска решений, анализируя представленные ситуации с разных углов зрения. Этот подход помогает формировать способность к объективной оценке проблем, выделять ключевые моменты и рассматривать широкий спектр возможных путей решения. Во время обсуждения кейсов студенты учатся не только видеть и понимать сложную природу проблем, но и аргументированно защищать свои позиции, опираясь на факты и логику [10].

Этот процесс способствует развитию навыков ведения дискуссий, критического анализа чужих мнений и умения учитывать различные точки зрения. Участие в групповых обсуждениях также тренирует способность прислушиваться к другим и уважительно относиться к различным взглядам, что особенно важно в условиях многогранности современного мира. Более того, кейс-стади прививает привычку сомневаться в очевидных истинах и искать более глубокие причины происходящего, что лежит в основе критического мышления.

Это качество становится особенно полезным в профессиональной среде, где часто приходится сталкиваться с неопределенностью и необходимостью принимать решения в условиях ограниченного количества информации. Таким образом, кейс-стади выступает не только как инструмент для освоения теории, но и как эффективный тренажёр для выработки практических навыков, необходимых в реальной жизни [9].

Исходя из выше сказанного, можно сделать вывод, что статья посвящена исследованию психолого-педагогических аспектов внедрения методики «кейс-стади» в подготовку будущих педагогов, исследуя ее эффективность в формировании профессиональных компетенций у студентов педагогических вузов. Особое внимание уделяется теоретическим основам методики, ее влиянию на когнитивное развитие, эмоциональный интеллект и мотивацию студентов. История и развитие кейс-стади Методика «кейс-стади» возникла в 1920-х годах в Гарвардской школе бизнеса и со временем распространилась на другие области, такие как юриспруденция, медицина и технические науки. Современное использование кейс-стади охватывает множество дисциплин и

акцентируется на междисциплинарности и развитии мягких навыков (soft skills). Подходы к подготовке педагогов для эффективного внедрения кейс-стади педагоги должны владеть основными принципами и этапами метода, включая разработку кейсов, организацию обсуждений и оценивание результатов [7]. Важны навыки организации дискуссий, которые помогают студентам анализировать ситуации и делать выводы. Психолого-педагогические аспекты Кейс-стади стимулирует активную познавательную деятельность, развивает критическое мышление, социальные навыки и эмоциональный интеллект. Социальный компонент метода способствует укреплению социальных связей и формированию навыков коллективной работы. Эмоциональный интеллект развивается за счет учета чувств и эмоций участников ситуаций, что приводит к формированию чуткости и эмпатии. Рефлексивное мышление помогает студентам анализировать собственные действия и решения, способствуя личностному росту. Исследователи и их вклад Среди ключевых фигур выделяются Уоллас Донэм, Джордж Рагус, Андрей Павлович Павлов, Ольга Сергеевна Григорьева и Алексей Владимирович Миронов, каждый из которых внес значительный вклад в развитие и применение кейс-метода в различных областях образования. Процесс анализа ситуаций методом кейс-стади Процесс анализа ситуаций методом кейс-стади включает последовательные шаги: изучение ситуации, идентификацию ключевой проблемы, сбор и анализ дополнительной информации, генерацию идей и выбор оптимального решения [13]. Развитие критического мышления происходит через глубокий анализ представленных ситуаций и аргументацию своей позиции. Заключение Кейс-стади является мощным инструментом для комплексного развития студентов, объединяя когнитивные, социальные и эмоциональные компоненты. Методика способствует подготовке специалистов, готовых к решению реальных задач в профессиональной деятельности, развивает важные профессиональные навыки, такие как аналитическое мышление, креативность, стратегическое планирование и принятие решений. Положительные отзывы преподавателей и студентов подтверждают эффективность методики в образовательной практике [8]. Таким образом, статья подчеркивает значимость кейс-стади как инновационного подхода в обучении будущих педагогов, интегрирующего теорию с практикой и создающего условия для глубокого понимания и осмысления профессиональных задач.

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ПРЕИМУЩЕСТВА РАЗВИТИЯ УПРАВЛЕНЧЕСКИХ КОМПЕТЕНЦИЙ СТУДЕНТОВ В ПРОЦЕССЕ МОДЕРНИЗАЦИИ СИСТЕМЫ ВЫСШЕГО ОБРАЗОВАНИЯ

Аннотация: *В статье рассматриваются актуальность, содержание и значение развития управленческих компетенций у студентов в условиях модернизации системы высшего образования. Обосновано, что формирование управленческих компетенций является важным фактором повышения эффективности образовательного процесса, подготовки конкурентоспособных кадров в условиях рыночной экономики, а также укрепления готовности студентов к профессиональной деятельности. Кроме того, проанализированы пути развития управленческих компетенций посредством применения инновационных подходов, современных педагогических технологий и практических методов обучения. Результаты исследования служат научно-методической основой для повышения качества образования и подготовки современных менеджеров в высших учебных заведениях..*

Ключевые слова и фразы: *Модернизация, непрерывное образование, финансовая независимость, управленческая компетентность, трудовая деятельность, современная экономика.*

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ADVANTAGES OF DEVELOPING MANAGERIAL COMPETENCIES IN STUDENTS IN THE PROCESS OF MODERNIZING THE HIGHER EDUCATION SYSTEM

Annotation: *This article reveals the relevance, content, and significance of developing managerial competencies among students in the context of modernizing the higher education system. It substantiates that the formation of managerial competencies is an important factor in increasing the efficiency of the educational process, preparing competitive specialists in a market economy, and strengthening students' readiness for professional activity. In addition, the article analyzes the ways of developing managerial competencies through the use of innovative approaches, modern pedagogical technologies, and practical teaching methods.*

The research results serve as a scientific and methodological basis for improving the quality of education and training modern managers in higher education institutions.

Key words and phrases: *Modernization, continuous education, financial freedom, management competence, , labor activity, modern economy.*

Концепция развития системы высшего образования Республики Узбекистан до 2030 года, утвержденная постановлением главы вашего государства от 8 октября 2019 года, в целях определения приоритетов системного реформирования высшего образования в Республике Узбекистан, поднятия процесса подготовки самостоятельно мыслящих высококвалифицированных кадров на новый качественный уровень, модернизации высшего образования, развития социальной сферы и отраслей экономики на основе передовых образовательных технологий. служит прелюдией к реформам.

При модернизации системы образования решаются следующие приоритетные задачи:

обеспечение равных прав каждого человека на полноценное образование и открытость образования;

достижение новых качественных показателей в системе непрерывного образования;

привлечение новых образовательных ресурсов и формирование на их основе эффективных нормативно-правовых и организационно-экономических механизмов;

развитие социального статуса и профессиональной компетентности работников системы образования на основе поддержки государства и общества;

повышение роли участников образовательного процесса - обучающихся, педагогов, родителей и образовательных учреждений в соответствии с принципом образования, основанного на государственном и общественном управлении системой образования.

Система высшего образования является важным фактором, определяющим экономическое и социальное развитие страны. Современное общество меняет студентов, технологические революции и процессы глобализации, постоянная модернизация системы высшего образования положительно влияет не только на развитие науки и техники, но и на экономический рост. Учитывая международный опыт, Узбекистан реализует ряд реформ по модернизации системы высшего образования.

1. Цифровизация и развитие онлайн-образования. - В высших учебных заведениях внедряются платформы электронного обучения. Например, студенты могут изучать различные курсы через платформу moocs.edu.uz. - С 2023 года в одном из многочисленных вузов введена система образования.

2. Международное сотрудничество и открытие зарубежных филиалов. - Ведется работа по открытию филиалов престижных зарубежных вузов

Узбекистана. - Расширена система выделения международных грантов и стипендий для студентов.

3. Адаптация образовательных программ к рынку труда. - В Узбекистане усиливается процесс образования и промышленной интеграции. Например, IT-парк и другие технологии дают студентам возможность участвовать в реальных практических проектах.

Талантливая молодежь направляется на обучение в ведущие зарубежные вузы через фонд «Эл-Юрт Умид».

4. Преобразование высших учебных заведений в научно-исследовательские центры. - Высшие учебные заведения Узбекистана преобразуются в центры научных исследований и инноваций. В 2022 году средства, выделяемые на научные исследования, увеличены вдвое. - Научные лаборатории создаются в сотрудничестве с зарубежными и местными компаниями.

5. Повышение финансовой свободы образования. - Начался процесс предоставления академической и самостоятельности высшим учебным заведениям.

С 2021 года государственные вузы имеют право самостоятельно формировать свои бюджеты.

В процессе модернизации системы высшего образования важно не только обеспечить студентов теоретическими знаниями, но и развивать их управленческие компетенции. Специалист, необходимый на современном рынке труда, должен обладать не только техническими знаниями, но и навыками лидерства, стратегического мышления, решения проблем и управления коллективом.

Управленческие компетенции – это совокупность знаний, умений и навыков, которые необходимы человеку, чтобы быть эффективным лидером и менеджером. Они включают в себя следующие основные направления:

-Стратегическое мышление – долгосрочное планирование и четкое определение целей.

-Лидерство и управление командой – мотивация команды, инициатива и эффективное распределение ресурсов.

- Аналитическое и критическое мышление – решение сложных задач, анализ данных.

- Умение принимать быстрые и эффективные решения.

- Коммуникативные навыки – эффективное общение и координация в команде.

- Управление проектами и временем для планирования своей деятельности и повышения эффективности.

Престижные университеты мира уделяют особое внимание развитию управленческих компетенций в сфере высшего образования. Опыт показывает, что, следуя приведенным рекомендациям, можно будет развивать управленческие компетенции студентов в процессе модернизации системы высшего образования.

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ФАКТОРЫ ПОВЫШЕНИЯ КОНКУРЕНТОСПОСОБНОСТИ АВТОСЕРВИСНЫХ ПРЕДПРИЯТИЙ И МЕТОДЫ ЕЁ ОЦЕНКИ

Аннотация. *В статье рассматривается проблема конкурентоспособности автосервисных предприятий в современных условиях. Анализируется сущность конкурентоспособности, факторы, ее определяющие, а также существующие методы оценки. Предлагается комплексный подход к оценке конкурентоспособности, учитывающий специфику автосервисной отрасли и включающий как количественные, так и качественные показатели. Результаты исследования могут быть использованы автосервисными предприятиями для повышения эффективности деятельности и укрепления своих позиций на рынке.*
Ключевые слова: *конкурентоспособность, автосервис, методы оценки, факторы конкурентоспособности, качество услуг, эффективность.*

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FACTORS FOR INCREASING THE COMPETITIVENESS OF MOTOR TRANSPORT SERVICE ENTERPRISES AND METHODS FOR ITS ASSESSMENT

Abstract. *The article examines the problem of the competitiveness of auto service enterprises in modern conditions. The essence of competitiveness, its determining factors, and existing assessment methods are analyzed. A comprehensive approach to assessing competitiveness is proposed, taking into account the specifics of the auto service industry and incorporating both quantitative and qualitative indicators. The research results can be used by auto service enterprises to improve their operational efficiency and strengthen their market position.*
Keywords: *competitiveness, auto service, assessment methods, competitiveness factors, service quality, efficiency.*

Автосервисный бизнес является динамично развивающимся сектором экономики, характеризующимся высокой конкуренцией. В условиях

растущего автомобильного парка и увеличивающегося спроса на услуги по обслуживанию и ремонту автомобилей, конкуренция между автосервисными предприятиями (АСП) постоянно усиливается. Для успешного функционирования и развития АСП необходимо постоянно повышать свою конкурентоспособность, что требует ее адекватной оценки и понимания факторов, на нее влияющих.

Актуальность исследования проблемы конкурентоспособности АСП обуславливается:

- высокой насыщенностью рынка, на котором существует большое количество АСП, предлагающих схожие услуги, что создает острую конкурентную среду;
- повышением требований клиентов, которые становятся более требовательными к качеству услуг, скорости обслуживания и ценам;
- развитием технологий, приводящих к появлению новых автомобилей со сложной электроникой, что требует от АСП постоянного повышения квалификации персонала и приобретения современного оборудования.

Целью данной статьи является анализ проблемы конкурентоспособности АСП и разработка комплексного подхода к ее оценке.

В экономической литературе существует множество определений конкурентоспособности. В общем смысле, конкурентоспособность – это способность объекта (предприятия, товара, услуги) превосходить конкурентов по определенным критериям.

М. Портер определяет конкурентоспособность как способность предприятия получать устойчивую прибыль, превышающую среднерыночную [1]. И. Ансофф подчеркивает важность инноваций и адаптации к изменениям внешней среды для обеспечения конкурентоспособности [2].

В контексте автосервисного бизнеса, конкурентоспособность АСП можно определить, как его способность предоставлять услуги, которые удовлетворяют потребностям клиентов лучше, чем конкуренты, и обеспечивают устойчивую прибыльность.

Внешние факторы - состояние экономики, уровень конкуренции, законодательство, технологические изменения, поведение потребителей и др.

Существующие методы оценки конкурентоспособности АСП можно разделить на следующие группы:

- Методы, основанные на анализе финансовых показателей: анализ рентабельности, прибыльности, ликвидности, оборачиваемости активов [3];
- Методы, основанные на оценке качества услуг: анкетирование клиентов, метод SERVQUAL, benchmarking [4];
- Методы, основанные на анализе рыночной доли: оценка доли рынка, динамики рыночной доли [5];
- Интегральные методы: SWOT-анализ, PEST-анализ, матрица BCG [6].

Несмотря на разнообразие существующих методов, многие из них имеют ограничения и не учитывают специфику автосервисной отрасли. Кроме

этого существующие методики оценки часто ограничиваются финансовыми и операционными показателями, не учитывая таких факторов, как инновации, уровень цифровизации, экологическая устойчивость. Это создает потребность в разработке новой интегральной методики.

Для оценки конкурентоспособности АСП предлагается использовать комплексный подход, включающий:

1. Анализ рынка автосервисных услуг: определение основных тенденций, конкурентной среды и потребностей клиентов;
2. Определение ключевых факторов конкурентоспособности для конкретного АСП: исследование факторов, наиболее важных для целевой аудитории;
3. Оценка конкурентоспособности по выбранным факторам: использование количественных и качественных показателей;
4. Расчет интегрального показателя конкурентоспособности: агрегирование оценок по отдельным факторам с учетом их весовых коэффициентов;
5. Сравнительный анализ с конкурентами: сопоставление интегрального показателя конкурентоспособности с показателями основных конкурентов.

Для оценки качества услуг предлагается использовать метод SERVQUAL, дополненный специфическими показателями, характерными для автосервисной отрасли, такими как: наличие современного оборудования; квалификация персонала по работе с конкретными марками автомобилей; использование оригинальных запчастей; предоставление гарантии на выполненные работы.

Для определения весовых коэффициентов факторов конкурентоспособности предлагается использовать метод экспертных оценок. В качестве экспертов выступают клиенты АСП, сотрудники и руководители.

Интегральный показатель конкурентоспособности (ИПК) рассчитывается по формуле:

$$ИПК = \Sigma (Bi * Oi)$$

где Bi - весовой коэффициент i-го фактора конкурентоспособности;

Oi - оценка i-го фактора конкурентоспособности.

Предложенный комплексный подход к оценке конкурентоспособности АСП позволит учитывать специфику автосервисной отрасли и выявлять факторы, наиболее важные для клиентов. Использование как количественных, так и качественных показателей позволит получить более полную и объективную картину конкурентоспособности АСП.

В отличие от традиционных методов оценки, основанных на анализе финансовых показателей, предложенный подход позволит учитывать такие важные факторы, как качество услуг и репутация АСП, которые оказывают непосредственное влияние на удовлетворенность клиентов и лояльность.

Таким образом, конкурентоспособность является ключевым фактором успеха автосервисного предприятия в современных условиях. Для ее

повышения необходимо постоянно анализировать рынок, выявлять ключевые факторы конкурентоспособности и принимать меры по улучшению своих показателей. Предложенный комплексный подход к оценке конкурентоспособности АСП позволяет получить объективную оценку и разработать эффективную стратегию повышения конкурентоспособности. Дальнейшие исследования могут быть направлены на разработку специализированного программного обеспечения для автоматизации процесса оценки конкурентоспособности АСП и на расширение перечня факторов конкурентоспособности, учитывающих новые тенденции в развитии автосервисной отрасли.

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ПЕРСПЕКТИВЫ РАЗВИТИЯ ИНДУСТРИИ ТУРИЗМА И ГОСТЕПРИИМСТВА

Аннотация: *Пути развития туризма включают развитие инфраструктуры, цифровизацию услуг, формирование уникальных туристических продуктов и повышение качества обслуживания. В статье представлены некоторые аспекты развития индустрии туризма и гостеприимства.*

Ключевые слова: *индустрия туризма, гостеприимство, путешествие, бронирование отелей, туристический бизнес, инвестиции.*

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PROSPECTS FOR THE DEVELOPMENT OF THE TOURISM AND HOSPITALITY INDUSTRY

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Abstract: *Tourism development paths include infrastructure development, digitalization of services, the creation of unique tourism products, and improved service quality. This article presents some aspects of the development of the tourism and hospitality industry.*

Key words: *Tourism industry, hospitality, travel, hotel booking, tourism business, investment.*

Сегодня индустрия туризма и гостеприимства представлена множеством компаний, которые занимаются организацией путешествий, а также бронированием отелей и билетов на транспорт. Туристический бизнес стал одним из самых прибыльных в мире, привлекая инвестиции и создавая рабочие места. Поэтому популярность обучения по направлению «Туризм и гостеприимство» продолжает расти и привлекает абитуриентов студентов к поступлению.

В последнее время данная индустрия сталкивается с рядом проблем. Одна из них – экологический ущерб, который наносится природной среде.

Кроме того, туристический бизнес может привести к перенаселению и разрушению культурных ценностей. Для решения этих проблем необходимо развивать новые, перспективные формы отдыха – такие, как экотуризм, который учитывает интересы не только туристов, но и местных жителей, и окружающей среды. Это позволит сохранить природные и культурные ресурсы для будущих поколений.

В условиях цифровизации и глобализации туризм становится более доступным и разнообразным. Появляются новые направления путешествий, форматы проживания, способы бронирования и взаимодействия с клиентами. Гостеприимство выходит за рамки традиционных отелей и ресторанов, превращаясь в полноценную систему услуг, ориентированную на персонализированный опыт. Эта эволюция открывает широкие горизонты для профессионалов, готовых развивать инновационные подходы в сфере обслуживания.

Однако развитие туристической отрасли невозможно без квалифицированных специалистов, понимающих рынок, технологии и потребности клиентов. Образование в области туризма и гостеприимства становится ключевым фактором конкурентоспособности как отдельных компаний, так и целых стран. Чтобы оставаться актуальным в этой быстро меняющейся среде, важно начать обучение уже сегодня, выбирая специальности в техникуме, которые дают практические навыки и теоретическую базу для успешной карьеры.

Туризм играет одну из ведущих ролей в формировании экономического потенциала многих стран. По данным международных исследований, индустрия путешествий напрямую или косвенно влияет на значительную долю мирового валового внутреннего продукта. Благодаря своей многосекторности, она стимулирует развитие транспорта, торговли, образования и сельского хозяйства. Туристические поездки создают условия для роста малого бизнеса и повышают уровень жизни населения в регионах.

Кроме того, сфера гостеприимства обеспечивает огромное количество рабочих мест, особенно в приграничных и культурно насыщенных зонах. Отели, рестораны, экскурсионные агентства, транспортные компании — все они зависят от активности туристов. Особенно важна эта роль для развивающихся стран, где туризм может стать основным источником валютных поступлений и средств к существованию для локальных сообществ. Таким образом, развитие туристической инфраструктуры становится не только экономической, но и социальной задачей.

Пути развития туризма включают развитие инфраструктуры, цифровизацию услуг, формирование уникальных туристических продуктов и повышение качества обслуживания. К методам относятся использование цифровых технологий (искусственный интеллект, VR/AR, мобильные приложения), продвижение с помощью социальных сетей, развитие устойчивого и персонализированного туризма. Перспективы заключаются в

росте внутреннего турпотока, создании новых рабочих мест и появлении новых, востребованных видов туризма.

Пути развития туризма. Инфраструктура: Строительство новых отелей и улучшение транспортной доступности регионов.

Управление продуктом: Создание новых туристических маршрутов и брендов, а также систематизация предложения для путешественников.

Персонал: Повышение качества обслуживания и уровня квалификации сотрудников туристической отрасли.

Методы развития туризма. Цифровизация:Онлайн-сервисы: Распространение платформ для бронирования, онлайн-покупки билетов и оплаты услуг.

Искусственный интеллект: Использование чат-ботов для мгновенных ответов на вопросы туристов и персонализации их запросов.

VR/AR: Применение технологий виртуальной и дополненной реальности для демонстрации мест до поездки.

Маркетинг: Социальные сети: Продвижение туристических направлений и продуктов через социальные сети.

Контент-маркетинг: Создание привлекательного контента, который вызывает интерес у потенциальных туристов.

Новые подходы: Персонализация: Создание индивидуальных предложений на основе анализа предпочтений клиентов.

Устойчивый туризм: Развитие экологически ответственных видов туризма и продвижение "зеленых" отелей и маршрутов.

Мобильные приложения: Разработка приложений с актуальной информацией о достопримечательностях, транспорте и событиях в регионе.

Перспективы развития.

Экономический рост: ожидается увеличение внутреннего турпотока, что приведет к созданию новых рабочих мест и развитию сферы услуг.

Диверсификация: Появление и развитие новых видов туризма, таких как экологический, культурный, детский и горнолыжный туризм.

Технологическое совершенствование: продолжится внедрение инноваций, что будет стимулировать дальнейший рост отрасли.

Современные путешественники становятся всё более осознанными и требовательными к качеству сервиса. Если раньше главным критерием выбора была стоимость поездки, то сегодня на первый план выходят уникальность опыта, безопасность, экологичность и удобство. Люди стремятся к авторским маршрутам, нетипичным направлениям и глубинному погружению в культуру принимающей страны. Такие изменения формируют новую модель потребительского поведения, которую необходимо учитывать в работе специалистов по туризму.

Развитие туризма положительно влияет на активизацию финансовых процессов. Инвестор принимает решение, ориентируясь на величину притока туристов, которые едут в данное государство с разных концов света. Туристы как барометр дают объективную оценку социально-экономической ситуации

в стране. Также большое значение имеют мир, безопасность и политическая стабильность.

Для эффективного развития международного туризма необходимо мобилизовать все внутренние резервы – реконструировать исторические и архитектурные памятники, благоустроить места поклонения, поднять до уровня мировых стандартов деятельность туристических фирм, расширить возможности гостиничной, коммуникационной, транспортной инфраструктур и развлекательной сферы, развивать санаторно-курортные и спортивные направления. Вместе с тем, необходима организация эффективной работы объединённых хозяйственных комплексов родственных предприятий, так называемых туристических кластеров.

Использованные источники

1."Tourism in Uzbekistan: opportunities and new challenges" (Усмонова Ш.)
2."Tourism Development as an Actual Task of the Society" (Абдурахманова Х.Б.)
3."Modern Uzbekistan and its Tourism Potential" (Абдурахмонова З.Ю.)
4."Prospects for the Development of Pilgrimage Tourism in Uzbekistan" (Джафарова Н.А., Абдурахимова С.Т.)
5."Pilgrimage Tourism and its Prospects in Uzbekistan" (Явмутов Д.Ш., Рахимов О.Х.)

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РЕЙТИНГИ УСТОЙЧИВОГО РАЗВИТИЯ РОССИЙСКИХ РЕГИОНОВ

Аннотация: *Исследование посвящено анализу экономической устойчивости российских регионов на основе трех ключевых рейтингов: RAEX ЭКГ-регион, Interfax-ЭРА и МГИМО по ЦУР ООН. Цель работы заключается в выявлении факторов, определяющих позиции регионов в рейтингах устойчивости, и разработке типологии регионов по уровню экономической устойчивости. Методология включает корреляционный анализ связей между рейтинговыми оценками и социально-экономическими показателями 85 субъектов РФ за 2024-2025 гг., а также кластерный анализ для типологизации регионов. Основные результаты показывают, что экономическая устойчивость определяется диверсификацией экономики, бюджетной самодостаточностью и уровнем ВРП на душу населения. Выделено пять типов регионов: высокоустойчивые диверсифицированные, ресурсно-устойчивые, промышленно-устойчивые, умеренно устойчивые и низкоустойчивые. Исследование вносит вклад в понимание факторов региональной устойчивости и предлагает дифференцированные рекомендации для региональной политики.*

Ключевые слова*: экономическая устойчивость, региональные рейтинги, диверсификация экономики, бюджетная самодостаточность, российские регионы, устойчивое развитие*

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SUSTAINABILITY RANKINGS OF RUSSIAN REGIONS

Abstract: *This study examines the economic resilience of Russian regions through the lens of three major sustainability rankings: RAEX's ESG-Region, Interfax-ERA, and MGIMO's SDG-based index. The aim is to identify the drivers behind regional positions in these rankings and to develop a typology of regions according to their level of economic resilience. The methodology combines Pearson correlation analysis—assessing links between ranking scores and socio-economic indicators across all 85 federal subjects for 2024–2025—with k-means cluster analysis to classify regions into distinct types. The findings indicate that economic resilience is primarily shaped by three factors: economic diversification, fiscal self-*

sufficiency, and per capita GRP. Five regional archetypes emerge: highly resilient and diversified, resource-dependent but resilient, industrially resilient, moderately resilient, and low-resilience regions. The study contributes to a deeper understanding of the determinants of regional resilience in the Russian context and offers tailored policy recommendations for different regional types.

Keywords: *economic resilience, regional rankings, economic diversification, fiscal self-sufficiency, Russian regions, sustainable development*

Введение

Современная экономика отличается высокой нестабильностью и чувствительностью к внешним потрясениям. В этом контексте экономическая устойчивость региона понимается как его способность сохранять ключевые функции в условиях кризисов и оперативно восстанавливаться после них[44]. Для России эта задача осложняется резким территориальным неравенством: различия проявляются не только в природно-климатических условиях, но и в структуре экономики, а также в качестве региональных институтов.

Оценить устойчивость позволяют рейтинговые системы, которые дают целостное представление об уровне развития регионов и выявляют источники их конкурентных преимуществ и уязвимостей. Анализ позиций субъектов РФ в рейтингах устойчивого развития помогает определить, какие именно экономические характеристики лежат в основе устойчивых региональных систем.

Цель статьи заключается в анализе экономической устойчивости российских регионов на основе существующих рейтингов устойчивого развития и выявлении ключевых факторов, определяющих позиции регионов в этих рейтингах. Задачи исследования включают: обзор методологий основных рейтингов устойчивого развития регионов России; анализ позиций различных типов регионов в рейтингах; выявление взаимосвязи между рейтинговыми оценками и социально-экономическими характеристиками регионов; формулирование рекомендаций по повышению региональной устойчивости.

В работе проверяются, в частности, три гипотезы: H1: Диверсификация экономической структуры положительно коррелирует с рейтинговыми оценками устойчивости регионов; H2: Бюджетная самодостаточность является ключевым фактором экономической устойчивости российских регионов; H3: Регионы можно типологизировать по уровню устойчивости на основе их экономических характеристик.

[44] OECD. Economic Resilience: Definition and Measurement. — Paris: OECD Publishing, 2023. — 156 с.

Для анализа отобраны три рейтинга — RAEX «ЭКГ-регион»[45], Interfax-ЭРА[46] и МЦУР МГИМО[47] — по критериям: ежегодность публикации, полнота методологии, использование официальной статистики, охват всех субъектов РФ и открытость данных. Эти рейтинги отражают разные подходы к оценке устойчивости и взаимно дополняют друг друга.

Теоретическую основу составляют международные работы Duval и Vogel (2008)[48], OECD (2023)[49] и Szabó et al. (2018)[50], подчеркивающие роль структурной политики и мультифакторного анализа в оценке региональной устойчивости, а также российские исследования Дерюгина и Сучковой (2022)[51], Кифяка (2021)[52] и Мисхожева (2024)[53], задающие методологию выбора переменных (ВРП, занятость, трансферты), интерпретации бюджетной самодостаточности и типологии устойчивости.

Методологически исследование опирается на комплекс количественных подходов. Распределение регионов описано с помощью дескриптивной статистики. Взаимосвязи между рейтингами и социально-экономическими показателями оценивались корреляцией Пирсона ($p<0,05$). Типологизация выполнена методом k-средних по ключевым экономическим индикаторам; оптимальное число кластеров определено по силуэтному критерию. Перед анализом все переменные нормализованы методом min–max к диапазону [0,1]. Мультиколлинеарность контролировалась через VIF с порогом 5,0. Робастность результатов проверена с использованием корреляции Спирмена и иерархической кластеризации.

Теоретические основы экономической устойчивости регионов

Структурная устойчивость характеризует способность региональной экономики сохранять основные пропорции и взаимосвязи при внешних воздействиях. Функциональная устойчивость отражает способность поддерживать ключевые экономические функции - производство, занятость, доходы населения. Адаптивная устойчивость предполагает способность к

[45] Рейтинг ЭКГ-регион 2025 года // RAEX URL: https://raex-rr.com/ESG/regions/EKG-region/2025/ (дата обращения: 09.10.2025).
[46] Актуальные рейтинги экологически устойчивого развития регионов России. // Interfax-ЭРА URL: https://interfax-era.ru/reitingi-regionov/aktualnye (дата обращения: 07.10.2025).
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[48] Duval R., Vogel L. Economic Resilience to Shocks: The Role of Structural Policies // OECD Journal: Economic Studies. — 2008. — Vol. 2008, No. 1. — P. 201–237.
[49] OECD. Economic Resilience: Definition and Measurement. — Paris: OECD Publishing, 2023. — 156 с.
[50] Szabó M., Csete M.S., Pálvölgyi T. Resilient regions from sustainable development perspective // European Journal of Sustainable Development. — 2018. — Vol. 7, No. 4. — P. 491–505.
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[53] Мисхожев Э.Р. Экономическая устойчивость региона: понятие, структура и факторы её определяющие // киберленинка URL: https://cyberleninka.ru/article/n/ekonomicheskaya-ustoychivost-regiona-ponyatie-struktura-i-faktory-ee-opredelyayuschie (дата обращения: 09.10.2025).

структурным изменениям и освоению новых видов деятельности в ответ на изменение внешних условий[54].

Экономическая устойчивость регионов в значительной мере определяется диверсификацией их экономической структуры: моноспециализация повышает уязвимость к отраслевым кризисам, тогда как диверсифицированная экономика способна сглаживать спады за счёт роста в других секторах. Не менее важную роль играет качество человеческого капитала — оно задаёт потенциал региона к инновациям, технологической адаптации и, как следствие, влияет на производительность и конкурентоспособность[55].

Бюджетная устойчивость субъектов РФ проявляется в способности поддерживать необходимый объём публичных расходов без чрезмерного роста долговой нагрузки. Финансово самодостаточные регионы располагают большими возможностями для реализации антикризисных мер и инвестиций в экономическую инфраструктуру. Существенное значение имеет и институциональная среда: эффективность государственного управления, развитость правовых институтов и качество взаимодействия власти с бизнесом снижают транзакционные издержки и создают условия для устойчивой экономической активности[56].

Социальные и экологические аспекты также вносят вклад в экономическую устойчивость. Высокое качество жизни способствует привлечению и удержанию квалифицированных специалистов, а рациональное природопользование обеспечивает сохранение ресурсной базы и минимизирует долгосрочные риски, связанные с экологической деградацией[57].

Международная практика свидетельствует: наиболее устойчивыми оказываются те регионы, где экономическая эффективность гармонично сочетается с развитием человеческого потенциала и ответственным отношением к природным ресурсам[58]. Такая синергия формирует основу для долгосрочной конкурентоспособности и гибкости в условиях внешних вызовов.

Обзор рейтингов устойчивого развития российских регионов

Рейтинг «ЭКГ-регион» (RAEX) оценивает устойчивость субъектов РФ по трём компонентам: «Экология» (20 %), «Кадры» (40 %) и «Государство»

[54] Duval R., Vogel L. Economic Resilience to Shocks: The Role of Structural Policies // OECD Journal: Economic Studies. — 2008. — Vol. 2008, No. 1. — P. 201–237.
[55] Кифяк А.В. Макроэкономический анализ социально-экономической устойчивости регионов // URL: https://fbi.cfuv.ru/wp-content/uploads/2022/04/20_Кифяк-1.pdf (дата обращения: 08.10.2025).
[56] Мисхожев Э.Р. Экономическая устойчивость региона: понятие, структура и факторы её определяющие // киберленинка URL: https://cyberleninka.ru/article/n/ekonomicheskaya-ustoychivost-regiona-ponyatie-struktura-i-faktory-ee-opredelyayuschie (дата обращения: 09.10.2025).
[57] Szabó M., Csete M.S., Pálvölgyi T. Resilient regions from sustainable development perspective // European Journal of Sustainable Development. — 2018. — Vol. 7, No. 4. — P. 491–505.
[58] OECD. Economic Resilience: Definition and Measurement. — Paris: OECD Publishing, 2023. — 156 с.

(40 %)[59]. Методика опирается на 17 метрик, сформированных на основе данных Росстата и корпоративной статистики за 2023–2024 гг.[60] В блоке «Экология» учитываются удельные показатели водопотребления и выбросов загрязняющих веществ (на единицу ВРП и на душу населения), а также эффективность обезвреживания отходов. Блок «Кадры» включает демографические индикаторы (ожидаемая продолжительность жизни, рождаемость), миграционную привлекательность и уровень материального благополучия. Блок «Государство» отражает бюджетную самодостаточность, реализацию нацпроектов и инвестиционную активность. Сильные стороны методики — сбалансированность, актуальность данных и прозрачность расчётов. Среди ограничений — субъективность весов, зависимость от качества региональной статистики и недостаточный учёт отраслевой специфики.

Рейтинг Interfax-ЭРА ориентирован на экологические и энергетические аспекты устойчивого развития, оценивая технический, человеческий и природный потенциалы регионов[61]. Технический потенциал измеряется через энергоэффективность, состояние инфраструктуры и технологический уровень; человеческий — через демографию, здравоохранение и образование; природный — через состояние окружающей среды и рациональность природопользования. Особенность подхода — дифференциация регионов по типам (аграрные, индустриальные, ресурсные), что повышает адекватность оценок. Долгая история рейтинга (с 2008 г.) позволяет проводить динамический анализ.

Рейтинг МЦУР МГИМО строится на 139 официальных показателях, соответствующих 17 целям устойчивого развития ООН за 2023–2024 гг.[62] Методика следует международным стандартам, обеспечивая сопоставимость с глобальными практиками и охватывая широкий спектр направлений — от борьбы с бедностью до климатических инициатив и партнёрств. Его преимущества — строгая привязка к международной повестке, комплексность и использование исключительно официальной статистики. Ограничения связаны со сложностью агрегирования разнородных индикаторов, возможными временными лагами в данных и недостаточной адаптацией к национальным особенностям.

Эмпирический анализ: позиции российских регионов в рейтингах устойчивости

Ханты-Мансийский автономный округ занимает первое место в рейтинге RAEX ЭКГ-регион (65.10 баллов), что обусловлено сочетанием высоких доходов от нефтедобычи с эффективной региональной политикой.

[59] Рейтинг ЭКГ-регион 2025 года // RAEX URL: https://raex-rr.com/ESG/regions/EKG-region/2025/ (дата обращения: 09.10.2025).
[60] Регионы России. Социально-экономические показатели. 2024: Стат. сб. / Росстат. — М., 2024. — 1242 с.
[61] Актуальные рейтинги экологически устойчивого развития регионов России. // Interfax-ЭРА URL: https://interfax-era.ru/reitingi-regionov/aktualnye (дата обращения: 07.10.2025).
[62] Ренкинг регионов РФ по показателям достижения ЦУР ООН // МЦУР МГИМО URL: https://ranking.mgimo.ru/ (дата обращения: 09.10.2025).

Регион демонстрирует бюджетную самодостаточность (собственные доходы составляют 87% бюджета), высокие инвестиции в социальную инфраструктуру и относительно благоприятную экологическую обстановку благодаря низкой плотности населения. ВРП на душу населения составляет 3.2 млн рублей, что в 4 раза выше среднероссийского уровня[63]. Экономическая устойчивость ХМАО основана на эффективном управлении нефтегазовыми доходами и их реинвестировании в диверсификацию экономики. Регион активно развивает транспортную инфраструктуру, создает индустриальные парки и поддерживает малый и средний бизнес. Ожидаемая продолжительность жизни (74.2 года) превышает среднероссийский показатель, что отражает высокое качество социальной инфраструктуры.

Республика Татарстан представляет пример успешной диверсификации экономики нефтедобывающего региона. Регион занимает высокие позиции во всех рассматриваемых рейтингах благодаря сбалансированному развитию промышленности, сельского хозяйства и сферы услуг. Доля обрабатывающих производств в структуре ВРП составляет 32%, что обеспечивает устойчивость к колебаниям цен на нефть[64]. Бюджетная самодостаточность региона достигает 78%. Татарстан активно развивает человеческий капитал: в регионе функционирует 32 вуза, включая Казанский федеральный университет, развита система профессиональной подготовки кадров. Инновационная активность региона подтверждается высокими показателями патентования (8.2 заявки на 10 тыс. населения) и объемами финансирования НИОКР (1.1% ВРП).

Ямало-Ненецкий автономный округ занимает вторую позицию в рейтинге RAEX (60,68 балла), что свидетельствует о высокой эффективности освоения природных ресурсов. На долю региона приходится около 80 % добычи природного газа в стране, а его собственные доходы бюджета превышают 400 млрд рублей, обеспечивая возможность реализации крупномасштабных инфраструктурных инициатив. ВРП на душу населения достигает 2,8 млн рублей[65]. Устойчивость экономики ЯНАО строится на монетизации газовых активов и последовательном реинвестировании полученных средств в развитие инфраструктуры. Особое внимание уделяется транспортной доступности: ведётся строительство новых железнодорожных веток и модернизация аэропортов. Дополнительную финансовую устойчивость обеспечивают резервные фонды, смягчающие последствия ценовой волатильности на энергорынке.

Тюменская область (без автономных округов) представляет пример региона, успешно использующего преимущества соседства с ресурсными территориями. Область специализируется на переработке углеводородного сырья, машиностроении для нефтегазового комплекса и развитии сферы

[63] Регионы России. Социально-экономические показатели. 2024: Стат. сб. / Росстат. — М., 2024. — 1242 с.
[64] Регионы России. Социально-экономические показатели. 2024: Стат. сб. / Росстат. — М., 2024. — 1242 с.
[65] Регионы России. Социально-экономические показатели. 2024: Стат. сб. / Росстат. — М., 2024. — 1242 с.

услуг. ВРП на душу населения составляет 1.1 млн рублей, бюджетная самодостаточность - 72%[66].

Тульская область демонстрирует успешную трансформацию от традиционного промышленного региона к диверсифицированной экономике. Регион сочетает развитую обрабатывающую промышленность (машиностроение, металлургия, химическая промышленность) с растущим сектором услуг и агропромышленным комплексом. Близость к Москве обеспечивает доступ к рынкам сбыта и трудовым ресурсам. ВРП на душу населения - 0.6 млн рублей, бюджетная самодостаточность - 65%[67].

Ленинградская область использует преимущества близости к Санкт-Петербургу и развитой транспортной инфраструктуры. Регион специализируется на обрабатывающих производствах с высокой добавленной стоимостью: автомобилестроении, производстве строительных материалов, пищевой промышленности. Портовая инфраструктура обеспечивает доступ к международным рынкам. Область активно привлекает иностранные инвестиции, что способствует трансферу технологий.

Анализ регионов, занимающих низкие позиции в рейтингах, выявляет общие экономические проблемы: моноотраслевую структуру, слабую бюджетную базу, низкую производительность труда и ограниченные инвестиционные возможности. Многие из этих регионов характеризуются высокой зависимостью от федеральных трансфертов (до 70-80% доходов бюджета)[68].

Типичные экономические проблемы включают низкие показатели ВРП на душу населения (0.2-0.3 млн рублей), высокий уровень безработицы, слабую инновационную активность и ограниченные возможности для привлечения частных инвестиций. Географическая периферийность и слабая транспортная доступность усугубляют экономические проблемы и снижают конкурентоспособность.

Анализ взаимосвязей между позициями регионов в рейтингах и экономическими показателями выявляет несколько значимых закономерностей (N=85, все корреляции значимы при $p<0.01$). ВРП на душу населения демонстрирует сильную положительную корреляцию ($r=0.72$) с рейтинговыми оценками, что подтверждает ключевую роль экономического развития для устойчивости[69].

Диверсификация экономики, измеряемая через обратный индекс Херфиндаля-Хиршмана для отраслевой структуры, положительно коррелирует с устойчивостью ($r=0.58$, $p<0.01$). Регионы с более сбалансированной отраслевой структурой демонстрируют большую

[66] Регионы России. Социально-экономические показатели. 2024: Стат. сб. / Росстат. — М., 2024. — 1242 с.
[67] Регионы России. Социально-экономические показатели. 2024: Стат. сб. / Росстат. — М., 2024. — 1242 с.
[68] Дерюгин А.Н., Сучкова О.В. Устойчивость бюджетов субъектов Российской Федерации при изменении макроэкономических факторов // Экономическая политика. - 2022. - №2. - С. 8-37.
[69] Регионы России. Социально-экономические показатели. 2024: Стат. сб. / Росстат. — М., 2024. — 1242 с.

устойчивость к внешним шокам. Наиболее диверсифицированными являются Москва, Санкт-Петербург, Татарстан и Свердловская область[70].

Бюджетная самодостаточность (доля собственных доходов в региональном бюджете) демонстрирует значимую положительную корреляцию с рейтинговыми оценками ($r=0.64$, $p<0.01$). Финансово независимые регионы имеют больше возможностей для проведения активной экономической политики и инвестиций в развитие. Лидерами по этому показателю являются ресурсные регионы и экономически развитые центры[71].

Инновационная активность, измеряемая через затраты на НИОКР в процентах к ВРП, показывает умеренную корреляцию с устойчивостью ($r=0.48$, $p<0.05$). Лидерами по инновационной активности являются Москва, Санкт-Петербург, Новосибирская область и Татарстан, что отражается в их высоких рейтинговых позициях[72].

На основе кластерного анализа по методу k-средних ($k=5$, критерий силуэта = 0.67) выделено пять основных типов регионов по уровню экономической устойчивости:

- Тип 1: Высокоустойчивые диверсифицированные регионы (n=8: Москва, Санкт-Петербург, Татарстан, Московская область) характеризуются высоким ВРП на душу населения (>1.0 млн руб.), диверсифицированной экономикой и высокой бюджетной самодостаточностью (>75%). Средний рейтинговый балл - 58.2.
- Тип 2: Ресурсно-устойчивые регионы (n=12: ХМАО, ЯНАО, Сахалинская область, Тюменская область) основывают экономическую устойчивость на эффективном использовании природных ресурсов. ВРП на душу населения >1.5 млн руб., бюджетная самодостаточность >80%. Средний рейтинговый балл - 55.8.
- Тип 3: Промышленно-устойчивые регионы (n=18: Тульская, Ленинградская, Калужская области) сочетают развитую обрабатывающую промышленность с растущим сектором услуг. ВРП на душу населения 0.5-0.8 млн руб., умеренная диверсификация. Средний рейтинговый балл - 42.1.
- Тип 4: Умеренно устойчивые регионы (n=32) демонстрируют средние экономические показатели. ВРП на душу населения 0.3-0.5 млн руб., бюджетная самодостаточность 50-65%. Средний рейтинговый балл - 35.7.
- Тип 5: Низкоустойчивые регионы (n=15) сталкиваются с комплексом структурных экономических проблем: низким ВРП на душу населения (<0.3 млн руб.), высокой зависимостью от трансфертов, моноотраслевой экономикой. Средний рейтинговый балл - 28.3.

[70] Кифяк А.В. Макроэкономический анализ социально-экономической устойчивости регионов // URL: https://fbi.cfuv.ru/wp-content/uploads/2022/04/20_Кифяк-1.pdf (дата обращения: 08.10.2025).
[71] Дерюгин А.Н., Сучкова О.В. Устойчивость бюджетов субъектов Российской Федерации при изменении макроэкономических факторов // Экономическая политика. - 2022. - №2. - С. 8-37.
[72] Регионы России. Социально-экономические показатели. 2024: Стат. сб. / Росстат. — М., 2024. — 1242 с.

Выводы и рекомендации

Анализ российских регионов на основе рейтингов устойчивого развития позволяет выявить как сильные стороны, так и методологические ограничения таких подходов в оценке экономической устойчивости. Среди преимуществ — стандартизированная методика, опора на официальную статистику и возможность сопоставления регионов. Многомерная структура рейтингов учитывает разнообразные аспекты устойчивости, выходя за рамки чисто экономических критериев[73].

Вместе с тем методики сталкиваются с рядом проблем. Выбор индикаторов и их весов часто носит субъективный характер, что приводит к расхождениям в оценках одного и того же региона в разных рейтингах. Так, ресурсодобывающие субъекты РФ могут занимать высокие позиции в экономически ориентированном рейтинге RAEX, но оказываться в нижней части экологически чувствительного рейтинга Interfax-ЭРА.

Особую сложность представляет агрегирование разнородных показателей в единый индекс. Преобладающий линейный подход не всегда учитывает нелинейные взаимосвязи между компонентами устойчивости, а компенсационный эффект — когда высокие значения по одним параметрам «затеняют» слабые по другим — может скрывать системные уязвимости в отдельных сферах региональной экономики.

Анализ чувствительности показывает, что изменение весовых коэффициентов на ±20% приводит к перестановкам в рейтинге для 15-20% регионов, что указывает на умеренную робастность результатов. При равных весах всех компонентов позиции ресурсных регионов снижаются, а промышленных - повышаются.

Динамический аспект экономической устойчивости недостаточно отражается в статических рейтингах. Способность региона адаптироваться к экономическим шокам может не коррелировать с текущими показателями устойчивости. Это требует разработки динамических индексов и анализа реакции регионов на прошлые кризисы.

Несмотря на ограничения, рейтинги устойчивого развития остаются ценным инструментом для анализа региональной экономики и могут служить основой для разработки экономической политики при условии критического анализа методологических особенностей.

Проведенный анализ позиций российских регионов в рейтингах устойчивого развития позволяет сформулировать несколько ключевых выводов. Экономическая устойчивость регионов определяется комплексом взаимосвязанных факторов, среди которых ключевую роль играют диверсификация экономики, бюджетная самодостаточность и уровень экономического развития.

[73] Duval R., Vogel L. Economic Resilience to Shocks: The Role of Structural Policies // OECD Journal: Economic Studies. — 2008. — Vol. 2008, No. 1. — P. 201–237.

Подтверждение гипотез исследования: H1 подтверждена - диверсификация экономической структуры положительно коррелирует с рейтинговыми оценками ($r=0.58$, $p<0.01$); H2 подтверждена - бюджетная самодостаточность является ключевым фактором устойчивости ($r=0.64$, $p<0.01$); H3 подтверждена - выделено пять типов регионов с различными характеристиками экономической устойчивости.

Лидирующие регионы сочетают высокую экономическую эффективность с диверсифицированной структурой и рациональным управлением бюджетными средствами. В то же время ресурсодобывающие субъекты, несмотря на впечатляющие макроэкономические показатели, остаются уязвимыми из-за зависимости от конъюнктуры сырьевых рынков.

Анализ позволяет сформулировать практические рекомендации для региональной экономической политики. Регионам с высоким уровнем устойчивости целесообразно укреплять свои позиции за счёт инноваций, цифровой трансформации и развития высокотехнологичных отраслей. Их роль должна выходить за рамки локального роста — такие территории способны выступать локомотивами развития для смежных регионов. Для ресурсных регионов приоритетными направлениями являются: создание стабилизационных фондов для сглаживания волатильности доходов; развитие перерабатывающих производств; диверсификация экономической структуры; инвестиции в транспортную и производственную инфраструктуру. Для промышленных регионов ключевыми задачами становятся модернизация производственной базы, развитие высокотехнологичных производств, создание индустриальных парков и кластерных инициатив. Важным направлением является развитие государственно-частного партнерства. Для отстающих регионов необходимы комплексные программы экономического развития: создание базовой производственной инфраструктуры; развитие человеческого капитала; поддержку предпринимательства и малого бизнеса; привлечение федеральных инвестиций в ключевые экономические проекты.

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ИНТЕЛЛЕКТУАЛЬНЫЕ СИСТЕМЫ СИТУАЦИОННОГО АНАЛИЗА В КОМПЛЕКСНОЙ БЕЗОПАСНОСТИ ОБЪЕКТОВ

Аннотация: *В статье исследуются подходы к применению интеллектуальных систем ситуационного анализа для обеспечения комплексной безопасности объектов. Рассматриваются принципы интеграции технологий искусственного интеллекта, машинного обучения и обработки больших данных в процессы выявления аномалий и прогнозирования угроз. Проанализированы архитектура и алгоритмы систем, основанных на корреляции событий и оценке рисков в реальном времени. Особое внимание уделено вопросам точности данных, прозрачности алгоритмов и этическим аспектам автоматизированных решений. Показано, что использование интеллектуальных систем позволяет перейти от реактивной к проактивной модели управления рисками, повышая устойчивость инфраструктуры и снижая зависимость от человеческого фактора. Сделан вывод, что дальнейшее развитие таких технологий требует нормативной базы, обеспечивающей баланс между инновациями, безопасностью и ответственностью.*

Ключевые слова: *интеллектуальные системы; ситуационный анализ; комплексная безопасность; машинное обучение; анализ данных; прогнозирование угроз; кибербезопасность; автоматизация.*

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INTELLIGENT SYSTEMS OF SITUATIONAL ANALYSIS IN THE COMPREHENSIVE SECURITY OF FACILITIES

Abstract: *The article examines approaches to the use of intelligent situational analysis systems to ensure the comprehensive security of facilities. It discusses the principles of integrating artificial intelligence, machine learning, and big data processing technologies into processes for detecting anomalies and predicting threats. The architecture and algorithms of systems based on event correlation and real-time risk assessment are analyzed. Particular attention is given to data*

accuracy, algorithm transparency, and the ethical aspects of automated decision-making. It is shown that the use of intelligent systems enables a transition from a reactive to a proactive risk management model, increasing infrastructure resilience and reducing dependence on the human factor. The conclusion emphasizes that the further development of such technologies requires a regulatory framework that ensures a balance between innovation, security, and accountability.

Keywords: *intelligent systems; situational analysis; comprehensive security; machine learning; data analysis; threat prediction; cybersecurity; automation.*

Введение

В условиях растущей сложности инфраструктурных систем и увеличения числа потенциальных угроз обеспечение комплексной безопасности объектов становится одной из приоритетных задач современного управления. Традиционные методы, основанные на разрозненных сенсорных системах и человеческом анализе, уже не обеспечивают необходимую скорость реакции и полноту оценки рисков. Переход к цифровым моделям безопасности требует использования интеллектуальных систем, способных не только фиксировать, но и прогнозировать инциденты, формируя проактивную стратегию защиты [1].

Ключевое направление этой трансформации — развитие систем ситуационного анализа (*situation analysis systems*), основанных на технологиях искусственного интеллекта, машинного обучения и корреляционной аналитики. Такие решения объединяют данные видеонаблюдения, контроля доступа, IoT-датчиков и корпоративных систем, создавая целостное представление об обстановке и повышая оперативность управления.

Интеллектуальные алгоритмы позволяют выявлять аномалии, классифицировать события по уровню риска и формировать оптимальные сценарии реагирования, обеспечивая переход от реактивной к превентивной модели безопасности. Вместе с тем их внедрение сопряжено с технологическими и этическими вызовами — достоверностью данных, прозрачностью алгоритмов и ответственностью за автоматизированные решения [2].

Цель статьи — проанализировать возможности и ограничения интеллектуальных систем ситуационного анализа, рассмотреть используемые алгоритмы и определить перспективы их развития в контексте комплексной безопасности объектов.

1. Эволюция концепции ситуационного анализа в системах безопасности

Понятие ситуационного анализа в сфере безопасности возникло как ответ на необходимость рассматривать не отдельные инциденты, а их взаимосвязь во времени и пространстве. Ранние системы контроля ограничивались регистрацией сигналов тревоги и доступа, а анализ событий проводился постфактум, что снижало эффективность реагирования и не позволяло прогнозировать угрозы.

Развитие ИКТ и интеллектуальных сенсоров сделало возможным переход от дискретного наблюдения к комплексному мониторингу. Концепция *situational awareness*, изначально применявшаяся в военной сфере, была адаптирована для гражданской инфраструктуры — промышленных предприятий, транспортных узлов и энергетики. Её суть заключается в интеграции данных из различных источников и их анализе в реальном времени для формирования целостной картины происходящего.

Современные системы ситуационного анализа строятся на трёх уровнях: обнаружение, оценка контекста и прогнозирование последствий. Такой подход обеспечивает не только реакцию, но и предсказание потенциальных рисков. При этом роль человека меняется: оператор становится контролёром и интерпретатором результатов работы системы, что снижает влияние человеческого фактора и повышает скорость реакции [3].

Внедрение технологий искусственного интеллекта и анализа больших данных позволило автоматизировать обработку потоков информации, превратив системы безопасности из пассивных средств наблюдения в активные инструменты прогнозирования и поддержки решений.

Современный ситуационный анализ представляет собой переход от наблюдения к пониманию, от фиксации событий к управлению рисками, формируя интеллектуальную основу комплексной безопасности объектов.

2. Технологическая основа интеллектуальных систем ситуационного анализа

Современные системы ситуационного анализа опираются на интеграцию технологий искусственного интеллекта, машинного обучения и обработки больших данных. Их задача — объединять разнородные источники информации и обеспечивать автоматическую интерпретацию событий в реальном времени. В отличие от традиционных систем, ориентированных на фиксированные сценарии, интеллектуальные решения обладают адаптивностью и способностью обучаться, повышая точность выявления угроз.

Технологическая архитектура включает несколько уровней: сбор данных от видеокамер, сенсоров доступа, IoT-устройств и сетевых компонентов; интеграцию и очистку данных; аналитическую обработку с применением алгоритмов машинного обучения и корреляции. Алгоритмы кластеризации, классификации и детектирования аномалий анализируют большие объёмы информации, выявляя отклонения от типичного поведения людей, оборудования или сетевой активности. Методы анализа временных рядов позволяют прогнозировать развитие событий и возможные сбои.

Ключевой элемент таких систем — Event Correlation Engine, сопоставляющий информацию из разных источников и определяющий связи между событиями. Это позволяет выявлять сложные сценарии угроз, например, одновременное отключение видеокамеры и несанкционированный доступ.

Результаты анализа отображаются в виде дашбордов, индексов риска и прогнозных графиков, что обеспечивает управляемость и прозрачность. Интеллектуальные системы всё чаще интегрируются с корпоративными платформами — ERP, SCADA, ISMS — и переходят от наблюдения к формированию рекомендаций и автоматическому реагированию.

Технологическая основа интеллектуальных систем ситуационного анализа формирует переход от пассивного мониторинга к активному управлению безопасностью, повышая устойчивость инфраструктуры к внутренним и внешним угрозам.

3. Алгоритмическое выявление аномалий и прогнозирование угроз

Одной из ключевых функций интеллектуальных систем ситуационного анализа является автоматическое выявление аномалий — событий, отклоняющихся от нормального поведения процессов или пользователей. В отличие от пороговых методов, современные алгоритмы используют машинное обучение для построения динамических моделей, способных адаптироваться к изменяющимся условиям и выявлять новые типы угроз без предварительных правил.

Наиболее распространены методы обучения без учителя — кластеризация и поиск выбросов (*k-means*, *DBSCAN*, *Isolation Forest*), которые формируют модель нормального поведения и фиксируют отклонения. При наличии размеченных данных применяются алгоритмы обучения с учителем — деревья решений, случайные леса, нейронные сети, классифицирующие события по уровням риска.

Особое значение имеют гибридные модели, совмещающие статистические методы и нейросети, что позволяет анализировать связи между изменениями параметров среды, доступом, температурой или активностью устройств. На основе таких зависимостей формируется оценка риска (R-Score), определяющая приоритет реагирования.

Применение анализа временных рядов и моделей на основе *LSTM*-сетей позволяет предсказывать вероятность инцидента и переходить от реакции к профилактике. Корреляционные движки (*Event Correlation Engines*) сопоставляют данные из разных источников — видеонаблюдения, контроля доступа, IoT — выявляя контекстные сценарии угроз, например отключение камеры при попытке проникновения.

Эффективность алгоритмического анализа зависит от качества данных и регулярного обновления моделей. Поэтому интеллектуальные системы внедряют *feedback loops*, обучающиеся на собственных ошибках и уменьшающие долю ложных тревог, превращаясь в адаптивный элемент управления безопасностью.

4. Преимущества и ограничения интеллектуальных систем безопасности

Интеллектуальные системы ситуационного анализа стали новым этапом развития комплексной безопасности, позволяя обрабатывать большие объёмы данных в реальном времени и автоматически выявлять угрозы. Они

обеспечивают высокую скорость реакции, снижение влияния человеческого фактора и переход к проактивной модели управления рисками.

Использование машинного обучения повышает точность обнаружения инцидентов и сокращает количество ложных тревог. Интеллектуальные решения объединяют данные из разных источников — видео, контроль доступа, IoT — формируя единый контур безопасности. Это делает возможным предиктивную аналитику и визуализированный контроль эффективности через метрики, такие как IRT, FAR и RME.

Вместе с тем внедрение ИИ в сферу безопасности сопровождается рядом ограничений. Ключевая проблема — зависимость от качества данных: неполные или ошибочные сведения приводят к искажённым результатам. Другой вызов — непрозрачность алгоритмов, когда система выдаёт решения без объяснений, что усложняет аудит и снижает доверие пользователей.

Не менее важно учитывать уязвимость самих интеллектуальных систем: интеграция множества устройств повышает риск кибератак и утечек данных. Кроме того, актуальны этические вопросы — защита персональных данных и распределение ответственности за автоматические решения.

Интеллектуальные системы значительно повышают эффективность и адаптивность защиты, однако требуют строгого контроля, прозрачности и нормативного регулирования для обеспечения устойчивого и ответственного применения.

Заключение

Интеллектуальные системы ситуационного анализа формируют новый стандарт управления безопасностью, основанный на интеграции данных, машинном обучении и аналитике в реальном времени. Они обеспечивают переход от реактивного к проактивному управлению рисками, когда ключевую роль играет не фиксация инцидента, а его прогнозирование и предотвращение.

Использование таких систем повышает точность оценки угроз, снижает нагрузку на персонал и создаёт основу для стратегического управления безопасностью на уровне предприятия или отрасли. Алгоритмическая обработка информации позволяет выявлять скрытые взаимосвязи между событиями и вырабатывать решения быстрее, чем это возможно при ручном анализе.

В то же время развитие интеллектуальных технологий требует строгих стандартов качества данных, прозрачности алгоритмов и этической ответственности за принимаемые решения. Баланс между автоматизацией и человеческим контролем становится ключевым фактором устойчивости и доверия к интеллектуальным системам.

Системы ситуационного анализа с элементами искусственного интеллекта представляют собой не просто инструмент оптимизации, а основу для построения комплексной, адаптивной и предсказуемой архитектуры безопасности, способной соответствовать вызовам цифровой эпохи [4].

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МОЛОДЕЖЬ И ИСКУССТВЕННЫЙ ИНТЕЛЛЕКТ: ДВИЖЕНИЕ К НОВОМУ МЫШЛЕНИЮ

Аннотация: *Связь молодёжи и искусственного интеллекта является одним из важнейших аспектов развития современного общества, а взаимодействие этих двух явлений определяет дальнейший путь человечества. Молодёжь – это поколение, которое быстрее всех осваивает технологии и может применять их в новых целях. Искусственный интеллект – это инструмент для молодёжи, позволяющий двигаться к новым возможностям и мышлению. На основе анализа передового опыта разработаны роль искусственного интеллекта в жизни молодёжи Узбекистана , а также предложения и рекомендации, которые могут быть применены в этой области.*

Ключевые слова: *цифровые технологии, зарубежный опыт, искусственный интеллект, цифровая информация, информационные технологии, социальные сети, коммуникация, глобальное общество, цифровая экономика, кибербезопасность.*

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YOUTH AND ARTIFICIAL INTELLIGENCE: TOWARDS A NEW THINKING

Abstract: *The relationship between youth and artificial intelligence is one of the most important aspects of the development of modern society, and the interaction of these two phenomena determines the future path of humanity. Young people are the generation that is most able to master technology and apply it to new purposes. Artificial intelligence is a tool for young people, enabling them to move toward new opportunities and thinking. Based on an analysis of best practices, the role of artificial intelligence in the lives of young people in Uzbekistan has been developed, along with proposals and recommendations that can be applied in this area.*

Keywords: *digital technologies, international experience, artificial intelligence, digital information, information technologies, social networks, communication, global society, digital economy, cybersecurity.*

«Молодёжь — не дети своего времени, а творцы будущего»
Ш. Мирзиёев

Современный мир живёт в эпоху технологической революции. Цифровизация мира происходит стремительными темпами, а сфера искусственного интеллекта полностью меняет образ жизни и мышления человечества. Искусственный интеллект играет важную роль не только в сфере производства и научных исследований, но и в социальной, культурной и политической жизни.

Устойчивое развитие современного общества и рост стран в цифровую эпоху напрямую зависят от взаимодействия молодёжного движения и искусственного интеллекта. Молодёжь, как наиболее активная, амбициозная и открытая к инновациям, находится в центре экономических, социальных и политических процессов. Искусственный интеллект – одно из важнейших направлений технологического развития, имеющее большое значение для обеспечения конкурентоспособности в национальном и глобальном масштабе.

И в центре этого процесса находится молодёжь. Это поколение , способное быстро осваивать новые технологии, открытое инновациям и находящее новые решения современных проблем. Искусственный интеллект становится для молодёжи не просто сложной технологией, а новым способом мышления и действий. Для тех, кто осознаёт ценность и ценность молодёжи, это время безграничных возможностей. Использование современных знаний и возможностей ещё больше расширит возможности стремления к будущему с помощью технологий. В обществе, где технологии достигли своего развития, будущее в наших руках, если молодёжь научится им управлять. Объединить интеллект с технологиями — значит начать настоящее движение.

Связь молодёжного движения и искусственного интеллекта – один из важных аспектов развития современного общества, а взаимодействие этих двух явлений определяет дальнейший путь человечества. С одной стороны, молодёжь – это поколение, которое быстрее всего осваивает технологии и может применять их в новых целях. Искусственный интеллект – это инструмент для молодёжи, позволяющий ей двигаться к новым возможностям и мышлению. С помощью искусственного интеллекта молодёжь может автоматизировать сложные задачи, эффективно усваивать знания и создавать инновационные проекты. Таким образом, искусственный интеллект расширяет творческий потенциал молодёжи и усиливает её роль в обществе.

Вопрос взаимодействия молодёжи и искусственного интеллекта (ИИ) в последние годы стал одной из ключевых тем в мировой научной и образовательной повестке. Современные исследования указывают, что

цифровая трансформация оказывает глубокое влияние на процесс социализации, профессиональную подготовку и мировоззрение молодого поколения [1; 2].

По мнению К. Шваба, человечество вступило в эпоху «четвёртой промышленной революции», где границы между физическим, цифровым и биологическим мирами постепенно стираются [3]. В этом контексте молодёжь становится главным двигателем технологического прогресса и инноваций.

Д. Белл и М. Кастельс подчёркивают, что информационное общество требует нового типа мышления, основанного на креативности, критическом анализе и умении работать с большими данными [4; 5]. Эти качества становятся особенно важными в эпоху искусственного интеллекта, когда способность человека адаптироваться к быстрым изменениям определяет его конкурентоспособность.

Согласно отчётам OECD, именно молодёжь быстрее всех осваивает цифровые инструменты и активно использует их в образовательных и предпринимательских целях. Однако исследователи отмечают необходимость формирования цифровой грамотности, этики ИИ и навыков кибербезопасности [6].

В работах узбекских авторов, таких как Ш. Мирзиёев, А. Абдурахмонов и М. Умаров, подчёркивается стратегическая роль молодёжи как ресурса цифрового развития страны. Государственная политика Узбекистана направлена на формирование «цифрового поколения», способного эффективно использовать ИИ в образовании, предпринимательстве и государственном управлении [7; 8; 9].

ЮНЕСКО и Всемирный банк обращают внимание на социальные и этические вызовы, возникающие при применении ИИ, в частности на вопросы защиты персональных данных, предотвращения алгоритмической дискриминации и укрепления цифровой ответственности молодёжи [10; 11].

Таким образом, анализ литературы показывает, что взаимодействие молодёжи и искусственного интеллекта носит междисциплинарный характер, охватывая образование, трудовую занятость, цифровую этику и социальную ответственность. В условиях Узбекистана данный процесс приобретает стратегическое значение, поскольку именно молодое поколение становится ключевым фактором цифровой модернизации и инновационного развития страны.

С другой стороны, молодёжное движение также вносит значительный вклад в развитие искусственного интеллекта. Молодые исследователи, программисты и предприниматели активно участвуют в создании новых технологий искусственного интеллекта и их внедрении в социально-экономическую сферу. Это обеспечивает адаптацию искусственного интеллекта к потребностям и ценностям человека. Кроме того, социальная ответственность и этические вопросы также актуальны во взаимодействии молодёжного движения с искусственным интеллектом. Молодёжи необходимо научиться использовать искусственный интеллект полезным и

безопасным образом, а также защитить себя от его негативных последствий. Это показывает, что молодёжное движение должно быть сосредоточено не только на освоении технологий, но и на их развитии в интересах человечества. Молодёжное движение и искусственный интеллект тесно переплетены, и вместе они создают основу для вывода общества на новый уровень развития. Активное и ответственное использование искусственного интеллекта молодёжью — залог построения устойчивого цифрового общества будущего.

Молодёжная политика и искусственный интеллект также влияют на национальную безопасность и стабильность страны. Интеллектуальные технологии играют ключевую роль в создании новых методов в сфере безопасности, обеспечении кибербезопасности и защите стратегических интересов государства. Понимание и освоение этих технологий молодёжью укрепит будущий потенциал безопасности страны. Интеллекта в развитии страны неоценима. Вместе они являются главной силой преобразования страны в передовое, цифровое и устойчивое общество. Поэтому государству, обществу и каждому гражданину необходимо проводить политику, направленную на поддержку инновационного потенциала молодёжи и развитие искусственного интеллекта. Политика главы нашего государства открыла большие возможности в этой области. В частности, Открытость образовательных ресурсов , международные конкурсы и проекты , возможность начать свой стартап , Учитывая высокую востребованность на рынке труда, практические действия в этой сфере могут осуществляться комплексно и прибыльно.

Искусственный интеллект также предоставляет молодым людям новые возможности для активного участия в социальных сетях, коммуникации и мировом сообществе. В этом пространстве молодые люди получат возможность доносить свои мысли, идеи и проекты до более широкой аудитории и устанавливать международные партнерства. Искусственный интеллект предоставляет молодым людям новые и широкие возможности для получения знаний, приобретения навыков, проявления творчества и активного участия в жизни общества. Рациональное использование этих возможностей будет служить будущему успеху молодых людей и способствовать развитию страны. Хотя взаимодействие искусственного интеллекта и молодежных движений открывает большие возможности, в этой области существуют и некоторые проблемы и риски, которые необходимо решать.

Во-первых, недостаток знаний и навыков в области искусственного интеллекта может стать серьёзным препятствием для молодёжи. Если все молодые люди не будут иметь равных возможностей, существует риск того, что некоторые из них останутся позади в освоении современных технологий. Это может привести к неравенству возможностей среди молодёжи и социальной несправедливости. Вторая проблема — риск неправильного использования искусственного интеллекта или без учёта этических аспектов. Молодёжь может использовать технологические достижения не только в продуктивных и полезных целях, но и ненадлежащим или вредоносным

образом. Например, известны случаи утечки персональных данных, кибератак или распространения ложной информации с использованием искусственного интеллекта.

Технологические и этические вопросы, связанные с созданием систем искусственного интеллекта, также влияют на молодёжное движение. Недостаточное понимание технологии или недостаток знаний о некоторых её аспектах может снизить доверие молодёжи к ИИ. Кроме того, существуют опасения, что автоматизация человеческого труда и профессий, а также развитие искусственного интеллекта могут привести к росту безработицы среди молодёжи. Это может негативно повлиять на её социальную и экономическую стабильность. В результате для успешного развития молодежного движения и искусственного интеллекта необходимо уделять пристальное внимание этим проблемам и осуществлять необходимые меры по их устранению. В частности, в направлении расширения информации и знаний, в направлении развития кооперационной и инновационной среды, в направлении продвижения этики и морали , в целях обеспечения технологического равенства, в направлении профессиональной переподготовки и повышения квалификации, в направлении правовой базы и безопасности есть ряд задач, которые нельзя откладывать, и которые мы должны реализовывать шаг за шагом.

Цель нашего акцента на этических и правовых вопросах заключается в том, что стремительное развитие технологий искусственного интеллекта несёт не только возможности, но и риски. В частности, конфиденциальность данных, несправедливость, дискриминация, автоматизированные решения и ситуации, нарушающие права человека, требуют этического подхода в этой области. Одной из наших главных задач должно стать формирование у молодёжи чувства ответственности в отношении этических вопросов. Молодым людям, работающим в сфере IT-технологий, необходимо знать, как соблюдать определённые этические стандарты. В частности, работа с точной и объективной информацией подразумевает непричинение вреда другим, уважение прав человека и отсутствие дискриминации посредством алгоритмов.

Сегодня актуальной является задача принятия национальных этических правил для ИТ-проектов при работе с цифровой информацией. Это позволит внедрить системы контроля, гарантирующие, что ИТ-программы не принимают решений, нарушающих права человека. Необходима постоянная практическая работа по информированию населения, особенно молодёжи, о возможностях и рисках ИТ. Искусственный интеллект и молодёжная политика неразрывно связаны. Подобно тому, как молодёжь — главная сила, определяющая будущее страны, искусственный интеллект — это технология, определяющая её дальнейшее развитие. Поэтому объединение этих двух направлений имеет стратегическое значение. Поэтому молодёжная политика требует актуализации с учётом технологий искусственного интеллекта . Наша главная задача — проведение аналитических исследований в сфере

образования, инфраструктуры и грантов для молодёжи в сфере IT со стороны государства, а также повышение социальной и экономической активности молодёжи. Внедрение основ искусственного интеллекта в школы и вузы, создание программ поддержки IT-стартапов для молодежи, проведение массовой образовательной работы по этике искусственного интеллекта, апробация IT-решений через молодежь в государственных органах, открытие отдельного направления в системе образования по направлению «IT и цифровая экономика» откроет дальнейшие возможности в нашей работе в этом направлении.

Искусственный интеллект – это продукт человеческого интеллекта, а молодёжное движение – его обновление. Искусственный интеллект – это будущее, и молодёжь играет ключевую роль в его построении. Если нашей молодёжи будет предоставлена возможность освоить эту область, активно участвовать в её развитии и ответственно её использовать, научно-технологическое развитие нашей страны будет полностью гарантировано.

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СРАВНИТЕЛЬНЫЙ АНАЛИЗ СОМАТИЗМА پا *PĀ* «НОГА» В ПРОИЗВЕДЕНИЯХ «ХАМСА» АЛИШЕРА НАВОИ И «БУСТАН» САДИ ШИРАЗИ

Аннотация. *На рубеже XX–XXI веков человеческий фактор оказался в центре внимания учёных, которые в рамках этой парадигмы решали вопросы, связанные с получением, кодированием, хранением и передачей информации различными средствами, в том числе лингвистическими. Это стало возможным благодаря интеграции различных отраслей знания, что способствовало гуманизации научных дисциплин.*

Ключевые слова. *Алишер Навои; Хамса; Саади Ширази; Бустан; соматизм; сравнительный анализ; нога, семантика.*

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COMPARATIVE ANALYSIS OF THE SOMATISM پا *PĀ* "LEG" IN ALISHER NAVOI'S KHAMSA AND SAADI SHIRAZI'S BUSTAN*

Abstract*. At the turn of the 20th and 21st centuries, the human factor came to the forefront of scholarly attention. Within this paradigm, researchers addressed issues related to the acquisition, encoding, storage, and transmission of information by various means, including linguistic ones, which became possible through the integration of different fields of knowledge aimed at the humanization of scientific disciplines. Somatic units are part of anthropological categories. More precisely, they represent a special group of lexemes, one of whose components denotes a part of the human body or an organ.*

Key words. *Alisher Navoi, Khamsa, Saadi Sherozi, Boston, somatism, comparative analysis,* leg*, semantic.*

Введение

Поэтические наименования частей тела являются одной из характерных особенностей творчества Саади Ширази, выдающегося поэта XIII века, чьё наследие неоднократно привлекало внимание исследователей. Такой интерес объясняется богатством и разнообразием его лексикона. Следует отметить, что соматизм پا [pā] “нога” встречается также и в поэме «Хамса» Алишера Навои, где он используется в разных значениях, что свидетельствует о мастерстве поэта.

Предмет «соматизм» широко рассматривались и изучались такими учёными, как Н.Х. Туйгунова[74], Д.Б. Дашиева[75], А.Р. Попова[76], Х.З. Алимова[77], Л.С. Пейсиков[78], Ю.А. Рубинчик[79], С.Г. Мехтиханлы[80]. Однако не была затронута семантика соматизма پا [pā] “нога” на персидском и тюркском языках, а также их сопоставление между собой.

Лингвисты определяют соматизм по-разному. В широком понимании соматизм трактуется как наименование части тела человека, то есть лексема с прямым номинативным значением «часть тела человека» [Горды, 2002: 13]. Соматизмы (от греч. *soma, somatos* — тело) — это «средства обозначения явлений, относящихся к сфере телесности, обладающие внутренней формой, то есть связью между фразеологическим значением оборота и реальными значениями его компонентов» [Ройзензон, 1965: 65]. Использование названий частей тела в переносных значениях позволяет людям точнее и выразительнее передавать свои мысли и чувства. С одной стороны, такие значения укоренены в культуре народа, с другой — они усиливают образность языка. В более узком смысле «соматизм» определяется как «любой значимый признак, положение или движение лица и всего тела человека» [Верещагин, Костомаров, 1980: 24]. Соматические единицы возникают на основе переносных значений названий частей тела; связь между прямыми и переносными значениями придаёт им образность. Переносные значения формируются в результате метонимии и метафоры, в связи с чем соматизмы приобретают эмоциональные, экспрессивные, интенсивные и иные оттенки.

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[74]Tuygunova N.X. Sopostavitel'niy analiz leksiki, oboznachayushey chasti tela v tadjikskom i angliyskom yazikax (na osnove proizvedeniya S.Ayni) [Comparative analysis of vocabulary denoting body parts in Tajik and English (based on the work of S. Ayni) – Dushanbe, 2012.

[75] Dashieva D.B. Izuchenie somaticheskoy frazeologii v sovremennoy rusistike [The study of somatic phraseology in modern Russian studies]. – Buryatskiy gosudarstvenniy universitet, 2010.

[76] Popova A. R. Ob odnoy iz osobennostey somaticheskoy frazeologii [About one of the features of somatic phraseology]. – Nijegorodskaya, 2009.

[77]Alimova X.Z. Strukturno-semanticheskaya klassifikasiya somatizmov v yazike dari [Structural-Semantic Classification of Somatisms in the Dari Language]. – T., 2005.

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[79] Rubinchik Yu.A. Grammatika sovremennogo persidskogo literaturnogo yazika [Grammar of modern Persian literary language]. –M., 2001.

[80] Mextixanli S. G. Nazvaniya chastey tela v sostave frazeologizmov russkogo i persidskogo yazikov [Names of body parts in the composition of phraseological units of the Russian and Persian languages]. – Gilyan, Iran, 2017.

Персидский язык отличается богатством словарного состава и наличием многочисленных многозначных слов, что особенно наглядно проявляется в «Бустане» Саади. Для сопоставления был проанализирован также текст “Хамса” Алишера Навои, что позволило глубже осмыслить специфику употребления соматизма پا [pā] “нога”.

Надо отметить, что соматизм پا [pā] “нога” является многозначным словом не только в персидском, но также в тюркском языках. Значение этого соматизма можно выявить из контекста. В словаре Амид понятие پا [pā] имеет следующее значение:

"پا –پای –عضو بدن انسان و حیوان که بتوسط آن راه می رود."

[pā\pāy – ‘ozv-e badan-e ensān va heyvān ke be tavassot-e ān rāh miravad]

«Нога – это часть тела человека и животных, посредством которой они ходят»[81]. В ходе исследования нами было найдено 84 примеров в поэме «Бустан» Саади, где участвовало слово پا [pā], а в значении соматизма это слово употреблялось лишь в 28 примерах.

В «Толковом словаре произведений Алишера Навои»[82]соматизм[pā\pāy имеет следующие значения: 1) нога; 2) шагать; 6 раза .

Цель и задачи

Цель данного исследования заключается в том, чтобы произвести сравнительный анализ семантики соматизма پا [pā] «нога»в персидском и тюркском языках, на основе поэм «Бустан» Саади Ширази и «Стена Искандара» Алишера Навои.

Исходя из вышеуказанной цели, были определены следующие задачи:

– определить случаи употребления соматизма پا [pā] «нога»

– сравнить употребление соматизма پا [pā] «нога»в вышеуказанных поэмах.

«глаз» в поэме «Бустан» Саади, а также в поэме «Стена Искандара» Алишера Навои;

– определить их значение по контексту;

– сравнить употребление соматизма پا [pā] «нога» в вышеуказанных поэмах.

Методы.

В ходе исследования мы воспользовались сравнительно-семантическим и статистическим методами и был изучен соматизм پا [pā] «нога» на основе произведений «Бустан» Саади и «Стена Искандара» Алишера Навои.

Результаты и достижения

В результате исследования мы выявили, что соматизм پا [pā] «нога» является многозначным словом в персидском языке, а также имеются некоторые значения в тюркском языке. Для сбора и анализа примеров мы

[81] فرهنگ عمید چاپ دانشگاه. تهران، ۱۳۷۹ جلد ۱صفحه٤١٢

[82] Alisher Navoiy asarlari tilining izohli lug‘ati [The Explanatory Vocabulary of Alisher Navoi’s Works Language],1-4volumes. Tashkent, “Fan” Publ., 1983-1985. Vol.2. p. 576.

воспользовались поэмой «Бустан» Саади[83] и «Конкорданс «Стена Искандара» Алишера Навои»[84].

Что из себя представляет термин «соматизм»?

Соматическая лексика представляет собой одну из интересных лексико-семантических групп, поскольку присутствие человека в языке ощущается на всех языковых ярусах, и более всего эта антропоцентричность проявляется в лексике. В последнее время в лингвистике возрастает интерес к «антропоцентрическому подходу»[85].

Ниже дан пример с использованием слова پا [pā]:

به پایش در افتاد و پوزش نمود

(سعدی « بوستان » باب چهارم - صفحه۲٤۹ بخندید لقمان که پوزش چه سود؟)

[Be pāyaš dar oftād u puzeš namud

Bexandid loqmān ke puzeš če savud]

«Он упал на ноги и извинился

Лукман усмехнулся: «Какая польза от извинений?»

В данном примере слово پا [pā] выступает в значении «нога», а в сочетании с местоимённой энклитикой ش [aš] указывающая на 3-е лицо единственного числа, даёт значение «его ноги».

В поэме «Стена Искандара» Навои соматизм «oyoq» («нога») также встречается как в прямом значении («нога человека»), так и в переносных (движение, шаг судьбы, путь странствия). Например:

Nečuk bolsa āyāġ uzā turāyin,

Yātib olgunčā dast-u-pā urāyin.

«Как смогу я долго стоять на ногах,

Пока не упаду, размахивая руками и ногами».

В данном случае соматизм «нога» выражает физическое усилие и усталость, но также имеет переносное значение борьбы и сопротивления судьбе. Исходя из вышеприведённых примеров можно сделать вывод, что соматизм پا [pā] «нога» было найдено в двух поэмах обоих писателей, однако количество использования этой лексемы в значении части человеческого тела в поэме «Бустан» было намного больше, чем «Стена Искандара». Это в первую очередь связано с происхождением данного слова, то есть слово پا [pā] «нога» является персидским словом, а также с индивидуальным подходом писателей этому слову.

Вывод.

1. Соматизм پا [pā] «нога» является многозначным как в персидском, так и в тюркском языках.

2. В «Бустане» Саади он чаще используется метафорически, обозначая путь, духовное движение и стремление.

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[83] Mansur Mehrang “Matn-e kāmel va sahih bustān-e Saadi”[Complete tekst of Saadi Bustan]. – Resht, Iran, 1965.

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[85]Ракин А. Н. Антропотоминимическая лексика в пермских языках (рукопись)[Anthropotominimic vocabulary in the Permian languages (manuscript)]. – Удмуртская, 1995. – С.37.

3. В «Стене Искандара» Навои «нога» употребляется и в прямом, и в переносном значении, отражая физическое усилие, испытания и борьбу.

4. Сопоставительный анализ показывает, что оба поэта мастерски использовали данный соматизм, придавая ему различные оттенки смысла в зависимости от контекста.

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СРАВНИТЕЛЬНЫЙ АНАЛИЗ СОМАТИЗМА چشم [ČAŠM] «ГЛАЗ» В ПРОИЗВЕДЕНИЯХ «ХАМСА» АЛИШЕРА НАВОИ И «БУСТАН» САДИ ШИРАЗИ

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COMPARATIVE ANALYSIS OF THE SOMATISM چشم [ČAŠM] “EYE” IN ALISHER NAVOI’S KHAMSA AND SAADI SHIRAZI’S BUSTAN*

Abstract. *At the turn of the 20th and 21st centuries, the human factor came to the forefront of scholarly attention. Within this paradigm, researchers addressed issues related to the acquisition, encoding, storage, and transmission of information by various means, including linguistic ones, which became possible through the integration of different fields of knowledge aimed at the humanization of scientific disciplines. Somatic units are part of anthropological categories. More precisely,*

they represent a special group of lexemes, one of whose components denotes a part of the human body or an organ.

Key words. *Alisher Navoi, "Iscandar`s wall", Saadi Sherozi, "Boston", somatism, comparative analysis, چشم [čašm], semantic.*

Введение.

Поэтические наименования частей тела являются одной из характерных особенностей творчества Саади Ширази, выдающегося поэта XIII века, чьё наследие неоднократно привлекало внимание исследователей. Такой интерес объясняется богатством и разнообразием его лексикона. Следует отметить, что соматизм چشم [čašm] встречается также и в поэме «Стена Искандара» Алишера Навои, где он используется в разных значениях, что свидетельствует о мастерстве поэта.

Предмет «соматизм» широко рассматривались и изучались такими учёными, как Н.Х. Туйгунова[86], Д.Б. Дашиева[87], А.Р. Попова[88], Х.З. Алимова[89], Л.С. Пейсиков[90], Ю.А. Рубинчик[91], С.Г. Мехтиханлы[92]. Однако не была затронута семантика соматизма چشم [čašm] на персидском и тюркском языках, а также их сопоставление между собой.

Термин «соматический» впервые был введён в финно-угроведение Ф. Вакком, который, анализируя наиболее употребительные фразеологизмы эстонского языка с компонентами — названиями частей тела человека, назвал их соматическими [Вакк, 1968: 23]. Термин «соматический фразеологизм» в отношении материала русского языка впервые употребил Э. М. Мордкович в статье «Семантико-тематические группы соматических фразеологизмов» [Мордкович, 1971: 244–245].

Лингвисты определяют соматизм по-разному. В широком понимании соматизм трактуется как наименование части тела человека, то есть лексема с прямым номинативным значением «часть тела человека» [Горды, 2002: 13]. Соматизмы (от греч. *soma, somatos* — тело) — это «средства обозначения явлений, относящихся к сфере телесности, обладающие внутренней формой, то есть связью между фразеологическим значением оборота и реальными

[86]Tuygunova N.X. Sopostavitel'niy analiz leksiki, oboznachayushey chasti tela v tadjikskom i angliyskom yazikax (na osnove proizvedeniya S.Ayni) [Comparative analysis of vocabulary denoting body parts in Tajik and English (based on the work of S. Ayni) – Dushanbe, 2012.

[87] Dashieva D.B. Izuchenie somaticheskoy frazeologii v sovremennoy rusistike [The study of somatic phraseology in modern Russian studies]. – Buryatskiy gosudarstvenniy universitet, 2010.

[88] Popova A. R. Ob odnoy iz osobennostey somaticheskoy frazeologii [About one of the features of somatic phraseology]. – Nijegorodskaya, 2009.

[89]Alimova X.Z. Strukturno-semanticheskaya klassifikasiya somatizmov v yazike dari [Structural-Semantic Classification of Somatisms in the Dari Language]. – T., 2005.

[90] Peysikov L.S. Ocherki po slovoobrazovaniyu persidskogo yazika [Essays on the word formation of the Persian language]. –M., 1973.

Peysikov L.S. Leksikologiya sovremennogo persidskogo yazika [Lexicology of Modern Persian]. –M.,1975.

[91] Rubinchik Yu.A. Grammatika sovremennogo persidskogo literaturnogo yazika [Grammar of modern Persian literary language]. –M., 2001.

[92] Mextixanli S. G. Nazvaniya chastey tela v sostave frazeologizmov russkogo i persidskogo yazikov [Names of body parts in the composition of phraseological units of the Russian and Persian languages]. – Gilyan, Iran, 2017.

значениями его компонентов» [Ройзензон, 1965: 65]. Использование названий частей тела в переносных значениях позволяет людям точнее и выразительнее передавать свои мысли и чувства. С одной стороны, такие значения укоренены в культуре народа, с другой — они усиливают образность языка. В более узком смысле «соматизм» определяется как «любой значимый признак, положение или движение лица и всего тела человека» [Верещагин, Костомаров, 1980: 24]. Соматические единицы возникают на основе переносных значений названий частей тела; связь между прямыми и переносными значениями придаёт им образность. Переносные значения формируются в результате метонимии и метафоры, в связи с чем соматизмы приобретают эмоциональные, экспрессивные, интенсивные и иные оттенки.

Следуя классификации А. Д. Райхштейна, выделим десять лексико-семантических групп соматических фразеологизмов:

1. характеристика характера;
2. физическое состояние;
3. чувство-состояние;
4. чувство-отношение;
5. качественная характеристика человека;
6. умственная деятельность;
7. портрет;
8. действия и поступки человека;
9. социальное положение;
10. степень удалённости от объекта.

Эти группы позволяют дифференцировать как общие черты, свойственные языковому коллективу в целом, так и особенности соматических фразеологизмов в разных языках [Райхштейн, 1980: 5].

В ходе нашего исследования был рассмотрен соматизм چشم [čašm] «глаз», который имеет несколько значений и различную частоту употребления в произведениях Саади и Навои. В статье данный соматизм анализируется на материале поэмы «Бустан» Саади и его использования в тюркской поэме «Стена Искандара» Алишера Навои. Определяются его значения по контексту и выявляется частотность употребления. Мы приходим к выводу, что оба поэта мастерски использовали соматизм چشم [čašm] и показали, что он способен передавать различные значения в персидском и тюркском языках.

Персидский язык отличается богатством словарного состава и наличием многочисленных многозначных слов, что особенно наглядно проявляется в «Бустане» Саади. Для сопоставления был проанализирован также текст поэмы «Стена Искандара» Алишера Навои, что позволило глубже осмыслить специфику употребления соматизма چشم [čašm].

Надо отметить, что соматизм چشم [čašm] является многозначным словом не только в персидском, но также в тюркском языках. Значение этого соматизма можно выявить из контекста. Как приводит Амид в словаре[93],

[93] فرهنگ عمید چاپ دانشگاه. تهران، ۱۳۷۹ جلد ۲ صفحه۱۹۰۰

соматизм چشم [čašm] даёт следующие значения: 1) глаз; 2) перен. взгляд; 3) перен. ожидание (с нетерпением ждать); 4) сглаз, дурной глаз; 5) в составе вкражения умереть. В вышеупомянутой поэме слово چشم [čašm] используется 54 раза .

В «Толковом словаре произведений Алишера Навои»[94] соматизм چشم [čašm] имеет следующие значения: 1) глаз; 2) плачущий глаз; 3) зависть. В вышеупомянутой поэме слово چشم [čašm] используется 3 раза .

Цель и задачи

Цель данного исследования заключается в том, чтобы произвести сравнительный анализ семантики соматизма چشم [čašm] «глаз» в персидском и тюркском языках, на основе поэм «Бустан» Саади Ширази и «Стена Искандара» Алишера Навои.

Исходя из вышеуказанной цели, были определены следующие задачи:

– определить случаи употребления соматизма «چشم [čašm]

– сравнить употребление соматизма چشم **[čašm]** в вышеуказанных поэмах.

«глаз» в поэме «Бустан» Саади, а также в поэме «Стена Искандара» Алишера Навои;

– определить их значение по контексту;

– сравнить употребление соматизма چشم **[čašm]** в вышеуказанных поэмах.

Методы

В ходе исследования мы воспользовались сравнительно-семантическим и статистическим методами и был изучен соматизм چشم [čašm] «глаз» на основе произведений «Бустан» Саади и «Стена Искандара» Алишера Навои.

Результаты и достижения

В результате исследования мы выявили, что соматизм چشم [čašm] является многозначным словом в персидском языке, а также имеются некоторые значения в тюркском языке. Для сбора и анализа примеров мы воспользовались поэмой «Бустан» Саади[95] и «Конкорданс «Стена Искандара» Алишера Навои»[96].

Что из себя представляет термин «соматизм»?

Соматическая лексика представляет собой одну из интересных лексико-семантических групп, поскольку присутствие человека в языке ощущается на всех языковых ярусах, и более всего эта антропоцентричность проявляется в лексике. В последнее время в лингвистике возрастает интерес к «антропоцентрическому подходу»[97].

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[94] Alisher Navoiy asarlari tilining izohli lug‘ati [The Explanatory Vocabulary of Alisher Navoi’s Works Language],1-4volumes. Tashkent, “Fan” Publ., 1983-1985. Vol.1. p. 457.

[95] Mansur Mehrang “Matn-e kāmel va sahih bustān-e Saadi”[Complete tekst of Saadi Bustan]. – Resht, Iran, 1965.

[96] Quronbekov A., Imomnazarov M., Mannonov A. va b. Alisher Navoiyning “Hayrat ul-abror” dostoni konkordansi [The Concordance of the Poem “Khayrat ul-abror” by Alisher Navoi]. Tashkent, “Fan va texnologiyalar markazining bosmaxonasi” Publ., 2012.

[97]Ракин А. Н. Антропотоминимическая лексика в пермских языках (рукопись)[Anthropotominimic vocabulary in the Permian languages (manuscript)]. – Удмуртская, 1995. – С.37.

Пример со словом چشم [čašm]:

شنیدم که خسرو به شیرویه گفت

در آن دم که **چشمش** زدیدن بخفت (سعدی « بوستان » باب اول - صفحه۴۳)

[Šenidam ke Xosrov be Širuye goft

Dar ān dam ke **čašmaš** ze didan bexoft]

«Слышал, что сказал Хосров Шируйэ

В ту пору, когда перестал видеть **глаз**».

В данном примере слово چشم [čašm] выступает в значении «глаз», а в сочетании с энклитикой ش [-aš] означает «его глаз». Нами было найдено 54 примера в поэме «Бустан» Саади, где участвовало слово چشم [čašm], а в значении «глаз» использовалось 38 раз.

Как приводит Ю.А. Рубинчик, существует значительное различие между литературно-разговорным и языком книжным, официально-канцелярским, в котором употребляются главным образом слова арабского происхождения и архаизмы. Так, например, вместо چشم [čašm] «глаз» в высоком стиле можно встретить عین [’eyn] «глаз», «око» Выдающийся поэт узбекской литературы Алишер Навои в своей поэме «Стена Искандара» сумел грамотно и поэтично употребить соматизм چشم [čašm] в разных значениях и вместе с другими словами, в основном соматизм چشم [čašm] имеет значение “глаз» в данной поэме.

Ниже приведем пример соматизма چشم [čašm] в значении “глаз»:

«Deŋiz barča «āmīn» dil u ĵān bilā,

Du’ā qildik ul **čašm**i giryān bilā». (89/225)

“Вы все скажите “Амин” с душой и сердцем,

И мы молились с плачущими **глазами**”

В приведённом примере соматизм [čašm] выступает в номинативном значении и означает слово «глаз». В ходе изучения этой поэмы было найдено 4 соматизмов «čašm» в значении «глаз». Однако, слово [čašm] выступает в других значениях в составе фразеологизма.

Исходя из вышеприведённых примеров можно сделать вывод, что соматизм چشم [čašm] в значении «глаз» было найдено в двух поэмах обоих писателей, однако количество использования этой лексемы в значении части человеческого тела в поэме «Бустан» было намного больше, чем «Стена Искандара». Это в первую очередь связано с происхождением данного слова, то есть слово چشم [čašm] является персидским словом, а также с индивидуальным подходом писателей этому слову.

Вывод.

1. Каждый язык имеет свои стилистические особенности выражения слов и словосочетаний. Соматизмы являются самым древним пластом, как и в других языках, так и в персидском языке.

2. Соматизм چشم [čašm] в персидском языке, как указывается в словарях, имеет более чем 5 значений, а в толковом словаре Алишера Навои их только три. Использование данного соматизма в обоих произведениях является относительным.

3. В поэме «Бустан» соматизм چشم [čašm] использовался 87 раз из них 54 раза в значении «глаз».

4. В поэме «Стена Искандара» Алишера Навои эта лексема была использована 4 в значении «глаз», а в остальных случаях в составе фразеологического оборота.

5. Редкое употребление соматизма چشم [čašm] в поэме «Стена Искандара» Алишера Навои предположительно связано с тем, что он был заимствован из персидского языка.

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СИНТЕЗ ПИРИДИНОВ ИЗ АЦЕТИЛЕНА И АММИАКА

Аннотация: *В статье исследован процесс каталитического синтеза пиридинов и их метилированных производных из ацетилена и аммиака с использованием пирофосфата кадмия, нанесенного на оксид алюминия. Рассмотрено влияние различных факторов на выход продуктов и предложены возможные механизмы образования пиридиновых оснований через промежуточные соединения, такие как ацетальдегид и виниламин. Обсуждается роль состава катализаторов в селективном получении различных метилпиридинов. Работа имеет значение для промышленного производства фармацевтических и химических продуктов.*

Ключевые слова: *Пиридин, ацетилен, аммиак, каталитический гетероциклизм, пирофосфат кадмия, оксид алюминия, виниламин, ацетальдегид, 2-метилпиридин, 4-метилпиридин, катализаторы, механизм синтеза.*

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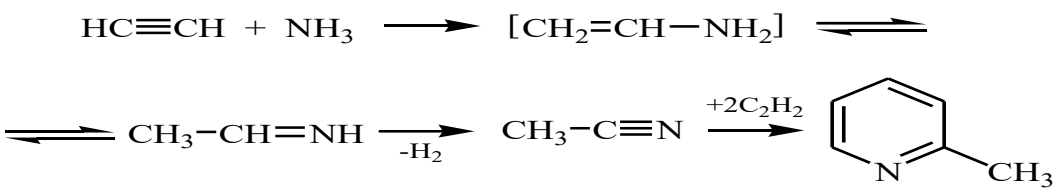
SYNTHESIS OF PYRIDINES FROM ACETYLENE AND AMMONIA

Abstract: *This article examines the catalytic synthesis of pyridines and their methylated derivatives from acetylene and ammonia using cadmium pyrophosphate supported on alumina. The influence of various factors on product yield is examined, and possible mechanisms for the formation of pyridine bases via intermediates such as acetaldehyde and vinylamine are proposed. The role of catalyst composition in the selective production of various methylpyridines is discussed. This work has implications for the industrial production of pharmaceuticals and chemicals.*

Keywords:*Pyridine, acetylene, ammonia, catalytic heterocyclism, cadmium pyrophosphate, alumina, vinylamine, acetaldehyde, 2-methylpyridine, 4-methylpyridine, catalysts, synthesis mechanism.*

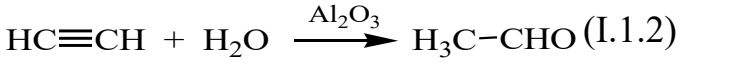
Исследована каталитическая гетероциклизация ацетилена с аммиаком в присутствии пирофосфата кадмия [1], нанесенного на оксид алюминия. Изучено влияние различных факторов на выход конечных продуктов и показано, что при температуре 400 °C, соотношении ацетилен:аммиак = 2:1 и общей объемной скорости 80 час$^{-1}$ выход 2-метилпиридина достигает 15 %, 4-метилпиридина — 10 % по ацетилену. Предложен механизм образования 2-

метилпиридина через промежуточный продукт — ацетонитрил с последующей конденсацией его с ацетиленом:

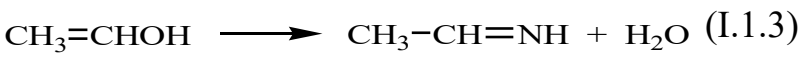


(I.1.1)

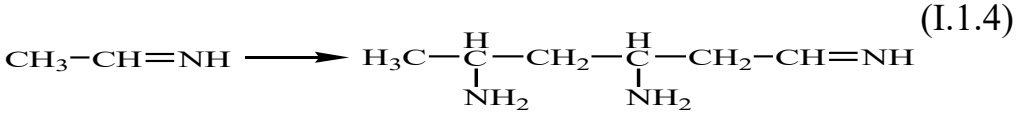
Среди работ по синтезу пиридиновых оснований из ацетилена и аммиака только в некоторых [1-2] затронут вопрос о вероятном механизме процесса. По мнению Чичибабина, синтез пиридиновых оснований из ацетилена и аммиака на оксиде алюминия протекает через промежуточное образование ацетальдегида. Имеющаяся в оксиде алюминия вода присоединяется к ацетилену с образованием ацетальдегида, который далее с аммиаком дает альдимин. Тримеризация последнего по типу альдольной конденсации с последующей дегидроциклизацией приводит к 2- и 4-метилпиридинам:



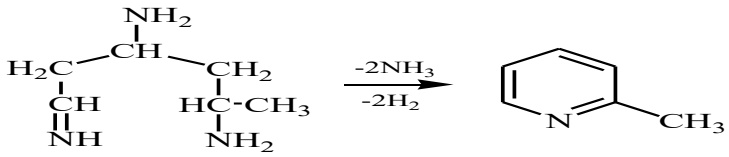
(I.1.2)



(I.1.3)

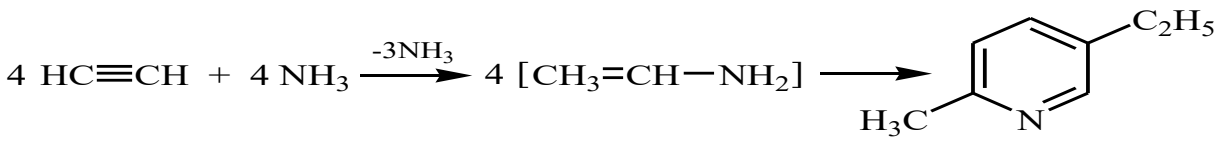


(I.1.4)



(I.1.5)

Известно, что пиридиновые основания из ацетилена и аммиака образуются и без катализатора [1]. Это доказывает, что образование пиридиновых оснований из ацетилена и аммиака не обязательно проходит черед ацетальдегид. Реппе [2] полагает, что из ацетилена и аммиака сначала получается и неустойчивый виниламин, а далее в результате его конденсации с отщеплением аммиака — 2-метил-5-этилпиридин:

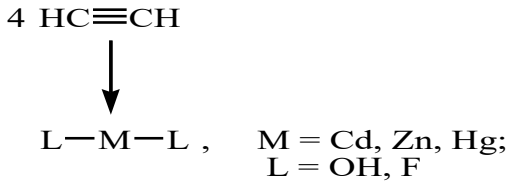


Предположение Репе высказано на основании результатов жидкофазной конденсации ацетилена с аммиаком в качестве главного продукта, где образуется 2-метил-5-этилпиридин.

Предполагают [1-2], что формирование структуры азотсодержащих соединений из ацетилена и аммиака (а также с участием метанола) состоит из следующих стадий:

1. Образование π-комплексов и амидов металлов. При взаимодействии ацетилена с компонентами катализатора, содержащими металлы IБ, IIБ, и VIIБ групп Периодической системы, образуются π-комплексы металлов:

2.



Аммиак и амины хорошо сорбируются на металлсодержащих центрах, проявляющих свойства кислот Льюиса, в том числе на гидроксифторидах кадмия, цинка, железа, алюминия и др. Наличие в составе катализаторов гидроксифторидов облегчает образование амидов металлов:

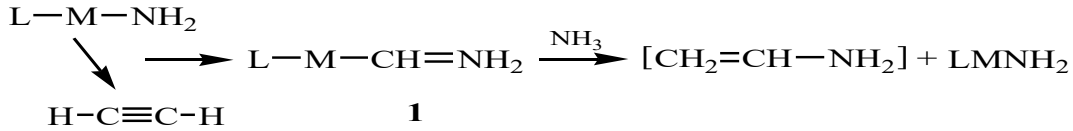
$$F—M—NH_2 \text{ или } H_2N—M—OH$$

Амиды металлов могут быть получены и по реакции:

$$M{=}O + NH_2 \longrightarrow H_2N—M—OH \quad (I.1.7)$$

Амидная группа, по-видимому, образуется и в центре, связанном с ацетиленом.

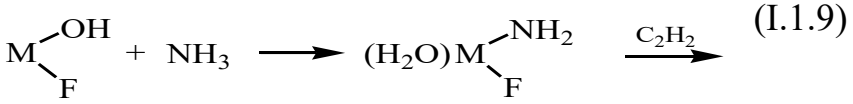
3. Образование неустойчивого виниламина или этилиденимина. Виниламин и его этилиденимин образуются в результате взаимодействия π-комплекса ацетилена с амидом металла (**1, 2**) по схемам:



1

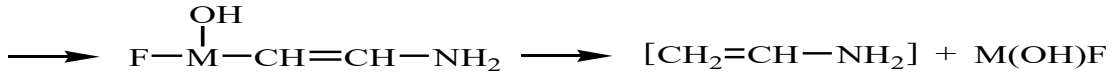
(I.1.8)

или



(I.1.9)

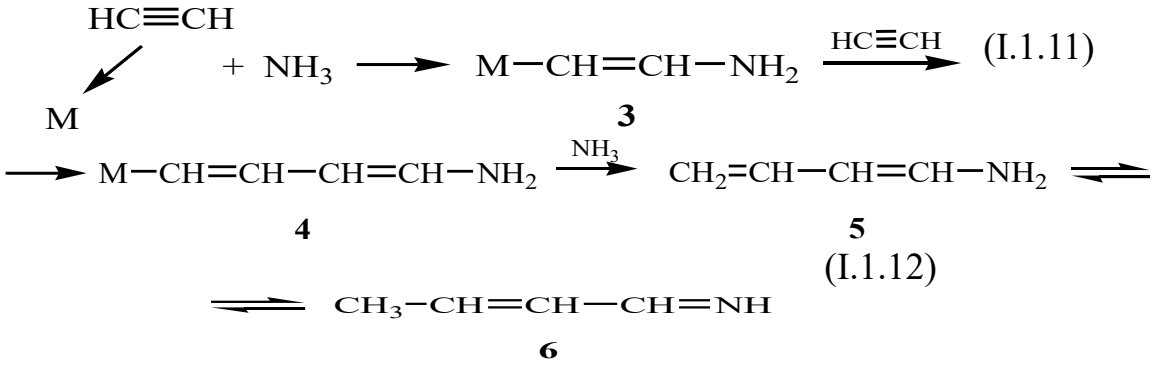
2



(I.1.10)

В присутствии сильных дегидрирующих катализаторов, таких как оксиды цинка, висмута, хрома, виниламин дегидрируется через этилиденимин в ацетонитрил. Образования пиридиновых оснований не наблюдается [2].

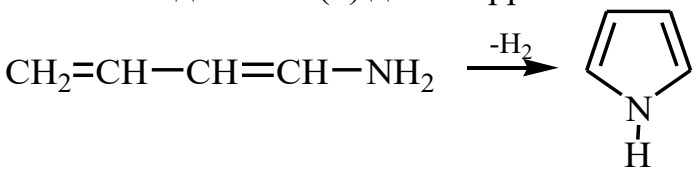
Стадия дегидроциклизации — образование гетероциклов. Образование гетероциклов можно представить как результат образования линейных C_4-азотсодержащих молекул (**5**) через промежуточные металлоорганические интермедиаты (**3, 4**):



(I.1.11)

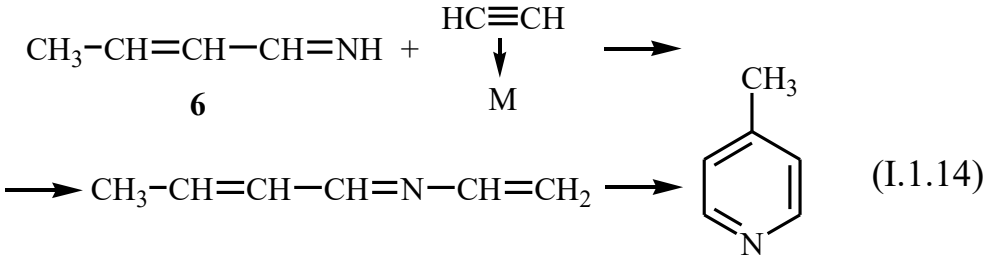
(I.1.12)

Дегидрирование соединения (**5**) дает пиррол:

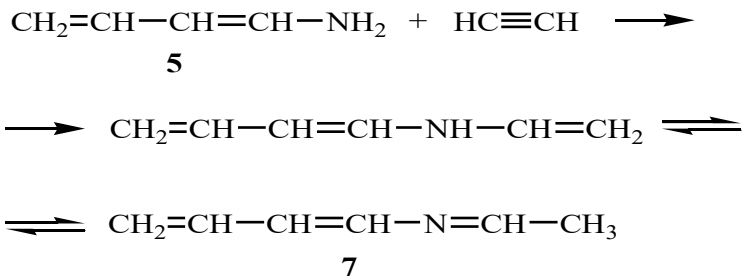


(I.1.13)

2- и 4-Метилпиридины получаются винилированием соединений (**5**) и (**6**) по реакции:

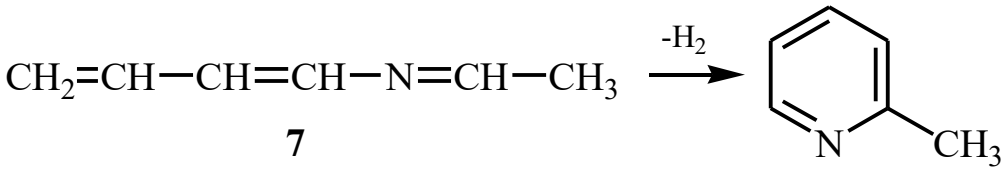


(I.1.14)



(I.1.15)

Соединение (**7**), как сопряженный триен, легко дегидроциклизуется в 2-метилпиридин:



(I.1.16)

Установлено, что образование гетероциклических соединений из ацетилена и аммиака преимущественно идет при наличии в составе катализаторов оксида цинка 3–5 %, оксида хрома (III) 3–4 % и гидроксифторидов цинка или кадмия 5–12 %.

Подбором состава катализаторов можно направить реакцию в сторону образования либо пиридина и 3-метилпиридина, либо 2- и 4-метил-пиридинов.

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УДК 330.322.21

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ПРОБЛЕМЫ ФИНАНСИРОВАНИЯ ИНВЕСТИЦИЙ В ГИДРОЭНЕРГЕТИКУ МАГАДАНСКОЙ ОБЛАСТИ

Аннотация: *В исследовании проводится анализ исполнения финансирования инвестиционной программы ПАО «Колымаэнерго», как основного субъекта гидроэнергетики Магаданской области. Рассмотрены основные проблемы финансирования инвестиционного бюджета предприятия. Предложены возможные пути увеличения финансирования инвестиционной программы ПАО «Колымаэнерго».*

Ключевые слова: *Гидроэнергетика, Магаданская область, Колымская ГЭС, Усть-Среднеканская ГЭС, ПАО «Колымаэнерго», инвестиции, инвестиционная программа, инвестиционный проект, экономика электроэнергетики, финансирование инвестиционной программы, источники финансирования, капитальные вложения.*

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PROBLEMS OF FINANCING INVESTMENTS IN HYDROELECTRICITY IN MAGADAN REGION

Annotation: *The study analyzes the implementation of financing for the investment program of PJSC "Kolymaenergo", as the main hydroelectric power entity in Magadan Oblast. The key issues related to funding the company's investment budget are examined. Possible ways to increase financing for investment program of PJSC "Kolymaenergo".*

Keywords: *Hydroelectricity, Magadan region, Kolymskaya HPP, Ust'-Srednekanskaya HPP, JSC "Kolymaenergo", investments, investment program, investment project, electric power economy, investment program financing, sources of financing, capital expenditures.*

ПАО «Колымаэнерго» осуществляет производство электроэнергии на территории Магаданской области в составе филиала «Колымская ГЭС имени Фриштера Ю.И.» и АО «Усть-Среднеканская ГЭС им. А.Ф. Дьякова» и является базовым энергетическим предприятием (производство

электроэнергии ~ 94%) Центрального энергоузла Магаданской энергосистемы, которое обеспечивает централизованное энергоснабжение ее южной, центральной и западной частей, а также части восточного Оймяконского района республики Якутия-Саха (см. рис. 1).[98]

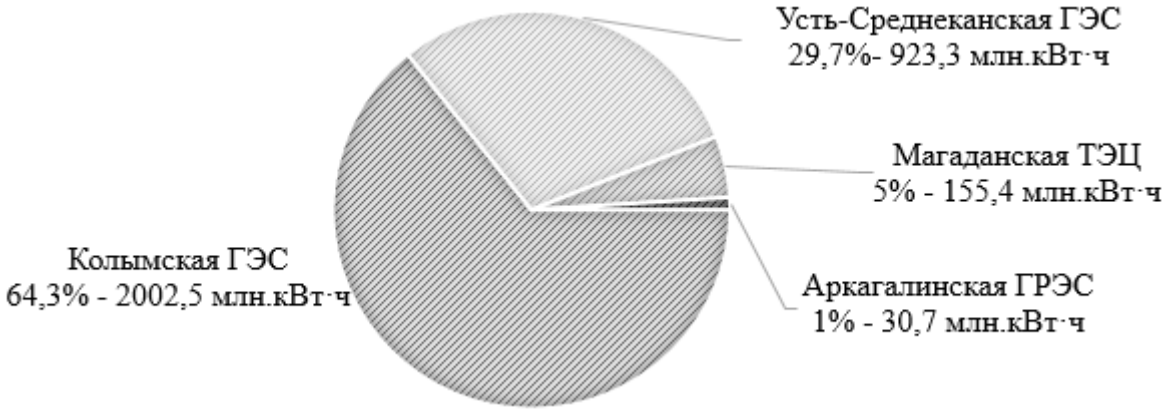


Рис. 1. Структура выработки электроэнергии на электростанциях энергосистемы Магаданской области в 2024 году

Около 97% промышленного производства Магаданской области формируют добыча полезных ископаемых и производство и распределение электроэнергии и воды. К наиболее развитым другим видам экономической деятельности в сфере обрабатывающих производств относятся рыбоперерабатывающее производство, производство пищевых продуктов, производство готовых металлических изделий.[99] Важным является социальная ответственность ПАО «Колымаэнерго», как производителя основного объема электрической энергии в Магаданской области.

Исполнение плана финансирования инвестиционной программы ПАО «Колымаэнерго» является важным показателем деятельности предприятия.

Основной экономической проблемой реализации инвестиционных проектов ПАО «Колымаэнерго» является ограниченность бюджета инвестиционной программы вследствие тарифного регулирования и нехватки собственных источников финансирования.

Факт дефицита инвестиционных ресурсов подтверждается стабильной динамикой роста износа оборудования, а дефицит собственных источников

[98] Годовой отчет ПАО «Колымаэнерго» за 2024 год: сайт / ПАО «Колымаэнерго». URL: https://storage.yandexcloud.net/storage.rushydro.ru/iblock/e88/e8898cc980b7ff219c98724eeec95293/Godovoy%20otchet%20PAO%20_Kolymaenergo_%20za%202024%20god.pdf (дата обращения: 05.10.2025).
Годовой отчет ПАО «Магаданэнерго» за 2024 год: сайт / ПАО «Магаданэнерго». URL: https://www.magadanenergo.ru/upload/iblock/497/1trhd146u4rrhu02g6wljhd7ag2syfv9/report_2024.zip (дата обращения: 05.10.2025).

[99] Обосновывающие материалы. Схема и программа развития электроэнергетических систем России на 2025–2030 годы. Электроэнергетическая система Магаданской области: сайт / АО «Системный оператор Единой энергетической системы». URL: https://www.so-ups.ru/fileadmin/files/company/future_plan/public_discussion/support_materials/2024/84_TITEHS_Magadan.pdf (дата обращения: 05.10.2025).

финансирования (амортизационных отчислений, возвратного НДС и недостаточной прибыли) ставит предприятия электроэнергетики в вынужденное положение на привлечение кредитных средств.

Согласно «Схеме и программе перспективного развития электроэнергетики Магаданской области на 2023-2027 годы», утвержденной указом губернатора Магаданской области №50-У от 28.04.2023, износ основного оборудования Колымской ГЭС является одной из основных проблем энергосистемы Магаданской области. По турбинному оборудованию физический износ в настоящее время составляет от 34 до 99%, генераторное оборудование в среднем отработало около 40 лет.[100]

Учитывая обязательства ПАО «Колымаэнерго» по обеспечению надежности и бесперебойности поставок электроэнергии, а также специфику действующего тарифного регулирования и ограниченный спрос на электроэнергию в Магаданской области, расширение мощностей с целью увеличения продаж электроэнергии становится финансово неоправданным мероприятием, стратегия повышения финансовой отдачи через наращивание мощностей теряет смысл.

Поэтому основными целями инвестиционной программы ПАО «Колымаэнерго» являются:

– обеспечение надежной эксплуатации электрооборудования;
– повышение безопасности персонала и эксплуатационных объектов;
– минимизация аварийности и отказов в работе энергоустановок, и как следствие, минимизация потерь электроэнергии;
– поддержание технического состояния производственного оборудования на уровне современных требований и технических регламентов.

Согласно формату раскрытия №1 проекта Инвестиционной программы ПАО «Колымаэнерго» на 2022-2024 годы, ее структура и анализ исполнения плана финансирования капитальных вложений с распределением по группам проектов представлен в таблице 1.[101]

[100] Схема и программа развития электроэнергетики Магаданской области на 2023-2027 годы: сайт / Министерство строительства, жилищно-коммунального хозяйства и энергетики Магаданской области. URL: https://minstroy.49gov.ru/common/upload/25/editor/file/Sipr_1_tom.pdf (дата обращения: 05.10.2025).

[101] Материалы итогового проекта ИПР ПАО «Колымаэнерго» от 30.08.2022 (Дата публикации: 31.08.2022): сайт / Министерство энергетики РФ. URL: https://minenergo.gov.ru/industries/power-industry/investment-programs/pao_kolymaenergo?docs-group=file-72983 (дата обращения: 05.10.2025).
Материалы итогового проекта ИПР ПАО «Колымаэнерго» от 20.10.2023 (Дата публикации: 24.10.2023): сайт / Министерство энергетики РФ. URL: https://minenergo.gov.ru/industries/power-industry/investment-programs/pao_kolymaenergo?docs-group=file-249724
Материалы проекта ИПР ПАО «Колымаэнерго» от 27.09.2024 (Дата публикации: 01.10.2024): сайт / Министерство энергетики РФ. URL: https://minenergo.gov.ru/industries/power-industry/investment-programs/pao_kolymaenergo?docs-group=file-300508 (дата обращения: 05.10.2025).

Таблица 1

Структура и анализ исполнения планов финансирования инвестиционной программы ПАО «Колымаэнерго» за 2022-2024 гг.

Наименование инвестиционного проекта (группы инвестиционных проектов)	Утвержденный план финансирования, млн. руб.			Факт финансирования, млн. руб.			Исполнение плана финансирования, %		
	2022 год	2023 год	2024 год	2022 год	2023 год	2024 год	2022 год	2023 год	2024 год
ВСЕГО по инвестиционной программе, в том числе:	253,08	531,51	924,24	239,49	220,03	817,90	95%	41%	88%
Реконструкция объектов по производству электрической энергии, объектов теплоснабжения и прочих объектов основных средств	16,64	168,05	494,64	10,06	6,07	458,11	60%	4%	93%
Реконструкция прочих объектов основных средств	16,64	168,05	494,64	10,06	6,07	458,11	60%	4%	93%
Модернизация, техническое перевооружение, всего, в том числе:	212,23	357,20	421,89	213,95	207,83	352,29	101%	58%	84%
Модернизация, техническое перевооружение объектов по производству электрической энергии	211,03	335,43	387,76	213,59	189,50	329,63	101%	56%	85%
Модернизация, техническое перевооружение прочих объектов основных средств	1,20	21,77	34,13	0,36	18,34	22,66	30%	84%	66%
Прочие инвестиционные проекты	24,21	6,26	7,71	15,47	6,13	7,50	64%	98%	97%

Так, в 2023 году ПАО «Колымаэнерго» исполнение инвестиционной программы ПАО «Колымаэнерго» составило 41%, что является

неудовлетворительным показателем. Однако в рамках одного периода тарифного плана, имелась возможность перенести неисполненные объемы финансирования с 2023 на 2024 год. В 2024 году, показатель исполнения плана финансирования инвестиций реабилитирован (см. табл. 1).

Согласно годовому отчету ПАО «Колымаэнерго» за 2024 год, структура и объемы источников финансирования инвестиций предприятия представлены в таблице 2.[102]

Таблица 2.

Источники финансирования инвестиционной программы ПАО «Колымаэнерго» за 2025-2030 гг.

№ п/п	Источники финансирования, млн. руб.	План 2024 г.	Факт 2024 г.	Отклонение
1.	Амортизация основных средств всего, в том числе	249,88	268,82	18,94
1.1.	текущая амортизация, учтенная в ценах (тарифах)	249,88	245,87	-4,01
1.2.	недоиспользованная амортизация прошлых лет	-	22,95	-22,95
2.	Возврат НДС	144,49	37,59	-106,9
3.	Прочие собственные средства всего, в том числе:	529,87	511,49	-18,38
3.1.	CAPEX-прибыль, направляемая на инвестиции, включенная в расчет тарифа	360,71	371,45	10,74
3.2.	прочая прибыль по двусторонним договорам	138,76	138,76	-
3.4.	прочая прибыль (аренда КЭС)	30,4	1,28	-29,12
	Всего:	924,24	817,90	-106,34

Превышение фактических расходов по амортизации от плановых значений в размере 18,94 млн. руб. связано в основном от включения затрат по недоиспользованной амортизации прошлых лет по законтрактованным мероприятиям.

Фактические расходы по источнику возвратного НДС осуществлены ниже плановых показателей на 106,90 млн. руб. из-за длительности процедур предоставления первичной документации подрядчиками для подтверждения права на возмещение.

Из прочих собственных средств, источником финансирования значимого проекта «Реконструкция участка автодороги «Мост-берма плотины (отм. 354,00)» км 3+500 + км 4+000» в составе объекта «Землевозные и бетоновозные автодороги» филиала «Колымская ГЭС имени Фриштера Ю.И.» выделен CAPEX – разрешенный Департаментом цен и тарифов Магаданской

[102] Годовой отчет ПАО «Колымаэнерго» за 2024 год: сайт / ПАО «Колымаэнерго». URL: https://storage.yandexcloud.net/storage.rushydro.ru/iblock/e88/e8898cc980b7ff219c98724eeec95293/Godovoy%20otchet%20PAO%20_Kolymaenergo_%20za%202024%20god.pdf (дата обращения: 05.10.2025).

области размер увеличения тарифа на электроэнергию, с условием израсходования до конца 2024 года. Превышение фактических значений от плановых связано с упущением возможности контрактации проекта в 2023 году. Нереализованный CAPEX 2023 года перенесен на фактические расходы 2024 года.[103]

Прибыль по двусторонним договорам полностью расходуется на нужды инвестиционной программы. На текущий момент у ПАО «Колымаэнерго» один покупатель по двустороннему договору продажи электроэнергии – АО «Полюс Магадан».

Неисполнение плана финансирования инвестиций влечет секвестирование бюджета и, как следствие, увеличение сроков реализации ключевых инвестиционных проектов.

Проведенная характеристика деятельности ПАО «Колымаэнерго» и анализ исполнения бюджета инвестиционной программы за прошедшие три года выявляют наличие ряда значимых экономических проблем реализации инвестиционных проектов.

Согласно проводимому распределению чистой прибыли ПАО «Колымаэнерго» за 2020-2024 гг., ни в одном из указанных лет чистая прибыль не направлялась на инвестиции (см. табл. 3). Причиной тому явилась необходимость погашения убытков прошлых лет, образовавшихся от «неденежных» операций по обесценению основных средств (ФСБУ 6/2020 «Основные средства»).

В данной связи, ПАО «Колымаэнерго» необходимо предпринимать меры по увеличению прибыли, расширению источников финансирования для направления на инвестиции.

Таблица 3

Распределение чистой прибыли ПАО «Колымаэнерго» за 2020 – 2024 гг.[104]

Статья распределения, тыс. руб.	2020 г.	2021 г.	2022 г.	2023 г.	2024 г.
Чистая прибыль (убыток) распределена на:	391 721	70 616	953 433	-1 151 487	- 3 417 341
Резервный фонд	19 586	3 351	47 672	-	-
Дивиденды	-	-	-	-	-
Инвестиции текущего года	-	-	-	-	-
Прибыль на накопление	128 456	59 774	-	-	-
Погашение убытков прошлых лет	243 679	7 311	905 761	-	-

[103] Там же.

[104] Информация о прошедших общих собраниях акционеров: сайт / ПАО «Колымаэнерго». URL: https://kolymaenergo.rushydro.ru/company/corporate/general-meeting/overpast/ (дата обращения: 05.10.2025).

Повышение прибыли ПАО «Колымаэнерго» возможно с помощью расширения покупателей по двусторонним договорам по розничным ценам на электроэнергию, особенно крупных промышленников, что, в свою очередь, зависит от привлекательности региона для ведения крупного бизнеса, темпов экономического развития Магаданской области.

Также, экономической проблемой является невозможность переоценки активов ПАО «Колымаэнерго» в результате политики тарифного регулирования. Компания могла бы пересмотреть стоимость активов, имеющих различия между первоначальной стоимостью и актуальной рыночной ценой. Результатом переоценки может стать увеличение балансовой стоимости активов, что приведет к росту амортизационных отчислений, но, как следствие, к росту тарифов на электроэнергию.

Источниками финансирования дорогостоящих инвестиционных проектов, обусловленных нормативными предписаниями, с целью непревышения тарифной нагрузки на потребителей электроэнергии, могут выступать государственные субсидии. Амортизационные отчисления должны быть увеличены в рамках переоценки балансовой стоимости имущества и должны использоваться только в целях сокращения износа основного оборудования, а неиспользованные объемы прошлых лет не должны изыматься при финансировании инвестиционной программы нового планового периода.

Согласно структуре источников финансирования, ПАО «Колымаэнерго» не практикует возможность финансирования инвестиционных проектов из заемных средств. Беспроцентные займы применяются в группе РусГидро, что подтверждается отчетностью других подконтрольных обществ. Кроме беспроцентных займов, источниками финансирования инвестиций может быть доход от претензионно-исковой работы с подрядчиками, а также средства, вырученные от продажи металлолома, образовавшегося в рамках демонтажа оборудования и металлоконструкций.

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АНДИЖОН ВИЛОЯТИ ТОҒ ОЛДИ ВА АДИР ҲУДУДЛАРИДА ТАБИИЙ АГРАР ИМКОНИЯТЛАРНИ ТАҲЛИЛ ҚИЛИШНИНГ ГЕОГРАФИК ЖИХАТЛАРИ

Аннотация: *ушбу мақолада Андижон вилоятининг тоғ олди ва адир ҳудудларида жойлашган маъмурий туманлари ландшафт асосида геоморфологик, агроиқлим, гидрогеологик ва ер ресурсларини аграр имкониятларини баҳолаш орқали районлаштирилган.*

Калит сўзлар: *ландшафт, районлаштириш, тоғ олди ва адир ҳудудлари, геоморфологик (орографик), иқлимий, тупроқ ва гидрологик кўрсаткичлар, конуссимон ёйилмалари ва конис оралиға ботиқлари, дарё поймалари.*

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GEOGRAPHICAL ASPECTS OF THE ANALYSIS OF NATURAL AGRICULTURAL OPPORTUNITIES IN THE MOUNTAIN AND ADIR AREAS OF ANDIJAN REGION

Abstract*: in this article, the administrative districts located in the foothills and hilly areas of Andijan region are regionalized based on the landscape by evaluating the agrarian potential of geomorphological, agroclimatic, hydrogeological and land resources.*

Key words: *landscape, zoning, foothills and foothills, geomorphological (orographic), climatic, soil and hydrological parameters, conical expanses and depressions between cones, river courses.*

Кириш.

Исталган ҳудудий объект ТАИ (Табиий аграр имконият)ни баҳолашда, шу ҳудуд учун хос бўлган миқдорий кўрсаткичлар ($К^1$, $К^2$, .., $К^n$) танлаб олинади ва дастлабки маълумотлар матрицаси деб аталувчи жадвал тузилади. Бу жадвалга ҳудуднинг ер, агроиқлим, геоморфологик ва гидрогеологик хусусиятларини ифодаловчи миқдорий кўрсаткичлар киритилади 1-жадвал.

Андижон вилояти тоғ олди ва адир ҳудуднинг табиий-аграр имкониятини баҳолаш шкаласи

№	ТАИ турлари	Табиий-ландшафт кўрсаткичлари	Б А Л Л А Р				
			1	2	3	4	5
1	Геоморфологик	Ҳудуднинг денгиз сатҳидан баландлиги, м	>701	621 - 700	541 - 620	461 - 540	460>
		Рельеф қиялиги	>0,010	0,010-0,009	0,008-0,007	0,006-0,005	0,004-0,003
2	Иқлимий	Ўртача +10°С юқори ҳарорат йиғиндиси; □t+□10°С	<4280	4281-4360	4361-4440	4441-4520	4521<
		ГТК, Селянинова	>026	0.24-0.25	0.22-0.23	0.20-0.21	0.19>
3	Ер ресурслар	Тупроқ бонитетбали	<45.6	45.7-48.2	48.3-54.8	54.9-61.4	61.5<
		Суғориладиган ерлар, фоиз хисобида	<45.6	45.7-54.2	54.3-61.8	62.9-71.4	71.5<
4	Гидрологик	Ер ости сувларинин сатхи, м. хисобида	<2-2	3-4	5-6	7-8	9<
		Ҳудуднинг дренажҳолати	1	2	3	4	5

Изоҳ: Жойнинг табиий дренаж ҳолати 5-жуда яхши, 4-яхши, 3-ўртача, 2-кучсиз, 1-оқим йўқ.

Жадвал Андижон вилояти учун муаллиф томонидан тузилган.

Ер ресурслари имкониятини баҳолаш учун кўрсаткичларнинг мукаммал тизими яратилган (Замков, 1978; Зворыкин, 1984; Қўзиев Р.Қ. ва б., 2004, Аҳмадалиев,2007). Ҳудуд тупроқларининг сифат кўрсаткичлари (тупроқдаги гумус, калий, фосфор миқдори, зичлиги) бонитет баллари ($К_1$) орқали ҳисобга олинади, бу иқтисодий географик тадқиқотлар моҳиятига мос тушади.

Ер ресурсларини ифодаловчи миқдорий кўрсаткич сифатида баҳоланаётган ҳудудга нисбатан суғориладиган ерлар салмоғи (фоиз ҳисобида, $К_2$) олинади. Обикор деҳқончилик қилинадиган ҳудудларда мазкур кўрсаткич ердан тезкор фойдаланиш даражасини, унинг иқтисодий имкониятини белгилайди (Крючков, 1987). Андижон вилояти туманлари учун бу кўрсаткичлар 2024 йил 1 январ холатига ҳисобланди.

Жойнинг **геоморфологик** ҳолатини ифодаловчи кўрсаткичлардан ҳудуднинг денгиз сатҳидан баландлиги ($К_3$), рельеф қиялигига ($К_4$) қараб суғориш тизими, тупроқ эрозияси, ювилиш каби жараёнларни билиш мумкин (Рафиқов, 1976; Абдулқосимов, 1983; Исматов, 1989; Нигматов, 2005; Ўрозбоев, 2004). Кўрсаткичларнинг туман ёки хўжалик ҳудудлари учун ўртача

миқдори олинади. Масалан, Қўрғонтепа туманида деҳқончилик қилинадиган ҳудудларнинг денгиз сатҳидан баландлиги 600-700 метр оралиғида тебраниб (Бабушкин и др. 1985, 17 б.), ер юзасининг ўртача гипсометрик қиялиги Оқбўйра дарёси конуссимон ёйилмасида 0,015-0,02 оралиғида қайд этилади (Мақсудов, 1990, 43 б.). Бунда туманнинг мутлоқ баландлиги 650 м, рельеф қиялиги 0,005 миқдорида олинади (1-жадвал).

Агроиқлим кўрсаткичларидан $+10^0$C дан юқори бўлган, ўртача йиллик ҳарорат йиғиндиси ($К_5$) ва Г.Т. Селянинов томонидан ишлаб чиқилган гидротермик коэффициент (ГТК, $К_6$) агроиқлимни баҳолаш ишларида фойдаланиб келинади. (Бабушкин, и др., 1985). Масалан, Андижон туманида ўртача йиллик ҳарорат йиғиндиси 4400-4500 оралиғида бўлиб, баҳолашда у 4450, ГТК -0,24 га тенг бўлади (1-жадвал).

Бутун Фарғона водийсида кузатилгани каби Андижон вилоятида ҳам мураккаб **гидрогеологик шароит** баҳолашда мазкур кўрсаткичларнинг аҳамиятини ошириб юборади (Мақсудов, 1990; Али-Заде и др., 1990). Суғориладиган тупроқларнинг шўрлашуви, ботқоқлашуви каби салбий жараёнлар бевосита ер ости сувларининг сатҳи, минераллашуви ва жойнинг табиий дренаж ҳолатига боғлиқ. Шунинг учун баҳолашда ер ости сувларининг ўртача чуқурлиги ($К_7$) ва ер ости сувлари оқимининг кетиши, яъни ҳудуднинг табиий дренаж ҳолати ($К_8$) асосий кўрсаткич сифатида олинади. Дренаж ҳолати жуда яхши бўлса-5 балл; яхши-4 балл; ўртача-3 балл; кучсиз-2 балл; жуда кучсиз бўлса-1, балл деб баҳоланади (Петров, 1993). Масалан, Ойим–Хўжаобод-Марҳамат Адир орти ботиғида жойлашган Марҳамат туманида бу кўрсаткич 2 бал бўлса, ер ости сувлари оқими яхши бўлган Пахтаобод туманида бу кўрсаткич 5 га тенг бўлади.(1-жадвал).

Учинчидан, таҳлил этилаётган баҳолаш кўрсаткичлари бўйича махсус баҳолаш шкаласи (баҳолашнинг даража кўрсаткичи) ердан фойдаланишни худудий ташкил этиш Андижон вилояти доирасида олиб борилаётгани учун, вилоятнинг тоғ олди адир ҳудудлари доирасида, 14 та маъмурий бирлик, 11 та туман ва 2 та шаҳар учун тузилди (2-илова).

Тадқиқ этилаётган маъмурий туманларнинг ТАИ турларини баҳолашда Б.И.Ишмуратов (1979), Т.М.Субботина (1993), А.М.Носонов (2001), Ю.И.Аҳмадалиев (2007) томонидан қўлланаётган қуйидаги формуладан фойдаланиш мумкин:

$$ХБ_i = \frac{К_{i1} \cdot к_{i1ш.б}}{К_{1\max}} + \frac{К_{i2} \cdot К_{i2ш.б}}{К_{2\max}} + \ldots + \frac{К^{in} \cdot к_{inш.б}}{К_{n\max}}; \quad (2.1)$$

бу ерда, $ХБ_i$ - i чи тумандаги табиий ресурс турининг хусусий бонитет бали;

$к_{1,2,..n}$ - баҳоланаётган кўрсаткичлар сони;

$к_{1\ мах}$ - мазкур кўрсаткичнинг минтақадаги энг катта қиймати;

$Ш_{б}$ - ушбу кўрсаткичнинг минтақавий баҳолаш шкаласидаги ўринбали.

Баҳолаш ишларини вилоятни Асака тумани мисолида кўриб чиқамиз, туманнинг вилоят маъмурий чегараси доирасидаги ерлари 2024 йил 1 январь ҳолатига 26877 гектар, шундан текислик ҳудудларда 24600 гектар, адирликларда 2277 гектар, суғориладиган жами ерлар 17882 ёки текислик майдонини 53,6 фоизини ташкил қилади, тупроқларнинг бонитет бали-62,3 (-лова). Ушбу кўрсаткичлар учун баҳолаш шкаласидаги мос баллар 2; 5; га (2-илова), энг юқори кўрсаткичлар эса 65,9 (Избоскан тумани) ва 65 (Қўрғонтепа тумани)га тенг бўлса, туманнинг ер ресурслари табиий-аграр имконияти 6.4 га баробар бўлади, яъни:

$$а)\ Ер_{б} = \frac{53.6 \cdot 2}{65.9} + \frac{62.3 \cdot 5}{65} = 6.4$$

Ҳудуднинг мутлоқ баландлиги, ГТК, рельеф қиялиги каби кўрсаткичлар учун энг юқори кўрсаткич сифатида энг катта рақам эмас, балки обикор деҳқончилик учун энг қулай ҳолатлар олинади. Худди шу тартибда туманнинг агроиқлимий ($АИ_{б}$), геоморфологик ($ГМ_{б}$) ва гидрогеологик ($ГГ_{б}$) табиий-аграр имкониятлари ҳисоблаб топилади.

$$б)\ АИ_{б}к\ \frac{4500 \cdot 4}{4600} + \frac{0{,}21 \cdot 4}{0{,}18} = 8{,}58$$

$$в)\ ГМ_{б} = \frac{460 \cdot 4}{380} + \frac{0.006 \cdot 5}{0{,}003} = 14{,}84$$

$$г)\ ГГ_{б}к\ \frac{7 \cdot 4}{10} + \frac{5}{5} = 3{,}8$$

Табиий-аграр имкониятни баҳолашда муҳим ҳисобланган ресурсларга қўшимча коэффициент бериш баҳолаш ишларининг ишончлилик даражасини оширади (Носонов, 2001). Бундай коэффициентлар кўрсаткичини аниқлашнинг тўғри усули мутахассиснинг эксперт сифатида баҳолаши ҳисобланади. Обикор дехқончилик қилинадиган Ўрта Осиё шароитида энг аҳамиятли ресурс суғориладиган ер ҳисобланади (Джалалов, 2000). Иккинчи ўриндаги инсон томонидан бошқарилиш имконияти кам бўлган ресурс жойнинг агроиқлим шароитидир. Шунинг учун ТАИнинг якуний қийматларини олишда ҳар икки ресурс кўрсаткичлари мос ҳолда 3; 2 коэффициентга кўтарилиб, якуний натижа қуйидаги формула ёрдамида топилади:

$$ТАИ_{i} = Ер_{б} \cdot 3 + АИ_{б} \cdot 2 + ГМ_{б} + ГГ_{б} \qquad (2.2)$$

Бу ерда, $ТАИ_{i}$ -туман учун жамловчи ТАИ бали;

3; 2 - қўшимча коэффициентлар;

$ЕР_{б}$, $АИ_{б}$, $ГМ_{б}$, $ГГ_{б}$ - мос ҳолдаги табиий ресурсларнинг ҳисобланган бонитет бали.

Демак, Асака туманининг жамловчи ТАИ бали 37,1 га тенг бўлади, яъни

$$ТАИ_i к 6,4 \cdot 3 + 8,58 \cdot 2 + 14,84 + 3,8 = 55$$

Юқоридаги тартибда Андижон вилояти маъмуний районлари массивлар ва 12 та туман ҳудудида баҳолаш ишлари ўтказилди. Табиий-қишлоқ хўжалик районларида экин майдонлари таркибини такомиллаштириш мақсадида ТАИ дан фойдаланиш самарадорлиги баҳоланади. Натижада адир орти ва адир оралиғи ботиқлари ландшафти жойлашган Мархамат ва Хўжаобод туманларида ТАИ бали мос равишда 41,7 ва 39,7 бўлса Конуссимон ёйилмалари ва конис оралиға ботиқларида жойлашган Избоскан ва Асака туманларида мос равишда 62 ва 55 бални ташкил қилди.

Хулоса

Бундан келиб чиқадики Ердан фойдаланиш самарадорлигини баҳолашда нафақат экологик ва иқтисодий, балки ТАИни ҳам ҳисобга олиш керак. Қишлоқ хўжалигини интенсивлаштиришнинг юқори даражасига қарамай, аҳолини юқори сифатли озиқ-овқат билан таъминлаш даражаси илмий асосланган меъёрдан сезиларли даражада орқада қолмоқда. Шунинг учун фақат ердан фойдаланишнинг бундай хусусиятини самарали деб ҳисоблаш мумкин емас. Бу масала ердан фойдаланишнинг ишлаб чиқариш ва ҳудудий тузилишини такомиллаштириш экинларни ландшафтли режалаштириш билан чамбарчас боғлиқ. Ердан фойдаланишнинг ижтимоий самарадорлигини оширишнинг асосий масаласи ер майдонлари таркибини оптималлаштиришдир. Ушбу масалани ҳал қилиш аҳолини озиқ-овқат, саноатни эса хом ашё билан таъминлашни ўз ичига олади.

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ВАЖНОСТЬ И НЕОБХОДИМОСТЬ МАРКЕТИНГА В ПРЕДПРИНИМАТЕЛЬСКОЙ ДЕЯТЕЛЬНОСТИ

АННОТАЦИЯ*: В условиях динамично развивающейся рыночной экономики маркетинг становится неотъемлемой частью успешной предпринимательской деятельности. Он обеспечивает системное изучение рынка, выявление потребностей и предпочтений потребителей, анализ конкурентной среды и разработку эффективных стратегий продвижения товаров и услуг. В статье раскрывается сущность и функции маркетинга как инструмента управления, способствующего повышению конкурентоспособности предприятий и их устойчивому развитию. Особое внимание уделено роли маркетинга в формировании позитивного имиджа компании, укреплении взаимоотношений с клиентами, а также внедрению инновационных подходов, включая цифровой и интернет-маркетинг. Отмечается, что грамотное использование маркетинговых технологий позволяет предпринимателям не только увеличить объем продаж, но и выстраивать долгосрочные партнерские отношения, адаптируясь к изменениям рыночной конъюнктуры. Таким образом, маркетинг выступает стратегическим фактором, определяющим эффективность и результативность предпринимательской деятельности в современных экономических условиях.*

Ключевые слова и фразы: *Маркетинг, предпринимательство, рынок, конкурентоспособность, стратегия, развитие.*

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THE IMPORTANCE AND NECESSITY OF MARKETING IN ENTREPRENEURIAL ACTIVITY

ABSTRACT: *In the context of a dynamically developing market economy, marketing has become an integral component of successful entrepreneurial activity. It provides a systematic study of the market, identification of consumer needs and preferences, analysis of the competitive environment, and development of effective strategies for promoting goods and services. The article reveals the essence and*

functions of marketing as a managerial tool that contributes to increasing the competitiveness and sustainable development of enterprises. Particular attention is paid to the role of marketing in shaping a positive corporate image, strengthening relationships with customers, and implementing innovative approaches, including digital and online marketing. It is emphasized that the competent use of marketing technologies enables entrepreneurs not only to increase sales volumes but also to build long-term partnerships while adapting to changing market conditions. Thus, marketing acts as a strategic factor determining the efficiency and effectiveness of entrepreneurial activity in the modern economic environment.

Keywords: *marketing, entrepreneurship, market, competitiveness, strategy, development..*

Маркетинг играет важную роль в предпринимательстве, так как на его основе инновационная экономика способствует дальнейшему развитию и либерализации экономики нашей страны, укреплению позиций национальной экономики в мировом сообществе.

Один из важнейших приоритетов экономических реформ, реализуемых в новом Узбекистане. Малый бизнес, как вид экономической деятельности, не требующий больших и крупных вложений в условиях дефицита капитала, обеспечивает высокие темпы оборачиваемости ресурсов, быстро и экономично решает задачу формирования и наполнения потребительского рынка в условиях структурной перестройки экономики, экономической нестабильности, ограниченности ресурсов. Малый бизнес быстро адаптируется к изменениям потребительского спроса, обеспечивая тем самым необходимый баланс на потребительском рынке.

В этой связи Президент нашей страны Ш.М.Мирзиёев, как отметил «в перспективе нам необходимо как можно скорее избавиться от практики экспорта сырья, цены на которое резко упали на мировом рынке, активно наращивать экспорт готовой конкурентоспособной продукции, а также еще больше расширять географию стран, в которые эта продукция будет поставляться. В этой связи необходимо находить новые рынки сбыта, новые транспортные коридоры, одним словом, проводить внешнеэкономическую политику, основанную на активном маркетинге».

В настоящее время малый бизнес и частное предпринимательство должны стать не только ключевым звеном в формировании валового внутреннего продукта, но и источником занятости и доходов населения, важным фактором достижения национального благосостояния. Основным приоритетом экономического и социального развития является дальнейшее повышение занятости и благосостояния населения, поддержка и стимулирование развития малого бизнеса и частного предпринимательства, сферы услуг и надомного производства.

Маркетинг является эффективным инструментом и основой для малого бизнеса и предпринимательства в принятии решений и развитии. Понятие маркетинга связано с любой деятельностью в рыночной сфере, поэтому

приводится перевод и происхождение слова маркетинг (происходит от английского слова Market — рынок, ing — активный, означающего деятельность, движение).

Основными направлениями комплексного исследования рынка на основе маркетинга являются следующие.

• требовать обучения
• определить структуру рынка
• исследование продукта
• исследование конкурентных условий
• анализ методов продаж.

Маркетинг — это не только философия, образ мышления и направление экономической мысли, но и практическая деятельность отдельных фирм, компаний, отраслей и экономики в целом.

Одной из основных причин возникновения маркетинга является рост объемов производства, появление новых отраслей промышленности, увеличение разнообразия товаров, возникновение проблемы сбыта продукции у предпринимателей.

Маркетинг учит:

• исследование рынка
• распределение единиц
• размещение товаров
• проведение маркетинговой политики
• торговая политика
• ценовая политика
• политика дистрибуции
• сменная политика
• возможно обновление, добавление услуг и т. д.

В настоящее время эффективное использование активного маркетинга имеет первостепенное значение. Маркетинг призван изучать методы активизации экономических отношений на рынке, методы решения проблем производства и реализации товаров на комплексной, системной основе, быстрой адаптации к изменениям рынка, дифференцированного подхода к потребителям, создания новых конкурентоспособных товаров и организации их производства, изучения и прогнозирования рыночной ситуации, разработки эффективной рекламы.

Для достижения этого маркетинг должен решить следующие важные задачи:

• исследование и выявление потребностей клиентов
• скорректировать ценовое действие в соответствии с потребностями покупателей
• сначала изучите рынок на основе полученной информации о спросе и предложении
• организовать рекламу товаров, повысить заинтересованность покупателей в приобретении товаров

• сбор и анализ данных для проведения ценового исследования для создателя или продавца продукта

• получить информацию обо всех услугах по маркетингу продукта

• собирать информацию о дополнительных товарах и товарах-заменителях

• Заключается в прогнозировании спроса на товары и контроле их реализации.

Процесс управления маркетингом состоит из следующих этапов:

•анализ рыночных возможностей

• выбор целевого рынка

• разработать маркетинговый микс

• реализация маркетинговых мероприятий.

При анализе рыночных возможностей маркетинговые исследования включают анализ маркетинговой информации, маркетинговой среды, структуры рынка, а также оптовой и розничной торговли.

При выборе целевого рынка: - измерить объем спроса, - рассматриваются процессы сегментации рынка.

В ходе разработки комплекса маркетинга осуществляется работа по производству товаров, ценообразованию товаров, методам распространения товаров и стимулирования сбыта, коммуникативной политике производства. Подводя итог, можно сказать, что из сути и целей маркетинга вытекают следующие основные принципы:

•принцип, ориентированный на потребителя, т.е. потребитель — король

•принцип перспективности, то есть деятельность субъекта должна быть перспективно ориентирована

•Под принципом достижения конечной цели понимается увеличение доли рынка и прибыли.

Маркетинг становится сегодня основным «маркетинговым» инструментом не только в коммерческих организациях, но и в общественных.

Предприятия, производящие товары и услуги в нашей стране, как и зарубежные компании, стремятся быть конкурентоспособными не только внутри страны, но и в мировом сообществе.

Опыт показывает, что, следуя вышеизложенным рекомендациям, можно еще больше повысить значимость и роль маркетинга в предпринимательской деятельности.

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БИОПРОДУКТИВНОСТЬ МАКРОФИТОВ ОЗЕРА КАРАТЕРЕН И ИХ ЗНАЧЕНИЕ В ЭКОСИСТЕМНЫХ ПРОЦЕССАХ

Аннотация: *В статье представлены результаты исследования биопродуктивности макрофитов озера Каратерен, расположенного в зоне Южного Приаралья. Рассмотрены видовой состав, сезонная динамика и вклад макрофитной растительности в функционирование водной экосистемы. Показано, что макрофиты играют ключевую роль в формировании кислородного режима, самоочищении водоёма и поддержании биоразнообразия. Установлено, что уровень биопродуктивности зависит от степени минерализации воды, глубины, прозрачности и антропогенного воздействия.*

Ключевые слова: *макрофиты, озеро Каратерен, биопродуктивность, Южное Приаралье, экосистема, самоочищение, биоиндикация.*

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BIOPRODUCTIVITY OF MACROPHYTES IN LAKE KARATEREN AND THEIR IMPORTANCE IN ECOSYSTEM PROCESSES

Abstract: *This article presents the results of a study on the bioproductivity of macrophytes in Lake Karateren, located in the Southern Aral Sea region. The species composition, seasonal dynamics, and contribution of macrophyte vegetation to the functioning of the aquatic ecosystem are examined. It is shown that macrophytes play a key role in maintaining the oxygen regime, self-purification of the reservoir, and maintaining biodiversity. Bioproductivity is determined to depend on the degree of water mineralization, depth, transparency, and anthropogenic impact.*

Keywords: *macrophytes, Lake Karateren, bioproductivity, Southern Aral Sea region, ecosystem, self-purification, bioindication.*

Введение

Озеро Каратерен является одним из природных водоёмов Южного Приаралья, испытывающим значительное влияние климатических и антропогенных факторов. В условиях аридного климата и высокой испаряемости важное значение приобретают макрофиты — высшие водные

растения, формирующие основу первичной продукции водной экосистемы. Исследование их биопродуктивности необходимо для понимания процессов круговорота веществ, оценки экологического состояния и устойчивости экосистемы.

В последние годы на фоне изменения гидрологического режима и засоления озёрной воды наблюдаются изменения в структуре и продуктивности макрофитной растительности. Анализ этих процессов позволяет оценить степень адаптации флоры и прогнозировать дальнейшее развитие экосистемы озера Каратерен.

Материалы и методы исследования

Полевые исследования проводились в весенне-летний и осенний периоды 2023–2025 гг. в прибрежной и мелководной зонах озера Каратерен. Определение видового состава макрофитов осуществлялось по общепринятым флористическим и гидроботаническим методикам. Биомасса определялась путём взвешивания воздушно-сухого материала, а годовая биопродуктивность — расчётным методом с учётом коэффициента прироста. Для анализа химического состава воды определялись показатели pH, электропроводность, содержание растворённого кислорода и минеральных веществ.

Результаты и обсуждение

В макрофитной флоре озера Каратерен отмечено более 20 видов высших водных растений, относящихся к различным экологическим группам: погружённые, полупогружённые и плавающие на поверхности воды формы. Наиболее распространёнными видами являются *Phragmites australis*, *Typha angustifolia*, *Ceratophyllum demersum*, *Potamogeton pectinatus* и *Myriophyllum spicatum*.

Биомасса макрофитов в зависимости от сезона колебалась от 350 до 890 г/м², при этом максимальные значения приходились на июль–август. Средняя годовая продуктивность составляла около 1,5–2,1 кг/м². Наибольший вклад в общую продукцию вносили тростник и камыш, формирующие густые заросли в прибрежной зоне.

Макрофиты активно участвуют в процессах самоочищения водоёма: аккумулируют тяжёлые металлы, связывают биогенные элементы и способствуют осаждению взвешенных частиц. Их разложение является источником органического вещества, поддерживающего питание микробиоценозов и беспозвоночных. Кроме того, заросли макрофитов создают микроклимат для обитания мальков рыб, водоплавающих птиц и беспозвоночных организмов, повышая структурную сложность экосистемы.

В условиях Каратерена важным фактором, влияющим на биопродуктивность, является засоление воды. При минерализации выше 8–10 г/л наблюдается угнетение роста погружённых форм (*Potamogeton pectinatus*, *Ceratophyllum demersum*), тогда как устойчивыми остаются прибрежные и полупогружённые виды (*Phragmites australis*, *Typha angustifolia*). Таким образом, уровень биопродуктивности отражает общее экологическое

состояние озера и может использоваться как интегральный показатель при экологическом мониторинге.

Заключение

Результаты исследования показали, что макрофиты озера Каратерен обладают высокой биопродуктивностью и играют ключевую роль в поддержании устойчивости водной экосистемы. Они обеспечивают первичную продукцию, способствуют самоочищению воды, формируют местообитания для гидробионтов и стабилизируют береговые процессы. Изменения их продуктивности могут служить индикатором экологических нарушений, связанных с засолением и антропогенной нагрузкой.

В перспективе требуется проведение долговременного мониторинга макрофитной растительности для оценки динамики биопродуктивности и разработки мер по сохранению природного потенциала озера Каратерен.

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ФОРМИРОВАНИЕ УСПЕШНОЙ PR-ДЕЯТЕЛЬНОСТИ ДЛЯ ТЕЛЕКОМ-КОМПАНИИ ПУТЕМ ПРИВЛЕЧЕНИЯ АГЕНТОВ ВЛИЯНИЯ (НА ПРИМЕРЕ ПАО «МТС» ПО НОВОСИБИРСКОЙ ОБЛАСТИ)

Аннотация: *В статье рассматриваются эффективные механизмы формирования позитивного имиджа ПАО «МТС» в регионах посредством интеграции PR-методов и активного сотрудничества с агентами влияния. Особое внимание уделено роли инфлюенс-маркетинга и взаимодействию с ключевыми фигурами местного сообщества для укрепления репутации и доверия среди населения.*

Ключевые слова: *PR-деятельность, социальные медиа, анализ, пресс-релизы, СМИ, продвижение.*

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FORMATION OF SUCCESSFUL PR ACTIVITIES FOR A TELECOM COMPANY BY ATTRACTING AGENTS OF INFLUENCE (USING THE EXAMPLE OF MTS PJSC IN THE NOVOSIBIRSK REGION)

Abstract: *This paper explores efficient mechanisms for shaping a positive image of PJSC MTS in regions through integration of public relations strategies and active collaboration with local opinion leaders. Special attention is given to influencer marketing techniques and interaction with key figures within the community to enhance reputation and trust among residents.*

Keywords: *PR activities, social media, analysis, press releases, mass media, promotion.*

Одним из эффективных путей укрепления репутации является работа с лидерами общественного мнения и агентами влияния, способствующими распространению положительной информации о компании и ее услугах.

Агенты влияния – это не только известные журналисты, политики и активисты, но и многочисленные блогеры, медийные личности. Сейчас обществу важны люди со схожей нравственной позицией, заинтересованные в конкретной проблематике и с умение донести окружающим свою точку зрения, тем самым актуализировать тот или иной вопрос [1].

Для того, чтобы грамотно реализовать PR-деятельность необходимо заранее определить по каким критериям будет оцениваться ее результативность.

Критерии для измерения PR-деятельности могут быть следующие [2]:

1. Количество распространённых компанией пресс-материалов (пресс-релизы, анонсы, тематические статьи).
2. Число привлеченных средств массовой информации и организаций, разместивших соответствующие материалы.
3. Количественное выражение обратной связи — количество полученных обращений и запросов на сайте компании.
4. Темпы изменений объемов публикаций, касающихся компании (увеличение или снижение частоты упоминания).
5. Степень совпадения контента PR-коммуникаций с заявленными целями и задачами корпоративной программы.
6. Объем аудитории, ознакомившейся с PR-сообщениями.
7. Процент аудитории, проявившей интерес к полученной информации.
8. Показатели воздействия на убеждения и отношение общественности после ознакомления с материалами.
9. Общие итоги реализации поставленных целей программы в социальной сфере, выражаемые как качественно, так и количественно.

А теперь, основываясь на данных критериях, определим критерии оценки PR-деятельности с участием агентов влияния.

1. Количество созданных уникальных креативных материалов агентами влияния. Включает посты, видеоролики, сторис, коллаборационные проекты.
2. Число привлекаемых каналов распространения (сколько платформ и форматов использовали инфлюенсеры).
3. Количественное выражение обратных реакций. Отзывы, комментарии, репосты, клики и другие действия подписчиков, инициированные после контакта с контентом агента влияния.
4. Изменение интенсивности позитивных упоминаний бренда в сети. Рост положительной шумихи вокруг бренда, частота цитирования в соцсетях и медиа.
5. Степень резонанса инфлюенсерской коммуникации с ожиданиями компании. Насколько эффективно достигаются цели кампании (улучшение репутации, повышение осведомленности).
6. Размер охваченной уникальной аудитории агентом влияния. Количество уникальных просмотров, слушателей, читателей контента каждого конкретного инфлюенсера.
7. Процент активных взаимодействий аудитории с контентом.

8. Показатель изменений убеждений и отношения аудитории к бренду.
9. Итоговый уровень достижения стратегических целей компании.

Для реализации PR-деятельности ПАО «МТС» с использованием агентов влияния может быть использована следующая модель.

Таблица 1

Этап	Цель	Инструменты
Анализ ситуации и определение целевых групп влияния	Определение ключевых аудиторий и лиц, оказывающих влияние на общественное мнение.	Составление портрета агента влияния (лидеры общественного мнения, журналисты, блогеры). Регулярный мониторинг публикаций и обсуждений в социальных сетях и традиционных СМИ.
Формирование базы агентов влияния	Создание сети лояльных партнеров и влиятельных персон, поддерживающих позитивный образ компании.	Привлечение известных новосибирских деятелей культуры, спорта, науки и бизнеса к участию в корпоративных событиях и программах. Организация мероприятий совместно с известными инфлюенсерами и создание партнерских материалов.
Реализация совместных проектов и активностей	Увеличение узнаваемости бренда посредством участия в общественно значимой деятельности и культурных мероприятиях.	Участие в образовательных форумах, конференциях и круглых столах по развитию цифровых технологий. Продвижение культурного наследия региона через интеграцию брендов в фестивали и конкурсы («Система Фест»).
Мониторинг эффективности и коррекция стратегии	Постоянный контроль результатов проведенных мероприятий и своевременная адаптация PR-кампании.	Использование специализированных инструментов анализа социальных сетей и поисковых запросов. Анкетирование клиентов и сотрудников филиалов. Сбор отзывов от участников проектов и оценка их удовлетворённости сотрудничеством.

Предложенная концепция и разработанные рекомендации имеют непосредственное применение в практике корпоративного PR ПАО «МТС», обеспечивая эффективный инструмент поддержания благоприятного публичного имиджа и выстраивания доверительных взаимоотношений с жителями региона.

Применение рекомендованных методик позволяет добиться значительного роста осведомленности и лояльности к услугам компании, способствует поддержанию сильного бренда и обеспечивает устойчивые позиции ПАО «МТС» на местном рынке.

Таким образом, интеграция агентов влияния в региональную PR-практику ПАО «МТС» способствует формированию устойчивого положительного образа компании, повышает лояльность клиентов и укрепляет позиции оператора на рынке телекоммуникационных услуг Новосибирского региона.

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СОЯ НАВЛАРИНИНГ ШОНАЛАШ ФАЗАСИДА СУВ АЛМАШИНУВ ХУСУСИЯТЛАРИ

Аннотатсия*: Сурхондарё вилояти тупроқ-иқлим шароитида турли соя навларининг дуккаклаш фазасида сув алмашинув хусусиятлари ўрганилди.*
Таянч сўзлар: *соя навлари, ўсиш, ривожланиш, транспиратсия, қурғоқчилик*

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CHARACTERISTICS OF WATER EXCHANGE IN THE STAGE OF SOYBEAN CULTIVARS

Abstract: *The characteristics of water exchange during the podding phase of different soybean varieties were studied in the soil and climate conditions of Surkhandarya region.*
Key words: *soybean varieties, growth, development, transpiration, drought*

Ҳозирги кунда вилоят шароитида етиштирилаётган соялар бир неча навлардан иборат бўлиб, улар умумий ҳосилдорлиги ва ҳосил сифатлари билан бир- биридан фарқ қилади. Айрим йилларда ёғингарчилик кам бўлиши ва суғориш учун ишлатиладиган сувларнинг ҳам режадан кам бўлиши умумий ҳосил миқдорига ва сифатига салбий таъсир этади. Шунинг учун ҳам соя навларининг қурғоқчиликка чидамлилик даражасини аниқлаш ва нисбатан чидамли навларни ишлаб чиқишга тавсия этиш долзарб муаммо бўлмоқда. Қурғоқчиликка мослашувчанларини янада кўпайтириш учун далада ҳам, лаборатория шароитида ҳам изланишлар зарур.

Ўсимликларнинг сув алмашинув хусусиятлари уларнинг ўсиши, ривожланиши, ҳосилдорлиги ва ҳосил сифатини таъминлайдиган асосий кўрсатгичлардан бири бўлиб ҳисобланади.

Қурғоқчиликка чидамлилик (сувсизланишга ва ҳаддан ташқари қизиб кетишга ҳосилдорликка катта зарар етказмаслик қобилияти) ноқулай шароитларда кафолатланган ҳосил олишга имкон беради. Уларнинг вегетация даврида ва дуккак ҳосил бўлишида ўсимликларнинг тез ва бир текис униб чиқиши, ўсиши ва ривожланиши асосан экилган уруғлар ва кўчатларнинг сув режимига боғлиқ.

Юқоридаги маълумотлардан келиб чиқган ҳолда, биз соя навларининг сув алмашинув хусусиятларини, уларнинг ўсиш ва ривожланиш фазалари бўйича ўргандик.

1.1- жадвал.

№	Навлар	Баргларда			
		Умумий сув миқдори %	Транспиратсия жадаллиги, г/м^{2}с	Сув тақчиллиги, %	Сув сақлаш қобилияти
1	Барака	74.5 %	87.23	35.8 %	76,1 %
2	Тўмарис ман-60	73.3 %	60.47	26.10 %	76, %
3	Устоз ММ-60	73.9 %	96.23	57.32 %	69,9%
4	Вилона	74.0 %	75.82	30.6 %	70,4%

Барака нави баргида умумий сувнинг миқдори 74,5 % га тенг бўлиб, Вилона нави билан бир хил эканлиги кузатилди. Тўмарис ман-60 навининг умумий сув миқдори 73.3 % га тенг бўлиб, Устоз ММ-60 билан деярли бир эканлиги аниқланди.

Бу маълумотлардан аниқланишича, Тўмарис ман-60 ва Устоз ММ-60 соя навларининг баргларидаги сув миқдорига нисбатан Барака ва Вилона соя навининг баргларида сув миқдори кўп бўлиши аниқланди.

Ўсимлик баргларида содир бўладиган транспирация жадаллиги ҳам ўсимликларни сув алмашинув хусусиятларидан бири ҳисобланади. Жадвалда кўрсатилган (1.1-жадвал) маълумотлардан аниқланишича Устоз ММ-60 навини баргларининг 1 м^2 барг сатҳида 1 соат давомида 96,23 г сув буғлатилган бўлса шу муддатда Тўмарис ман-60 навининг баргларидан 60.47 г сув буғланган яъни шу муддатда Устоз ММ-60 нави Тўмарис ман-60 навига нисбатан 35.76 г сув кўп буғлатган. Қолган навлар ҳам оралиқ ўринларни эгаллаб Устоз ММ-60 навига нисбатан камроқ сув буғлатган, яъни Барака нави 9,0 г , Вилона нави эса 20.41 г кам сув буғлатган. Бу кўрсатгич навларнинг транспирация жадаллиги бўйича ҳам бир-биридан кескин фарқ қилишини кўрсатади.

Соя навлари баргларидаги сув тақчиллиги ҳам нав хусусиятларига боғлиқ ҳолда ўзгаради. Устоз ММ-60 навининг баргларида сув тақчиллик 57.32 % га тенг бўлса, Тўмарис ман-60 навиники 26.10 % тенг бўлиб, у Устоз ММ-60 навига нисбатан нисбатан 31.22 %, Вилона навида 26.72 % ва Барака

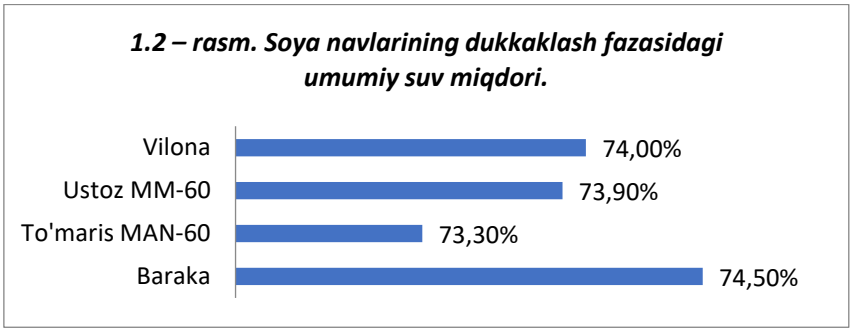
навида 21.52 % Устоз ММ-60 соя нави баргларига нисбатан сув тақчиллиги кўпроқ эканлиги аниқланди.

Ҳудди сув тақчиллигига ўхшаш баргларининг сув сақлаш қобиляти ҳам ўсимликларнинг қурғоқчиликка чидамлилик даражасини характерлайдиган энг муҳим кўрсатгич ҳисобланади. Барака соя нави баргларининг сув сақлаш қобиляти бошқа навларга нисбатан энг юқори бўлиб, 1 соат давомида сарфлаган сув миқдори 23.9 % га тенг бўлса, Устоз ММ-60 соя нави шу муддатда 30.1 % сув сарфлаган ва улар ўртасидаги фарқ 6.2 % га тенг.

Тўмарис ман-60 нави баргларидан сарфланган сув миқдори 24 % га тенг бўлиб, у бор ёғи 0,1 % га камроқ, Вилона навининг барглари шу муддатда 29,6 % сув буғлатган бўлиб, 0,5 % га кам сув буғлатган. Бу маълумотлар Устоз ММ-60 навининг сув сақлаш қобиляти энг паст, Барака соя навининг сув сақлаш қобиляти энг юқори эканлигини кўрсатади. Қолган навлар сувни сақлаш қобиляти бўйича оралиқ ўринни эгаллайди. Шундай қилиб соя навларининг сув сақлаш хусусиятларига асосланган ҳолда уларнинг қурғоқчиликка чидамлиги даражасини қуйидаги тартибда жойлаштириш мумкин: Устоз ММ-60< Вилона< Тўмарис ман-60 <Барака <

Устоз ММ-60 ўрганилган навлар ўртасида қурғоқчиликка чидамлиги энг паст бўлса, Барака навининг қурғоқчиликка чидамлиги энг юқори ва қолган вариантлар оралиқ ўринда жойлашган.

Соя навларининг қурғоқчиликка чидамлилик даражасини кўрсатувчи энг муҳим физиологик жараён баргларидаги умумий сув миқдоридир. Бошқа кўрсатгичларга нисбатан бу кўрсатгич тўғридан-тўғри навларнинг қурғоқчиликка чидамлилик даражасини характерлайди. Бизнинг тажрибамизда олинган бу маълумотлар 1.2-расмда янада аниқроқ тасвирланган.



Соя навларининг қурғоқчиликка чидамлилик даражасини тасвирловчи яъни уларнинг умумий сув миқдори бўйича тўпланган маълумотлар кўрсатишича барча ўрганилган навлар ўртасида нисбатан қурғоқчиликка чидамли нав бўлиб Барака нави ҳисобланади. Бу навнинг баргларидаги умумий сув миқдори 74.50% эканлиги аниқланди.

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ИЗУЧЕНИЕ ВОЗМОЖНОСТИ ПРИМЕНЕНИЯ ГРАВИТАЦИОННЫХ МЕТОДОВ ИЗВЛЕЧЕНИЯ МЕТАЛЛОВ ИЗ ОКИСЛЕННЫХ МЕДНЫХ РУД

Аннотация. *Общий объем окисленных медных руд месторождений Калмакыр составляет более 150 млн тонн. Содержание меди составляет – до 0,5 %, золото – до 1 г/т. В работе представлены результаты исследований, направленных на изучение возможностей извлечения металлов из окисленных медных руд.*

Ключевые слова: *окисленная медная руда, винтовой сепаратор, шлюз, гравитация, концентратор, выход продукта.*

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STUDYING THE POSSIBILITY OF USING GRAVITY METHODS TO EXTRACT METALS FROM OXIDIZED COPPER ORES

Abstract. *The total volume of oxidized copper ores at the Kalmakyr deposits exceeds 150 million tons. Copper grades reach up to 0.5%, and gold grades reach up to 1 g/t. This paper presents the results of research aimed at exploring the potential for extracting metals from oxidized copper ores.*

Keywords: *oxidized copper ore, screw separator, sluice, gravity, concentrator, product yield.*

Введение

В последние годы правительство Республики Узбекистан уделяет повышенное внимание добыче, переработке цветных металлов и производству из них продукции с высокой добавленной стоимостью. Отрасль цветной металлургии рассматривается как потенциальный драйвер экономики. Доказанные запасы золота в Узбекистане составляют 6,4 тыс. t,

серебра — 24,6 тыс. t, меди — 21,3 млн. t. Значительные запасы металлов создают потенциал для привлечения инвестиций в добычу, переработку и наращивание экспорта цветных металлов и продукции из них [1-2].

Месторождение Кальмакыр является одним из крупнейших в мире месторождений медно-порфировых месторождений [3]. Ежегодно добывается более 50 млн. t сульфидные руды для обогащения на МОФ-1 и 2. Общий объем окисленных медных руд месторождений Калмакыр составляет более 150 млн t. Содержание меди составляет – до 0,5 %, золото – до 1 g/t [4]**.** Извлечение металлов из таких руд является актуальным вопросам для горно-металлургической промышленности Узбекистана.

Объект и методы исследования

В качестве объекта исследования были выбраны окисленные медные руды, находящиеся в отвалах №39 Кальмакырского месторождения. Содержание меди составляет – 0,47 %, золото – 0,51 g/t. Окисленная зона Калмакырского месторождения представлена **малахитом** и **хризоколлой**, иногда бирюзой **[4].**

Цель исследований является изучение возможности гравитационного метода извлечение металлов из окисленных медных руд. Гравитационное обогащение – физический процесс, в котором отделение одного минерала от другого зависит от их относительного движения под действием силы тяжести и каких-либо других (одной или нескольких) сил. В качестве среды, в которой осуществляется гравитационное обогащение, используют воду, воздух, тяжелые суспензии и жидкости. Гравитационным обогащением не только перерабатывают различные минералы, но и выделяют сопутствующие ценные компоненты из руд и продуктов обогащения [5-7].

Перед проведением гравитационного метода исследований на винтовом сепараторе, концентрационном столе СКЛ-0,2 и центробежном сепараторе Knelson MD3 изучили параметры оборудования (рис. 1-3):

- теорию процесса обогащения на винтовом сепараторе, особенности движения потока и расслоения минеральных взвесей на винтовом сепараторе, принцип работы, факторы, влияющие на работу винтового сепаратора, схемы применения винтового сепаратора;

- движение потоков воды по наклонной поверхности на концентрационном столе, особенности движения минеральных зерен в наклонной струе воды на концентрационном столе, турбулентность потоков и возникновение вертикальной взвешивающей составляющей скорости на концентрационном столе, подъемную силу потоков, закономерности движения зерен в потоке;

- влияние центробежной силы на разделение минеральных частиц на центробежных сепараторах, влияние скорости потока флюдизационной воды, скорость вращения оборота ротора, создающая центробежную силу, эффективность улавливания тяжелых минеральных частиц;

- подготовку исходного материала, производительность аппаратов.



Рис. 1. Винтовой сепаратор



Рис. 2. Концентрационный стол



Рис. 3. Центробежный сепаратор

Результаты исследований.

В лабораторных условиях провели опыты по гравитационному обогащению в соответствии с нормативными документами. Навески отобраны по 1 кг и измельчены до 70% -0,074 mm (200 меш) в шаровой мельнице МШЛ-14К. Время проведения опыта составило 4-6 мин. Были поставлены одиннадцать опытов с разными параметрами. Полученные продукты при гравитационном обогащении отстаивались, отфильтровывались. Полученные фильтраты высушивались при температуре 105-110^{0}C в лабораторном сушильном шкафу СНОЛ-3,5.3-И41. Высушенные фильтраты истирались ручным способом в фарфоровой ступке, были отобраны сокращенные аналитические пробы весом по 100 g, которые доизмельчались в вибрационном истирателе ИВС-4 (75Т-ДРМ) и упаковывались. Были проанализированы химическим методом по МВИ O`z O`U 0501:2010 на спектрометре AAnalyst 200 и полуколичественным спектральным анализом на ренгенофлюоресцентном спектрометре БРА-135F.

Наилучший результат на винтовом сепараторе СВм-500 был получен при режиме расхода смывной воды 8 l/min и Т:Ж 1:3, выход готового класса 32%, извлечение меди составило 33,7%, золота – 2,5 %.

При извлечении металлов на лабораторном концентрационном столе СКЛ-0,2 наилучший результат был получен при режиме расхода смывной воды 5 l/min и Т:Ж 1:3, выход готового класса 31,6%, извлечение меди составило 34,29 %, золота 4,6 %.

При оптимальных условиях (расход флюидизационной воды - 2,5-3 l/min, скорость вращения ротора - 800 rpm, продолжительность процесса - 5 min, соотношение твердой фазы к жидкой – 1:3) на концентраторе Knelson MD3, выход готового класса составил 7,8%. При этом, извлечение золота достигло уровня 52,2%, меди – 12,45%, а серебра – 6%.

Заключение

Результаты проведенных исследований показали возможности извлечения металлов из окисленной медной руды гравитационным методом

на различных оборудованиях: винтовом сепараторе, концентрационном столе СКЛ-0,2 и центробежном сепараторе Knelson MD3. Наилучшие результаты получены при использование центробежного сепаратора Knelson MD3.

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ИЗВЛЕЧЕНИЯ МЕТАЛЛОВ ИЗ ОКИСЛЕННЫХ МЕДНЫХ РУД

Аннотация. *В работе представлены результаты исследований, направленных на изучение возможностей извлечения драгоценных металлов из окисленных медных руд. В лабораторных условиях проведены эксперименты по гравитационному обогащению с применением концентратора Knelson MD3. При этом извлечение меди составило 12,45%, а золота – 52,2%.*

Ключевые слова: *окисленная медная руда, гравитация, концентрат, хвосты, центробежные концентраторы, выход продукта.*

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METAL EXTRACTION FROM OXIDIZED COPPER ORES

Abstract. *This paper presents the results of research aimed at studying the potential for precious metal extraction from oxidized copper ores. Laboratory experiments were conducted using gravity concentration using a Knelson MD3 concentrator. Copper recovery was 12.45%, while gold recovery was 52.2%.*

Keywords: *oxidized copper ore, gravity, concentrate, tailings, centrifugal concentrators, product yield.*

Введение

Месторождение Кальмакыр в Узбекистане является одним из крупнейших в мире месторождений медно-порфировых месторождений с высоким содержанием золота [1]. Медно-золотая и молибденовая минерализация порфирового месторождения Кальмакыр представлена штокверками, прожилками и вкраплениями в зонах филлитовых и калий-силикатных изменений, развитых преимущественно в интрузивном комплексе среднего и позднего карбона, сложенном монцонитовыми и гранодиоритовыми порфирами [2].

В работе [3] было проведено лабораторное исследование по извлечению меди из окисленной руды с использованием различных концентраций серной кислоты в качестве выщелачивающего агента. Скорость извлечения меди 80,0–94,26% при сниженном расходе кислоты (20%) оказалась экономически эффективным подходом.

Объект и методы исследования

В качестве объекта исследования были выбраны окисленные медные руды, находящиеся в отвалах №39 Кальмакырского месторождения. Общий объем этих руд составляет 1,5 млн тонн. Содержание меди составляет – 0,47 %, золото – 0,51 г/т. Окисленная зона Калмакырского месторождения представлена в основном малахитом (локально - хризоколлой, иногда бирюзой), глубина окисления примерно 20–65 м. Такие медные минералы, особенно хризоколла, плохо поддаются гравитации [4].

Цель исследований является изучение возможности извлечение металлов из окисленных медных руд с применением центробежного концентратора Knelson MD3. Концентраторы Knelson — это усиленная гравитация, изначально “заточенная” под свободное золото и платиноидов; их используют, когда есть высокая контрастность плотности и достаточно грубая разубоженная крупность. Исключение — наличие самородной меди или крупно освобождённого малахита/куприта: такие фракции можно частично отобрать Knelsonom, но это нишевый эффект.

Результаты исследований

Для окисленных руд Калмакыра, где доминируют малахит и хризоколла, Knelson можно использовать лишь как вспомогательный оборудование [4-7]. При экспериментах по применение Концентратора Knelsona для окисленных медных руд основным технологические параметры является:

1. Класс крупности питания: малахит/куприт эффективно извлекаются только если зерно освобождено и имеет крупность, сопоставимую с диапазоном работы концентратора (обычно −1.0+0.075 мм), хризоколла и тонкие шламы (<38–45 мкм) практически не поддаются гравитации;

2. **Содержание твёрдого в пульпе:** слишком высокая густота ухудшает разделение, слишком низкая — снижает загрузку и эффективность;

3. G-force (ускорение): для рудных минералов меди оптимум выше, чем для золота, при низком ускорении часть тяжёлых зерен уходит в хвосты, при слишком высоком — забивается концентратор и растёт потери в слив;

4. Время цикла: длинный цикл - перегрузка концентрата и ухудшение селективности, короткий цикл - не успевает стабилизироваться градиент плотности.

5. Скорость водной промывки: для медных минералов диапазон **4–8 L/min,** подбирается по визуальному выходу «легкой фракции», слишком малая подача - концентратор забивается, слишком большая - выносит ценные минералы.

Вода для флюидизации создаёт “псевдоожиженный слой” в чаше концентратора. При малом расходе воды лёгкие минералы не вымывается и

концентратор начинает забирать много постороннего материала. При расходе воды 2,5-3,0 l/min выход концентрата составляет 4,8 % и содержание Au в концентрате достигается до 2,5 g/t. Дальнейшее увеличение расхода воды приводит к увеличение выхода продукта, но селективность падает, часть тяжёлых минералов уносится в хвост (табл. 1). При оптимальных условиях, выход готового класса составил 7,8%. При этом, извлечение золота достигло уровня 52,2%, меди – 12,45%, а серебра – 6%. Лабораторные эксперименты проводились с использованием технологической схемы, разработанной для извлечения металлов из окисленных медных руд месторождения «Кальмакыр» (рис. 1).

Таблица 1.

Результаты исследований

№	Продукт	Выход		Содержание,			Извлечение, %			Режим гравитации
		kg	%	Au, g/t	Ag, g/t	Cu, %	Au	Ag	Cu	
1	Концентрат	0,077	7,7	0,68	0,62	0,27	12,2	2,8	4,42	Скорость вращения ротора - 700 rpm, время - 3 min
	Хвосты	0,923	92,3	0,408	1,82	0,49	87,8	97,3	95,58	
	Исходный	1,0	100	0,429	1,727	0,47	100,0	100,0	100,0	
2	Концентрат	0,053	5,3	3,08	1,05	0,65	38,1	3,2	7,33	Скорость вращения ротора - 800 rpm, время - 3 min
	Хвосты	0,947	94,7	0,281	1,765	0,46	61,9	96,8	92,68	
	Исходный	1,0	100	0,429	1,727	0,47	100,0	100,0	100,0	
3	Концентрат	0,065	6,5	0,95	1,13	0,21	14,4	4,32	2,90	Скорость вращения ротора - 600 rpm, время - 5 min
	Промпродукт	0,087	8,7	0,32	1,22	0,12	6,5	6,12	2,22	
	Хвосты	0,848	84,8	0,4	1,824	0,53	79,1	89,56	94,88	
	Исходный	1,0	100	0,429	1,727	0,47	100,0	100,0	100,0	
4	Концентрат	0,033	3,3	0,87	0,57	0,46	6,7	1,1	3,23	Скорость вращения ротора - 700 rpm, время - 5 min
	Промпродукт	0,185	18,5	0,72	0,51	0,18	31,1	5,5	7,09	
	Хвосты	0,782	78,2	0,342	2,06	0,54	62,3	93,4	89,69	
	Исходный	1,0	100	0,429	1,727	0,47	100,0	100,0	100,0	
5	Концентрат	0,078	7,8	2,87	1,33	0,75	52,2	6,0	12,45	Скорость вращения ротора - 800 rpm, время - 5 min
	Хвосты	0,922	92,2	0,223	1,76	0,45	47,8	94,0	87,56	
	Исходный	1,0	100	0,429	1,73	0,47	100,0	100,0	100,0	
6	Концентрат	0,073	7,3	1,21	0,85	0,49	20,6	3,6	7,61	Скорость вращения ротора – 600 rpm, время - 7 min
	Промпродукт	0,094	9,4	0,55	0,79	0,15	12,1	4,3	3,00	
	Хвосты	0,833	83,3	0,347	1,91	0,50	67,3	92,1	89,39	
	Исходный	1,0	100	0,429	1,73	0,47	100,0	100,0	100,0	
7	Концентрат	0,069	6,9	1,43	0,68	0,42	23,0	2,7	6,17	Скорость вращения ротора - 700 rpm, время - 5 min
	Промпродукт	0,153	15,3	0,61	0,79	0,20	21,8	7,0	6,51	
	Хвосты	0,778	77,8	0,305	2,005	0,53	55,2	90,3	87,32	
	Исходный	1,0	100	0,429	1,73	0,47	100,0	100,0	100,0	

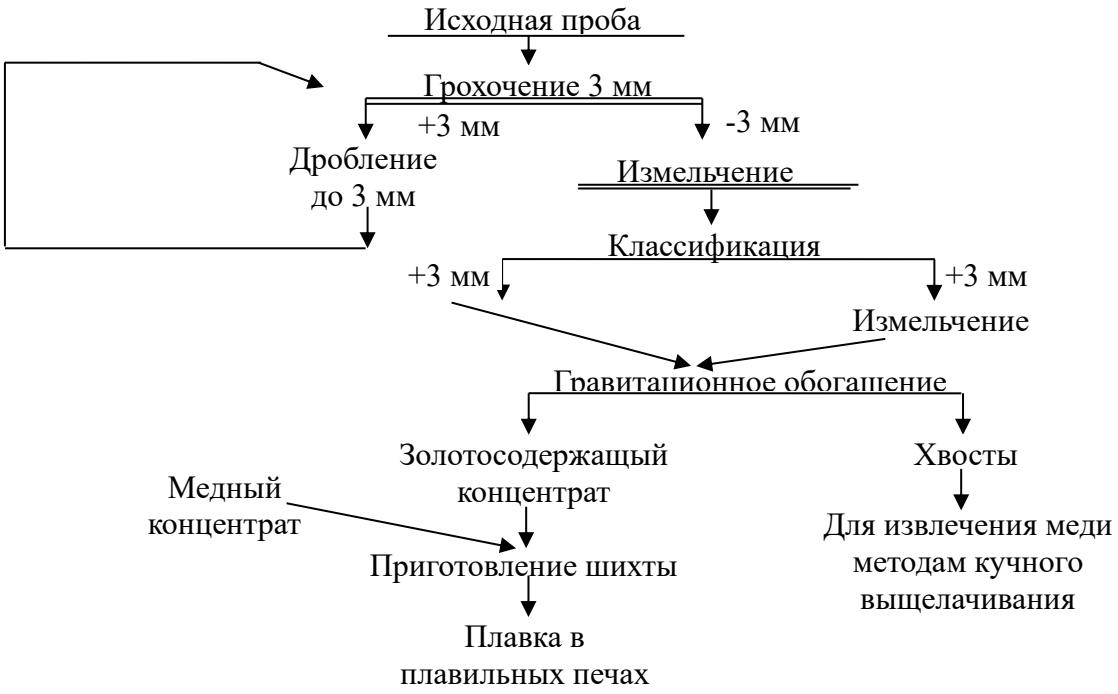


Рис. 2. Рекомендуемая ехнологическая схема

Заключение.

Результаты проведенных исследований показали возможности извлечения золота из окисленной медной руды посредством центробежных концентраторов Knelson. Оптимальным параметром процесса является: расход флюидизационной воды - 2,5-3 l/min, скорость вращения ротора - 800 rpm, продолжительность процесса - 5 min, соотношение твердой фазы к жидкой – 1:3. При этих оптимальных условиях, выход готового класса составил 7,8%. Извлечение золота в концентрат составить 52,2%. Полученный концентрат содержит 2,87 g/t золота и его можно использовать в качестве флюса при плавке медных концентратов.

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РЕФОРМЫ СИСТЕМЫ ОБРАЗОВАНИЯ В УЗБЕКИСТАНЕ: ДОСТИЖЕНИЯ В ДОШКОЛЬНОМ И ШКОЛЬНОМ ОБРАЗОВАНИИ

Аннотация: *В статье проводится анализ содержания и сущности реформ, реализуемых в системе дошкольного и школьного образования Республики Узбекистан. Особое внимание уделяется содержанию нормативно-правовых актов – законов, указов и постановлений, направленных на развитие образовательной отрасли. В нем также Представлена информация о достигнутых результатах реформ, созданных возможностях для педагогических кадров, мерах по повышению их профессионального потенциала, а также направлениях международного сотрудничества в сфере образования.*

Ключевые слова и понятия: *дошкольная образовательная организация, нормативно-правовые документы, реформы, современные педагогические технологии, непрерывное профессиональное развитие, международное сотрудничество.*

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REFORMS OF THE EDUCATION SYSTEM IN UZBEKISTAN: ACHIEVEMENTS IN PRESCHOOL AND SCHOOL EDUCATION

Annotation: *The article analyzes the content and essence of the reforms being implemented in the preschool and school education system of the Republic of Uzbekistan. Special attention is paid to the content of regulatory legal acts –laws, decrees, and resolutions—aimed at the development of the education sector. It also presents information on the achieved results of the reforms, the opportunities created for teaching staff, measures to enhance their professional potential, as well as the directions of international cooperation in the field of education.*

Key words and concepts: *preschool education organization, regulatory documents, reforms, modern pedagogical technologies, continuous professional development, international cooperation.*

Сегодня в новом Узбекистане проводятся глубокие реформы во всех сферах жизни. Особое значение при этом приобретает образование как одна из ключевых сфер, определяющих духовное и экономическое развитие общества. В последние годы совершенствование системы образования, приведение ее в соответствие с международными стандартами и развитие человеческого капитала стали приоритетами государственной политики.

В частности, принятие Закона Республики Узбекистан «О дошкольном образовании и воспитании» (16 декабря 2019 года) и обновленной редакции Закона «Об образовании» (23 сентября 2020 года), которые считаются основополагающими нормативно-правовыми документами в сфере образования, четко определило основные принципы, систему, виды и формы образования. Эти законы обеспечивают прочную правовую основу для проводимых реформ и гарантируют стабильное развитие отрасли.

Законы направлены на обеспечение преемственности образовательного процесса на всех уровнях – от дошкольного до общего среднего, профессионального и высшего образования, повышение качества и эффективности обучения, создание современной инфраструктуры и укрепление человеческого капитала. Они взаимосвязаны и обеспечивают целостность системы: первый закон отвечает за развитие ребенка с дошкольного возраста, второй - закрепляет его права в образовательном процессе и обеспечивает возможность получения качественного образования.

В соответствии с указанными законами были приняты следующие ключевые нормативные акты:

- Указ Президента Республики Узбекистан от 30 сентября 2024 года № ПФ-152 «О дополнительных мерах по повышению качества и эффективности дошкольного образования»;
- Указ Президента Республики Узбекистан от 28 апреля 2025 года № ПФ-73 «О мерах по дальнейшему совершенствованию системы подготовки педагогических кадров»;
- Постановление Президента Республики Узбекистан от 25 января 2021 года № ПҚ-4963 «О мерах по поддержке научно-исследовательской деятельности и внедрению системы непрерывного профессионального развития в сфере дошкольного и школьного образования»;
- Постановление Президента Республики Узбекистан от 21 июня 2024 года № ПҚ-231 «О дополнительных мерах по совершенствованию системы непрерывного профессионального развития работников дошкольного и школьного образования»;
- Постановление Кабинета Министров Республики Узбекистан от 20 декабря 2024 года № 867 «О совершенствовании системы непрерывного профессионального развития работников дошкольного и школьного образования».

Эти документы играют ключевую роль в проведении реформ в дошкольной и школьной системе и способствуют дальнейшему совершенствованию отрасли.

На сегодняшний день в системе дошкольного и школьного образования страны действуют 6 887 государственных дошкольных образовательных организаций и 10 163 общеобразовательные школы. Всего в образовательных учреждениях работает более 657,6 тыс. педагогов, из них 119,6 тыс. - в дошкольных учреждениях и 538 тыс. - в системе общего среднего образования.

В результате принятых законов, указов и постановлений, а также проведенных реформ достигнуты значимые результаты:

В дошкольном образовании:

- укрепление материально-технической базы: в 2017–2024 годах построено и реконструировано более 4 000 современных дошкольных учреждений, что обеспечило дополнительно 1,5 млн мест. Сейчас функционирует около 7 000 государственных детских садов с современным оборудованием.
- создание новых форм организаций: семейные и частные дошкольные учреждения на основе государственно-частного партнерства. В настоящее время функционирует более 31 000 частных детских садов.
- расширение охвата: доля охвата дошкольным образованием выросла с 25–30% до 80–85%. 96% шестилетних детей включены в подготовительные группы к школе.
- повышение кадрового потенциала: внедрена система непрерывного профессионального развития педагогов, изучен международный опыт. Заработная плата педагогов увеличена на 65%, а более 80% специалистов имеют высокую квалификацию.
- расширение международного сотрудничества: реализуются проекты с ЮНИСЕФ, Всемирным банком, Исламским банком развития и другими международными организациями.
- создание цифровой системы повышения квалификации: внедрена электронная программа «Виртуальное повышение квалификации».
- Внедрение методической работы: введены «День методического мастерства» и «Час методического мастерства».
- современные программы и технологии: разработан государственный образовательный стандарт дошкольного образования, внедрены STEAM-образование и мультимедийные технологии, реализована программа «Илк қадам» (Первый шаг) для творческого и интеллектуального развития детей.

В школьном образовании:

- укрепление материально-технической базы: построено и реконструировано более 6 000 школ, создано около 1 млн дополнительных мест, школы обеспечены интернетом, Wi-Fi, электронными журналами и современными ИТ.

- выявление талантливой молодежи: созданы Президентские, специализированные и творческие школы для отбора перспективных учеников и их углубленной подготовки.

- совершенствование подготовки педагогов: на базе Ташкентского государственного педагогического университета имени Низами создан Национальный педагогический университет, а 13 педагогических вузов переданы в систему Министерства дошкольного и школьного образования.

- приравнивание педагогических направлений в частных вузах к государственным и введение системы внешней оценки качества образования.

- обновление системы переподготовки учителей: улучшена деятельность Национального института педагогического мастерства имени А. Авлони и 13 региональных центров педагогические навыки.

- улучшение условий труда: введены более 10 надбавок к зарплате, дополнительные выплаты за международные сертификаты и работу в удаленных районах. Заработная плата учителей увеличена в несколько раз.

- внедрение системы повышения квалификации: «Час повышения квалификации» и «День повышения квалификации» во всех школах.

- международная оценка: участие в PISA, TIMSS, PIRLS для сопоставления знаний и навыков учащихся с международными стандартами.

- инновации и цифровизация: внедрение онлайн-занятий, электронных журналов и цифровых платформ, что существенно повысило качество и эффективность школьного образования.

Реформы продолжаются, при этом особое внимание уделяется устранению территориальных дисбалансов, решению проблемы нехватки педагогов, стабилизации обновления материально-технической базы и поддержке пожилых педагогов в адаптации к цифровой среде.

Для успешного решения этих задач важны: полное выполнение нормативных документов, изучение и адаптация международного опыта и цифровизация управления образованием.

В результате реформ в системе образования сформирован системный подход, обеспечена преемственность между дошкольным и школьным уровнями, повышен престиж педагогических кадров, а качество образования постепенно приводится в соответствие с международными стандартами.

В будущем эти реформы будут способствовать дальнейшему развитию образования в инновационном и гуманном ключе, росту человеческого капитала и повышению интеллектуального потенциала страны.

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ИНТЕГРАЦИЯ ЦИФРОВЫХ HR-СИСТЕМ И ИЗМЕНЕНИЕ ЦЕННОСТНЫХ ОРИЕНТИРОВ КОРПОРАТИВНОЙ КУЛЬТУРЫ

Аннотация. *Современные тенденции цифровизации бизнеса оказывают существенное влияние на трансформацию корпоративной культуры и подходов к управлению персоналом. Интеграция цифровых HR-систем становится не только инструментом оптимизации кадровых процессов, но и мощным фактором, формирующим новые ценностные ориентиры в организации. Использование технологий автоматизации, искусственного интеллекта, HR-аналитики и облачных решений меняет взаимодействие между сотрудниками и работодателем, повышает прозрачность процессов, способствует развитию культуры доверия и ответственности. Однако наряду с положительными эффектами, цифровизация HR-сферы вызывает и ряд вызовов, связанных с утратой традиционных форм коммуникации, снижением эмоциональной вовлеченности работников и необходимостью формирования новых этических стандартов цифрового поведения. В данной статье рассматриваются ключевые аспекты влияния интеграции цифровых HR-систем на корпоративную культуру и ценностные установки персонала, выявляются преимущества и риски цифровизации кадровой среды, а также определяются направления адаптации управленческих практик к новым реалиям цифрового общества.*

Ключевые слова. *Цифровизация, HR-системы, корпоративная культура, мотивация персонала, организационные ценности, управление персоналом, цифровая трансформация, автоматизация, цифровая этика.*

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INTEGRATION OF DIGITAL HR SYSTEMS AND THE TRANSFORMATION OF CORPORATE CULTURAL VALUES

Annotation: *Modern trends in business digitalization have a significant impact on the transformation of corporate culture and human resource management. The integration of digital HR systems is not only a tool for optimizing*

personnel processes but also a key factor in shaping new organizational values. The use of automation technologies, artificial intelligence, HR analytics, and cloud platforms changes the interaction between employees and employers, increases transparency, and promotes a culture of trust and accountability. However, alongside these benefits, digitalization introduces challenges such as the loss of emotional engagement, the weakening of traditional communication, and the need for digital ethics. This article analyzes the impact of digital HR system integration on corporate culture and value orientation, exploring both the advantages and risks of digital transformation in human resource management.

***Keywords**: Digitalization, HR systems, corporate culture, motivation, organizational values, personnel management, digital transformation, automation, digital ethics.*

Введение.

Современный этап развития мировой экономики характеризуется стремительным внедрением цифровых технологий во все сферы управления, включая кадровую политику и развитие человеческого капитала. Цифровизация стала не просто трендом, а необходимым условием эффективного функционирования любой организации, стремящейся к конкурентоспособности и устойчивому развитию. В этих условиях происходит коренная трансформация системы управления персоналом, основанной на использовании цифровых HR-систем, включающих автоматизацию подбора, адаптации, обучения, оценки и мотивации сотрудников.

Интеграция цифровых решений в кадровые процессы не ограничивается лишь технологическими изменениями. Она затрагивает фундаментальные основы корпоративной культуры — систему ценностей, норм и принципов, определяющих взаимоотношения в коллективе, отношение к труду и степень вовлеченности сотрудников. Введение электронных HR-инструментов, таких как облачные платформы для управления персоналом, искусственный интеллект в рекрутинге и аналитика данных для оценки эффективности, приводит к пересмотру подходов к коммуникации, лидерству, мотивации и развитию организационной идентичности.

Корпоративная культура в условиях цифровизации становится более гибкой, открытой и ориентированной на инновации. Вместе с тем, возрастают требования к цифровой компетентности сотрудников, прозрачности управленческих решений и развитию доверия в среде, где многие процессы переносятся в виртуальное пространство. Это требует от руководителей нового типа мышления и умения выстраивать баланс между технологической эффективностью и человеческими ценностями.

Особое значение приобретает переосмысление ценностных ориентиров корпоративной культуры. Если ранее ключевыми составляющими корпоративного духа считались лояльность, стабильность и командная работа, то в цифровую эпоху на первый план выходят такие качества, как

адаптивность, открытость к инновациям, готовность к постоянному обучению и способность к самоуправлению. Цифровые HR-системы становятся инструментом, формирующим новые модели поведения, стимулирующим саморазвитие и укрепляющим культуру взаимной ответственности.

Актуальность темы обусловлена тем, что интеграция цифровых технологий в HR-практики создает не только возможности, но и риски, требующие научного осмысления. Цифровая трансформация может приводить к отчуждению работников от корпоративных ценностей, если технологические новшества внедряются без учета человеческого фактора. В этой связи изучение взаимосвязи между цифровыми HR-системами и изменением корпоративной культуры является важным направлением современной науки управления персоналом.

Целью данной статьи является анализ влияния интеграции цифровых HR-систем на формирование новых ценностных ориентиров корпоративной культуры, определение позитивных и негативных тенденций, а также выработка рекомендаций по гармонизации технологических и гуманитарных аспектов управления персоналом в условиях цифровизации.

Основная часть.

Интеграция цифровых HR-систем представляет собой процесс внедрения и использования информационных технологий для автоматизации, оптимизации и интеллектуализации функций управления персоналом. Современные компании активно применяют такие решения, как ERP-платформы, искусственный интеллект для отбора кандидатов, онлайн-системы обучения, базы данных компетенций и инструменты HR-аналитики. Эти технологии позволяют руководителям принимать решения на основе данных, а не интуиции, и формируют совершенно новый формат взаимодействия между сотрудником и организацией.

Одним из ключевых последствий цифровизации является изменение ценностных ориентиров корпоративной культуры. В традиционных организациях ценности формировались через прямое общение, коллективные мероприятия и личный пример руководителя. Сегодня же ценности транслируются через цифровые коммуникационные каналы — корпоративные порталы, внутренние социальные сети, цифровые платформы обратной связи и геймифицированные инструменты мотивации. Это приводит к переосмыслению таких понятий, как доверие, ответственность, участие и признание.

Цифровые HR-системы способствуют росту прозрачности и справедливости в управлении персоналом. Автоматизированные процессы оценки, вознаграждения и карьерного роста позволяют минимизировать субъективность, что повышает доверие работников к системе и укрепляет культуру честности и равенства. Кроме того, использование аналитических инструментов помогает выявлять скрытые тенденции в коллективе — например, снижение мотивации, профессиональное выгорание или недостаток коммуникации — и оперативно реагировать на них.

Однако цифровизация несет не только преимущества, но и определенные риски. В условиях дистанционного взаимодействия может ослабевать чувство принадлежности к коллективу, снижаться эмоциональная вовлеченность и социальная поддержка. Сотрудники, взаимодействующие преимущественно через цифровые платформы, могут ощущать изоляцию, что требует внедрения новых форм виртуальной корпоративной культуры. Кроме того, усиление контроля со стороны автоматизированных систем нередко вызывает у персонала стресс и ощущение постоянного наблюдения, что способно подорвать атмосферу доверия.

Важным направлением является формирование новой цифровой этики. Автоматизация HR-процессов подразумевает сбор и обработку больших объемов персональных данных, что порождает вопросы конфиденциальности, этичности алгоритмов и справедливости решений, принимаемых искусственным интеллектом. Для поддержания устойчивой корпоративной культуры необходимо формировать у сотрудников осознанное отношение к использованию технологий, обучать их цифровой грамотности и навыкам кибербезопасности.

КЛЮЧЕВЫЕ ИДЕИ
Интеграция цифровых HR-систем и изменение ценностных ориентиров корпоративной культуры.
Цифровизация экономики приводит к трансформации управления персоналом и корпоративной культуры. Необходимость адаптации организаций к новым технологическим реалиям делает тему стратегически значимой.
Цель исследования — проанализировать влияние интеграции цифровых HR-систем на формирование новых ценностных ориентиров корпоративной культуры и определить пути гармонизации технологических и гуманитарных аспектов управления персоналом.
Объект исследования — цифровые HR-системы как инструмент управления человеческими ресурсами в современных организациях.
Предмет исследования — влияние цифровизации на корпоративные ценности, мотивацию и культуру взаимодействия в коллективе.
Ключевые понятия: цифровизация, корпоративная культура, HR-аналитика, цифровая этика, мотивация, доверие, адаптивность.
Интеграция цифровых технологий меняет формы коммуникации и характер корпоративных ценностей. Возрастает роль прозрачности, аналитики и обратной связи в HR-процессах. Автоматизация повышает эффективность, но несёт риски отчуждения и стресса у работников. Цифровые инструменты требуют новой цифровой этики и развития цифровой грамотности.
Цифровые HR-системы формируют новую философию управления персоналом. Корпоративная культура становится гибкой и инновационной. Для устойчивого развития необходим баланс между технологией и человеческими ценностями. Будущее HR — синтез цифровых инструментов и гуманистических принципов управления.
Результаты исследования могут использоваться при разработке корпоративных стратегий цифровизации, программ обучения персонала и совершенствования HR-политики.

Также стоит отметить, что цифровые инструменты оказывают существенное влияние на мотивационную структуру работников. В условиях постоянной обратной связи, геймификации и персонализированных систем поощрений сотрудники становятся более ориентированными на результат и саморазвитие. Вместе с тем, внутренняя мотивация, основанная на принадлежности и идеологической вовлеченности, требует поддержания живого общения, ценностного диалога и внимания к индивидуальным потребностям человека.

Таким образом, интеграция цифровых HR-систем выступает не просто технологическим процессом, а глубоким культурным преобразованием, затрагивающим все аспекты корпоративной жизни. Успех внедрения зависит от того, насколько организация сможет гармонично сочетать цифровую эффективность с человеческим фактором, превратив технологии в инструмент укрепления, а не разрушения корпоративных ценностей.

Заключение

Интеграция цифровых HR-систем становится ключевым направлением развития современных организаций, формируя новую философию управления персоналом и трансформируя традиционные модели корпоративной культуры. Цифровизация кадровых процессов способствует повышению прозрачности, эффективности и справедливости в отношениях между работодателем и сотрудниками, создавая предпосылки для более осознанной и мотивированной работы персонала. В то же время она стимулирует пересмотр ценностных ориентиров, выдвигая на первый план такие качества, как гибкость, инновационность, самостоятельность и цифровая ответственность.

Проведённый анализ показывает, что влияние цифровых HR-систем на корпоративную культуру проявляется в нескольких взаимосвязанных направлениях. Во-первых, технологии меняют характер коммуникаций, формируя цифровое рабочее пространство, где ценность информации, открытость и оперативность становятся важнейшими составляющими организационной этики. Во-вторых, автоматизация способствует формированию новых стандартов мотивации, основанных на персонализированных данных, постоянной обратной связи и геймифицированных системах поощрения. В-третьих, цифровизация требует от работников и руководителей развития новых компетенций — цифровой грамотности, адаптивности, креативного мышления и эмоционального интеллекта.

Однако важно подчеркнуть, что автоматизация HR-процессов не должна превращаться в самоцель. Без должного внимания к человеческому фактору, моральным ценностям и психологическим аспектам труда цифровая трансформация может привести к отчуждению сотрудников, снижению вовлечённости и потере чувства корпоративной идентичности. Для того чтобы избежать подобных последствий, организациям необходимо выстраивать стратегию внедрения технологий с учётом принципов гуманизации труда, соблюдения этических норм и развития корпоративного диалога.

Будущее управления персоналом — за гармоничным синтезом цифровых инструментов и человеческих ценностей. Именно такое сочетание позволит создать устойчивую корпоративную культуру, способную не только адаптироваться к изменениям внешней среды, но и формировать внутренние источники инноваций и мотивации. Таким образом, цифровые HR-системы должны рассматриваться не как замена человеческому управлению, а как интеллектуальное дополнение, усиливающее потенциал личности и укрепляющее корпоративное сообщество.

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ИЛМИЙ ИЗЛАНИШ ВА ЖАМИЯТ ТАРАҚҚИЁТИГА ФИДОЙИЛИК БИЛАН ҲИССА ҚЎШГАН ОЛИМ (ГЕОГРАФИЯ ФАНЛАРИ ДОКТОРИ ПРОФЕССОР А.Н.РЎЗИЕВ ХОТИРАСИГА БАҒИШЛАНГАН)

Аннотация: *Мазкур мақолада Ўзбекистон география фани тараққиётига катта ҳисса қўшган олим, география фанлари доктори, профессор Абдимўмин Нормуродович Рўзиевнинг ҳаёти ва илмий фаолияти ёритилган. Олимнинг илмий мероси, монография ва мақолалари, педагогик фаолияти ҳамда шогирдлар тайёрлашдаги хизматлари таҳлил қилинади. Шунингдек, Рўзиев томонидан география кафедрасининг ташкил этилиши, ўқув қўлланмаларининг яратилиши ва илмий мактаб шаклланишидаги роли кўрсатиб ўтилган. Мақолада олимнинг фидокорона меҳнати ва Ватан равнақига қўшган беқиёс ҳиссаси умумлаштирилган ҳолда кўрсатилган. Унинг шахси Юксак илм фидоийси сифатида баҳоланади.*

Калит сўзлар: *Абдимўмин Рўзиев, профессор, Шўрчи, Сайрак, иқтисодий география, илмий мерос, педагогика, география кафедраси, илмий мактаб.*

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THE SCHOLAR DEVOTED TO THE ADVANCEMENT OF SCIENCE AND SOCIETY (DEDICATED TO THE MEMORY OF DOCTOR OF GEOGRAPHICAL SCIENCES, PROFESSOR A.N. RUZIEV)

Abstract. *This article highlights the life and scientific activity of Abdimumin Normurodovich Ruziev, Doctor of Geographical Sciences and Professor, who made a significant contribution to the development of geography in Uzbekistan. The article analyzes his scientific legacy, monographs, articles, pedagogical work, and his contribution to the training of young specialists. It also emphasizes Ruziev's role*

in establishing the Department of Geography, creating educational manuals, and forming a scientific school. The author summarizes his devoted work and invaluable contribution to the progress of the Motherland, portraying him as a devotee of great science.

Keywords: *Abdimumin Ruziev, professor, Shurchi, Sayrak, economic geography, scientific heritage, pedagogy, Department of Geography, scientific school.*

Кириш

Республикамизда таниқли бўлган иқтисодий географ олим, география фанлари доктори, профессор Абдимўмин Рўзиев 1936-йил 18-июлда Сурхондарё вилояти Шўрчи туманидаги Сайрак қишлоғда хизматчи оиласида туғилган.

Абдимўмин Рўзиев 1955-1960 йилларда Ўрта Осиё давлат университетида (ҳозирги Ўзбекистон Миллий университети) таҳсил олди. У 1960-йилда университетнинг иқтисодий география бўлимини муваффақиятли тамомлади ва ишлаш учун география факультетининг илмий-тадқиқот бўлимига йўлланма олди. Абдимўмин Рўзиев 1978-йилдан бошлаб ўз фаолиятини Термиз давлат педагогика институтида (ҳозирги Термиз давлат университети) давом эттирди. Устоз 1978-йилдан 1986-йилгача дотсент, илмий ишлар бўйича проректор (1980-1983), география кафедраси мудири, профессор (1987-1993,1996-2001), иқтисод- география факултетининг декани (1993-1996) лавозимларида ишлаб келган.

Профессор Абдимўмин Рўзиев иқтисодий география фанининг жонкуяр тарғиботчиси ҳам эди. Жумладан домланинг сайи ҳаракатлари билан география кафедраси ва география бўлими очилган. Сўнгра 1990-йилдан 2004-йилга қадар ТерДУ география кафедраси негизида география фанидан Ўзбекистон Республикаси талабалар олимпиадаси узлуксиз равишда ўтказилиб келинди.

География фанлари доктори, профессор А.Рўзиев 2001-йил 31-октябрда айни илмий ижод комиллиги чўққисига етган бир пайтда оламдан кўз юмган. Унинг илмий меъроси ва ёркин инсоний хотираси ҳамиша яқинлари, шогирдлари, дўсту-ҳамкасбларининг хотираларида абадий сақланиб қолади.

Асосий қисм: Профессор Абдимўмин Нормуродович Рўзиев Сурхон-Шеробод водийси қишлоқ хўжалиги ривожланиши, ихтисослашуви, тармоқ ва худудий таркиби, Ўзбекистонда агросаноат ишлаб чиқаришининг худудий тизимлари шакилланиши ва уларни такомиллаштириш масалалари, Жанубий Ўзбекистон иқтиодиётини комплекис ривожлантириш ва оқилона худудий ташкил этиш муаммоларни ўзининг кўп йиллик илмий фаолияти мобайнида ҳар томонлама чуқур ўрганишга катта ҳисса қўшган.

Абдимўмин Рўзиев илмий фаолиятини қишлоқ хўжалиги географияси йўналишидан бошлаган. У собиқ иттфоқ Фанлар академияси география бўлимида лабораторант ва кичик илмий ходим сифатида ишлаган даврида етук олимлардан – А.Н.Ракитников, К.И.Иванов, З.М.Акрамов каби

олимлардан маслахат олган. Рўзиев илк номзодлик диссертатсиясини ,,Сурхон-Шеробод водийсида қишлоқ хўжалигининг жойлашиши ва ривожланиши номли мавзуда ҳимоя қилган ва бу мавзу бўйича экспедитсиялар ва илмий тадқиқотлар олиб борган. Кейинчалик унинг илмий изланишлари кенгайиб, ҳудудий геосистемалар, агросаноат комплекслари территориал ташкилотлари ва ҳудудлараро иқтисодий-географик алоқалар каби мавзуларга қаратилган. 1987-йилда ,,Собиқ Ўзбекистон ССР агросаноат комплексида территориал системалар ва уларни такомиллаштириш йўллари" мавзусида докторлик диссертатсиясини муваффақиятли ҳимоя қилган. География фанлари доктори, профессор А.Н.Рўзиевнинг ташаббуси билан 1971-йилда Ўзбекистон география жамиятининг Қарши бўлими, 1989-йилда эса Термиз бўлими очилди. Профессор А.Н.Рўзиев мазкур бўлимларнинг биринчи раиси ҳамда кўп йиллар мобайнида Ўзбекистон география жамиятининг илмий кенгашининг аъзоси бўлган. Шунингдек Абдумўмин Рўзиев жаҳон географлари XXIII Конгреси, Собиқ Бутун иттифоқ география жамиятининг VI (Тбилиси), VII (Фрунзе), IX (Қозон) сездлари, Ўзбекистон география жамиятининг қатор сездларининг фаол қатнашувчиси бўлган.

Устоз Абдимўмин Рўзиев ўзларининг кўп йиллик меҳнат фаолиятлари давомида самарали меҳат фаолиятини олиб бориб, 400 га яқин илмий ишларни чоп эттирганликлари, улардан 20 дан ортиғи монография ва илмий рисолалар, 10 дан ортиқ дарслик ва ўқув қўлланмалари чоп этилган. Унинг монография ва китоблари орасида ,,Қишлоқ хўжалиги ишлаб чиқариши асослариъъ(1990), ,,Қишлоқ хўжалигида фан-техника тараққиёти, ,,Сурхондарё вилояти"(1996), ,,Сурхондарё сув омборлари ва агросаноат мажмуини ривожлантириш масалалари"(1997), ,,Марказий Осиё давларлари иқтисодий ва ижтимоий географияси"(2000) ва ,,Ўзбекистон иқтисодий географиясиъъ(2001) каби номлар тилга олинган. Ушбу асарлар ўқув ва илмий доираларда кенг тарқалган бўлиб, география йўналишида таълим олувчилар ва илмий тадқиқотчилар учун муҳим манба ҳисобланади. Рўзиевнинг айрим илмий мақолалари хорижий тилларга таржима қилинган, кенг география жамоатчилигинингтаҳсинига сазовор бўлган, режалаштириш ташкилотлари томонидан инобатга олинган. Жумладан, унинг Катта Совет энсиклопедияси (3-нашри)нинг 25-жилдида чоп қилинган ,,Сурхондарё вилояти" мақоласи инглиз, француз, немис ва бошқа хорижий тилларга таржима қилинган.

Хулоса

Абдимўмин Нормуродович Рўзиев ўзининг бутун ҳаёти ва фаолиятини география фанини ривожлантириш юртимиз табиатини илмий жиҳатдан тадқиқ этиш ва уни келажак авлодларга етказишга бағишлаган буюк олимдир. У нафақат самарали илмий тадқиқотлари, балки кўплаб шогирдлар тарбиялаши, дарслик ва қўлланмалари, ташкилотчилик фаолияти билан ҳам илм-фан ривожида ўчмас из қолдирди. Рўзиевнинг илмий мероси бугун ҳам долзарб бўлибъ Ўзбекистон география фанининг мустаҳкамланишида муҳим манба вазифасини ўтамоқда. Шу боис, Абдимўмин Рўзиев шахсияти ва фаолиятини ,,Юксак илм фахрийсиъъ деб аташ бежиз эмас. У ўзининг илмий

изланишлари, фидокорона меҳнати ва Ватанга садоқати билан ёш авлод учун ибрат мактабини яратиб кетди. Унинг ҳаёти ва фаолияти бизни илмга муҳаббат, меҳнатга садоқат ва Ватан равнақи йўлида фидойиликка чорлайди.

Вақт оқар дарё эканлигини барчамиз яхши биламиз. У хотираларимизнинг хиралашишига, баъзи воқеаларнинг ёдимиздан кўтарилишига сабабчи бўлади. Лекин қалбга яқин бўлган инсонлар хотираси даврлар ўтиши билан ҳам ўзгармайди. Устознинг босиб ўтган илмий педагогик фаолияти ва география фанидаги эришган ютуқлари ёш авлодга таълим-тарбия беришда ибрат намунаси бўлиб хизмат қилади. Илоҳим, устознинг жойлари жаннат, руҳлари шод ва оҳиратлари обод бўлсин.

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ИҚТИСОДИЙ ИНТЕГРАЦИЯНИНГ ҲУДУДИЙ-ГЕОГРАФИК ЖИҲАТЛАРИ. (МАРКАЗИЙ ОСИЁ ДАВЛАТЛАРИ МИСОЛИДА)

Аннотация. *Ушбу мақолада Марказий Осиё давлатлари мустақилликни қўлга киритишлари билан ижтимоий-иқтисодий тараққиётнинг янги босқичи бошланганлиги, бу босқич муштарак мақсадлари бир бўлган давлатларнинг ўзаро тенгликка таянган дўстона ҳамкорликларини янги асосларга суянган ҳолатда ривожланаётганлиги, яъни иқтисодий интеграцияни вужудга келтириш орқали кечадиган босқичи эканлиги, ҳамда ижтимоий-иқтисодий тараққиётга эришишда ривожланган давлатларнинг, тарихий синовлардан ўтган бирдан –бир йўли эканлиги очиб берилган.*

Калит сўзлар; *иқтисодий интеграция, Марказий Осиё давлатлари, ишлаб чиқариш, халқаро, ихтисослашув.*

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REGIONAL AND GEOGRAPHICAL ASPECTS OF ECONOMIC INTEGRATION (ON THE EXAMPLE OF CENTRAL ASIAN COUNTRIES)

Summary. *The article reveals the questions that with the acquisition of independence by the Central Asian states, a new stage of socio-economic development has begun, that this stage is developing on the basis of friendly cooperation, which is based on the mutual equality of states with common goals, that is, it is a stage that occurs through the implementation economic integration, and that the only correct path that has gone through historical trials in achieving the socio-economic development of prosperous states.*

Keywords: *Economic integration, Central Asian states, production, international, specialization.*

Ҳар қандай иқтисодий интеграциянинг замирида ҳудудий (географик) бирлик ва яхлитлик, тарихий тараққиёт ҳамда халқларнинг яқин ўтмишидаги тақдири бирлиги, аҳолисининг этник бирлиги, эзгу мақсадлари бирлиги, коммуникациялар, иқтисодиётининг асосий ва етакчи тармоқлари муштараклиги, сув хўжалиги ва энергетика объектларидан ҳамкорликда фойдаланиб ишлатиш, темир йўл ва автомобил транспорти ягона тизимини вужудга келтириб ишлатишдаги мақсадлари бирлиги ва бошқалар ётади. Шу жиҳатдан иқтисодий интеграцияни Марказий Осиё давлатлари (МОД) мисолида қараб чиқишнинг ўз ўрни бор.

МОД аро иқтисодий интеграция (ИИ) ҳақида фикр юритганимизда биз кичик интеграция тизими ҳақида фикр юритамиз, чунки унга уюшган мустақил давлатларнинг ҳар бири ўзларининг хўжалик фаолиятларидаги кўпқиррали интеграция бирлигини мустақил тарзда сақлайдилар ва хал қиладилар.

Марказий Осиё давлатлариаро ривожланиб бораётган халқаро меҳнат тақсимоти мазкур давлатларининг маҳсулот этиштириш кўлами, миқёси ва ҳилига ўз таъсирини ўтказиб боради ва шу асосда уларнинг хўжаликни иқтисодий жиҳатдан мақсадга мувофиқ тарзда юритишларига (ва шу билан бирга ҳудудий меҳнат тақсимотига) ўз таъсирини кўрсатади. Бу нарса табиий равишда мазкур давлатлар ижтимоий-иқтисодий тараққиётини бир-бирига яқинлаштиришга хизмат қилади. Шу билан бирга МОД аро ИИ халқаро меҳнат тақсимотининг таркибий қисми бўлиб, унинг ривожланиб боришга моддий асос яратиб беради[2].МОД аро ИИ унинг ҳар бир субъекти халқ хўжалигининг тармоқ тузилишига, унинг ихтисослашув даражасининг чуқурлашиб боришига ҳамда давлатлар ижтимоий-иқтисодий тараққиётига ижобий таъсир кўрсатади.ИИ натижасида унга уюшган ҳар бир мустақил давлатнинг географик (айниқса ҳудудий, табиий ресурс) ва иқтисодий (меҳнат ресурси, техникавий, технологик, транспорт) имкониятлари тўлароқ ишга солинади.

Собиқ Иттифоқнинг парчаланиб кетиши сабабли Марказий Осиёда бешта Республика ўрнида муштарак мақсадлари бир бўлган мустақил давлатлар пайдо бўлди. Тарихий ҳақиқат шуки, бу ҳудуд давлатлар оша Турон, Мовароуннаҳр, Туркистон деб юритилган . Тарих тақозоси билан бу ҳудуд халқлари (бинобарин давлатлари) яна рамзий маънода бирлашадиган бўлди. Бу хил бирлашиш бизнинг фикримизча жаҳондаги ривожланган давлатлар босиб ўтган йўл орқали, яъни мустақил давлатчиликни сақлаган ва уни ривожлантиришни олий мақсад қилиб олган ҳолда ИИ ни шакллантириш ва ривожлантириш орқали ўтадиган йўлдир[5].

Эндиликда барқарор иқтисодий интеграцияни вужудга келтириш борасида Марказий Осиё давлатлари қутлуғ ишларни амалга оширмоқдалар. Марказий Осиё давлатлари даражасидаги интеграцияга келсак у ўзининг алоҳида хусусиятлари билан ажралиб туради. Бу хусусиятлар бизнинг фикримизча, уларнинг тарихий ва ҳудудий бирлиги,халқларнинг эса этник келиб чиқиши жихатидан бирлиги, бир-бутунликни азал-азалдан муқаддас деб

билиши, уни асрлар оша қадрлаб келиши, яқин ва узоқ келажакга йўналтирилган эзгу мақсадларининг бирлигидадир. Бу интегрция ўз моҳиятига кўта ҳамиша халқ интеграцияси бўлиб келган ва шундай бўлиб қолмоқда. Бутун тарих давомида бу минтақа халқлари ажнабий босқинчилар ҳукмронлигига қарши елкама-елка туриб курашиб келганлар. Бу халқларнинг вакилларини мустақилликни қўлга киритиш ва мустақил давлатлар тузиш ғоялари бирлаштирган. Бу халқлар Туркистон деб ном олган улкан ҳудудда асрлар давомида яшаб келганлар.

Марказий Осиё ҳамдўстлигининг келажагига ишонч билан қараш учун ҳамма асослар мавжуд. Зарур ҳуқуқий ва ташкилий шарт-шароитлар яратилган[3].

Ягона иқтисодий маконнинг маъноси шуки, МОД таркибидаги ушбу давлатлараро иқтисодий интеграциянинг барча жабҳаларида ва айниқса товар айирбошлашда тўсиқлар олиб ташланади, эркин савдо-сотиқ қилишга кенг йўл очилади, унинг ҳар-бир аъзоси биридан-иккинчисига олиб ўтиладиган маҳсулотлар учун бож тўлашдан озод қилинади.

Марказий Осиёдаги барча мустақил давлатлар халқ хўжалигини ривожлантиришнинг ўзига хос хусусияти, имконият, йўналиш ва қонуниятларига эга.Биринчи Президентимиз таъкидлаганидек ,,Ҳар бир мустақил давлатнинг ўз ривожланиш йўли бор”[1]. Айни пайтда Марказий Осиёдаги барча давлатларни бирлаштирувчи, уларнинг халқ хўжалигини боғлаб ривожлантиришга асос бўладиган тарихий-географик омиллар ҳам бор. Бу географик имконият (омил)лари қуйидагиларда намоён бўлади:

- худудий яқинлик ва яхлитлик;
- табиий географик омил;
- меҳнат ресурси омили;
- саноат ва транспорт омили;
- сув хўжалиги омили ва бошқалардир[4].

Марказий Осиё халқларининг интеграцияси орзу ёки келажакга мўлжалланган лойиҳа эмас, бу – бор нарса, бу – мавжуд воқелик бўлиб, фақат ташкилий, ҳуқуқий ва сиёсий томонларини ривожлантириш зарур, МОД аро ИИ ни ривожлантиришнинг асосий мақсадларидан бири, аввало ушбу давлатларининг иқтисодиётини ривожлантиришдир.

Хуллас, Марказий Осиёда иқтисодий интеграцияни ривожлантириш учун унинг барча субъект (давлат) ларида объектив асослар мавжуд. Бу интеграция ҳамдўстлик давлатчиликни жипслаштириш ва ҳозирги бозор иқтисодиёти шароитида минтақадаги мамлакатларнинг куч-ғайратлари ва саъйи-ҳаракатларини жипслаштиришга қаратилгандир.МОД да ИИ ни ривожлантиришдан асосий мақсад Марказий Осиё давлатлари аро мустақил давлатчиликни мустаҳкамлаш, уларнинг ижтимоий-иқтисодий тараққиётини таъминлаш ва ушбу минтақа халқларининг қадимий қон–қардошлик, дўстлик йўлидаги куч-ғайратларини бирлаштиришга қаратилгандир.

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СУРХОНДАРЁ ВИЛОЯТИДА БОҒДОРЧИЛИК ТАРМОҚЛАРИНИ РИВОЖЛАНТИРИШДА СУВ РЕСУРСЛАРИДАН УНУМЛИ ФОЙДАЛАНИШ МАСАЛАЛАРИ

Аннотация. *Ушбу мақолада арид иқлимли минтақада жойлашган Сурхондарё вилояти географик ўрни, иқлим исиши шароитида сув ресурсларидан унумли фойдаланиш, томчилатиб суғориш усулида боғдорчилик ва субтропик мевачиликни ривожлантириш, ноанъанавий экин турлари бўлган зайтун, топинамбур, стивея каби ўсимликларни районлаштириш ҳамда етиштирилган меваларни қайта ишлаш ва уни ташқи бозорга чиқариш масалалари ёритилган.*

Калит сўзлар*. арид минтақа, сув ресурслари, томчилатиб суғориш, боғдорчилик, субтропик мевачилик, қишлоқ хўжалиги, қайта ишлаш.*

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ISSUES OF EFFICIENT USE OF WATER RESOURCES IN THE DEVELOPMENT OF HORTICULTURE SECTORS IN THE SURKHANDARYA REGION

Abstract. *In this article, the geographic location of Surkhondarya region, which is located in an arid climate region, the efficient use of water resources in conditions of climate warming, the development of horticulture and subtropical fruit growing by drip irrigation, the zoning of non-traditional crops such as olives, artichokes, stevia, and the processing of grown fruits and their export to the foreign market. issues are covered.*

Keywords. *arid region, water resources, drip irrigation, gardening, subtropical fruit growing, agriculture, processing.*

Кириш.

Арид иқлимли минтақада жойлашган Сурхондарё вилояти Ўзбекистоннинг энг жанубий маъмурий ҳудудий бирлиги бўлиб, мамлакатимизда тутган жанубий географик ўрни, мураккаб кўринишли орографик хусусиятлари, қурғоқчил (экстемал) иқлимий шароити, сув ресурслари билан кам таъминланганлиги, аҳолиси ва унинг табиий ўсишининг республикамиздаги ўртача кўрсатгичдан юқори эканлиги, қишлоқ хўжалиги ишлаб чиқаришида обикор деҳқончиликнинг устунлиги ҳозирги

иқлим исиши шароитида сув ресурсларидан унумли фойдаланишни ва қурғоқчиликка чидамли, сувни кам талаб қилувчи қишлоқ хўжалиги экинларини экишни долзарб масала қилиб қўйган.

Сурхондарё вилоятининг табиий –иқлим шароити турли хил мева махсулотларини етиштириш учун жуда қулай.Минтақада машхур Сурхон мевалари, айниқса довруғи етти иқлимга машҳур Шеробод анорлари, ширин-шакар шафтолилари, анжир, беҳи каби дарахтлари ҳақиқатдан ҳам сувни кам талаб қилиши ва иссиқ иқлимга чидамли экинлигини ҳисобга олиб ушбу тармоқни ривожлантиришда мавжуд имкониятлардан унумли фойдаланишга алоҳида эътибор қаратиш зарур[1].

Мақсад ва вазифалар

Иқлим исиши шароитида арид минтақада жойлашган Сурхондарё вилоятида боғдорчиликни янада ривожлантириш учун қуйидаги ишларни амалга ошириш лозим деб ҳисоблаймиз. Ҳозирги пайтда вилоятнинг шимолий ва шимоли-ғарбий ҳудудидаги туманларда “тоифи” навли узум ва анор етиштириб, уни четга чиқариб сотиш яхши самара бермоқда. Таъкидлаш жоизки, бу соҳада етарлича фойдаланилмай ётган катта имкониятлар мавжуд. Бойсун туманида янги ўзлаштириш мумкин бўлган ерлардан 3700 гектар ҳудудни узумзор ва анорзорлар барпо этиш учун деҳқон хўжаликлари ва алоҳида ихтисослаштирилган фермер хўжаликларига тендер асосида узоқ муддатли фойдаланишга бериш мумкин. Худди шундай имкониятлар Узун ва Сариосиё туманларида ҳам мавжуд. Бу эса вилоятда анор ва узум етиштириш ҳажмини ошириш, сифатини яхшилаш ва экспортини кўпайтириш имконини беради.[2]

Вилоятнинг тоғолди ва адирли ҳудудларида, хусусан Бойсун, Сариосиё, Узун туманларида терраса усулини қўллаб боғ қилиш – бу соҳада ҳозирда етарлича фойдаланилмаётган имкониятлардан ҳисобланади. Сув таъминоти нисбатан муаммоли бўлган ушбу ҳудудлардаги янги барпо этиладиган боғларда томчилатиб суғориш тизимини йўлга қўйиш мумкин.

Бойсун ва Олтинсой туманларида кўп миқдорда етиштириладиган узум ҳосилини экспорт қилиш билан бирга, уни қайта ишлаш имконияти ҳам мавжуд. Бойсун шаҳрида илгари фаолият кўрсатган вино заводи қувватлари фойдаланилмасдан ётибди.Бу ерда илгари ҳар йили 3000 тонна узумга дастлабки ишлов берилиб, сўнгра қайта ишлаш учун Денов ароқ заводига топширилган. Эндиликда туман ҳудудида етиштирилаётган узум ҳосилининг бир қисмини мазкур корхонада қайта ишлашни йўлга қўйиш мумкин. [3]

Сариосиё, Узун, Термиз ва Шеробод туманларида боғдорчилик соҳасида аҳоли малакаси ва кўникмасини ҳисобга олиб,кам ҳосил берадиган анъанавий экин турлари ўрнида олма, нок, беҳи, анор анжир, ёнғоқ каби мевали боғларни томчилатиб суғориш усулида барпо этиш мақсадга мувофиқдир.

Минтақада етиштирилган мева маҳсулотлари хуштаъм, мазали ва экологик тоза бўлишига қарамасдан, қимматбаҳо маҳсулотнинг катта қисми қайта ишланмасдан қолмоқда. Ҳосилни йиғиб-териб олиш мавсумида сақлаш

ва қадоқлаш имкониятининг чекланганлиги туфайли катта миқдордаги маҳсулот ички бозорга олиб чиқилмоқда.

Мутахассисларнинг хисоб-китобларига кўра бозорда маҳсулотнинг ортиқчалиги, сақлаш ва қадоқлаш ишларининг яхши йўлга қўйилмаганлиги туфайли етиштирилган маҳсулотнинг ¼ қисмидан кўпроғи нест-нобуд бўлади[6].

Юқори ҳосилдор боғларни барпо этиш учун маҳаллий шароитга мос бўлган навларни танлаб олиш зарур. Бунда навларнинг нафақат биологик хусусиятлари, шу билан бирга уларнинг иқтисодий самарадорлиги ҳам ҳисобга олиниши лозим. Бунда айниқса паст бўйли мевали дарахтларни (масалан, палмет нави) жойлаштиришга алоҳида эътибор қаратилиши лозим.

Сурхондарё вилоятида субтропик экинларни ўстириш учун етарли бўлган ҳарорат йиғиндиси, тупроқ таркиби мавжуд. Бундай экинларни етиштириш бўйича минтақада тўпланган катта ижобий тажриба самара келтириши мумкин.

Мамлакатимизда қишлоқ хўжалигида сарфланадиган сув, умумий сувнинг 92 % ини ташкил қилади. Ҳозирги кунда асосий вазифа сув кам талаб қиладиган экинларни етиштириш ва сувни тежаш ҳисобланади. Табиатни муҳофаза қилиш Давлат қўмитаси маълумотларига кўра, яқин йилларда юртимизда ҳавонинг исиши натижасида экинларнинг суғориш меъёри тахминан 10% га ошади. Республикада иқлим ўзгариши туфайли суғориладиган ерларда буғланиш 10-15% га ошади ёки шунча миқдордаги сувнинг беҳудага йўқолишига олиб келади. Чучук сувларнинг камайиб бориши суғориладиган майдонларнинг камайиши, шўрланиши ва тупроқ таназзулига олиб келади[4]. Субтропик ўсимликлар эса кўпгина бир йиллик ўсимликларга қараганда сувни кам талаб қилишини эътиборга олиб, уларни унумдорлиги паст, шўрланган Сурхондарё ҳудудида кўп учрайдиган қумоқ тупроқларда экиб ҳосил олиш мумкин.Ушбу экинларга писта, бодом, ёнғоқ, зайтун ва бошқаларни мисол қилиш мумкин. Бу ўсимликлар биологиясига кўра мутлоқо тупроқ танламайди, ниҳоллар 5-6 йилдан кейин сувни жуда кам талаб қилади. Ушбу ўсимлик унумдорлиги паст, тошли майдонларда, шунингдек, тоғолди минтақалари ва адирларда ҳам экилиши мумкин. Ҳисоб-китоблар вилоятда мевали боғларни кўпайтиришнинг иқтисодий самарадорлиги юқори эканлигини кўрсатмоқда. Агар субтропик мевалар экспорт қилинса, олинадиган фойда миқдори яна икки мартагача ошиши мумкин.

Хулоса

Хулоса қилиб шуни айтиш мумкинки, вилоят халқ хўжалигида қишлоқ хўжалиги етакчи тармоқ бўлиб, қишлоқ хўжалигида эса мевачилик соҳаси, айниқса субтропик мевачилик тоғ ва тоғолди ҳудудларида анча ривожланган.Ушбу тармоқни илмий ва амалий жиҳатдан тўғри ривожлантирилиши минтақа аҳолисининг ва саноатнинг хом ашёга бўлган эҳтиёжини қондиришга хизмат қилади. Вилоятда ушбу тармоқни ривожлантириш салоҳиятидан, ҳамда аҳолининг ушбу маҳсулотларга бўлган

талаби, ташқи бозорга маҳсулотлар чиқариш истиқболларидан келиб чиқиб,ҳар бир туман бўйича ушбу тармоқни ривожлантиришнинг устувор йўналишларини белгилаб олиш ҳамда иқлим ўзгаришини ҳисобга олиб қишлоқ хўжалиги ишлаб чиқаришида сувдан унумли фойдаланишнинг замонавий усулларидан фойдаланиш зарур.

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СУРХОНДАРЁ ВИЛОЯТИДА МЕҲНАТ РЕСУРСЛАРИДАН САМАРАЛИ ФОЙДАЛАНИШ МУАММОЛАРИ

Аннотация. *Мазкур мақолада Сурхондарё вилоятида аҳоли табиий кўпайишининг юқорилиги сабабли доимий равишда меҳнат ресурслари заҳираларининг ортиб бориши жараёнлари, аҳолининг меҳнатга фаоллиги ва ижтимоий ишлаб чиқаришда банд бўлган меҳнатга лаёқатли аҳоли салмоғи, шунингдек меҳнат ресурсларидан фойдаланишнинг асосий мезони эканлиги очиб берилган.*

Калит сўзлар; *Меҳнат ресурслари, аҳолининг меҳнатга фаоллиги, баланс, ишсизлар фоиз, статистика, тадбиркорлик, шаҳар, туман.*

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PROBLEMS OF EFFECTIVE USE OF LABOR RESOURCES IN THE SURKHANDARYA REGION

Abstract. *This article examines the processes of continuous growth in labor resource reserves in the Surkhandarya region due to the high rate of natural population increase. It analyzes the labor activity of the population, the share of the working-age population employed in social production, and highlights the main criteria for the effective utilization of labor resources.*

Keywords: *labor resources, labor activity of the population, balance, unemployment rate, statistics, entrepreneurship, city, district.*

Асосий қисм.

Бугунги фан-техника тараққиёти ривожланган XXI асрда меҳнат ресурсларига нисбатан қўйилаётган талаб ҳам ортиб бормоқда. Шу жумладан илгари меҳнат ресурсларининг ишчи кучи ёки сонига эътибор қаратилган бўлса, бугунги кунда меҳнат ресурсларининг касбий билим кўникма малакаси ёки интеллектуал салоҳиятига алоҳида эътибор қаратилмоқда. Бу эса айниқса, саноатда сўнгги йилларда фан талаб тармоқларнинг жадал суръатларда ривожланиши билан боғлиқ бўлмоқда.

Ўзбекистон республикасининг жанубий минтақаси бўлган Сурхондарё вилоятида аҳоли табиий кўпайишининг юқорилиги сабабли доимий равишда меҳнат ресурслари заҳираларининг ортиб бориши жараёнлари кузатилади. Аҳолининг меҳнатга фаоллиги ва ижтимоий ишлаб чиқаришда банд бўлган

меҳнатга лаёқатли аҳоли салмоғи меҳнат ресурсларидан фойдаланишнинг мезонини белгилайди.Ўзбекистонда бу мезон 99,8 фоиздан зиёдроқдир. Ишлаб чиқариш, меҳнат қилиш қобилиятига эга бўлган, мураккаб ижтимоий-иқтисодий категория ҳисобланган меҳнат ресурслари жамиятнинг ижтимоий-демографик ривожланиши билан биргаликда вужудга келади. Аниқроқ қилиб айтганда, аҳолининг табиий, сотсиал, механик ҳаракати натижасида меҳнат ресурслари шаклланади, ривожланади, тақсимланади.[105]Ўзбекистон республикаси меҳнат ресурслари билан тўлиқ таъминланган давлатлардан биридир.Бу ерда табиий ўсишнинг юқорилиги ҳар йили мамлакатда меҳнат ресурслари салмоғининг ошиб боришига сабаб бўлмоқда. Ўзбекистон Республикаси Президенти ҳузуридаги Давлат Статистика қўмитаси маълимотларига кўра Вилоят аҳолиси 2945,5 минг кишини (2025-йил 1-январ маълумотларига кўра) ташкил этди. 2023-йил маълумотларига кўра вилоятда меҳнат ресурслари 1489,6 минг кишини ташкил этиб, меҳнатга лаёқатли ёшдаги аҳоли сони 1484,9 минг кишини ташкил этган.Маълумотлардан кўриниб турибдики, вилоятда меҳнат ресурслари сони 2023-йилда 2016-йилга нисбатан 86,5 минг нафар кишига ортган. 2023-йилда меҳнат ресурсларининг жами аҳоли сонидаги улуши 51,8 фоизни ташкил этган.(1-жадвал)

[105] Z.N.Tojiyeva.Aholi geografiyasi.Fan va texnologiya.-T:,2019

1 жадвал

Сурхондарё вилоятида меҳнат ресурслари таркиби

Йилларда	2016	2017	2018	2019	2020	2021	2022	2023*
Меҳнат ресурслари	1403,1	1425,0	1442,7	1462,6	1452,2	1463,5	1469,0	1489,6
Доимий аҳолига нисбатан, фоизда	57,0	56,7	56,1	55,6	54,7	53,4	52,3	51,8
шу жумладан:								
Меҳнатга лаёқатли ёшдаги меҳнатга лаёқатли аҳоли	1397,7	1419,3	1437,4	1445,1	1450,2	1461,1	1466,6	1484,9
Доимий аҳолига нисбатан, фоизда	56,8	56,5	55,9	55,0	54,6	53,3	52,3	51,6
Меҳнат ресурсларига нисбатан, фоизда	99,6	99,6	99,6	98,8	99,9	99,8	99,8	99,7
Меҳнатга лаёқатли ёшдан кичик ва катта ёшдаги ишловчилар	10,1	10,2	5,3	3,4	2,0	2,4	2,4	4,7
Доимий аҳолига нисбатан, фоизда	0,4	0,4	0,2	0,1	0,1	0,1	0,1	0,2
Меҳнат ресурсларига нисбатан, фоизда	0,7	0,7	0,4	0,2	0,1	0,2	0,2	0,3

Изоҳ:-дастлабки маълумотлар*

Манба: *Сурхондарё вилояти статистика бошқармасининг "Сурхонстат.уз"расмий веб сайти маълумотлари асосида муаллиф томонидан тузилди*

Юқорида келтирилган жадвал маълумотлари асосида қуйидагича хулосага келиш мумкин: тадқиқ этилётган 2016-2023-йиллар оралиғида меҳнат ресурсларининг доимий аҳолига нисбатан кўрсаткичларида бироз пасайиш юзага келган бўлиб 2016- йилда бу кўрсаткич 57,0 фоизни ташкил этган бўлса 2023-йилда 51,8 фоизни ташкил этиб, 5,2 фоиз пасайиш юзага келган. Бу кўрсаткичлар сўнгги йилларда вилоят аҳолиси таркибида меҳнат ресурслари балансининг бироз паст кўрсаткичларга эга бўлиб борётганлигидан далолат бермоқда.

Хулоса

Хулоса қилиб шуни айтиш мумкинки Вилоят республикада саноат ялпи маҳсулоти ишлаб чиқариш салоҳияти бўйича охирги ўринни эгаллайди. Бу борада маҳаллий арзон хом ашё базасида янги ишлаб чиқариш қувватларини ташкил этиш орқали қўшимча иш ўринларини яратиш орқали аҳоли бандлигини таъминлаш айниқса қишлоқ хўжалиги маҳсулотларини қайта ишловчи саноат корхоналарини қуриб ишга тушириш қишлоқ туманларида ортиқча меҳнат ресурслари бандлигига эришиш мақсадидага меҳнат

ресурсларидан самарали фойдаланишнинг муҳим йўналишлари қуйидагиларни ўз ичига олади:

-Тадбиркорлик фаолиятини қўллаб-қувватлаган ҳолда ишлаб чиқариш ва хизмат кўрсатиш соҳаларида янги иш ўринларини яратиш ва аҳоли бандлигини таъминлаш;

-Вилоятнинг ҳар бир шаҳар, туманларида ишлаб чиқариш ва хизмат кўрсатиш соҳаларини ривожлантиришда эркин бозор рақобат муҳитини шакллантириш орқали монопол ишлаб чиқариш ва хизмат кўрсатиш корхоналарининг фаолиятига барҳам бериш ҳисобига янги тармоқ корхоналарини вужудга келтириш билан янгидан иш ўринларини барпо этиш;

-Вилоятнинг ҳар бир туманида яқин (5 йил) ва узоқ (10 йил) муддатларга белгиланган кадрлар тайёрлаш бўйича йўл хариталари ишлаб чиқиши унга кўра кадрлар етказиб берувчи ва истеъмолчи идоралар ўртасида аҳоли бандлиги бўйича аниқ механизмлари ишлаб чиқилиши зарур.

-Вилоятда янги иш ўринларини яратишда ҳар бир шаҳар ва туманларнинг табиий, иқтисодий демографик хусусиятлари ҳисобга олиниши мақсадга мувофиқдир.

-Вилоятнинг ҳар бир шаҳар ва туманларида аҳоли бандлиги муаммоларини ҳал этишда меҳнат бозори мутаносиблигини ва инфратузилмасини ривожлантириш орқали шаффоф ва эркин рақобатли меҳнат бозорини шакллантириш зарурдир.

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ВОПРОСЫ ПРИМЕНЕНИЯ КОНТРОЛЬНО-КАССОВОЙ ТЕХНИКИ ХОЗЯЙСТВУЮЩИМИ СУБЪЕКТАМИ В РЕСПУБЛИКЕ УЗБЕКИСТАН

Аннотация. *В данной статье рассматриваются вопросы использования контрольно-кассовой техники (ККТ) субъектами предпринимательства в Республике Узбекистан. Рассматриваются правовые основы использования ККТ при осуществлении предпринимательской деятельности, требования нормативно-правовых актов. Показана роль внедрения современных онлайн-касс и виртуальных кассовых аппаратов в регулировании наличного денежного оборота, увеличении налоговых поступлений и сокращении теневой экономики. В статье также отражены вопросы применения ККТ и их важные аспекты, а также ответственность за работу без ККТ, и даны рекомендации по созданию удобств для предпринимателей.*

Ключевые слова: *Контрольно-кассовая машина, Онлайн-касса, Виртуальная касса, Налоговые поступления, Оператор фискальных данных, Налоговое администрирование, Проверка QR-кода, Цифровая маркировка (система «Аслбелгиси»).*

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ISSUES OF USING CASH REGISTERS BY BUSINESS ENTITIES IN THE REPUBLIC OF UZBEKISTAN.

Abstract. *This article examines the use of cash register equipment (CRE) by businesses in the Republic of Uzbekistan. It examines the legal framework for using CRE in business activities and the requirements of regulatory and legal acts. It also highlights the role of modern online and virtual cash registers in regulating cash flow, increasing tax revenues, and reducing the shadow economy. The article also discusses the use of CRE and its important aspects, as well as liability for operating*

without CRE, and provides recommendations for creating a more convenient environment for entrepreneurs.

Keywords: *Cash register, Online cash register, Virtual cash register, Tax revenues, Fiscal data operator, Tax administration, QR code verification, Digital labeling (Aslbelgisi system).*

Введение

В Республике Узбекистан особое значение приобретают вопросы применения контрольно-кассовой техники в целях повышения прозрачности деятельности хозяйствующих субъектов, укрепления бухгалтерской дисциплины и обеспечения полноты налоговых поступлений. В процессе проводимых в нашей стране экономических реформ внедрение систем электронного учета, технологий онлайн-касс и виртуальных касс не только создает удобства для хозяйствующих субъектов, но и повышает эффективность государственного контроля.

Внедряемые в этой сфере нововведения основаны на международном опыте и широком использовании современных цифровых технологий. Вместе с тем, существуют некоторые организационно-правовые проблемы в сфере применения контрольно-кассовой техники, решение которых будет способствовать дальнейшей либерализации деятельности хозяйствующих субъектов, профилактике налоговых правонарушений и обеспечению стабильности государственного бюджета.

В связи с этим изучение данной темы является актуальным и требует анализа правовых основ применения контрольно-кассовой техники, практики ее применения, а также существующих проблем и путей их решения.

Мнения и комментарии.

В целях значительного сокращения доли теневой экономики, расширения налогооблагаемой базы и повышения привлекательности легальной деятельности для физических лиц, в соответствии с Постановлением Президента Республики Узбекистан от 12 августа 2025 года №ПП-247 «О мерах по созданию благоприятных условий для индивидуальных предпринимателей и самозанятых лиц» внесен ряд изменений в порядок применения контрольно-кассовых аппаратов (далее – ККА).

Кассавые аппараты являются важным инструментом налогового администрирования в Узбекистане. На основе информации с ККА, используемой в розничной торговле через интернет:

- формируется отчетность по налогу с оборота и НДС;
- контролируется соблюдение налогового законодательства;
- формируется отчетность о доходах и продажах в личном кабинете налогоплательщика;
- исключены товары, подлежащие обязательной цифровой маркировке в системе «Аслбелгиси».

Какие субъекты предпринимательства обязаны использовать онлайн-кассовые аппараты:

Согласно пункту 1 Указа Президента Республики Узбекистан № ПФ-5813 от 6 сентября 2019 года «О мерах по внедрению современных информационных технологий в систему расчетов в торговле и сфере услуг и усилению государственного контроля в этой сфере», расчеты с населением наличными деньгами и (или) банковскими картами в торговых (сервисных) точках осуществляются с использованием виртуальных кассовых аппаратов и онлайн-кассовых систем.

Положение «О порядке применения онлайн-кассовых аппаратов и систем виртуальных кассовых аппаратов при наличных расчетах с населением», утвержденное постановлением Кабинета Министров Республики Узбекистан от 23 ноября 2023 года № 943, устанавливает, что все субъекты предпринимательства, принимающие платежи наличными деньгами и банковскими картами, обязаны использовать в своей деятельности онлайн-кассовые аппараты. В частности:

1. Юридические лица;
2. Индивидуальные предприниматели;
3. Семейные предприятия.

В соответствии с пунктом 20 вышеуказанного Положения, самозанятые лица также могут использовать онлайн-НКТ. Долгое время самозанятые лица не имели технической возможности зарегистрировать онлайн-НКТ и виртуальную кассу, но теперь таких ограничений нет.

Юридические лица, индивидуальные предприниматели и семейные предприятия обязаны выдавать чек онлайн-НКТ при получении оплаты, а самозанятые лица – при использовании онлайн-НКТ.

Чек онлайн-НКТ также формируется при расчетах корпоративными картами.

Это очень важный аспект, поскольку данные чеки необходимы покупателю-юридическому лицу для:

- составления отчета ответственному лицу;
- оприходования приобретенных товаров (услуг);
- принятия к учету НДС.

Поэтому при выдаче и приеме чеков, оплаченных корпоративными банковскими картами, необходимо тщательно проверять их содержимое.

Обращаем внимание на еще один важный момент: реализация товаров, выполнение работ, оказание услуг без использования контрольно-кассовой техники является основанием для привлечения субъекта хозяйствования к ответственности по:

- статье 221 Налогового кодекса;
- статье 164 Кодекса об административной ответственности;
- статье 189 Уголовного кодекса.

Сообщения о нарушениях поступают в налоговые органы, в частности, через мобильное приложение «Налоговый», и по ним проводятся налоговые проверки. В случае подтверждения информации к нарушителям применяются штрафные санкции.

В соответствии с пунктом 7 Постановления Президента Республики Узбекистан от 12 августа 2025 года №ПП-247 «О мерах по созданию благоприятных условий для индивидуальных предпринимателей и самозанятых лиц» с 1 января 2026 года установлено обязательным требованием правил розничной торговли для индивидуальных предпринимателей и самозанятых лиц наличие специального QR-кода для приема электронных платежей, сформированных на цифровых платформах платежных организаций. Отсутствие специального QR-кода приравнивается к неиспользованию НКТ и (или) расчетных терминалов.

Какие виды контрольно-кассовых аппаратов существуют:

Согласно пункту 3 ПОЛОЖЕНИЯ «О порядке применения онлайн-касс и виртуальных кассовых аппаратов при денежных расчетах с населением», утвержденного Постановлением Кабинета Министров Республики Узбекистан № 943 от 23 ноября 2023 года:

• онлайн-касса — специальное устройство;

• виртуальные кассовые аппараты — программное обеспечение (ПО), позволяющее использовать в качестве контрольно-кассовой техники компьютерную технику, планшеты, смартфоны;

• маркетплейсы и электронные платежные системы — торговые площадки для продажи товаров через Интернет и приложения для расчетов между продавцами и покупателями, которые самостоятельно или совместно с онлайн-кассой или виртуальной кассой имеют функцию формирования чека онлайн-кассы.

Все три вида кассовых аппаратов работают в единой информационной системе оператора фискальных данных и имеют возможность формирования чеков для онлайн-касс (QR-код и чек с фискальной меткой).

Каждый расчет с розничным покупателем осуществляется посредством онлайн-чека НКТ. Чеки различаются по типу оплаты: «продажа», «возврат», «рассрочка (предоплата)», «рассрочка (кредит)». Вид оплаты определяет порядок отражения сумм чеков в налоговой отчетности.

Технология онлайн-НКТ позволила автоматизировать процесс отражения данных о продажах через НКТ в налоговой отчетности по налогу с оборота и НДС, а также формировать отчеты о продажах в личном кабинете налогоплательщика на основе данных из чеков онлайн-НКТ. Онлайн-НКТ и виртуальные кассы также незаменимы в работе системы цифровой маркировки товаров «Aslbelgisi».

Заключение.

Вопрос применения контрольно-кассовой техники хозяйствующими субъектами в Республике Узбекистан является неотъемлемой частью экономических реформ, что является важным фактором укрепления

бухгалтерской дисциплины, обеспечения полноты налоговых поступлений и сокращения теневой экономики. Внедрение онлайн-касс и виртуальных касс не только упрощает ведение бизнеса, но и повышает эффективность государственного контроля и обеспечивает прозрачность налогового администрирования.

Кроме того, новые нормативно-правовые акты (ПФ-5813, ПК-247, ВМК-943) устанавливают обязательность использования контрольно-кассовой техники всеми видами хозяйствующих субъектов – юридическими лицами, индивидуальными предпринимателями, семейным бизнесом и самозанятыми лицами. Это повышает привлекательность легальной деятельности в экономике и служит профилактике налоговых правонарушений.

В перспективе дальнейшее совершенствование данной системы, расширение технических возможностей, применение международного опыта и создание благоприятных условий для предпринимателей будут иметь решающее значение для устойчивого развития экономики.

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ОСНОВНЫЕ ПРИЧИНЫ ДЕГРАДАЦИИ И ЗАСОЛЕНИЯ ЗЕМЕЛЬ И ИХ ПРЕДОТВРАЩЕНИЕ

Аннотация*: В данной статье исследуется снижение эффективности землепользования в сельском хозяйстве вследствие таких факторов, как деградация земель, экологическое состояние орошаемых земель, дефицит воды, нерациональное использование земли и воды. Рассмотрены пути решения современных проблем, таких как засоление земель, ветровая эрозия, снижение плодородия почв, влияние экологических условий на жизнь человека. Использование технологических программ ГИС (географической информационной системы) имеет большое значение для восстановления и развития продуктивности сельского хозяйства.*

Ключевые слова*: Деградация земель, засоление, опустынивание, засоление, сельскохозяйственные угодья, экология, ветровая эрозия, подземные воды, деградация.*

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MAIN CAUSES OF LAND DEGRADATION AND SALINIZATION AND THEIR PREVENTION

Abstract: *This article examines the decline in agricultural land use efficiency due to factors such as land degradation, the environmental condition of irrigated lands, water scarcity, and irrational land and water use. Solutions to contemporary problems such as land salinization, wind erosion, declining soil fertility, and the impact of environmental conditions on human life are considered. The use of GIS (geographical information system) technology programs is essential for restoring and improving agricultural productivity.*

Keywords: *Land degradation, salinization, desertification, salinization, agricultural land, ecology, wind erosion, groundwater, degradation.*

Введение

В настоящее время орошаемые земли являются одним из важнейших ресурсов для производства продуктов питания в жизнедеятельности человека. В нашей стране опустынивание, борьба с деградацией земель, засухой и предотвращение засоления стали одной из наиболее острых проблем современности. Само слово «деградация» – латинское слово, означающее сокращение, уменьшение. Деградация приводит к ухудшению состояния почв и земель, снижению продуктивности и усилению процессов засоления земель [1]. Эта проблема заключается не только в снижении продуктивности, но и в ухудшении экологической обстановки. Высыхание Аральского моря оказало негативное влияние на экологию. В частности, это имеет различные пагубные последствия для жизни человека. Засоление и засоленность почв наблюдаются часто. По данным О. Ибраимова и др. (2024), ежегодно 6-7 миллионов

гектаров земель по всему миру переводятся из категории сельскохозяйственных угодий в тип неиспользуемых земель [2]. Потому что основная причина этого - деградация земель. Принятие Президентом Ш. Мирзиёевым 10 июня 2022 года постановления «О мерах по созданию эффективной системы борьбы с деградацией земель» также свидетельствует об актуальности проблемы. В системе Министерства сельского хозяйства Республики Узбекистан создано отдельное новое ведомство. На ведомство возложены задачи по борьбе с деградацией земель, ее предотвращению и его задачи. Деградация - это процесс ухудшения состояния земель, снижение продуктивности, то есть уменьшение содержания питательных веществ [2]. Виды деградации почв включают: эрозию почвы, загрязнение почвы, засоление почвы, дефицит питательных веществ и т. д. Основными причинами деградации почв являются снижение продуктивности почв из-за эрозии, воды, ветра и других процессов. В них в результате подъёма грунтовых вод, например, при использовании избыточных вод в системах орошения с использованием солевых растворов, наблюдается вторичное засоление. Эрозия снижает плодородие почв, смывая верхний слой почвы.

По данным О. Ахмедова и др. (2022), естественное засоление наблюдается преимущественно на богарных землях. В грунтовых водах наблюдается естественное засоление и соленакопление. Естественное соленакопление часто происходит с помощью ветра. Избыточная влажность почвы, обычно образующаяся в процессе засоления, отрицательно влияет на свойства почв, их водный, воздушный и солевой режимы [1]. В соответствии с Постановлением Президента Республики Узбекистан от 19 апреля 2013 года № ПП-1958 «О мерах по улучшению мелиоративного состояния орошаемых земель и рациональному использованию водных ресурсов в 2013-2017 годах» и Постановлением Кабинета Министров Республики Узбекистан от 24 февраля 2015 года № 39 «О дополнительных мерах по обеспечению безусловной реализации Государственной программы по улучшению мелиоративного состояния орошаемых земель и рациональному использованию водных ресурсов в 2013-2017 годах» соответствующими предприятиями системы на основании приказа Государственного комитета Республики Узбекистан по земельным ресурсам, геодезии, картографии и государственному кадастру в 2017 году в эксплуатацию введено 796805,0 га орошаемых земельных площадей, граничащих с 27 районами и городскими поселениями Сурхандарьинской, Бухарской, Ферганской, Наманганской, Ташкентской и Андижанской областей, Наряду с рядом факторов, определяющих мелиоративное состояние сельскохозяйственных угодий в литолого-геоморфологических, гидрогеологических и почвенно-климатических условиях, определены общее количество легкорастворимых солей в почвенном профиле и их общие запасы, а также на основе количественных показателей запасов солей составлена картограмма засоления [3, 4].

Картографирование требует использования программного обеспечения, а именно географических информационных систем и технологий (ГИС), дистанционного зондирования и мониторинга, для сбора данных и картирования его состояния. Кроме того, дефицит почвенной влаги, орошение и нехватка воды связаны с понижением уровня грунтовых вод, иссушением земель и нарушением водного режима почвы [1]. Неправильные методы орошения приводят к деградации земель. Сегодня большинство орошаемых земель потеряли свою продуктивность, а уровень засоления растет, из-за чего продуктивность снизилась. Последствия деградации в настоящее время вызывают множество негативных экологических и социальных последствий. В том числе нехватку продовольствия, рост различных заболеваний, изменение климата из-за геоэкологических проблем и другие. Решение этой проблемы заключается в предотвращении деградации земель, мониторинге грунтовых вод и использовании водосберегающих технологий для более эффективного использования воды: капельного и дождевального орошения, которые предотвращают чрезмерный полив земель, защищают землю от избытка воды и защищают почву за счет правильного управления.

Дистанционное зондирование позволяет контролировать состояние земельных и водных ресурсов с использованием социальных технологий и GATS. Для снижения засоленности и содержания солей необходимо повышать эффективность коллекторных сетей (очистка, реконструкция новых и т.д.). Такие меры, как создание ветрозащитных полос для снижения скорости ветра, эффективны в предотвращении ветровой эрозии.

Заключение

Деградация орошаемых земель является серьезной проблемой для сельского хозяйства, имеющей социальные и экологические последствия.

Для решения этой проблемы необходимо расширять использование водосберегающих технологий, усиливать управление природопользованием и разрабатывать меры, направленные на улучшение экологического состояния всех орошаемых земель. Мониторинг земель с использованием инновационных технологий, данных дистанционного зондирования и GATS эффективен для защиты почв.

Мы, исходя из нашего направления, сталкиваемся с необходимостью создания цифровой карты деградированных земель в различных районах и областях Узбекистана, создания и совершенствования веб-карт, построения динамики изменения площади непродуктивных, засоленных и солончаковых земель с использованием ArcGIS online, а также актуализации базы данных. Мы ставим задачи перед подрастающим поколением в этом направлении в системе учитель-ученик, ставим задачу на примере конкретного колхоза, анализируем площадь деградированных земель путем анализа спутниковых снимков, определяем долгосрочную динамику и обосновываем возможность дальнейших изменений, развиваем способность научно мыслить. Благодаря этому разрабатываются рекомендации по предупреждению и улучшению решения поставленных проблем в той или иной степени.

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СОВЕРШЕНСТВОВАНИЕ СИСТЕМЫ ПРОВЕДЕНИЯ АНАЛИЗА РАСТИТЕЛЬНОСТИ И ПОЧВ ПРЕДГОРНЫХ ТЕРРИТОРИЙ С ИСПОЛЬЗОВАНИЕМ ГЕОПРОСТРАНСТВЕННЫХ ДАННЫХ И ТЕХНОЛОГИЙ

Аннотация. *В данной статье представлены предложения по использованию данных дистанционного зондирования Земли в качестве основы для мониторинга всех видов изменений вегетационного периода на сельскохозяйственных угодьях и усовершенствования метода своевременного принятия необходимого решения.*

Ключевые слова: *точное земледелие, дистанционное зондирование, ГИС, ЭОСДА.*

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IMPROVEMENT OF THE SYSTEM FOR CONDUCTING ANALYSIS OF VEGETATION AND SOILS IN FOOTHILL AREAS USING GEOSPATIAL DATA AND TECHNOLOGIES

Abstract. *This article presents proposals for using remote sensing data as a basis for monitoring all types of changes during the growing season in agricultural lands and improving the method for timely decision-making.*

Keywords*: precision agriculture, remote sensing, GIS, EOSDA.*

Введение.

Спутниковый мониторинг сельскохозяйственных культур – это технология, позволяющая в режиме реального времени отслеживать вегетационные индексы сельскохозяйственных культур посредством спектрального анализа спутниковых снимков высокого разрешения для различных полей и культур, что позволяет отслеживать положительную и отрицательную динамику развития сельскохозяйственных культур [1]. Разница в вегетационном индексе даёт информацию о дисбалансе в развитии отдельного растения, что указывает на необходимость проведения дополнительных агротехнических работ в определённых зонах поля, поскольку спутниковый мониторинг сельскохозяйственных культур относится к специфическим агротехническим приёмам. [1–3]

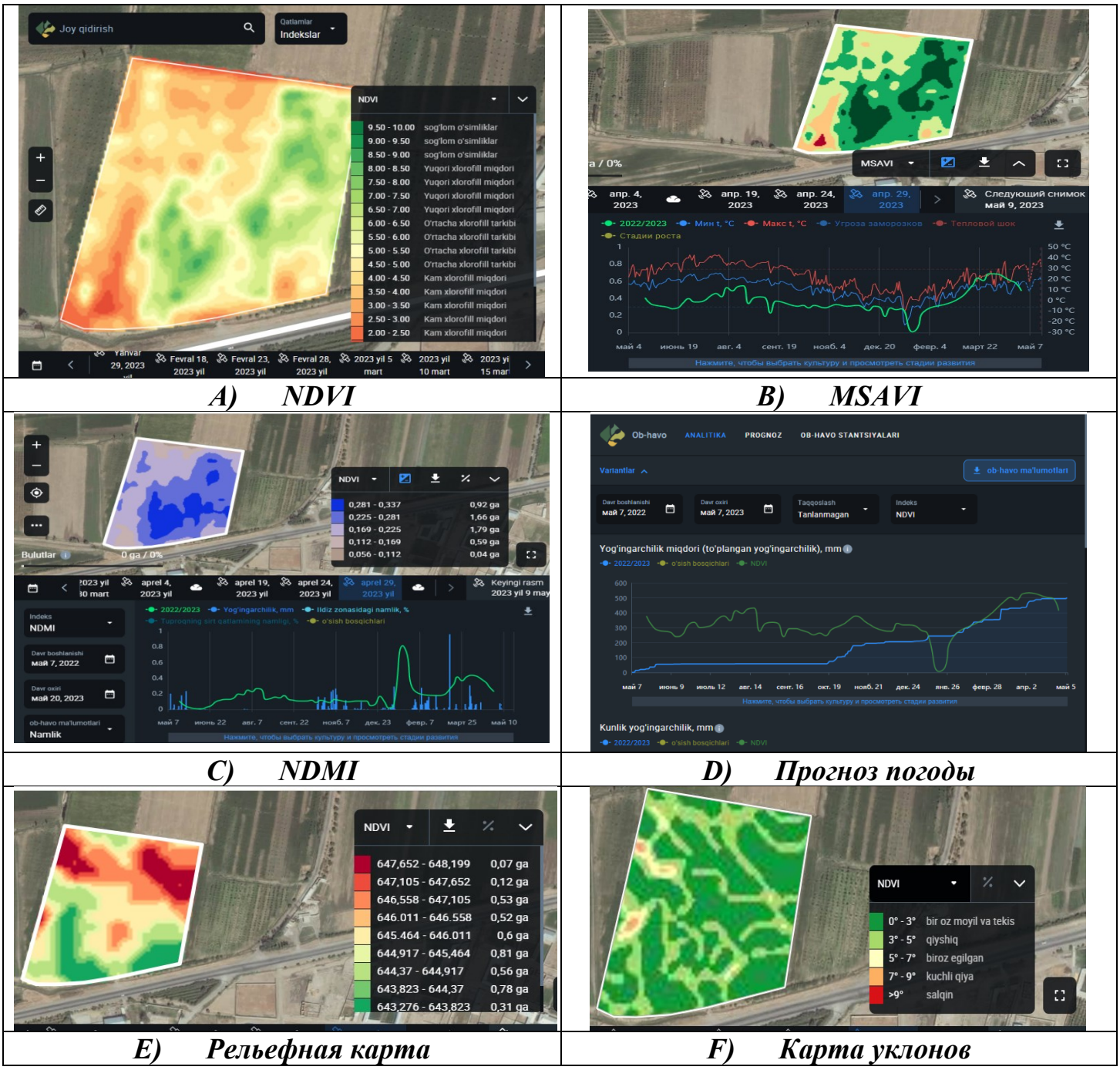
Методы и источники исследования

Технологии дистанционного зондирования позволяют осуществлять мониторинг природных ресурсов, включая растительные и почвенные [4–6]. В качестве объекта исследования было выбрано поле фермерского хозяйства «Зариф Бурхонов» Китабского района Кашкадарьинской области. В ходе исследования было рассчитано несколько видов специальных индексов (таблица 1). В качестве программного обеспечения, позволяющего ускорить расчёт нескольких видов индексов, была выбрана платформа Crop Monitoring Platform[7]. В качестве пространственных данных эта платформа рассчитывает значения индексов с использованием спутниковых продуктов Sentinel-2. Обновление космических снимков каждые 3–5 дней обеспечивает быстрое получение данных в режиме реального времени. Кроме того, для больших территорий используются данные спутников Landsat и MODIS Terra и Aqua.

Index/Parameter	Formula/Description
Normalized Difference Vegetation Index (NDVI)	(NIR - Red) / (NIR + Red)
Normalized Difference Moisture Index (NDMI)	(NIR - SWIR) / (NIR + SWIR)
Enhanced Vegetation Index (EVI)	2.5 * ((NIR - Red) / (NIR + 6 * Red - 7.5 * Blue + 1))
Green Normalized Difference Vegetation Index (GNDVI)	(NIR - Green) / (NIR + Green)
Soil-Adjusted Vegetation Index (SAVI)	((NIR - Red) / (NIR + Red + L)) * (1 + L)
Normalized Difference Water Index (NDWI)	(Green - NIR) / (Green + NIR)
Leaf Area Index (LAI)	Varies depending on the specific model used
Crop Water Stress Index (CWSI)	Varies depending on the specific model used
Soil Moisture Index	Varies depending on the specific calculation method used
Slope	Calculated from the elevation data to represent the inclination of the terrain
Elevation Map	Representation of the terrain's elevation values
Red Edge Chlorophyll Index (RECI)	(NIR - Red Edge) / (NIR + Red Edge)
Normalized Difference Infrared Index (NDII)	(NIR - SWIR) / (NIR + SWIR)

Таблица 1: Список индексов, рассчитываемых платформой EOSDA.

Результаты и обсуждение



A) NDVI *B) MSAVI*

C) NDMI *D) Прогноз погоды*

E) Рельефная карта *F) Карта уклонов*

Рисунок 1: Индексы, рассчитанные в ходе исследования.

Модифицированный индекс растительности почвы (MSAVI) – на основе этого индекса можно создавать карты для дифференцированного внесения удобрений на ранних стадиях роста сельскохозяйственных культур. Как видно на рисунке 1B, MSAVI, или модифицированный индекс растительности почвы, показывает степень и процент загрязнения почвы: темно-зеленые участки указывают на хорошее состояние, светло-зеленые – на лучшее, а желтые, светло-красные и темно-красные – на загрязнение почвы [2].

Как видно на рисунке, пораженный участок почвы также влияет на ростовую активность растений. То есть, в красной области рост и развитие растений замедляются, поэтому необходимо проанализировать почву перед

посадкой, а затем и непосредственно посадкой. Этот мониторинг показывает не только уровень заболевания почвы, но и ее влажность, недостаток необходимых удобрений, а также карты высот и уклонов. Кроме того, он также показывает содержание хлорофилла в листьях растений [3].

Нормализованный разностный индекс красного цвета и вегетационный индекс (NDRE и NDVI) являются мерами фотосинтетической активности, используемыми для оценки концентрации азота в листьях растений в середине и конце сезона (рисунок 1A). Это позволяет выявлять нездоровые растения, используется для диагностики заболеваний растений и позволяет оптимизировать сроки уборки урожая. NDRE полезен на поздних стадиях развития растений. Для районов с очень густым растительным покровом рекомендуется использовать NDRE вместо NDVI. Волнистые красные и синие линии, видимые на изображении, — это температура воздуха, указывающая процент температуры воздуха в °C.

Нормализованный индекс разности влажности (NDMI) характеризует уровень водного стресса сельскохозяйственной культуры и рассчитывается как отношение разности к сумме преломленного излучения в ближнем и среднем инфракрасном спектре (рисунок 1C). Интерпретация абсолютного NDMI позволяет сразу определить области фермы или поля, испытывающие водный стресс. NDMI легко интерпретируется: его значения варьируются от (-1) до (1), и каждое значение соответствует разному агротехническому состоянию, независимо от культуры.

Карта высот — это цифровая модель, содержащая информацию о высоте местности (рисунок 1E). Из этого следует, что полив растений на неровных участках земли может быть довольно затруднительным. Поэтому при выравнивании почвы необходимо обращать внимание и на эти мелкие детали. Если вода застаивается в одном месте, мы можем наблюдать замедление роста и задержку роста растений в этом месте.

Карта уклонов – описывает уровень возвышенности или понижения рельефа в градусах (рисунок 1F). Как видно на рисунке, индекс этой карты уклонов также уменьшается от зелёного к красному. Из этого следует, что карта уклонов местности неровная. На таком уклоне возникает ряд проблем с равномерным стоком воды и её потреблением растениями.

На рисунке 1D представлен аналитический прогноз количества осадков в год по месяцам. Это позволяет получить точную информацию о том, в какие месяцы количество осадков увеличилось или уменьшилось. Данный прогноз составлен по орошаемой площади Китабского района Кашкадарьинской области.

Заключение

Производительность сельского хозяйства является одной из важнейших сфер жизни населения республики. Точное земледелие является основным инструментом рационального управления природными ресурсами и снижения себестоимости продукции. Своевременно и правильно принятые решения позволяют снизить ущерб сельскохозяйственным культурам, сохранить и

повысить урожайность. Кроме того, в условиях дефицита воды использование технологий дистанционного зондирования является одним из наиболее оптимальных решений для смягчения ущерба от дефицита воды и экономии водных ресурсов на орошаемых территориях республики. В данном исследовании описывается процесс мониторинга всхожести и состояния растений, оценки влажности и уклона почвы, определения температуры воздуха в режиме реального времени и получения двухнедельных прогнозов с использованием технологий дистанционного зондирования на орошаемых территориях.

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ОСОБЕННОСТИ РАЗВИТИЯ И ТЕЧЕНИЯ КАРДИТА У ДЕТЕЙ ПРИ РЕВМАТИЧЕСКОЙ ЛИХОРАДКЕ

Актуальность: *Острая ревматическая лихорадка – это системное заболевание соединительной ткани, при котором ведущими диагностическими критериями являются кардит, полиартрит, малая хорея, кольцевидная эритема и ревматические узелки (1,4,9).*

В последнее десятилетие проведен ряд исследований в области возможно более раннего распознавания и уточнения характера поражения сердца. В основе их положения ведущую роль в развитии ревматической лихорадки сыграли бета гемолитический стрептококк группы А и измененная реактивность организма. Однако изменение клинической картины ревматической лихорадки, преобладание подострого и затяженовялого течения все чаще выявляемые кардиопатии другой этиологии, создают немалые трудности в своевременном и правильном диагностике болезни (1,6,7,8).

Ключевые слова: *ревматизм, пороки сердца, кардит, тонзиллит.*

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FEATURES OF CARDITIS IN RHEUMATIC FEVER

Relevance: *Acute rheumatic fever is a systemic disease of connective tissue, in which the leading diagnostic criteria are carditis, polyarthritis, chorea minor, annular erythema and rheumatic nodules (1,4,9).*

In the last decade, a number of studies have been conducted in the field of the earliest possible recognition and clarification of the nature of heart damage. Their position is based on the leading role in the development of rheumatic fever played by beta-hemolytic streptococcus group A and altered reactivity of the body. However, changes in the clinical picture of rheumatic fever, the prevalence of subacute and protracted course, increasingly identified cardiopathies of other etiologies, create considerable difficulties in the timely and correct diagnosis of the disease (1,6,7,8).

Key words: *rheumatism, heart defects, carditis, tonsillitis.*

Цель работы: выявить особенности клинических проявлений поражения сердца при ревматической лихорадке на современном этапе.

Материалы и методы

Под наблюдением были 50 детей в возрасте 5-17 лет поступившие в областную детскую клиническую больницу города Андижана, из них у 30 (60%) детей отмечалось нарушение сердечной деятельности. Диагноз ревматической лихорадки устанавливался в соответствии с критериями Киселя Джонсона в модификации, Ассоциации ревматологов 2003 года. Для подтверждения диагноза проводилось комплексное обследование больного: наличие в крови анти стрептококковых антител, инструментальные исследования (ЭКГ, ЭхоКГ, рентгенография грудной клетки). По показанием проводились консультации специалистов: лор врача, стоматолога, невропатолога.

Результаты и обсуждения

В динамике обследования и наблюдения детей с признаками кардита был поставлен диагноз острой ревматической лихорадки (ОРЛ), в 20 (40%) случаях, повторная ревматическая лихорадка (ПРЛ) 10 (20%). Развёртывание симптомов кардита с полиартритом или без него позволяет установить диагноз ОРЛ. Следовательно, ведущим в диагностике является все же кордивоскулярный синдром – симптомтомоплекс митрального вальвулита. При остром течении болезни у большинства детей 4 (8%) отмечается и острое ее начало с минимальной активностью процесса с яркой клинической симптоматикой, отражающая одновременное поражение одного, или нескольких оболочек сердца. При обследовании у этих детей -2 (4%) выявлялись симптомы полиартрита и отчетливая картина кардита. Выраженной недостаточности кровообращения у этих больных не наблюдалось. Комплексное, гормонально- медикаментозное лечение приводит у этих больных к наиболее благополучным результатам. Подострое течение ревматической лихорадки наблюдалось при повторных атаках (ПРЛ) -6 (60%). Болезнь начиналась более постепенно, активность ее не превышает II степени, клинические симптомы кардита выражены менее ярко, порок сердца формировался почти у всех детей, нежели при остром течении пороков не было выявлено. Данные вариант течения болезни превышает острый. Затяжной и непрерывно рецидивирующий варианты ОРЛ по праву считаются самым тяжелым у детей 4 (40%)- отмечалось спонтанный или комбинированный порок сердца выраженной недостаточностью кровообращения. Назначенная комплексная терапия, включающая сердечные гликозиды, диуретики, приносили лишь временный эффект. Латентный вариант течения болезни составил 14 (61%) детей школьного возраста. Течение заболевания характеризовалось скрытостью симптомов, малодоступные для выявления даже при комплексном применении различных современных методов обследования. Достоверный диагноз может быть поставлен только после того, как сформировался клапанный порок сердца и налицо все его неоспоримые клинические признаки. У 3 х детей преобладали

симптомы малой хореи в начале заболевания, но в последующем в течении 3-6 месяцев выявлены признаки ревматического миокардита. У 20 детей после обследования был установлен диагноз хронического тонзиллита, этиологической причиной которого в 30%-50% случаев является стрептококковая инфекция. У них клинически наблюдался кардиальный синдром (сердцебиение, одышка, функциональный систолический шум) и астеновегетативный синдром. В общем анализе крови признаки воспаления, ЭКГ – тахикардия, неполная блокада правой ножки пучка Гиса. ЭхоКГ – без патологии. Применение терапии направленное на ликвидацию воспалительного процесса в носоглотке, витамины, физиотерапия способствовали исчезновению клинической симптоматики.

Прогноз: Непосредственная угроза жизни в связи с развитием ОРЛ практически отсутствует (за исключением чрезвычайно редких случаев панкардита в детском возрасте). В основном прогноз определяется состоянием сердца (наличие и тяжесть порока, выраженность СН). Весьма важны сроки начала лечения, так как при отсроченной фармакотерапии (или в отсутствии таковой) риск развития РПС резко возрастает. Ревматический порок сердца (РПС) формируется как исход ревмокардита. Максимальная частота формирования РПС (75%) наблюдается в течение 3 лет от начала болезни. Частота возникновения пороков после первой атаки ОРЛ составляет: у детей 20-25%; у подростков 33%; у взрослых 39-45% [5]. У детей чаще формируется изолированная митральная и аортальная недостаточность, примерно у 7-10% детей развивается пролабирование митрального клапана. В юношеском возрасте половину составляет изолированная недостаточность митрального клапана. С учетом того, что у взрослых чаще (90-93%) развиваются повторные ОРЛ уже на фоне имеющихся пороков сердца, структура пороков у взрослых имеет свои особенности. В 42% наблюдаются сочетанный митральный порок, а на изолированную недостаточность митрального и аортального клапанов приходится соответственно на 12 и 13% [9]. РПС является одним из наиболее распространенных заболеваний, ведущей к инвалидизации и в связи с чем представляющих социальную проблему. В диагностике РПС возможны ошибки: 1) гипердиагностика порока; 2) заболевание сердца не выявляется вообще; 3) ставится диагноз другого заболевания сердца. ЭхоКГ обладающая высокой разрешающей способностью при митральном и аортальном стенозах недостаточно информативна при недостаточности клапанов. Между тем, своевременный диагноз определенных пороков сердца может обеспечить их рациональное излечение хирургическим путем.

Вывод

Имеется отдаленная корреляция между степенью активности и вариантом течения болезни, установление которого приводит к более современному пониманию закономерности ее развития, варианты течения позволяют определить клинический облик болезни, выявить ряд характерных ее особенностей, применить адекватную терапию и наметить предполагаемый исход.

Все нарастающая трудность диагностики при отсутствии ранних специфических проявлений болезни заставляет считать проблему ревматической лихорадки в детском возрасте не менее сложной и актуальной в связи с необходимостью раннего начала лечения, ускоренного выздоровления, напротив латентное течение заболевания в практика приводит к порокам сердца нежели острое течение.

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КРИТЕРИИ РАВНОВЕСНОГО, КОЛЕБАТЕЛЬНОГО И ХАОТИЧЕСКОГО ПОВЕДЕНИЯ КОНЦЕНТРАЦИИ МАЛЫХ ГАЗОВ В ТРОПОСФЕРЕ

Аннотация. *Данная статья, показывает результаты исследования изменения концентрации тропосферных газов, когда приток этих газов и их составляющих меняется от малого до большего. Определены коэффициенты, показывающие скорость реакции и как при этом система меняется от устойчивого до хаоса.*

Ключевые слова: *малые газы, тропосферный озон, хаос, дифференциальные уравнение, матрица Якоби.*

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CRITERIA FOR EQUILIBRIUM, OSCILLATORY, AND CHAOTIC BEHAVIOR OF TRACE GASES CONCENTRATION IN THE TROPOSPHERE

Abstract. *This article presents the results of a study examining changes in tropospheric gas concentrations when the influx of these gases and their components changes from low to high. Coefficients are determined that indicate the reaction rate and how the system changes from stable to chaotic.*

Keywords: *trace gases, tropospheric ozone, chaos, differential equations, Jacobian matrix.*

Введение

Исследование концентрации тропосферных газов имеет большое значение в связи с увеличивающимся с каждым годом негативным антропогенным воздействием на окружающую среду.

Из-за увеличивающихся концентраций и эмиссии CH_4, CO и NO_x человеческими действиями, распределение концентрации O_3 и OH в тропосфере изменяются. Очень важно знать, какие процессы будут происходить с изменением концентраций тропосферных газов.

В данной статье рассматривается динамическая система на примере изменения концентрации тропосферного озона.

Проблема исследования озона связано не только с методами измерения, но и изучением физико-химических свойств. Дело в том, что хотя мы достаточно хорошо знаем эти свойства на практике, когда требуется

количественно оценить характеристики озона, не удается создать однозначную модель. Потому что, концентрация озона, будучи продуктом вторичных реакций, всегда зависит от первичных реагентов (CO и т.д.) и условий реакции. Поэтому, когда создается модель, требуется из всего множество факторов выбирать те, которые лучше отражают условия местности. Например, условия в городах и сельских местностях разные. И даже если в них наблюдается одинаковое количество озона, источники этого озона могут быть разные.

Не менее важным фактором являются погодные и климатические условия региона, который мы рассматриваем.

В работах [1,2] проведена оценка многолетних тенденций изменения тропосферного озона на основе данных с использованием метеорологического спутника инфракрасного интерферометра для зондирования атмосферы IASI.

В работе [3] приводится модель для тропосферного озона и соответствующих его химических предшественников, включающая в себя 85 видов газов, 12 основных видов аэрозолей, 39 фотолизных реакций и 157 газофазных реакций. В работе [4] предлагается модифицированная модель для озона и его предшественников с учетом стратосферной химии. Модифицированная модель включает 87 видов газов, 16 основных видов аэрозолей, 41 фотолизную реакцию и 180 газофазных реакций.

В работе [5] на основе сопоставительного анализа результатов расчета концентрации тропосферного озона, полученного на основе модифицированной модели [4], с данными измерения в различных точках земли, показано, что отклонения данных доходит до 25%. Это объясняется сложностью учета изменения таких элементов как CO и NO_x.

Метод исследования.

В связи с этим определенный интерес вызывает поведения тропосферного озона и его прекурсоров при предположении неограниченного притока NO_x, основными источниками которого являются, такие естественные процессы как молнии, лесные пожары, и процессы вследствие человеческой деятельности, такие как выбросы продуктов горения тепловых электростанций, двигателей внутреннего сгорания и др.

Рассмотрим основные фотохимические реакции в тропосфере, которые влияют на образования и разрушении тропосферного озона. Выделим следующие химические элементы: OH, HO_2, O_3, NO, NO_2, CO и CH_4, участвующие в фотохимических реакциях, описанных в таблице [6].

Таблица 1

Модель тропосферной химии

	Реакция			Норма параметра	Значение (298 K)
R1	$O_3+h\nu$	H_2O $\rightarrow$	$2OH+\{O_2\}$	k_{R1}, c^{-1}	$2{,}0\cdot10^{-10}$
R2	$NO_2+h\nu$	O_2 $\rightarrow$	$NO+O_3$	k_{R2}, c^{-1}	$1{,}6\cdot10^{-14}$
R3	$OH+O_3$	$\rightarrow$	$HO_2+\{O_2\}$	k_{R3}, см^3 молекула$^{-1}$ c^{-1}	$7{,}3\cdot10^{-14}$
R4	$OH+CO$	O_2 $\rightarrow$	$HO_2+\{CO_2\}$	k_{R4}, см^3 молекула$^{-1}$ c^{-1}	$\sim 1{,}5\cdot10^{-12}$
R5	$OH+NO_2$	$\rightarrow$	$\{HNO_3\}$	k_{R5}, см^3 молекула$^{-1}$ c^{-1}	$1{,}1\cdot10^{-11}$
R6	$OH+CH_4$	$2O_2$ $\rightarrow$	$CO+HO_2+\{2H_2O\}$	k_{R6}, см^3 молекула$^{-1}$ c^{-1}	$6{,}4\cdot10^{-15}$
R7	HO_2+O_3	$\rightarrow$	$OH+\{2O_2\}$	k_{R7},см^3 молекула$^{-1}$ c^{-1}	$1{,}9\cdot10^{-15}$
R8	HO_2+NO	$\rightarrow$	$OH+NO_2$	k_{R8}, см^3 молекула$^{-1}$ c^{-1}	$8{,}0\cdot10^{-12}$
R9	HO_2+HO_2	$\rightarrow$	$H_2O_2+\{O_2\}$	k_{R9}, см^3 молекула$^{-1}$ c^{-1}	$1{,}4\cdot10^{-12}$
R10	$NO+O_3$	$\rightarrow$	$NO_2+\{O_2\}$	k_{R10}, см^3 молекула$^{-1}$ c^{-1}	$1{,}8\cdot10^{-14}$
R11	источник	$\rightarrow$	CO	F_{CO}, молекула см$^{-3}$с$^{-1}$	переменное
R12	источник	$\rightarrow$	O_3	F_{O3}, молекула см$^{-3}$с$^{-1}$	$6{,}0\times10^{4}$
R13	источник	$\rightarrow$	NO	F_{NO}, молекула см$^{-3}$с$^{-1}$	переменное
R14	источник	$\rightarrow$	CH_4	F_{CH4}, молекула см$^{-3}$с$^{-1}$	$4{,}2\times10^{13}$
R15	NO	$\rightarrow$	потери	L_{NO}, молекула см$^{-3}$с$^{-1}$	$1{,}9\times10^{-8}$
R16	NO_2	$\rightarrow$	потери	L_{NO2}, молекула см$^{-3}$с$^{-1}$	$7{,}2\times10^{-8}$
R17	O_3	$\rightarrow$	потери	L_{O3}, молекула см$^{-3}$с$^{-1}$	$9{,}6\times10^{-8}$

Система нелинейных дифференциальных уравнений модели тропосферной химии, приведенной в таблице 1, имеет вид:

$$\frac{d[CO]}{dt} = k_{R6}[CH_4][OH] - k_{R4}[CO][OH] + F_{CO},$$

$$\frac{d[O_3]}{dt} = k_{R2}[NO_2] - k_{R1}[O_3] - k_{R7}[HO_2][O_3] - k_{R10}[NO][O_3] - k_{R3}[OH][O_3] - L_{O3}[O_3] + F_{O3},$$

$$\frac{d[NO]}{dt} = k_{R2}[NO_2] - k_{R10}[NO][O_3] - k_{R8}[HO_2][NO] - L_{NO}[NO] + F_{NO}, \quad (1)$$

$$\frac{d[NO_2]}{dt} = k_{R10}[NO][O_3] + k_{R8}[HO_2][NO] - k_{R2}[NO_2] - k_{R5}[HO][NO_2] - L_{NO2}[NO_2],$$

$$\frac{d[HO]}{dt} = 2k_{R1}[O_3] + k_{R7}[HO_2][O_3] + k_{R8}[HO_2][NO] - k_{R4}[OH][CO] - k_{R5}[OH][NO_2] - k_{R3}[OH][O_3] - k_{R6}[CH_4][OH],$$

$$\frac{d[HO_2]}{dt} = k_{R4}[OH][CO] + k_{R3}[OH][O_3] + 2k_{R6}[CH_4][OH] - k_{R7}[HO_2][O_3] - k_{R8}[HO_2][NO] - k_{R9}[HO_2][HO_2],$$

$$\frac{d[CH_4]}{dt} = -k_{R6}[CH_4][OH].$$

В модель включены также значения физических источников (CO, NO, NO_2 и O_3) и потерь (NO, NO_2 и O_3) [7,8].

Элементы HNO_3, H_2O_2 и CO_2 являются продуктами реакции и не фигурируют в приведенных уравнениях.

Систему дифференциальных уравнений (1) используя преобразование

$u \equiv [CO]$, $v \equiv [O_3]$, $x \equiv [NO]$, $w \equiv [NO_2]$, $y \equiv [OH]$, $z \equiv [HO_2]$, $s \equiv [CH_4]$, $F_1 \equiv F_{CO}$, $F_2 \equiv F_{O3}$, $F_3 \equiv F_{NO}$, $L_1 \equiv L_{NO}$, $L_2 \equiv L_{NO2}$ и $L_3 \equiv L_{O3}$, можно записать в более удобном виде:

$$\frac{du}{dt} = k_{R6}sy - k_{R4}uy + F_1,$$
$$\frac{dv}{dt} = k_{R2}w - k_{R1}v - k_{R7}zv - k_{R10}xv - k_{R3}yv - L_3v + F_2,$$
$$\frac{dx}{dt} = k_{R2}w - k_{R10}wv - k_{R8}zx - L_1x + F_3,$$
$$\frac{dw}{dt} = k_{R10}xv + k_{R8}zx - k_{R2}w - k_{R5}yw - L_2w, \qquad (2)$$
$$\frac{dy}{dt} = 2k_{R1}v + k_{R7}zv + k_{R8}zx - k_{R4}yu - k_{R5}yw - k_{R3}yv - k_{R6}sy,$$
$$\frac{dz}{dt} = k_{R4}yu + k_{R3}yv + 2k_{R6}sy - k_{R7}zv - k_{R8}zx - k_{R9}z^2,$$
$$\frac{ds}{dt} = -k_{R6}sy.$$

Эффективность численного решения в значительной степени определяется спектром матрицы Якоби системы (2) [9]. Сложность задачи можно оценить величиной pH, где p – спектральный радиус матрицы Якоби, H – величина интервала интегрирования. При умеренных значениях pH (нежесткие задачи) интегрирование обычно выполняется традиционными явными методами и требует небольших вычислительных затрат. Трудности возникают при больших значениях pH (жесткие задачи), когда для получения правильного решения бывает необходимо выбирать очень малый шаг интегрирования [10].

На основе анализа различных методов по влиянию жесткости задачи на точность ее решения и вычислительные затраты, авторы работы [9] подтвердили, что наиболее приемлемыми являются неявные методы, а среди них эффективнее других является метод Гира,

Результаты исследования

Рассмотрим нелинейное поведение модели тропосферной химии, приведенной в таблице 1., изменением притока NO_x (F_{NO}) при следующих констант скоростей реакций [7,11,12,13]:

$k_{R1} = 6.9 \cdot 10^{-8}$ $с^{-1}$; $k_{R2} = 3.9 \cdot 10^{-3}$ $с^{-1}$; $k_{R3} = 7.0 \cdot 10^{-14}$ $см^3$ молекула$^{-1}$ $с^{-1}$;
$k_{R4} = 1.9 \cdot 10^{-13}$ $см^3$ молекула$^{-1}$ $с^{-1}$; $k_{R5} = 1.3 \cdot 10^{-11}$ $см^3$ молекула$^{-1}$ $с^{-1}$;
$k_{R6} = 1.0 \cdot 10^{-16}$ $см^3$ молекула$^{-1}$ $с^{-1}$; $k_{R7} = 1.5 \cdot 10^{-15}$ $см^3$ молекула$^{-1}$ $с^{-1}$;
$k_{R8} = 9.6 \cdot 10^{-12}$ $см^3$ молекула$^{-1}$ $с^{-1}$; $k_{R9} = 2.9 \cdot 10^{-12}$ $см^3$ молекула$^{-1}$ $с^{-1}$;
$k_{R10} = 7.9 \cdot 10^{-15}$ $см^3$ молекула$^{-1}$ $с^{-1}$.

Приток и потери приняты:

$F_{CO} = 5.0 \cdot 10^5$ молекула $см^{-3}$ $с^{-1}$; $F_{O3} = 6.0 \cdot 10^4$ молекула $см^{-3}$ $с^{-1}$;
$L_{O3} = 9.6 \cdot 10^{-8}$ молекула $см^{-3}$ $с^{-1}$; $L_{NO} = 1.9 \cdot 10^{-8}$ молекула $см^{-3}$ $с^{-1}$;
$L_{NO2} = 7.2 \cdot 10^{-8}$ молекула $см^{-3}$ $с^{-1}$.

Приведенные константы скоростей реакций, значения притоков и потерь соответствуют процессам в средней тропосфере, располагающейся на высоте 2-6 км [14].

Покажем, что постепенное увеличение F_{NO} последовательно приводит устойчивое равновесное состояние модели к периодическому колебанию, удваиванию периода и далее к хаосу.

На рис. 3.4 приведены фазовые портреты изменения $[O_3]$ от [OH] и зависимости изменения $[O_3]$ от времени при F_{NO}=7.98x10^4 молекула/$см^3$с. Графики концентрации озона после начального возбуждения стремится к устойчивому положению в узловой точке (7,0x10^9 молекула/$см^3$).

Далее с увеличением притока F_{NO} изменения графиков имеет характер затухающего колебания. На рис. 3.5. приведен пример затухающего колебания, которое стремится к значению 5,756x10^{11} молекула/$см^3$.

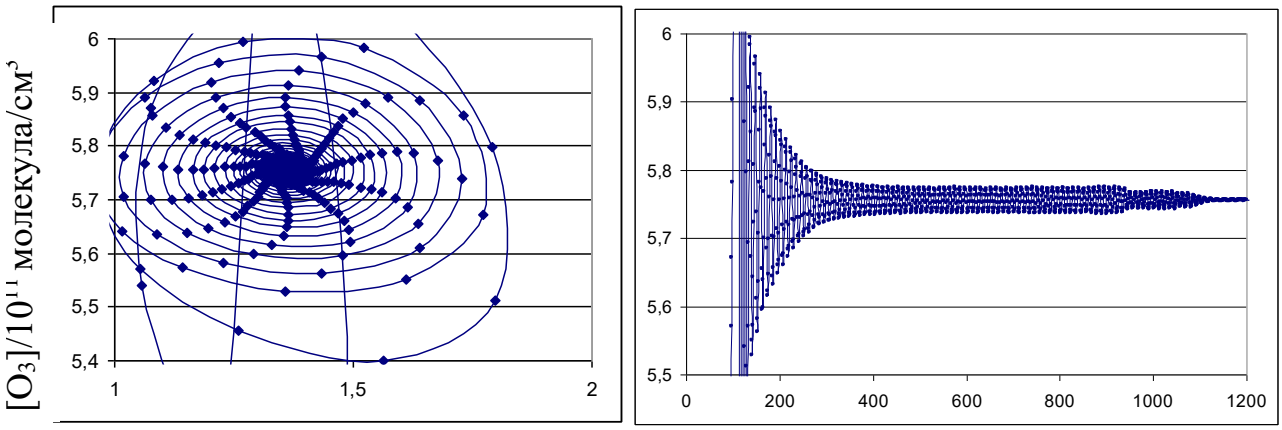


Рис.3.5. Зависимость изменения [O_3] при $F_{NO}=7.98x10^4$ молекула/см^{3}с.

Расчеты показали, что в интервале значений $10^3<F_{NO}\leq 7.98x10^4$ (молекула/см^{3}с) система является равновесной и стремится к узловой точке.

Дальнейшее увеличение F_{NO} нарушает равновесное (устойчивое) состояние, происходит колебательный процесс, далее удвоение периода, т.е. бифуркация, каскад бифуркаций с переходом к хаотическому поведению.

Рассмотрим этот процесс на основе решаемой задачи.

На рис. 3.6 -3.8 показаны колебания, полученные для $F_{NO}=7.99x10^4$ молекула/см^{3}с, $F_{NO}=8.5x10^4$ молекула/см^{3}с и $F_{NO}=1.0x10^5$ молекула/см^{3}с. Процесс стремится к предельному циклу. Причем с увеличением F_{NO} увеличиваются как общие значения предельных циклов, так и их размер.

Таким образом, для значений F_{NO}: $7.99x10^4<F_{NO}<1.0x10^5$ (молекула/см^{3}с) модель имеет характер периодических колебаний.

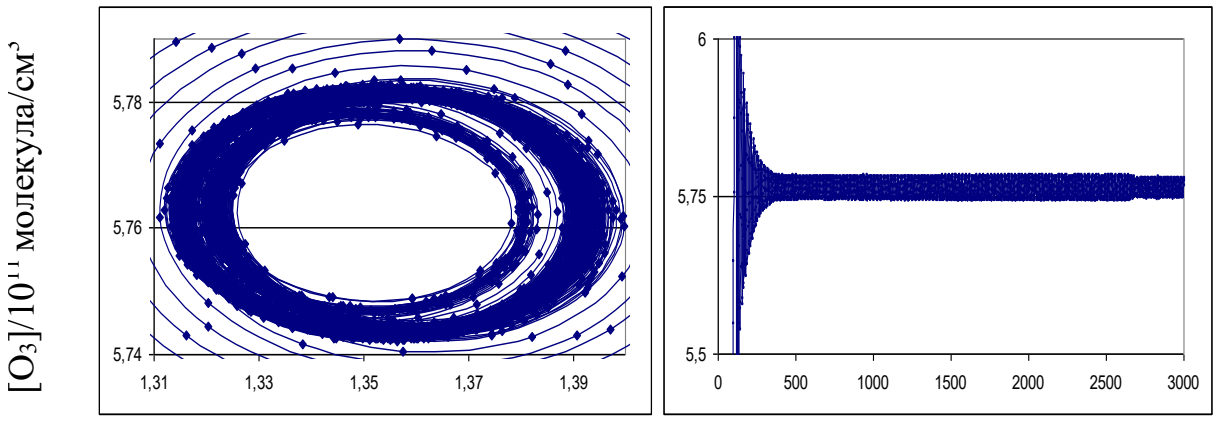


Рис.3.6. Зависимости изменения [O_3] при $F_{NO}=7.99x10^4$ молекула/см^{3}с.

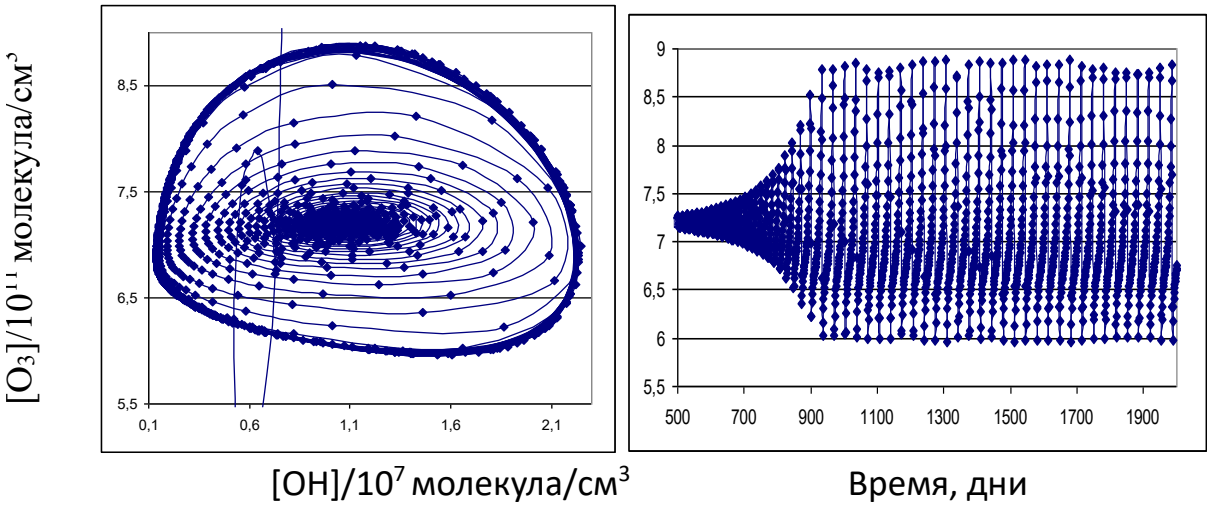


Рис.3.6. Зависимости изменения [O_3] при F_{NO}=1.0x10^5 молекула/см^{3}с.

Дальнейшее увеличение F_{NO} влечет за собой развитие удвоенного предельного цикла критического, после чего начинается каскад удвоений с переходом к хаотическому аттрактору.

При F_{NO}=1.1x10^2 молекула/см^{3}с происходит бифуркация с удвоением предельных циклов (Рис.3.9).

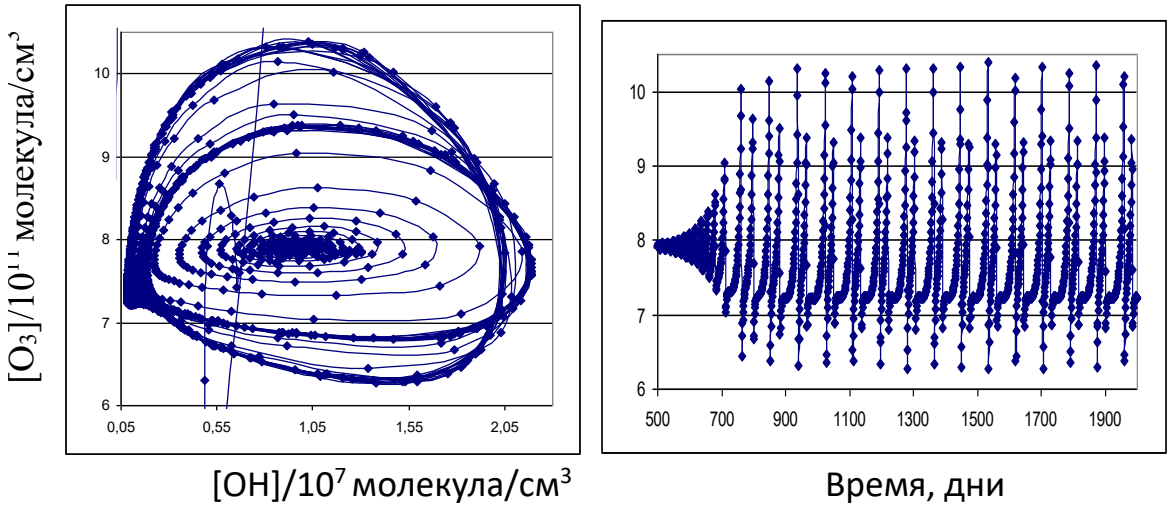


Рис.3.9. Зависимости изменения [O_3] при F_{NO}=1.1x10^5 молекула/см^{3}с.

На рис. 3.10 и 3.11 показаны зависимости изменения [O_3] при F_{NO}=1.13x10^5 и 1.16x10^5 молекула/см^{3}с. Графики наглядно показывают каскад бифуркаций предельных циклов и хаотический аттрактор.

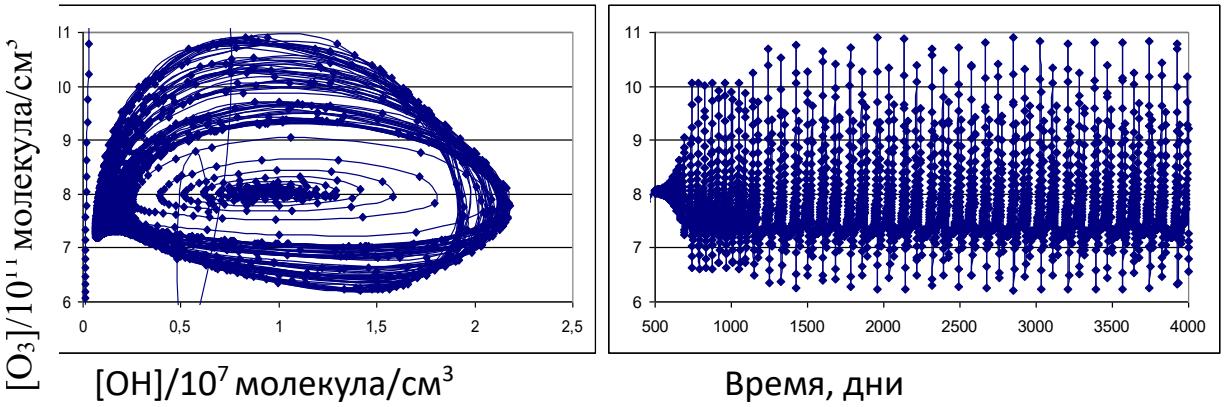


Рис.3.10. Зависимости изменения [O_3] при F_{NO}=1.13x10^5 молекула/см^{3}с.

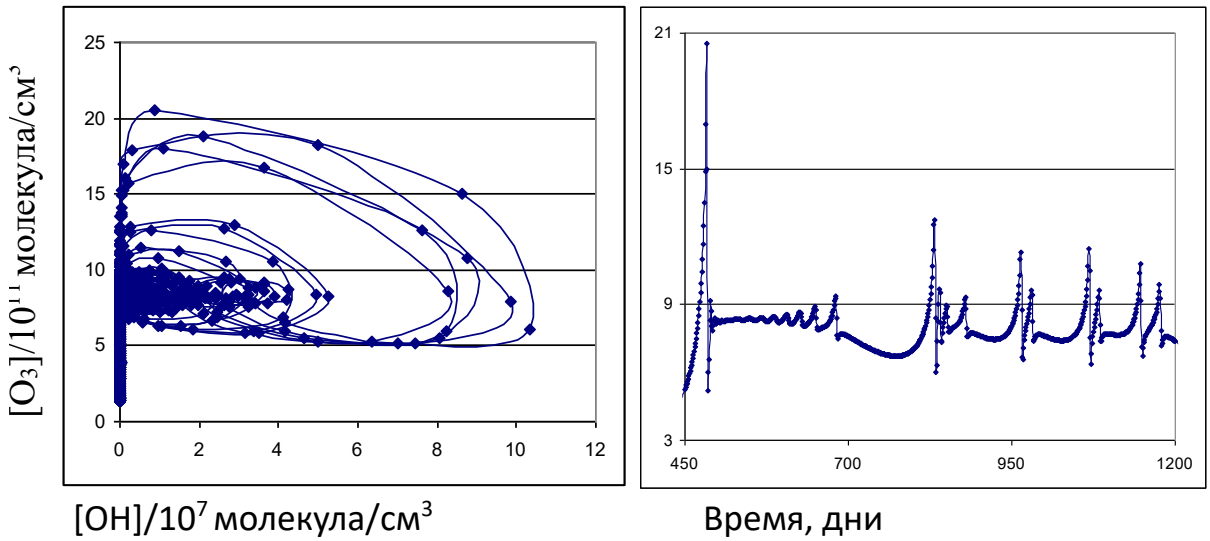


Рис.3.11. Зависимости изменения [O_3] при F_{NO}=1.16x10^5 молекула/см^{3}с.

Подобная картина просматривается и при рассмотрении зависимости радикала [OH] от [CO] (Рис.3.12).

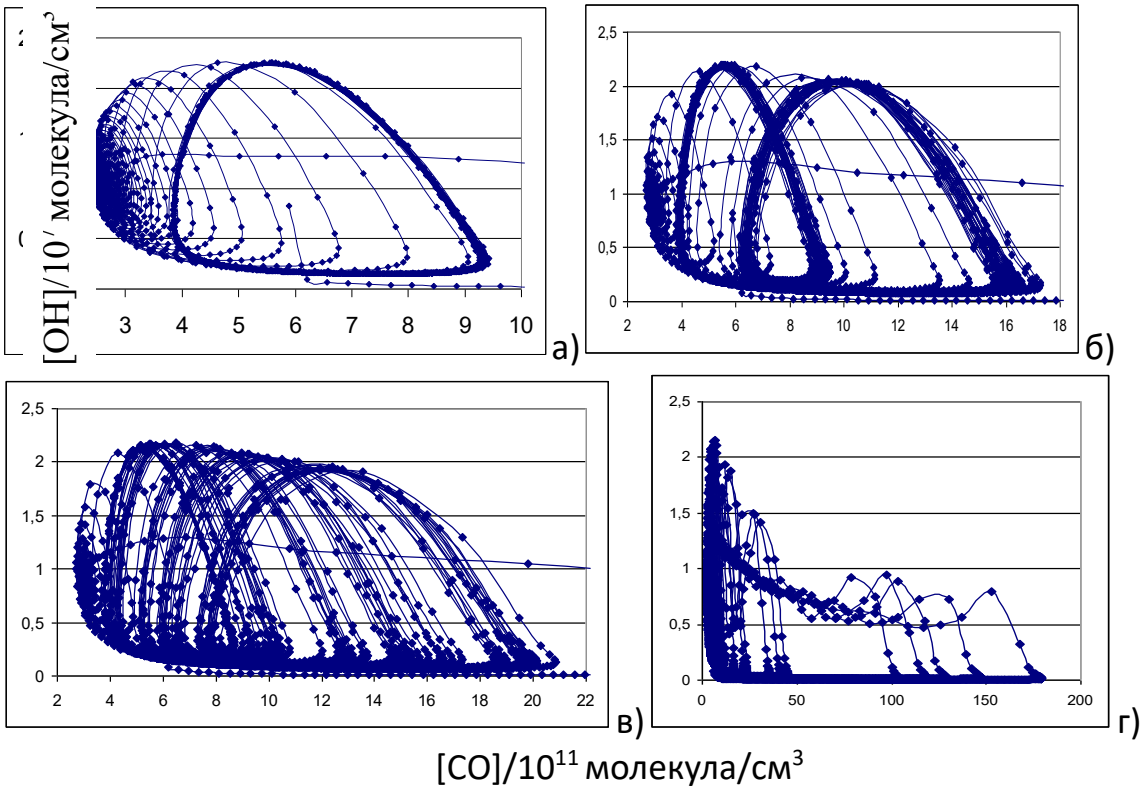


Рис. 3.12. Зависимости изменения [OH] от [CO].
а) при F_{NO}= 1.0x10^5 молекула/см^{3}с; б) при F_{NO}=1.1x10^5 молекула/см^{3}с;
в) при F_{NO}=13x10^5 молекула/см^{3}с; г) при F_{NO}=1.16x10^5 молекула/см^{3}с.

Заключение.

Таким образом, анализ результатов расчета показал, что в зависимости от эмиссии оксида азота NO (F_{NO}) в интервале значений $10^3<F_{NO}\leq 7.98x10^4$ (молекула/см^{3}с) модель является равновесной и стремится к узловой точке. В частности, зависимость [O_3] от [HO] и от времени при F_{NO}=7.98x10^4 молекула/см^{3}с показала, что модель имеет характер затухающего колебания и стремится к значению 5,756x10^{11} молекула/см^3. В интервале значений $7.99x10^4<F_{NO}<1.1x10^5$ модель является колебательной со стремлением к предельным циклам и при $1.1x10^5\leq F_{NO}$ через каскад удвоений переходит в апериодический (хаотический) аттрактор.

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ТЕРРИТОРИАЛЬНАЯ СТРУКТУРА ТРАНСПОРТНОГО ОБСЛУЖИВАНИЯ В СУРХАНДАРЬИНСКОЙ ОБЛАСТИ И ПУТИ ЕЁ СОВЕРШЕНСТВОВАНИЯ

Аннотация: *В данной статье раскрываются территориальная структура транспортного обслуживания населения в Сурхандарьинской области и существующие различия, а также причины их возникновения. Рассматриваются разреженность транспортной сети на отдельных территориях, недостаточно развитая транспортная инфраструктура, диспропорции в предоставлении транспортных услуг и влияние природных и экономических факторов на их формирование. Наряду с этим представлены предложения, направленные на решение обозначенных проблем.*

Ключевые слова*: Сурхандарьинская область, транспортное обслуживание, автомобильный транспорт, пассажирские перевозки, воздушный транспорт, железнодорожный транспорт, городской транспорт, транспортная доступность, Международный аэропорт Термез.*

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TERRITORIAL STRUCTURE OF TRANSPORT SERVICES IN THE SURKHANDARYA REGION AND WAYS OF ITS IMPROVEMENT

Abstract: *The article examines the territorial structure of transport services in the Surkhandarya region, with particular attention to spatial disparities and the underlying causes of their formation. It analyzes the uneven distribution of the transport network across specific areas, the insufficient development of transport infrastructure, and disproportions in the provision of services, as well as the influence of natural and socio-economic factors on their spatial organization. In addition, the study proposes a set of measures aimed at mitigating the identified challenges and improving the efficiency and accessibility of transport services in the region.*

Keywords: *Surkhandarya Region, transport services, road transport, passenger transportation, air transport, railway transport, urban transport, transport accessibility, Termez International Airport*

Введение

В транспортно-географических исследованиях основное внимание уделяется двум аспектам изучения транспорта. Во-первых, транспорт рассматривается как отрасль производственной экономики, во-вторых — как элемент социальной инфраструктуры.

При транспортно-географическом анализе учитываются его природно-географическое положение, организационно-экономические (производственные) аспекты, правовые основы, а также степень рациональности территориальной организации транспортной системы с точки зрения социальной инфраструктуры, то есть насколько эффективно и удобно для населения организовано транспортное обслуживание. Изучение транспортной системы в этих направлениях составляет основу научного исследования транспорта. С этой точки зрения транспорт выступает важным фактором, способствующим повышению удобств в повседневной жизни населения и улучшению уровня его благосостояния.

Улучшению транспортного обслуживания населения, полному удовлетворению потребностей жителей городских и сельских территорий в транспортных услугах, а также повышению транспортно-экономического и инфраструктурного потенциала регионов уделяется значительное внимание со стороны Правительства Узбекистана.

В частности, в Указе Президента Республики Узбекистан от 28 января 2022 года № ПФ-60 «О Стратегии развития Нового Узбекистана на 2022–2026 годы», в Указе от 11 сентября 2023 года № ПФ-158 «О Стратегии “Узбекистан – 2030”», а также в Постановлении Президента от 16 февраля 2023 года № ПП-0095 «О мерах по реформированию системы общественного транспорта» определены задачи по полному удовлетворению потребностей населения в качественных и удобных пассажирских перевозках, внедрению новых

автобусных маршрутов в городах, а также разработке отдельных «дорожных карт» по областным центрам с установлением конкретных мероприятий.

Основная часть

К настоящему времени сфера услуг занимает ведущие позиции в мировой экономике и хозяйствах отдельных государств, при этом транспорт занимает в ней особое место. В частности, в структуре ВВП Узбекистана доля сферы услуг составляет 47 %, из которых на транспортные услуги приходится 22 % (2023 г.). На долю Сурхандарьинской области приходится 4,5 % от общего числа перевезённых пассажиров в республике.

По основным показателям транспортно-экономического потенциала Сурхандарьинская область занимает следующие позиции в стране. В частности, протяжённость автомобильных дорог общего пользования с твёрдым покрытием составляет 2843 км (6,7 % от протяжённости автомобильных дорог Республики Узбекистан), протяжённость железных дорог общего пользования — 413 км (7,9 % железнодорожной сети республики). Объём перевозок пассажиров железнодорожным транспортом составляет 846,9 тыс. человек, что эквивалентно 4,0 %.

На развитие транспорта в области влияют следующие факторы: территориальная конфигурация и направление транспортных путей, которые, прежде всего, зависят от рельефа местности и структуры гидрографической сети; размещение городских и сельских населённых пунктов; минерально-сырьевой потенциал территории; производственный потенциал региона; демографический потенциал; а также повседневные культурно-бытовые потребности населения, формирующие территориальную мобильность. Все эти факторы оказывают влияние на уровень транспортного обслуживания и на формирование его территориальных направлений.

Таким образом, социальная инфраструктура, специализирующаяся на предоставлении различных услуг населению (объекты обслуживания, а также крупные торговые объекты, рыночная инфраструктура — банки, финансовые, страховые и лизинговые организации, биржи и др.), а также органы управления (хокимият, налоговые органы, отраслевые структуры управления и др.), правоохранительные учреждения в большей степени размещены в областном центре — городе Термезе, а также в районных центрах. Это, в свою очередь, оказывает влияние на территориальную мобильность населения, а также на уровень транспортного обслуживания и формирование его территориальных направлений.

В этом отношении расположение города Термеза — административного, политического, экономического, научного и культурного центра области — на крайнем юге региона приводит к территориальным диспропорциям для сельских районов, находящихся в сотнях километров на севере.

На сегодняшний день на территории области в перевозке пассажиров и грузов исторически сложились основные транспортные направления — это маршруты Термез – Денов и Термез – Бойсун. На них приходится значительная доля перевозимых грузов и пассажиров в области.

В масштабах области транспортные услуги, в зависимости от используемых транспортных средств, их вида и территориального охвата, можно подразделить на местный (межрайонный), региональный (межобластной) и международный (межгосударственный) уровни.

Изучение международного опыта показывает, что в перевозке пассажиров и грузов автомобильный транспорт является наиболее эффективным на короткие расстояния, железнодорожный транспорт — на средние расстояния, а морской или воздушный транспорт — на дальние расстояния. При этом на дистанции до 750 км активно функционирует автомобильный транспорт, на расстоянии 750–1500 км наиболее удобным считается железнодорожный транспорт. [5; 156 р].

В области по объёмам перевозок пассажиров лидируют города: Термез — 48 млн, Денов — 43 млн, Ангор — 27 млн человек, тогда как наименьшие показатели зафиксированы в районах Бандихон (4,6 млн), Байсун (5,8 млн), Кизирик (11 млн) и других.

Общий объём транспортных услуг в области увеличился с 234,3 млрд сумов в 2010 году до 2,1 трлн сумов в 2024 году, то есть вырос в 7 раз.

Перевозка грузов по железной дороге и транзитных грузов с каждым годом растёт по сравнению с пассажирскими перевозками. Так, например, в 2022 году в области по железной дороге было перевезено 2,3 млн тонн грузов, в то время как пассажиров — 700 тысяч человек.Наиболее высокая динамика роста отмечается в воздушном транспорте: в 2024 году было перевезено в общей сложности 43 тысячи пассажиров.

В Сурхандарьинской области организованы следующие железнодорожные маршруты: на международном направлении действует маршрут Термез – Москва; на межобластных направлениях — Термез – Ташкент, Сариасия – Ташкент, Андижан – Термез, Денов – Ташкент; на местном (областном) уровне функционируют маршруты Термез – Дарбанд, Термез – Сариасия, Термез – Сурхонобод и другие.По объёму перевозок пассажиров на межобластных маршрутах среди железнодорожных станций области лидирующие позиции занимает вокзал (станция) Термез, тогда как наименьшее количество пассажиров приходится на станцию Байсун. Так, например, в декабре 2023 года со станции Термез было перевезено 5895 пассажиров, тогда как со станции Байсун — всего 504 человека.

Кроме того, в области в 2023 году на междугородних железнодорожных направлениях было перевезено 368 тысяч пассажиров. В междугородних перевозках крупнейшими железнодорожными станциями являются Термез и Кумкурган. На последующих позициях располагаются станции Сариасия и Денов, тогда как наименьшее количество пассажиров приходится на станции Тангимуш (новая станция), Жаркурган, Дарбанд и др.

Помимо этого, в области также осуществляются следующие трансграничные железнодорожные маршруты: Душанбе – Москва и др.

Железные дороги отсутствуют в районах Алтынсай, Кызирик и Бандихон. Это, в свою очередь, свидетельствует о том, что данные районы отстают в социально-экономическом развитии. На территории области функционирует всего 26 железнодорожных станций. Железнодорожные линии проходят через территории 94 махаллей области [21;].

В настоящее время железнодорожный транспорт в области не может составить конкуренцию автомобильному транспорту при перевозке грузов и пассажиров. Причинами этого являются, прежде всего, невысокая скорость движения поездов, изношенность основной железнодорожной инфраструктуры, вагонов и локомотивов, несоответствие качества обслуживания современным мировым стандартам, а также высокие тарифы.

В пассажирских перевозках, то есть в сфере транспортного обслуживания, в области, как и в республике в целом, преобладает автомобильный транспорт. Более 95 % всех перевезённых пассажиров в регионе приходится именно на его долю.

По объёму перевозимых пассажиров автомобильным транспортом в разрезе сельских районов условно выделяются две основные группы — северные и южные районы. Центром южного региона является город Термез, тогда как центром северного региона выступает город Денов. Эти центры занимают средний (13,3 млн – 22,6 млн), высокий (22,7 млн – 31,9 млн) и очень высокий (32,0 млн – 43,2 млн) уровни пассажироперевозок автомобильным транспортом. Напротив, низкий уровень (3,9 млн – 13,2 млн) характерен для группы районов, включающей Байсунский, Бандиханский, Кызирикский, Алтынсайский, Кумкурганский и Шурчинский.

В пассажирских перевозках автомобильным транспортом важное значение имеют автовокзалы. В этом отношении для автобусных и таксомоторных маршрутов в Термезе, Денове, Шерабаде и Кумкурганском районе функционируют крупные автовокзалы. В остальных районах автовокзалы не соответствуют требованиям, либо в некоторых районах (Узун, Шурчи, Алтынсай, Бандихан, Кызирик) они вовсе отсутствуют.

В области функционируют следующие автобусные маршруты: Термез – Денов, Термез – Шерабад, Денов – Шурчи, Денов – Узун, Денов – Алтынсай, Термез – Ангор, Термез – Музработ, Термез – Кызирик и др. Наряду с этим организованы автобусные пассажирские перевозки по направлениям Термез – Байсун, Денов – Музработ.

Кроме того, отсутствуют автобусные маршруты, соединяющие районные центры с областным центром по направлениям Термез – Сариасия, Термез – Алтынсай, Термез – Узун, Термез – Бандихан. Такая ситуация, безусловно, создаёт неудобства для населения в получении транспортных услуг.

Обслуживание населения области пассажирским транспортом (автобусными маршрутами) сравнительно лучше развито в городе Термез. Здесь функционируют 11 автобусных маршрутов, а существующий автопарк насчитывает 117 автобусов. В Деновском районе организовано 5 автобусных

маршрутов, а в Жаркурганском районе — 4 маршрута. Автобусные маршруты отсутствуют в Ангорском, Бандиханском, Кызирикском, Музработском, Алтынсайском, Сариасийском, Термезском, Узунском и Шурчинском районах. Их функцию частично выполняют маршрутные такси.

Однако тот факт, что в области фиксируется самый высокий в республике уровень рождаемости и естественного прироста населения, требует не только расширения транспортных услуг для населения, но и организации общественного транспорта, а также формирования соответствующей инфраструктуры.

Заключение

В ходе анализа территориальной структуры пассажирского транспортного обслуживания, то есть состояния по районам, можно отметить, что в большинстве районов общественный транспорт функционирует только в районных центрах и населённых пунктах, расположенных близ городов. Основная же часть населения пользуется частным транспортом (такси) либо личными транспортными средствами.

Несмотря на положительные темпы роста объёмов транспортных услуг для населения области, развитию данной сферы препятствуют следующие факторы:

- низкий уровень обеспеченности автомобильной, железнодорожной и другой инфраструктурой;
- изношенность подвижного состава железнодорожного транспорта (вагонов), низкая скорость движения поездов, отсутствие реконструкции железнодорожных станций;
- слабые темпы обновления существующего транспортного парка современными транспортными средствами;
- почти полное отсутствие пассажирской транспортной инфраструктуры в отдалённых сельских, горных и предгорных районах;
- концентрация транспортных услуг в основном в центрах, слабая организация транспортного обслуживания населения горных районов, высокие транспортные расходы;

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ЗНАЧЕНИЕ ИГРЫ В РАЗВИТИИ ЛИЧНОСТИ РЕБЕНКА

Аннотация: *Игровая деятельность в жизни ребенка развивает творческий подход, интерес к новым знаниям, умение собирать и обрабатывать информацию, формирует тягу к познавательной деятельности, развивает навыки коммуникации. В данной статье рассматриваются некоторые вопросы значения игры в развитии личности ребенка.*

Ключевые слова: *Игровая деятельность, творческий подход, интерес к знаниям, умение собирать информацию, познавательная деятельность, навыки коммуникации.*

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THE IMPORTANCE OF PLAY IN THE DEVELOPMENT OF A CHILD'S PERSONALITY

Annotation: *Playful activities in a child's life develop creativity, an interest in new knowledge, the ability to gather and process information, foster a passion for learning, and develop communication skills. This article examines some of the importance of play in a child's personal development.*

Key words: *Playful activities, creativity, interest in knowledge, ability to collect information, cognitive activity, communication skills.*

Значение игры в жизни ребенка очень велико. Именно через игру малыш познает мир, учится взаимодействовать с ним, контактирует со своими близкими, а позже, со сверстниками и другими взрослыми, приспосабливается к работе в команде, проявляет фантазию и смекалку, развивает логику, активирует мыслительный процесс. Здесь важно понять, что все необходимое ребенок получает как раз в игровом формате, и рассматриваться данная форма деятельности должна комплексно. Играя, ребенок:

- развивает мелкую моторику (рисование, лепка, пазлы), что ускоряет развитие речевых навыков;
- развивает фантазию (вовлечение родителей, игрушек, применение к себе какой-либо роли из реальной жизни или прочитанной книги);
- адаптируется к социальным ситуациям (магазин, школа, поликлиника);

- развивается физически (подвижные игры);
- нивелирует стресс (укачивание/укладывание кукол, активные игры).

Задача родителей состоит в правильной организации игрового пространства – дать ребенку возможность проявить фантазию, направить его активность в правильное русло, объяснив через игру основные нормы и правила поведения.

Начинать играть с ребенком нужно с рождения, важно лишь адаптировать деятельность под возраст малыша, так как основные навыки дети получают, общаясь с родителями. Сначала ребенок смотрит, как родители манипулируют различными предметами: погремушками, игрушками, бытовыми вещами. А затем сам начинает держать и перемещать те же предметы, повторяя за ними движения, жесты, мимику.

С малышами постарше вариантов игры гораздо больше. К году они уже готовы собирать и разбирать пирамидки, оставаться одни на небольшое количество времени и занимать себя сами, у них появляются свои предпочтения. После третьего года жизни, игры детей становятся еще разнообразнее: ребенок проявляет фантазию, вовлекает игрушки в обыгрываемую ситуацию, способен занять себя, пока мама занята домашними делами.

Игровая деятельность в жизни ребенка развивает творческий подход, интерес к новым знаниям, умение собирать и обрабатывать информацию, формирует тягу к познавательной деятельности, развивает навыки коммуникации. Родителям же игра позволяет наладить коммуникацию с маленьким человеком. Важно лишь помнить, что дети – это личности со своим внутренним миром, характером, предпочтениями, а чтобы они нашли свой правильный путь, мы – взрослые, можем и должны помочь маленькому человеку адаптироваться в этом мире.

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“Тошкент ирригация ва қишлоқ хўжалигини механизациялаш муҳандислари институти”
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магистранти
Тошкент давлат аграр университети
Тошкент, Ўзбекистон

АМУДАРЁ ҚИРҒОҚЛАРИНИНГ ТАРИХИЙ ГИДРОЛОГИК ВА АРХЕОЛОГИК ТАҲЛИЛИ

Аннотация: *Амударё дарёсининг қадимдан Марказий Осиё давлатлари цивилизациясида ҳал қилувчи аҳамиятга эга бўлган. Унинг ўзани доимий ўзгарувчан бўлиб ўнг ва чап қирғоқларга жиддий таъсир кўрсатиб турган. Унинг оқими, сув сатҳи ва тошқинлари нафақат ирригация тизимларини ривожлантириш, балки шаҳарларнинг тақдирига ҳам боғлиқ бўлган. Амударё оқими натижасида эррозияга учранган тарихий ёдгорликлардан бири қадимий Кампиртепа бўлиб, у Бақтрия ва Суғдни боғлайдиган муҳим савдо йўли, Амударё қирғоқларида жойлашган шаҳар ҳисобланган.*

Калит сўзлар: *сув сатҳи, сув сарфи, эррозия, ёдгорлик, тупроқлар, сув тошқини, шкала, динамика, тарихий манзара.*

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HISTORICAL HYDROLOGICAL AND ARCHAEOLOGICAL ANALYSIS OF THE BANKS OF THE AMUDARYA RIVER

Abstract: *The Amudarya River has been of decisive importance in the civilization of the Central Asian countries since ancient times. Its core is constantly changing and has a serious impact on the right and left banks. Its flow, water level and floods depended not only on the development of irrigation systems, but also on the fate of cities. One of the historical monuments eroded by the flow of the Amudarya is the ancient Kampirtepa, which was a city located on the banks of the Amudarya, an important trade route connecting Bactria and Sughd.*

Key words: *water level, water consumption, erosion, monument, soils, flood, scale, dynamics, historical landscape.*

Методология ва тадқиқот усуллари

Мақоладаги маълумотлар археологик қазишмалар, гидрологик башоратлар ва геоморфологик таҳлилларга асосланган. Сув сарфи кўрсаткичлари археологик қатламлардаги қолдирилган излар билан таққосланиб, пропорционал ҳисоб-китоблар йўли билан аниқланган.

Кириш

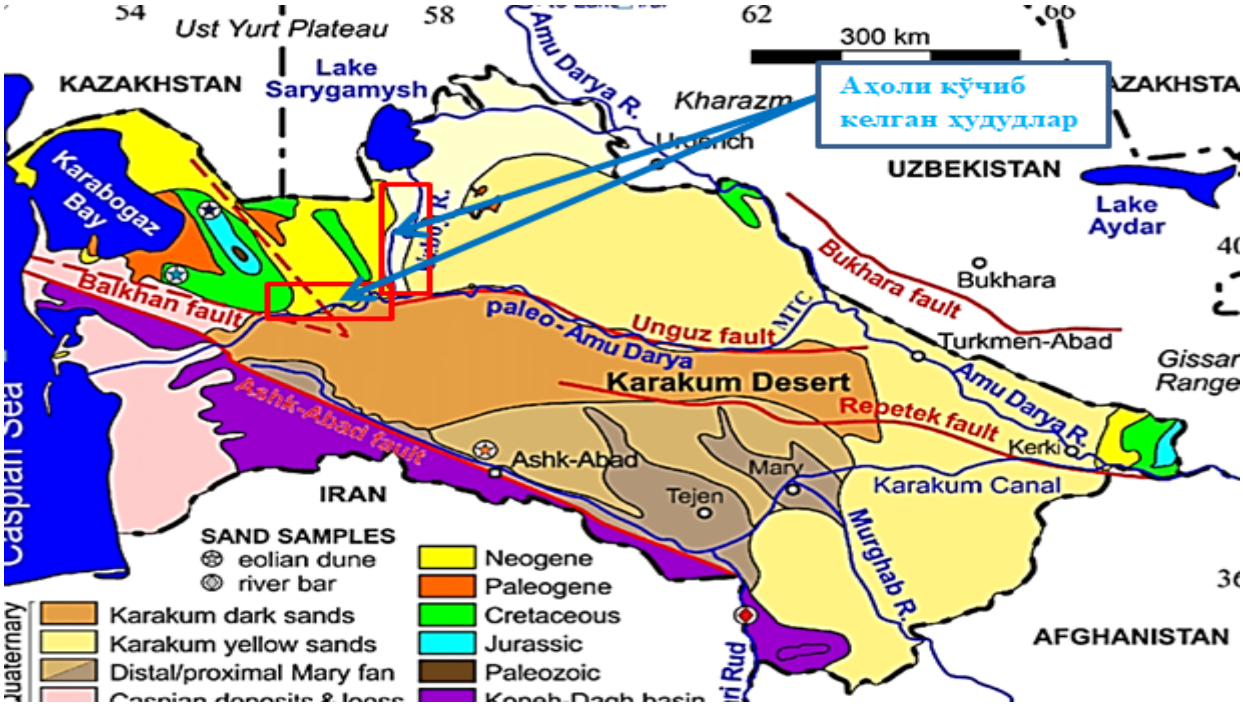
Амударё ҳақида ёзма маълумотлар асосан антик даврдан бошлаб учрайди. Археологик тадқиқотлар Амударё қирғоқларидаги Кампиртепа ёдгорлигида сув тошқинлари ва эрозия жараёнлари натижасида юзага келган ҳолатлар катта из қолдирганини кўрсатади. Амударёнинг тўлин сув ва тошқин даврларида юзага келган тўлқинлар қирғоқларни ҳар 5-10 метргача ювиб дарё ўзанини ўзгартириб, қирғоқ тупроқлари ювилиб кетгани кузатилган.

Қиш ва баҳор фаслларида сув кўтарилиши қирғоқлардаги грунтларни юмшатиб, кўчки ва эрозия хавфини оширган. Археологик қатламларнинг бузилиши, Қалъа деворларининг ювилиши ва бошқа биноларнинг ўпирилиши айнан Амударёнинг тошқин даврларидаги сув таъсири билан боғлиқдир. Вақт шкаласи бўйича дарё ўзанининг 4-аср, 2-аср ва ҳозирги даврлардаги ўзгаришлари хариталарда ҳам қайд этилган.

Милоддан аввалги 3-асрларда Амударёнинг сув сатҳи кескин кўтарилиб, Кампиртепа аҳолиси учун катта хавф туғдира бошлаган. Тахминий гидрологик ҳисоботларга кўра Милоддан аввалги 260 йилларда Амударёнинг Кампиртепа ҳудудида сув сарфи 2500–3000 м³/с атрофида бўлиб, бу энг юқори кўрсаткич ҳисобланган. Шу даврда шаҳарнинг ярми сув босиши натижасида ювилиб кетган. Натижада аҳоли шаҳарни ташлаб бошқа ҳудудларга кўчишга мажбур бўлган. Бу жараёнлар шаҳарнинг таназзули ва стратегик аҳамиятининг йўқолишига сабаб бўлган.

Амударё сув йўллари фақат Кампиртепа билан чекланмаган. Олиб борилган илмий изланишларда Милоддан аввалги 4-минг йилликдан 1-минг йилликнинг 1-ярмигача Ўзбўй орқали Сариқамиш кўли орқали Каспий денгизига сув оққанлиги аниқланган. Археологик текширишлар натижасида Амударё қирғоқларидан кўплаб неолит манзилгоҳлари, бронза даврига хос сопол идишлар, шунингдек, милоддан аввалги 7-5-асрларга оид шаҳарлар топилган. Милоддан аввалги 1-минг йилликнинг ўрталарида Ўзбўй бўйлаб сув оқмай қўйган. Археологик ва тарихий маълумотлар 10-13-асрларда Ўзбой орқали Хоразмдан Хуросонга ўтган карвон йўли ва кўп карвонсаройлар, сардобалар бўлганлигини кўрсатади. Ўрта Осиёнинг чўлли ҳудудларида фақатгина қисқа давр мобайнида сув оққан ёки умуман сув оқими тўхтаган қуруқ ўзанлар ҳам Ўзбой деб аталган

Бугунги замонавий илм фан Амударёнинг Каспий денгизи билан боғловчи сув йўли Ўзбой ўзани орқали амалга оширилганлиги ҳақидаги қарашларни тасдиқламоқда. Б.И.Вайнберг маълумотларига кўра, милоддан аввалги V- IV асрлардан Ўзбой ўзаннинг иккала қирғоқларида яшовчи халқлар пайдо бўлган.

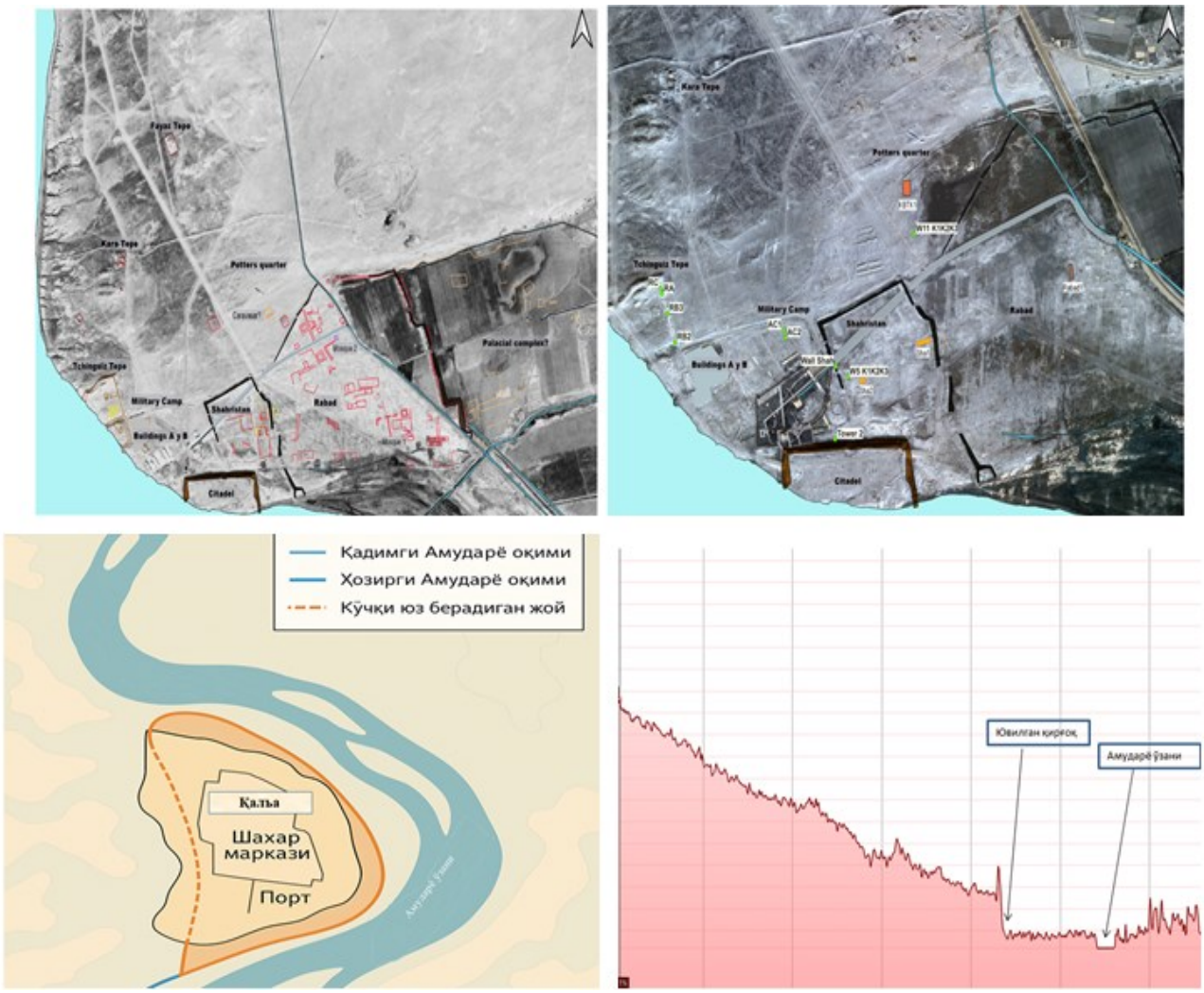


1-расм. Амударёнинг Узбой орқали Каспий ва Орол денгизларига қуйилиши.

Изланишлар натижасида Узбой атрофларида кўчманчи ҳамда ярим кўчманчи чорвадор қабилалар қолдирган кўплаб қароргоҳ ва мозорлар топилган.

Бу топилмалар антик даврда Амударё бўйлаб Каспий ва Қора денгизгача давом этган сув йўли Ҳиндистон, Марказий Осиё, Кавказ, Яқин Шарқ ва шимолий Қора денгиз соҳилларини боғлаганлиги ҳақидаги малумотлар ҳамда изланишларни асослаган. Шунингдек, бу сув йўли бўйлаб олиб борилган алоқаларни Амударёнинг юқори оқимидаги Тахти-Сангин, Хоразм воҳасидаги Йелхарас, Сариқамиш делтасидаги Қалъаликир-2, Ўзбойдаги Ичанлитепа, Катта Болхондаги Гарраултепа, Кавказдаги Вани каби ибодатхона–диний марказлар орқали ҳам кузатиш мумкин. Бундан келиб чиқадики, Амударё бўйлаб ўтган сув йўллари нафақат ички ва ташқи алоқа тизимида, балки маданий алоқалар ҳамда диний қарашлар ёйилиши ривожида ҳам муҳим рол ўйнаган.

Амударёнинг ўрта оқимида сув йўлини назорат қилиб туриш мақсадида муҳим кечувлар яқинида Калиф, Курегин, Каркича (Карки), Одойдепа, Усти каби қалъалар барпо етилган. Карки кечуви Самарқанд ва Бухородан Ксениппа (Йерқўрғон) орқали Бақтрияга ўтувчи йўлда жойлашгани унинг Амударё сув йўлининг ўрта оқимини назорат қилиб турганидан далолат беради. Кампиртепа ёдгорлиги эса нафақат Бақтриядан Суғдга борадиган савдо йўлидаги Амударё кечувини, шу билан бирга Амударё бўйлаб олиб борилган Термиз-Урганч сув йўлини ҳам назорат қилиб турган. Вақт ўтиб бу қалъалар қирғоқ ювилиши натижасида бутунлай вайрон бўлган.

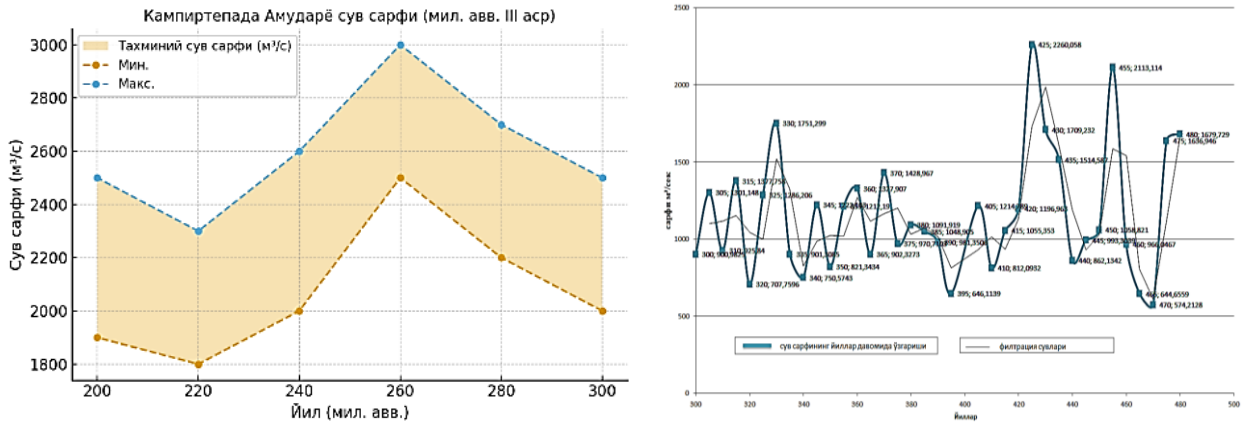


2-расм. Амударё қирғоқлари эрозияга учраган қалъаларни жойлашуви

Милоддан авввалги III асрларда қалаларнинг ювилишининг асосий сабабини гидрологик реконструкциялар Амударё сув сарфининг сезиларли даражада ўзгариб тургани билан боғликлигини кўрсатади.

Кампиртепа ҳудудида;

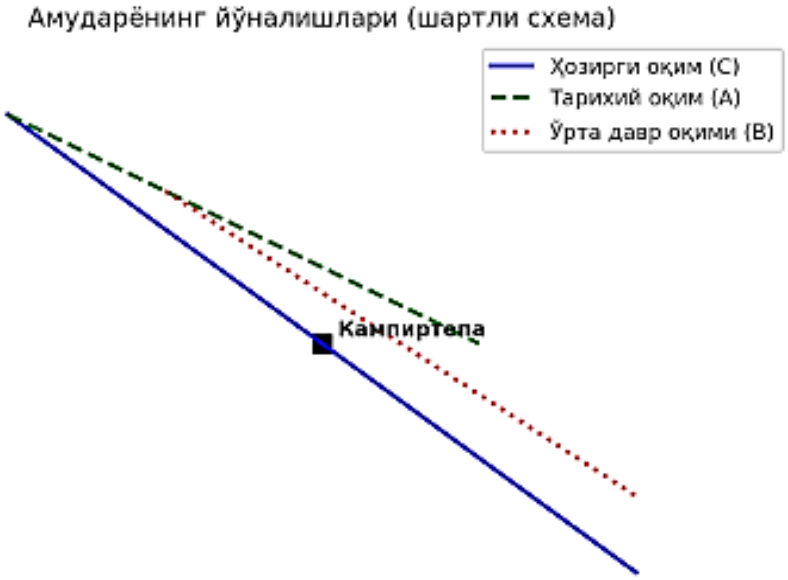
- **Миллоддан аввалги 300–280-йиллар**: сув сарфи 2000–2700 м³/с, барқарор ҳолат.
- **Миллоддан аввалги 260-йил**: сув сарфи 2500–3000 м³/с, энг юқори кўрсаткич. Бу даврда шаҳарнинг ярми сув босиши натижасида бузилиб кетганлиги археологик ёдгорликлар билан тасдиқланган.
- **Миллоддан аввалги 240–200-йиллар**: сув сарфи пасайган, аммо ирригация тизимлари яроқсиз ҳолатга келган.



3-расм. Милоддан аввалги III асрларда Амударё сувининг ўзгариш графиги. (Милоддан аввалги 300-200 йиллар)

Натижада Кампиртепа аҳолиси шаҳарни ташлаб кетишга мажбур бўлган. Бу ҳолат гидрологик ўзгаришларнинг аҳолининг яшаш шароитларини ўзгаришига ва маҳаллийлашишга бевосита таъсирини кўрсатади.

Амударё Каспий денгизи орқали Кавказ ва Қора денгизга уланган. Милоддан аввалги V–IV асрларда бу йўл орқали Марказий Осиё, Ҳиндистон ва Яқин Шарқ ўртасида савдо ва маданий алоқалар ривожланган. Кампиртепа эса нафақат Бақтрия–Суғд йўлидаги марказ бўлган, балки Термиз–Урганч сув йўлини назорат қилган порт сифатида ҳам муҳим аҳамият касб этган.



4-расм. Амударё оқими даврлар мобайнида ўзгаришининг шартли схемаси

Хулоса

Амударёнинг қирғоқларида жойлашган Кампиртепа тарихи гидрологик ўзгаришлар билан узвий боғлиқ. Мил. авв. III асрдаги катта тошқинлар шаҳарнинг қисман йўқолишига, аҳолининг кўчишига ва иқтисодий таназзулга олиб келган.

Шу билан бирга, Кампиртепа Амударё сув йўлидаги стратегик порт сифатида Марказий Осиё цивилизациясида муҳим рол ўйнаган.

Бу тадқиқотлар ҳозирги кунда ҳам долзарб масалалардан бўлиб, Амударё қирғоқларидаги археологик ёдгорликларни муҳофаза қилиш ва гидрологик жараёнларни илмий таҳлил қилиш зарурлигини кўрсатади. Шу билан бирга тарихий манбаларга таяниб Амударё ўзанининг бугунги кундаги ўзгаришларини баҳолаш ва чора тадбирлар ишлаб чиқиш имкониятини яратади.

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ГЕОГРАФИЧЕСКИЕ НАПРАВЛЕНИЯ ИЗУЧЕНИЯ ТЕРРИТОРИАЛЬНОЙ ОРГАНИЗАЦИИ НАСЕЛЕНИЯ

Аннотация: *В статье поясняется, что основной сущностью территориальной организации общества является территориальная организация населения, а суть в том, что эти два понятия нельзя понимать отдельно друг от друга. Думается о том, в какой степени науки, изучающие население, оказывают влияние на содержание понятия территориальной организации населения, и в любом случае организация приобретает территориальность. Также в статье территориальность трактуется как основной критерий численности населения и населенных пунктов, входящих в географическое пространство, и обосновано ее проявление посредством территориальной стратификации.*

Ключевые слова: *Территориальная организация общества, география населения, природно-географические факторы, размещение населения, плотность населения, территориальная организация населения, образ жизни населения, территориальность.*

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GEOGRAPHICAL DIRECTIONS FOR STUDYING THE TERRITORIAL ORGANIZATION OF POPULATION

Abstract: *The article explains that the main essence of the territorial organization of society is the territorial organization of the population, and the point is that these two concepts cannot be understood separately from each other. One thinks about the extent to which the sciences that study population influence the content of the concept of territorial organization of the population, and in any case, the organization acquires territoriality. Also in the article, territoriality is interpreted as the main criterion for the size of the population and settlements included in the geographical space, and its manifestation through territorial stratification is justified.*

Key words: *Territorial organization of society, geography of the population, natural geographical factors, distribution of the population, population density, territorial organization of the population, lifestyle of the population, territoriality.*

Введение

Население является как субъектом, так и объектом производственного и потребительского процесса. Оно представляет собой территориальное единство людей, то есть выступает в качестве основы территориальной организации общества [1; с. 180]. Сложная природа населения изучается в рамках различных наук – географии населения, демографии, экономики, социологии, этнографии, психологии, религиоведения, медицины и др., – при этом каждая из них рассматривает определяющие факторы по-разному. Однако именно в экономической и социальной географии, которая входит в число важнейших географических дисциплин, роль населения как основного фактора проявляется наиболее отчётливо.

Изменчивость численности населения, являющейся основным показателем самого термина «население», требует его постоянного и систематического изучения.

Во многих науках население рассматривается как рабочая сила, трудовой ресурс и фактор размещения и развития производственных отраслей. В современном обществе оно изучается, прежде всего, как социальная категория. В процессе социализации общества особое внимание уделяется исследованию влияния условий и уровня жизни, процессов воспроизводства населения и его территориального размещения на другие факторы — религиозную принадлежность, здоровье, мировоззрение и отношение к экологии. Подобный подход способствует дальнейшей социализации, экологизации и гуманитаризации экономической и социальной географии.

В географии населения традиционно изучаются две взаимосвязанные территориальные системы — население как совокупность людей **и** населённые пункты**.**

Первая из них предполагает изучение населения по его территориальным группам. В зависимости от цели исследования проводится сравнительный анализ населения континентов, государств, регионов, а также

отдельных территориальных единиц (городов, посёлков, сёл, населённых пунктов).

Вторая система — это исследование населённых пунктов, их типов и закономерностей территориального распределения. Эти две системы взаимодополняют друг друга, формируя целостное представление о пространственной организации общества.

Географическое размещение населения, в свою очередь, определяется природно-географическими условиями территории**,** обеспеченностью природными ресурсами и степенью её хозяйственного освоения. В современной науке данные характеристики описываются понятием «комфортность населённого пункта»**,** то есть соответствие территории необходимым условиям для проживания человека.

Анализ литературы и методы

В исследованиях территориальная организация населения рассматривается, как правило, с двух сторон. Во-первых, как совокупность процессов, связанных с распределением населения на любой территории в контексте управления производством и окружающей средой. Учет взаимосвязей населения с производством и природопользованием позволяет ускорить социально-экономическое развитие как всего общества, так и его отдельных территориальных частей.

Во-вторых, данный процесс рассматривается с точки зрения его результатов — численности и плотности населения, его структуры, системы населённых пунктов, миграции и других характеристик территориальной организации. Таким образом, в первом случае изучается **сам процесс,** а во втором — **его результат** [5; с. 7].

В нашей стране многие исследователи занимались изучением социальных, экономических и экологических проблем, связанных с населением. В частности, в трудах таких учёных, как М.К. Кораханов (1983), И.Р. Муллажанов (1983), Г.Р. Асанов (1994), А.А. Каюмов (2000), Л.П. Максакова (2001), М.Р. Буриева (2005), А.С. Солиев (2005), О.Б. Ата-Мирзаев (2006), Э.А. Ахмедов (2006), Р.А. Убайдуллаева (2006), Б.Х. Умурзаков (2007), Н.Х. Рахимова (2007), К.Х. Абдурахмонов (2010), Х.Х. Абдурахмонов (2010), Н.Ж. Эмбергенов (2011), З.Н. Таджиева (2010, 2017), Х. Абдувалиев (2020, 2025), Р. Кадиров (2021), Х. Облакулов (2021) и других, всесторонне освещены вопросы демографии, урбанизации, географии населения и городов, использования трудовых ресурсов, занятости населения и территориальной организации населения Республики Узбекистан.

Результаты и обсуждение

Распределение населения по территории связано с размещением самого населения и населённых пунктов. В свою очередь, формирование населённых пунктов является территориальной формой распределения населения. Одной из важнейших задач роста численности и размещения населения является создание единой системы расселения. При этом каждая страна и её административно-территориальные единицы используют собственные

методы и подходы. Однако при всех различиях населённые пункты объединяются в единую систему, основанную на взаимосвязи производственных, транспортных, инфраструктурных, социально-культурных и рекреационных элементов.

Во-вторых, важным направлением при размещении населённых пунктов является формирование опорных центров — это могут быть города, крупные города, агломерации или мегаполисы. В некоторых случаях для небольших населённых пунктов такую функцию выполняют районные центры или малые города. Именно такое научное понимание сохраняет свою актуальность и сегодня [12; с.18].

Население является частью более крупной системы — общества. Необходимость правильной территориальной организации общества в процессе взаимодействия человека и природы, производства материальных благ и выполнения различных общественных функций отмечалась многими исследователями. Развитие общества имеет сложную структуру, включающую политические, экономические, социальные и другие компоненты. Поэтому наиболее крупной формой территориальной организации выступает территориальная организация общества, которая охватывает территориальное разделение труда, размещение производительных сил, взаимоотношения между природой и обществом, региональную социально-экономическую политику и множество других аспектов.

Все люди на Земле имеют определённое место жительства, что отражает территориальный характер населения. Независимо от контекста использования термина «население», его существование в пространстве и на определённой территории является одной из ключевых характеристик. Поэтому понятие «население» всегда рассматривается во взаимосвязи с понятием «территория».

Термин «территория» имеет более широкое значение, чем близкие по смыслу понятия «земля», «пространство», «место», «район» или «местность». В арабских источниках слово «худуд» (hudud) — родственное словам *хад, сархад* — означает «граница» или «земля, принадлежащая кому-либо». Таким образом, под территорией понимается пространство, обладающее специфическим географическим положением, определёнными природными ландшафтами и хозяйственными особенностями, включающее все природные и антропогенные ресурсы, играющее важную роль в промышленности, транспорте, строительстве и расселении [3; с.21].

В географии населения ключевыми направлениями исследований являются процессы формирования, размещения и развития населённых пунктов. В рамках экономико-географических исследований понятие «размещение населения» употребляется в двух значениях. В первом случае оно обозначает распределение населения по местам проживания — от улицы, махалли, села и района до области, страны или континента. Во втором — рассматривается как отражение статичности и динамики роста населения.

Развитие и структура населённых пунктов зависят от сложных внутренних взаимосвязей между элементами, которые формируют внутренний потенциал территории. Эти связи определяют характер конкретного географического пространства.

Из вышеизложенного следует, что население и населённые пункты всегда обладают территориальностью. Следовательно, в рамках данного исследования необходимо рассмотреть и классифицировать понятие «территориальность».

Территориальность – это основной критерий, характеризующий население и населённые пункты как часть географического пространства. Все элементы расселения обладают территориальными свойствами. Территориальность проявляется через территориальную дифференциацию [8; с.65–69].

В экономической географии вместе с термином «территориальность» широко используются понятия, связанные с организацией различных сфер: «территориальная организация общества», «территориальная организация промышленности», «территориальная организация населения», «территориальная организация транспорта», «территориальная организация сельского хозяйства» и др.

В рамках данного исследования ключевым является понятие «территориальная организация населения», которое активно применяется в географии населения и охватывает как организацию самого населения, так и населённых пунктов. По сути, оба подхода выражают одно и то же содержание, поэтому в научной литературе нередко употребляется термин «территориальная организация населённых пунктов», не искажая при этом смысловую суть. Впервые выражение «территориальная организация» было введено Н.Н. Колосовским (1947) [11; с.23], а позднее А.Е. Пробст (1982) применил его к сфере производства. В дальнейшем термин «размещение производительных сил» получил широкое распространение не только по отношению к национальной экономике, но и к отдельным отраслям и экономическим районам.

Термин «общество», обозначающий совокупность людей в рамках определённой территории, является важной экономико-географической категорией. Соответственно, «территориальная организация общества» выражает совокупность всех вышеперечисленных элементов (население, промышленность, транспорт и др.) и их организацию.

Территориальная организация общества является одним из наиболее перспективных направлений развития социально-экономической географии, так как она служит инструментом управления различными географическими процессами. При этом важно дифференцировать и объяснить смысловые различия между понятиями «территориальная организация общества» и «территориальная организация населения», хотя они тесно взаимосвязаны: общество невозможно без населения, а население — без общества.

Общество включает политические, экономические, социальные и иные структуры (организации), среди которых территориальная организация общества занимает ключевое место. В широком смысле она охватывает все вопросы, связанные с географическим разделением труда, размещением производительных сил, расселением людей, взаимоотношением общества и природы, региональной социально-экономической политикой и др.

Как отмечает З.Н. Таджиева, территориальная организация общества включает:

- размещение населения;
- отрасли производственной и непроизводственной сфер;
- природопользование;
- территориальное разделение труда;
- экономическое и этно-национальное районирование;
- территориально-политическое и административно-территориальное устройство государства.

Таким образом, основная цель территориальной организации общества заключается в повышении эффективности развития отдельных регионов и всех территориальных единиц государства.

С этой точки зрения вопросы территориальной организации общества в новой экономической и социальной географии Узбекистана должны занимать центральное место. Для этого необходимо использовать долгосрочные прогнозы и передовой международный опыт, прошедший успешную апробацию в развитых странах. При этом важно учитывать, что каждая территориальная единица обладает собственной спецификой и степенью адаптивности. Следовательно, методы, эффективные в одном регионе, могут оказаться неприменимыми в другом. Как отмечает Н.У. Комилова, неадекватные формы территориальной организации нередко проявляются в навязывании чуждых этнических элементов, что нарушает гармоничное развитие региона [7].

Главная цель территориальной организации общества – достижение оптимального территориального развития. Этот процесс невозможен без учёта экологических, демографических, экономических, энергетических, продовольственных, образовательных и медицинских факторов. Обострение этих проблем, характерное как для мировой практики, так и для Узбекистана, требует повышенной ответственности при формировании территориальной политики.

Проблемами территориальной организации общества занимались российские учёные Ю.Г. Саушкин (1973), Б.С. Хорев (1981), Э.Б. Алаев (1983), И.М. Маергойз (1986), А.А. Ткаченко (1995), А.Г. Дружинин (2012), а также американский исследователь Р. Моррилл (1970). Впервые этот термин был предложен Ю.Г. Саушкиным (1973), а Р. Моррилл (1970) трактовал его как «пространственную организацию общества» и рассматривал с точки зрения рационального использования земной поверхности [9; с.117].

Кроме того, в географической науке широко представлены исследования по территориальной организации различных отраслей:

– территориальная организация производства (Калашникова, 1990);

– территориальная организация сельского хозяйства (Акрамов, 1957; Ракитников, 1970; Иванов, 1975; Крючков, 1978; Рузиев, 1986; Абдуллаев, 1988);

– территориальная организация природопользования (Минц, 1972; Рунова, 1993; Ахмадалиев, 2007).

А. Солиев (1999) пытался выявить сходства и различия между понятиями «размещение», «расположение» и «территориальная организация», которые часто используются в географической науке.

Хотя понятие «территориальная организация населения» близко по смыслу к «территориальной организации общества», между ними существуют определённые различия. Территориальная организация населения тесно связана с понятием «размещение населения», подразумевающим как количественные, так и качественные характеристики расселения. Одним из показателей этих взаимосвязей является плотность населения, которая широко используется в географических исследованиях. Многие учёные считают, что понятия «размещение населения» и «плотность населения» во многом взаимозаменяемы.

Термин «территориальная организация населения» имеет более широкое значение, чем просто размещение населения. Он отражает процессы формирования населённых пунктов, оптимизации территориальных структур и управления социально-экономическим развитием. Население рассматривается как часть общества — совокупность людей, объединённых исторически сложившимися формами совместной жизни и деятельности. Люди не существуют вне общества. Территориальная организация населения, производительных сил и производства формирует территориальную структуру всего общества. Территориальная организация общества охватывает вопросы географического разделения труда, размещения производительных сил, миграции, взаимоотношений между обществом и природой, региональной политики и многое другое. Таким образом, территориальная организация общества является одновременно процессом и результатом этих взаимосвязей.

Следовательно, территориальная организация населения тесно связана как с территориальной организацией производительных сил, так и с территориальной организацией производства, являясь одной из составных частей общей территориальной организации общества.

Заключение

Территориальная организация общества представляет собой динамическую систему, зависящую от множества показателей. Эта система проявляется через географическое разделение труда, распределение производительных сил, миграционные процессы, взаимодействие между

обществом и природой, а также в реализации региональной социально-экономической политики.

Кроме того, при анализе необходимо учитывать взаимосвязанность всех этих показателей. Только в этом случае становится возможным планирование социально-экономического развития как общества в целом, так и его отдельных территориальных сообществ.

Обеспечение устойчивости общества возможно лишь при комплексном подходе к его территориальной организации, основанном на учёте экономических, социальных, экологических и эксистических (жилищных) факторов. Такая устойчивость достигается через оптимизацию взаимодействия между обществом и природой**,** что является залогом сбалансированного и устойчивого развития.

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ЛИМФОМА: СОВРЕМЕННЫЕ ПРЕДСТАВЛЕНИЯ, МАТЕРИАЛЫ ИССЛЕДОВАНИЯ И РЕЗУЛЬТАТЫ

Аннотация. *Лимфомы представляют собой гетерогенную группу злокачественных заболеваний лимфатической системы, характеризующихся разнообразием клинических проявлений и исходов. В исследовании проведён анализ клинико-морфологических особенностей лимфом, а также оценка эффективности стандартных схем терапии. Полученные результаты подтверждают высокую частоту ремиссий при использовании современных протоколов лечения, однако сохраняется проблема рецидивов и рефрактерных форм, что подчёркивает необходимость дальнейшего внедрения таргетных и клеточных технологий.*

Ключевые слова: *лимфома, неходжкинские лимфомы, лимфома Ходжкина, диагностика, химиотерапия, таргетная терапия, выживаемость.*

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LYMPHOMA: CURRENT CONCEPTS, RESEARCH MATERIALS, AND RESULTS

Abstract. *Lymphomas are a heterogeneous group of malignant diseases of the lymphatic system, characterized by a variety of clinical manifestations and outcomes. This study analyzed the clinical and morphological features of lymphomas and assessed the effectiveness of standard treatment regimens. The results confirm a high remission rate with modern treatment protocols. However, relapses and refractory forms remain a problem, highlighting the need for further implementation of targeted and cellular technologies.*

Keywords: *lymphoma, non-Hodgkin's lymphomas, Hodgkin's lymphoma, diagnostics, chemotherapy, targeted therapy, survival.*

Введение

Лимфомы представляют собой одну из наиболее значимых групп злокачественных заболеваний крови и лимфатической системы. За последние десятилетия отмечается устойчивая тенденция к росту заболеваемости лимфомами во всём мире. По данным Всемирной организации здравоохранения, ежегодно регистрируется более 600 тысяч новых случаев неходжкинских лимфом, что выводит их на седьмое место среди онкологических заболеваний [5].

Особую актуальность лимфомам придаёт их клиническое многообразие и гетерогенность: от относительно благоприятных форм (например, лимфома Ходжкина, при которой современные схемы терапии позволяют достичь излечения в 80–90% случаев), до агрессивных и резистентных вариантов (например, диффузная В-крупноклеточная лимфома и периферические Т-клеточные лимфомы), характеризующихся низкими показателями выживаемости[4]. Несмотря на внедрение таргетных препаратов (ритуксимаб, брентуксимаб ведотин, ингибиторы BTK, CAR-T-клеточная терапия), остаётся значительная доля пациентов с рефрактерными и рецидивирующими формами, требующих новых подходов к лечению.

Дополнительным фактором актуальности является то, что лимфомы поражают людей трудоспособного возраста (30–55 лет), что приводит не только к медицинским, но и к социально-экономическим последствиям: длительная нетрудоспособность, необходимость дорогостоящего лечения, снижение качества жизни[1,2].

Таким образом, исследование клинических особенностей лимфом, совершенствование методов диагностики и оценка эффективности терапии представляют собой приоритетное направление современной онкогематологии.

Целью данного исследования было проанализировать клинико-морфологические особенности лимфомы у пациентов, а также оценить результаты стандартных методов терапии.

Материалы и методы

Исследование проведено на базе гематологического отделения условной клиники в 2022–2025 гг.

- **Выборка**: 82 пациента (46 мужчин и 36 женщин), средний возраст 47 лет (диапазон 21–72 года).
- **Диагностические методы**: морфологическое исследование биоптатов лимфоузлов, иммуногистохимия, ПЦР-исследования на генетические транслокации.
- **Классификация**: диагноз устанавливался согласно критериям ВОЗ (2016).
- **Лечение**: пациенты получали стандартные схемы химиотерапии (ABVD для ЛХ, R-CHOP для ДВККЛ).

- **Оценка эффективности**: проводилась по критериям Cheson (2007): полная ремиссия (ПР), частичная ремиссия (ЧР), стабилизация или прогрессирование.

Результаты. В исследование были включены 82 пациента с верифицированными лимфомами.

1. Распределение по типам лимфом:

- Лимфома Ходжкина (ЛХ) — 21 пациент (25,6%).
- Неходжкинские лимфомы (НХЛ) — 61 пациент (74,4%).
  - из них диффузная В-крупноклеточная лимфома (ДВККЛ) — 36 случаев (59,0% от НХЛ),
  - фолликулярная лимфома — 11 случаев (18,0%),
  - периферическая Т-клеточная лимфома — 8 случаев (13,1%),
  - другие варианты — 6 случаев (9,9%).

2. Возраст и пол:

- Средний возраст пациентов с ЛХ составил 38 лет, с НХЛ — 52 года.
- Мужчины преобладали при ЛХ (62%), женщины — при фолликулярной лимфоме (55%).

3. Стадия заболевания по Ann Arbor:

- I–II стадия — у 29 пациентов (35,4%).
- III–IV стадия — у 53 пациентов (64,6%). Наиболее часто поздние стадии выявлялись при ДВККЛ и Т-клеточных лимфомах.

4. Клинические проявления:

- В-симптомы (лихорадка, ночная потливость, потеря веса >10% за 6 мес.) наблюдались у 41 пациента (50%).
- Генерализованная лимфаденопатия — у 28 пациентов (34,1%).
- Экстранодальные поражения (селезёнка, ЖКТ, костный мозг) выявлены у 19 пациентов (23,1%).

5. Эффективность терапии:

- Лимфома Ходжкина (ABVD):
  - полная ремиссия (ПР) — у 68,3%,
  - частичная ремиссия (ЧР) — у 21,4%,
  - прогрессирование — у 10,3%.
- НХЛ (R-CHOP, R-CVP и др.):
  - ПР — у 55,7%,
  - ЧР — у 24,5%,
  - стабилизация — у 9,8%,
  - прогрессирование — у 9,8%.

6. Выживаемость:

- Общая 2-летняя выживаемость составила 78,9%.
- У пациентов моложе 50 лет — 85,4%, старше 60 лет — 62,7%.
- Наиболее неблагоприятные исходы зафиксированы у больных с Т-клеточными лимфомами (2-летняя выживаемость 48,0%).

7. Рецидивы и рефрактерность:

- Рецидивы в течение 24 месяцев выявлены у 12 пациентов (14,6%).
- Наибольшая частота рецидивов отмечена при ДВККЛ (22,2%).
- Рефрактерность к первой линии терапии — у 7 пациентов (8,5%).

Обсуждение

Полученные результаты подтверждают, что современные схемы терапии позволяют достичь высокой частоты ремиссий у пациентов с лимфомой. В то же время значительная часть больных, особенно с ДВККЛ, нуждается в интенсификации терапии и применении таргетных препаратов (ритуксимаб, ингибиторы контрольных точек, CAR-T-терапия).

Основными неблагоприятными факторами оказались: возраст старше 60 лет, III–IV стадия заболевания, наличие B-симптомов и высокий уровень LDH в сыворотке крови.

Заключение

Лимфомы остаются актуальной проблемой современной онкогематологии. Несмотря на успехи стандартной химио- и иммунотерапии, часть пациентов демонстрирует рецидивы и резистентность. Перспективным направлением является внедрение таргетных препаратов и клеточных технологий, что открывает новые возможности в повышении выживаемости и качества жизни больных.

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РАЗРАБОТКА КРИТЕРИЕВ ОХРАНЫ ОКРУЖАЮЩЕЙ СРЕДЫ НА ПРЕДПРИЯТИЯХ ПО ПРОИЗВОДСТВУ КАЛИЙНЫХ УДОБРЕНИЙ

Аннотация. *Рассмотрены основные источники воздействия на окружающую среду при добыче, транспортировке и обогащении калийных руд. Определены ключевые факторы и степень их влияния на экологическую обстановку. На основе анализа мирового и отечественного опыта предложены критерии охраны окружающей среды для предприятий калийной промышленности с учётом природных и социально-экономических особенностей региона.*

Ключевые слова: *экология, калийные соли, месторождения, отходы, окружающая среда, мониторинг, добыча, обогащение.*

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DEVELOPMENT OF ENVIRONMENTAL PROTECTION CRITERIA AT POTASH FERTILIZER PRODUCTION ENTERPRISES

Abstract. *The study examines the main sources of environmental impact in potash fertilizer production, including mining, transportation, and ore processing. Key factors influencing ecological conditions are identified, and a set of environmental protection criteria is proposed, taking into account the natural and socio-economic characteristics of the region. The suggested approach enables comprehensive monitoring, risk assessment, and mitigation of negative effects, thereby contributing to the sustainable development of the potash industry.*

Keywords: *ecology, potash ores, mining, beneficiation, waste, environmental monitoring, sustainability.*

Введение

Комплексное использование минерального сырья и утилизация отходов горнодобывающей промышленности являются актуальной задачей для стран с развитой экономикой. Производство калийных удобрений сопровождается образованием значительных объёмов отходов, аккумулируемых в шламовых хранилищах и солевых отвалах, что обусловливает высокие экологические риски. Основными источниками загрязнения выступают сточные воды, твердые и жидкие промышленные отходы, нарушающие структуру почвенного покрова, гидрологический режим и качество атмосферного воздуха.

Экологический ущерб, наносимый предприятиями калийной промышленности, проявляется в нарушении рельефа и ландшафта, изменении состава поверхностных и подземных вод, загрязнении атмосферы, а также в накоплении многотоннажных отходов. Масштабы воздействия зависят от природно-климатических условий, геологического строения месторождения и применяемых технологий добычи и обогащения.

В связи с этим разработка критериев оценки экологической нагрузки и природоохранных мероприятий на предприятиях по добыче и переработке калийных руд является важной задачей обеспечения устойчивого развития отрасли.

Обзор литературы и методы.

Изучение экологических последствий деятельности калийной промышленности получило широкое освещение в научных исследованиях Канады, России, Белоруссии, Китая и других стран с развитым производством калийных удобрений. Основное внимание уделяется вопросам рационального использования природных ресурсов, снижению объёмов загрязнений и утилизации отходов.

В Республике Узбекистан проводится ряд исследований (Зайров Ш.Ш., Уринов Ш.Р., Латипов З.Ё. и др.), направленных на изучение региональной специфики воздействия калийного производства и разработку адаптированных методов охраны окружающей среды. В их работах акцентируется внимание на рациональном размещении отходов и возможности получения вторичных продуктов [1, 4, 5].

В настоящем исследовании использован системный подход, включающий анализ литературных источников, обобщение международного опыта, экологический аудит и мониторинг, а также методы моделирования для оценки и прогнозирования рисков.

Результаты и обсуждение.

Мировые запасы калийных солей оцениваются в 26,8 млрд тонн, извлекаемые – в 7,6 млрд тонн. Ведущими странами по добыче являются Канада, Беларусь, Россия и Китай, на долю которых приходится более 80%

мирового объёма (Рис. 1). В странах СНГ значительное производство сосредоточено также в Узбекистане, Туркменистане и Казахстане [4, 11].

В Республике Узбекистан крупным производителем выступает АО «Дехконободский калийный завод», использующий в качестве сырьевой базы месторождение Тюбегатан. Запасы месторождения составляют 235,9 млн тонн с содержанием хлористого калия в среднем 36,1 %. Добыча осуществляется шахтным способом, а переработка включает дробление, измельчение, флотацию, обезвоживание, сушку и упаковку готового продукта [6, 9].

Природные условия региона характеризуются аридным климатом, ограниченными водными ресурсами и высокой уязвимостью экосистем. Основные экологические риски связаны с:

– загрязнением атмосферного воздуха при работе перерабатывающего комплекса;

– изменением гидрологического режима вследствие забора воды из водохранилища Пачкамар;

– накоплением отходов в отвалах и шламовых отстойниках;

– деградацией пастбищных земель и снижением биоразнообразия.

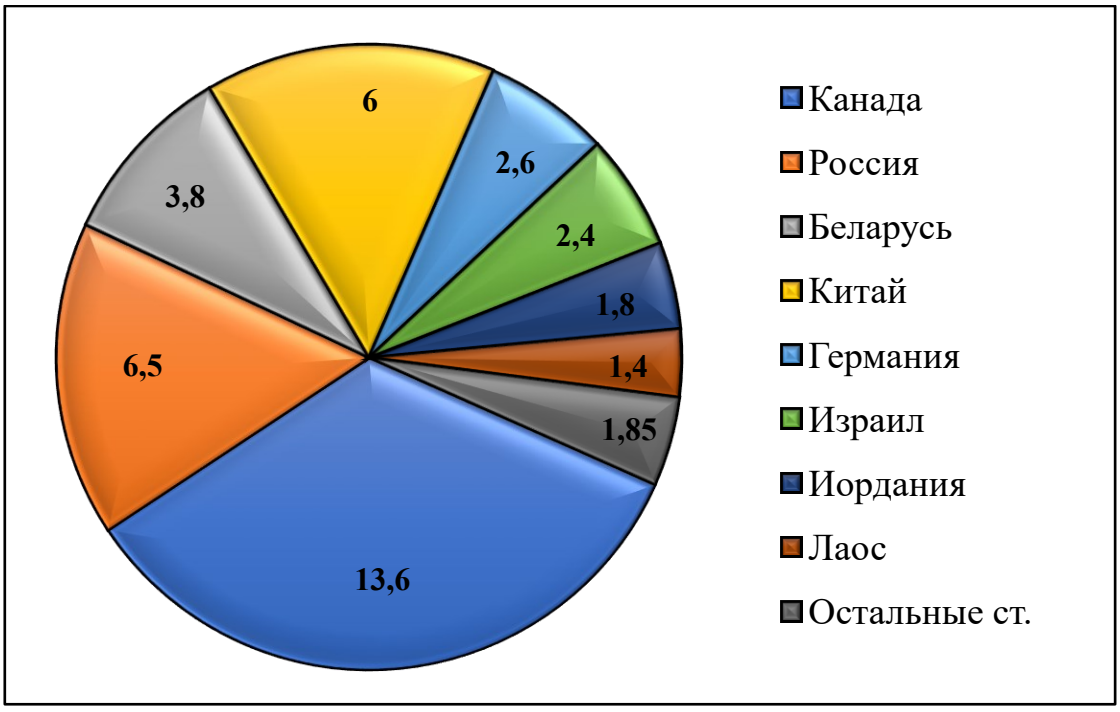


Рисунок 1. Показатели добычи калийных руд в странах мира в 2023 году (млн.т.).

Физико-химические свойства солевых пластов и особенности залегания полезных компонентов оказывают существенное влияние на выбор технологии добычи и обогащения, а также на состав и количество образующихся отходов [12, 13].

До середины прошлого века вопросы охраны окружающей среды в процессе добычи и переработки полезных ископаемых уделялись

недостаточно внимания, что привело к значительному негативному воздействию горнодобывающих предприятий на экологическую обстановку. В настоящее время в большинстве стран мира к горнодобывающей отрасли предъявляются строгие экологические требования, и проектирование объектов добычи и переработки должно учитывать все аспекты природоохранной деятельности [7, 8, 10].

Необходимо осуществлять экологические мероприятия как в процессе эксплуатации предприятий, так и после завершения добычи и закрытия шахт, что позволит избежать значительных затрат, связанных с ликвидацией последствий, и повысить геолого-экономическую эффективность предприятий [14, 15].

При организации экологического контроля и реализации природоохранных мероприятий в горнодобывающих и перерабатывающих предприятиях следует учитывать социально-экономические, горно-геологические и экономико-географические условия региона расположения предприятия. Экологическое состояние территории во многом определяется климатическими и природными особенностями региона. Например, предприятия, работающие в условиях влажного климата (Россия, Беларусь, Германия), отличаются по экологическим характеристикам от предприятий, расположенных в зонах с сухим (аридным) климатом, таких как Узбекистан и Туркменистан. Поэтому для каждого предприятия необходимо разрабатывать индивидуальный подход к управлению экологическим состоянием и проведению природоохранных мероприятий с учётом всех местных особенностей [2, 3].

Природные условия территории АО «Дехконободский калийный завод» характеризуются засушливым климатом и ограниченным количеством водных ресурсов, что затрудняет развитие плотного и устойчивого биологического слоя. Литолого-геоморфологическая основа региона подверглась значительным антропогенным изменениям, связанным с возведением производственных и инфраструктурных объектов. Это привело к нарушению рельефа и растительного покрова, формированию локальных зон с повышенной экологической нагрузкой, что проявляется в локальном воздействии на окружающую среду.

Кроме того, пастбищные земли, расположенные на ровной местности, подвергаются деградации вследствие вытаптывания и иных антропогенных факторов, что вызывает изменения в составе растительного мира. Расширение зон деградации биоцинозов ведёт к снижению биологической продуктивности и замедлению процессов естественного восстановления, что негативно сказывается на биологическом разнообразии региона.

Водные ресурсы района характеризуются нерегулируемым поверхностным стоком с высоким содержанием минеральных веществ, что исключает их использование в качестве источника питьевой и промышленной воды. Для производственных нужд водоснабжение осуществляется из водохранилища Пачкамар посредством системы водопроводных

трубопроводов. Основные изменения в состоянии окружающей среды связаны с использованием водных ресурсов, воздействием на атмосферный воздух и подземные водные пласты.

Ввод в эксплуатацию объектов перерабатывающего комплекса привёл к увеличению выбросов загрязняющих веществ в атмосферу, однако их уровень остаётся в пределах нормативных значений, так как для всех выбросов установлены максимально допустимые концентрации.

При строительстве и эксплуатации шламовых отстойников изменения в составе компонентов окружающей среды затрагивают почву, атмосферный воздух, растительный покров, местные биогеоценозы и здоровье работников, однако воздействие ограничено территорией, прилегающей к отстойникам, и является локальным. Состояние экологической системы в районе расположения отстойников может нарушаться лишь при возникновении чрезвычайных ситуаций. При реализации всех предусмотренных технических мер экологический риск сводится к минимуму [6, 9].

Учитывая вышеизложенное, для объектов горнодобывающего и перерабатывающего комплексов АО «Дехконободский калийный завод» разработаны критерии оценки загрязнения окружающей среды и минимизации негативных последствий. При разработке критериев учитывались особенности геоэкологической среды, атмосферного воздуха, поверхностных и подземных вод, земельных ресурсов, флоры и фауны, а также рельефа и ландшафта территории.

Основные объекты, охваченные разработанными критериями, включают:

– горнодобывающий комплекс по добыче калийных руд;

– перерабатывающий (обогатительный) комплекс;

– отвал соляных пород и склады отходов;

– систему транспортировки калийных руд и отходов обогащения.

В процессе разработки критериев особое внимание уделялось основным факторам, оказывающим отрицательное воздействие на окружающую среду, а также признакам и последствиям загрязнения.

После выявления признаков и последствий загрязнения необходимо проводить отбор проб и лабораторные исследования для оценки степени воздействия, что позволит провести объективный экологический мониторинг и разработать меры по стабилизации экологической ситуации.

Заключение

Разработанные критерии охраны окружающей среды позволяют проводить комплексную оценку негативного воздействия предприятий калийной промышленности, своевременно выявлять экологические риски и формировать меры по их снижению. Применение предложенного подхода в условиях АО «Дехконободский калийный завод» обеспечивает возможность долгосрочного мониторинга, стабилизации экологической обстановки и устойчивого развития отрасли.

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IMMUNOPHENOTYPING IN THE DIAGNOSIS OF LEUKEMIAS IN ADULTS

Abstract: *Immunophenotyping was performed in 48 patients aged 18 to 62 years diagnosed with acute leukemia (AL). Based on the results, the disease variants were specified as follows: acute lymphoblastic leukemia (ALL) was identified in 17% of patients, including T-cell subtype in 9% and B-cell subtype in 27%; acute undifferentiated leukemia was diagnosed in 6%, and acute myeloblastic leukemia (AML) in 50% of cases. The obtained data on AL subtypes confirm the diagnostic value of immunophenotyping and support its implementation in clinical practice to optimize therapeutic strategies, including selective intensification of chemotherapy and the application of program-based treatment protocols.*

Key words: *leukemia, immunophenotype, diagnostics, adults.*

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ИММУНОФЕНОТИПИРОВАНИЕ В ДИАГНОСТИКЕ ЛЕЙКОЗОВ У ВЗРОСЛЫХ

Аннотация: *Иммунофенотипирование было проведено у 48 пациентов в возрасте от 18 до 62 лет с диагнозом острый лейкоз (ОЛ). Исходя из результатов, варианты заболевания были уточнены следующим образом: острый лимфобластный лейкоз (ОЛЛ) был выявлен у 17% пациентов, в том числе Т-клеточный подтип у 9% и В-клеточный подтип у 27%; острый недифференцированный лейкоз был диагностирован у 6% и острый миелобластный лейкоз (ОМЛ) у 50% пациентов. Полученные данные по подтипам АЛ подтверждают диагностическую ценность*

иммунофенотипирования и поддерживают его внедрение в клиническую практику для оптимизации терапевтических стратегий, включая селективную интенсификацию химиотерапии и применение программных протоколов лечения.

Ключевые слова: *лейкоз, иммунофенотип, диагностика, взрослые.*

Relevance

Leukemias (leukemias) are malignant neoplasms of the hematopoietic system, primarily originating in the bone marrow and subsequently disseminating to the peripheral blood, spleen, lymph nodes, and other tissues. The development of leukemia in humans appears to be multifactorial, involving the interaction of external influences—such as radiation exposure and viral infections—with constitutional or genetic predispositions.

Leukemias are among the most common oncological diseases in childhood, accounting for approximately one-third of newly diagnosed malignancies each year in adults. Acute lymphoblastic leukemia (ALL) represents 76–82% of all leukemia cases, while acute non-lymphoblastic leukemia (ANLL) accounts for 17–21%, and chronic myelocytic leukemia for about 3% [1,4].

Based on the concept that the phenotype of malignant cells corresponds to that of their normal counterparts at specific stages of differentiation, several immunological variants of leukemia have been identified. These variants reflect the cellular origin of the leukemic clone and the level of differentiation arrest within the leukemic population. Although no truly leukemia-specific markers have been identified to date, the immunophenotypes of leukemic blasts often mirror those of normal hematopoietic cells at similar differentiation stages. In both ALL and acute myeloblastic leukemia (AML), the blasts are considered malignant analogs of normal progenitor cells in the early stages of lymphoid and myeloid development.

Thus, a single marker cannot reliably distinguish neoplastic from normal cells, as malignant cells frequently express the same differentiation antigens found on their physiological counterparts. However, studies have shown that malignant cells may express combinations of normal differentiation antigens that are rarely or never detected in normal bone marrow—typically occurring in less than 0.1% of cases.

Given the heterogeneity of therapeutic responses and clinical outcomes, immunophenotyping of leukemic cells—together with other diagnostic parameters—plays a crucial role in assessing tumor aggressiveness and determining the prognostic relevance of immunological characteristics.

In the 1970s, long-term remissions (over five years) were achieved in only about 5% of patients with acute leukemias. Advances in hematology over the past few decades have dramatically improved outcomes for these once uniformly fatal diseases [4,6]. Currently, remission rates reach 95% in ALL and 90% in AML. Approximately 70–75% of patients with ALL achieve durable remissions considered curative, while 40–50% of AML patients survive for more than 3–6 years. These outcomes have become possible due to improved diagnostic precision,

risk-adapted intensification of chemotherapy, structured treatment protocols, and the widespread implementation of bone marrow transplantation in clinical practice [4,7].

Purpose of the Study

To evaluate the diagnostic and therapeutic significance of immunophenotyping in hemolysates in order to improve the effectiveness of disease detection and treatment.

Materials and Methods

The study presents data obtained from immunophenotyping of 48 patients aged 18 to 62 years who were treated in the Oncohematology Department of the Bukhara Regional Multidisciplinary Medical Center during 2022–2024. All patients were referred with a diagnosis of acute leukemia (AL).

Immunophenotyping of leukemic cells was performed using the immunocytochemical method with the EnVision+ visualization system and monoclonal antibodies (mAbs) manufactured by DAKO (Denmark). The following antigens were analyzed: CD19, CD20, CD22 (B-lineage); CD3, CD7 (T-lineage); and CD13, CD33 (myeloid). Microscopic examination of stained preparations was conducted using a Mikmed (LOMO) microscope.

Results.

To achieve the study objective, immunophenotyping of blast cells was performed using the immunocytochemical method with the following markers: CD3 and CD7 (T-lineage), CD19, CD20, and CD22 (B-lineage), as well as CD13 and CD33 (myeloid lineage). Table 1 presents the immunophenotypic characteristics of 18 cases of acute leukemia (AL) diagnosed between 2022 and 2024.

According to the European Group for the Immunological Classification of Leukemias, four major types of AL are distinguished:

- acute lymphoblastic leukemias (ALL)
- acute myeloblastic leukemias (AML)
- biphenotypic acute leukemias (BAL)
- undifferentiated acute leukemias

Within the ALL group, T-lineage and B-lineage leukemias are identified, along with cases showing co-expression of myeloid markers. In the AML group, subtypes are classified according to the affected myelopoietic lineage, including poorly differentiated AML and AML with co-expression of lymphoid markers.

Table 1

Distribution of major markers on blast cells in leukemia

	marker	**Detection rate, n = 48**	
		quantity	**%**
T-ALL	CD3	4	8%
	CD7	7	14%
B-ALL	CD19	4	8%
	CD20	3	6%
	CD22	6	12%

AML	CD13	8	16%
	CD33	16	33%

In our study, eight patients initially diagnosed with AL demonstrated expression of T-lineage markers, leading to the final diagnosis of T-cell ALL. Blast cells from 13 patients expressed B-lineage markers, confirming a diagnosis of B-cell ALL. Among 24 patients, blast cells exhibited expression of myeloid markers, resulting in a diagnosis of AML. In three cases, no expression of the investigated markers was detected, and these patients were diagnosed with undifferentiated AL.

Several patients demonstrated co-expression of unrelated lineage markers. According to the literature, the frequency of such aberrant co-expression in acute leukemias ranges from less than 1% to 50%, depending on diagnostic criteria, the antibody panels used, and differences in antibody specificity. Reports indicate that more than 50% of ALL cases show co-expression of myeloid markers (My+ALL), over 40% of AML cases express lymphoid markers (Ly+AML), while simultaneous expression of both T- and B-cell markers occurs in fewer than 2% of cases.

In our study, co-expression of lymphoid markers in AML (Ly+AML) was observed in 10% of cases, and co-expression of myeloid markers in ALL (My+ALL) in 4% of cases. These findings support the concept that leukemogenesis represents not an absolute block in cell differentiation, but rather a disruption of maturation and proliferation processes, resulting in aberrant antigen expression patterns that are rarely observed in normal hematopoiesis.

Immunophenotypic analysis enabled a more accurate selection of therapeutic protocols, contributing to a personalized approach to treatment, optimization of chemotherapy regimens, and improvement of therapeutic efficacy. Furthermore, the implementation of this method reduces the overall cost of treatment through the rational use of medications and clinical resources.

Conclusion.

The findings support the inclusion of immunophenotyping as an essential component of leukemia diagnostics in clinical practice. Further studies aimed at expanding the panel of immunological markers and deepening the analysis of leukemic cell characteristics are considered promising directions for improving prognostic accuracy and therapeutic outcomes in acute leukemia.

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METABOLIC ASSOSSIRLANGAN JIGARNI YOG`LI KASALLIGINI ERTA ANIQLASHDA ZAMONAVIY YONDASHUVLAR, ALGORITMLAR VA AMALIY TAVSIYALAR

Annotatsiya: *Metabolik disfunktsiya bilan bog‘liq steatozli jigar kasalligi (MASLD; ilgari NAFLD) aholining katta qatlamida uchraydi va 2-tip qandli diabet, semirish, dislipidemiya kabi kardiometabolik xavf omillari bilan chambarchas bog‘liq. Erta diagnostika jigar kasalliklari ichida ayniqsa dolzarb, chunki prognozni belgilovchi eng asosiy faktor — fibroz darajasi — ko‘pincha uzoq vaqt klinik belgilar bermaydi. So‘nggi yillarda klinik yo‘riqnomalar ikki bosqichli (boshlang‘ich saralash + tasdiqlovchi) strategiyani taklif qilmoqda: FIB-4/NFS kabi oddiy zardob tekshiruvi yordamida «past xavf» guruhini ajratib, «o‘rta/yuqori xavf» guruhida esa noinvaziv tasviriy/elastografik testlar (VCTE/FibroScan, 2D-SWE, MRE) orqali fibrozni erta aniqlashga yordam beradi. Steatozni miqdoriy baholashda MRI-PDFF «referens» hisoblanadi; CAP (FibroScan’dagi Controlled Attenuation Parameter) va yangi ultratovushli xiralanishi ko‘rsatkichlari esa amaliyotda kengayib bormoqda. Fibrozni prognoz qilishda ELF (HA, PIIINP, TIMP-1) keng qo‘llanmoqda; PRO-C3 kabi fibrogenez markerlari istiqbolli. Bu sharh zamonaviy atamalar (MASLD/MASH), skrining kimlarga kerakligi, kesim qiymatlari (cut-off), kuchli va zaif tomonlar hamda O‘zbekiston sharoitida soddalashtirilgan amaliy algoritmni jamlab beradi [1].*

Kalit so‘zlar: *MASLD (NAFLD), MASH (NASH), erta diagnostika, FIB-4, NFS, VCTE/FibroScan, CAP, MRI-PDFF, MRE, ELF, PRO-C3.*

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MODERN APPROACHES, ALGORITHMS, AND PRACTICAL RECOMMENDATIONS FOR EARLY DIAGNOSIS OF METABOLIC DYSFUNCTION–ASSOCIATED STEATOTIC LIVER DISEASE (MASLD)

Abstract: *Metabolic dysfunction–associated steatotic liver disease (MASLD; formerly NAFLD) affects a substantial share of the population and is closely linked to cardiometabolic risk factors such as type 2 diabetes, obesity, and dyslipidemia. Early diagnosis is particularly important among liver diseases because the key prognostic determinant—fibrosis stage—often remains clinically silent for a long time. Recent clinical guidelines advocate a two-step strategy (initial triage + confirmation): simple serum-based scores such as FIB-4/NFS to identify a "low-risk" group, followed in "intermediate/high-risk" patients by noninvasive imaging/elastographic tests (VCTE/FibroScan, 2D-SWE, MRE) to detect fibrosis early. For quantitative assessment of steatosis, MRI-PDFF serves as the reference method; the Controlled Attenuation Parameter (CAP) on FibroScan and newer ultrasound attenuation metrics are increasingly used in practice. For fibrosis risk prediction, the ELF test (HA, PIIINP, TIMP-1) is widely applied, while fibrogenesis markers such as PRO-C3 are promising. This review summarizes current terminology (MASLD/MASH), identifies target groups for screening, presents practical cut-offs, strengths and limitations of key tools, and proposes a simplified, practice-oriented algorithm adapted to the Uzbek context [1].*

Key words: *MASLD (NAFLD), MASH (NASH), early diagnosis, FIB-4, NFS, VCTE/FibroScan, CAP, MRI-PDFF, MRE, ELF, PRO-C3.*

Terminologiya va nega «erta» NAFLD → MASLD nomlanishidagi o‘zgarishlar 2023 yilda yetakchi davlatlar «NAFLD» atamasini «MASLD» (metabolic dysfunction-associated steatotic liver disease) deb almashtirdi. Bu nafaqat til jihatdan stigmani kamaytiradi, balki patogenezdagi metabolik disfunktsiyani markazga qo‘yadi. «Steatozli jigar kasalliklari» (SLD) shifri ostida turli sabablardagi steatoz birlashtiriladi; «MASH» ― steatohepatitning zamonaviy nomi. Diagnostik mezonlar ham moslashtirildi: jigar steatozi + kamida bitta kardiometabolik xavf omili.[3]

Nega erta aniqlash muhim degan savolga javob toppish uchun bir qancha ma`lumotlar keltirilgan. Kasalning uzoq muddatli oqibati asosan fibroz darajasi bilan belgilanadi; erta bosqichda (F0–F2) qaytuvchanlik yuqori, F3–F4 esa dekompensatsiya, HCC va transplantatsiya xavfini oshiradi. Shuning uchun «fibrozga yo‘naltirilgan» skrining bugungi kun mezonidir[5]. Kimlarni skrining qilish kerak? Hozirgi kunda Yevropa (EASL-EASD-EASO, 2024) hamda AASLD (2023) hujjatlarida quyidagilar «case-finding» guruh sifatida ko‘rsatilgan: 2-tip diabet (T2D), semirish (ayniqsa BMI≥30 yoki markaziy semirish), aterogen dislipidemiya, metabolik sindrom komponentlari, doimiy ALT/AST o‘zgarishi yoki tasodifiy aniqlangan steatoz. 65+ yoshda kesim qiymatlari qayta kalibrlanadi (quyida).[6] Xulosa qilib aytganda O‘zbekiston sharoitida birlamchi bo‘g‘inda (oilaviy shifokor/endokrinolog) T2D va semirish bilan kelgan har bir bemorda jigar xavfini tekshirish ― sifatli yordamning ajralmas qismi bo‘lishi kerak.

Boshlang‘ich laborator saralashda: oddiy skorlash tizimlaridan FIB-4 ishlatilinadi. Bu usul aniqlik bo’yicha ancha yuqori va soddaligi bo`yicha ancha

maqbul usul xisoblanadi. Bir qator metaanalizlar xulosasiga ko`ra ishonarlik darajasi 89% tashkil qiladi [6]. (Fibrosis-4) FIB-4 — eng koʻp validatsiya qilingan «rule-out» skorlardan biri. 35–65 yoshlar uchun <1.3 — ilgʻor fibrozni ehtimoldan chiqarish (NPV yuqori), ≥2.67 — ilgʻor fibrozni ehtimollash (rule-in); 65+ yoshda past chegara ≈2.0 ga koʻtariladi (ayrim yoʻriqnomalarda 2.0). Oraliq zona (1.3–2.67) qoʻshimcha test talab qiladi[4]. O`z navbatida FIB-4 ga alternative xisoblangan NFS usulimiz ham qolishmaydi. NAFLD Fibrosis Score (NFS) NFS uchun klassik kesimlar: <−1.455 — fibrozni istisno qilish; >0.676 — ilgʻor fibrozga shubha. Qarilikda soxta ijobiylik yuqori boʻlishi mumkin, shu bois yoshi katta guruhda ehtiyotkor talqin kerak. APRI va boshqa oddiy indekslar APRI, AST/ALT nisbatlari kabi koʻrsatkichlar ham mavjud, lekin MASLD kontekstida ularning aniqligi FIB-4/NFSdan pastroq; shuning uchun yoʻriqnomalar FIB-4ni birlamchi tanlaydi.[4] Bu usulning kuchli tomonlar: arzon, laboratoriya paketidan hisoblanadi, «xavf» darajasini ajratish qulay va tez ajratadi. Bu usuldan foydalanishda bir qancha cheklovlar mavjud masalan**:** katta yosh, trombotsitopeniya yoki hamroh kasalliklari boʻlganlarda notoʻgʻri musbat/manfiy xatolar boʼlishi ehtimoli ortadi, hamda «oraliq zona» juda keng.

Fibrozni erta aniqlash uchun noinvaziv biomarkerlar ELF (Enhanced Liver Fibrosis) skori ELF — HA, PIIINP va TIMP-1 konsentratsiyalarini birlashtiruvchi sertifikatlangan test. 9.8 dan past darajalar — 10 yillik jigar hodisalari xavfi past; ≥11.3 — yuqoriroq xavf. Klinik amaliyotda FIB-4 bilan kombinatsiyada ishlatilganda «rule-in/rule-out» samarasi oshadi. FDA hujjatlarida preanalitik shartlar (biotin, gemoliz va h.k.) alohida koʻrsatilgan.[14]

PRO-C3 va kompozit panellar (FIBC3, ADAPT, ABC3D) PRO-C3 — kollagen III neo-epitopi, faol fibrogenezni aks ettiradi; yirik tahlillarda ilgʻor fibrozni aniqlashda klinik ahamiyat koʻrsatdi, kompozit panellar bilan ishlatilganda yanada barqaror. Baʼzi ishlar PRO-C3 ning prognoz ahamiyatini ham tasdiqlaydi. Hozircha keng ommalashuv darajasi ELFʼdan pastroq[13]. Sitokeratin-18 (M30/M65) Apoptoz markerlari sifatida qiziqish katta boʻlgan CK-18 fragmentlari (M30/M65) mustaqil skrining test sifatida yetarli aniqlik bermaydi; koʻp markyorli panellarda foydali boʻlishi mumkin[18]. Resurslar cheklangan sharoitda FIB-4 → VCTE algoritmi yetarlicha kuchli. Agar resurslar mavjud boʻlsa, «oraliq» guruhda ELF/PRO-C3 yordam beradi.

Steatozni erta aniqlashda: tasviriy yondashuvlar Oddiy ultratovush (B-mod) Meta-tahlillarga koʻra UTT oʻrta-ogʻir steatozni aniqlashda yaxshi (Se~85%/Sp~85%), ammo eng yengil steatozda sezgirlik pasayadi; shuningdek, operatorga bogʻliqlik bor. Shu bois UTT — skriningda «bor/yoʻq» bahosi uchun qulay, lekin miqdoriy nazorat uchun emas.[17] CAP (Controlled Attenuation Parameter, FibroScan) CAP MRI-PDFF bilan solishtirilganda steatozni aniqlashda qoniqarli; meta-tahlillar <~249 dB/m — steatozni inkor etish, >~328 dB/m — steatozni tasdiqlash uchun foydali diapazonlarni taklif qilmoqda (apparat/aholi boʻyicha farqlar eʼtiborga olinadi).[8] MRI-PDFF — miqdoriy «oltin standart»

MRI-PDFF jigar yog‘ foizini aniq miqdorlaydi; ≈5–6% PDFF jigar steatozini bildiruvchi ishlatiladigan praktika chegarasi sifatida qo‘llanadi (histologiya bilan moslik bo‘yicha zamonaviy modellashtirishlar 5.75%, 15.5%, 21.35% kabi darajalarni taklif qilgan). Klinikada dori sinovlari va ilmiy ishlarda Afzal[20]. Elastografiya: fibrozni erta va noinvaziv aniqlashning tayanchi

VCTE (FibroScan) va kesim qiymatlari VCTE liver stiffness (LSM) <~8 kPa — past xavf; 8–12 kPa — o‘rta; >~12 kPa — yuqori xavf bo‘lishi haqida ko‘plab manbalar yozadi (markaz va aholi turiga qarab farqlanishi mumkin). 2024 yildagi metatahlil NAFLDda 7.1–7.9 kPa oraliqni ilg‘or fibroz uchun optimal kesim sifatida ko‘rsatdi.[19] MRE (Magnetic Resonance Elastography) MRE diagnostik aniqligi yuqori, ayniqsa «gray-zone» holatlarni hal etishda. Afzalligi — butun jigar bo‘ylab xaritalash; kamchiligi — narxi va mavjudligi. Ko‘plab ishlar ≈3.6–3.9 kPa ni F3 uchun kesim sifatida ko‘rsatadi[11].

Amaliy algoritm: FIB-4 «oraliq/yangi yuqori» → VCTE; agar VCTE shubhali yoki klinika bilan mos kelmasa → MRE; kolliziyalar bo‘lsa yoki klinik qaror keskin bo‘lsa — biopsiya. Kengaytirilgan MRI ko‘rsatkichlari: cT1 va boshqalar Iron-corrected T1 (cT1) jigar yallig‘lanish/fibrozning kompozit markeri sifatida tadqiq etilmoqda; klinik tarix bo‘yicha prognoz ahamiyati va davolashga javobni aks ettirish qobiliyati ko‘rsatilgan, lekin har doim ham yo‘riqnomalarda «standart» test sifatida tavsiya etilmagan.[11] Genetika va «genomika»: erta xavf qatlamlash PNPLA3 (I148M), TM6SF2, MBOAT7 kabi variantlar fibroz xavfini oshirishi mumkin; biroq birlamchi skriningda keng genotiplash hozircha tavsiya etilmaydi — klinik qarorlar ko‘proq fenotipik riska tayanadi. (Ushbu bo‘lim umumiy ma’lumot sifatida kiritildi; amaliy algoritmlar FIB-4/VCTE atrofida qoladi.) Bolalar, ayollar va maxsus guruhlar UTT bir qator kamchilik va afzalliklari bor. Bolalarda UTT birinchi qadam bo‘lib qoladi; elastografiya (VCTE/SWE) foydali, MRI-PDFF ilmiy ishlar va murakkab holatlarda afzal. Homiladorlikda laborator mezonlar ehtiyotkor talqin qilinadi; invaziv/prokarsion tekshiruvlardan qochiladi. 65+ yoshlar uchun FIB-4 past chegarasi ko‘tariladi[3]. Algoritm va kesim qiymatlari: soddalashtirilgan «birlamchi → ixtisoslashgan» Quyidagi bosqichma-bosqich yondashuv amaliyotda eng maqbul va yo‘riqnomalarga mosdir: 1-bosqich (birlamchi bo‘g‘in, endokrinolog/oila shifokori) tekshiruvlarda xatar omili yuqori bo’lgan aholi o’rtasida tekshiruvlar olib boriladi va nimalar tekshiladi: T2D, semirish, metabolik sindrom, aterogen dislipidemiya, ALT/AST uzaygan, tasodifiy steatoz topilganlar.[6] FIB-4 hisoblash:< 1.3 (yoki ≥65 yoshda < 2.0): ilg‘or fibroz ehtimoli past — hayot tarzi, kardiometabolik nazorat, 1–2 yilda qayta baholash[3]. 1.3–2.67 (yoki ≥65 yoshda 2.0–2.67): VCTE yoki ELF bilan chuqurlashtiring. ≥ 2.67: ixtisoslashgan markazga yuborish, VCTE ± MRE, biopsiya ko‘rsatmasini ko‘rib chiqish.[4]

2-bosqich (ixtisoslashgan bo‘g‘in): VCTE LSM talqini (NAFLD/MASLD uchun): <~8 kPa past; 8–12 kPa oraliq; >~12 kPa yuqori xavf (yangi metatahlillarda AF uchun 7.1–7.9 kPa diapazoni ko‘rsatilgan). CAP bilan steatoz darajasini

baholang[1]. ELF: <9.8 — past prognoz riski; ≥11.3 — yuqori risk; FIB-4 bilan birga qaror qabul qilishni kuchaytiradi. MRE: VCTE «gray-zone» bo‘lsa yoki qaror hal qiluvchi bo‘lsa, ≈3.6–3.9 kPa F3 uchun mos chegaralar sifatida qo‘llanadi. Steatoz nazoratiqilishda bu usullar qolganlariga nisbatan ancha Afzal xisoblanadi: MRI-PDFF: davolashga javobni miqdoriy kuzatish (dori sinovlari, murakkab holatlar). UTT: arzon skrining, ammo nazoratda suboptimal. CAP: amaliy miqdoriy alternativa xisoblanadi.[20] Yangi ufqlar: sun’iy intellekt va avtomatlashtirilgan UTT So‘nggi yillarda UTT tasvirlaridan chuqur o‘rganish orqali steatoz/mumkin bo‘lgan MASHni aniqlash bo‘yicha istiqbolli natijalar paydo bo‘ldi. Hozircha ko‘proq ilmiy doirada, ammo skrining vaqtini qisqartirish va operatorga bog‘liqlikni kamaytirish potentsiali bor.[20] O‘zbekiston sharoitida amaliy «paket»: minimal va optimal paketlar mavjud bo’lib bemorning moliyaviy ahvilidan kelib chiqib mana shu paketlardan foydalanish mumkin

Minimal (resurs cheklangan) paket:

1. T2D/semirish bemorlarida FIB-4 hisoblash (AST, ALT, trombotsit, yosh mavjud bo‘lsa — yetarli).
2. FIB-4 ≥1.3 bo‘lsa — viloyat markazida FibroScan (VCTE+CAP) tekshiruvini o’tkazadi.
3. FIB-4 <1.3 — hayot tarsi o’zgartirish, 12–24 oyda qayta baholash amalga oshiriladi.

Optimal paket:

1. FIB-4 → VCTE/CAP; «oraliq zona» yoki qarama-qarshiliklarda ELF; zarur bo‘lsa MRE.
2. MRI-PDFF — dori bilan davoda yoki klinik sinovlarga tayyorgarlikda, ilmiy ishlar uchun afzal xisobladi .

Xulosa

Erta tashxislash — asosan fibrozni aniqlashga yo‘naltirilgan, ikki bosqichli va resursga moslashuvchan bo‘lishi kerak. Birlamchi bo‘g‘inda FIB-4 — yuqori NPV bilan birlamchi skrining rolini bajaradi; keyingi bosqichlarda VCTE (±CAP) va zaruratda ELF/MRE diagnostik aniqlikni oshiradi. MRI-PDFF steatozni miqdoriy baholashda «oltin standart»ga yaqin; lekin kundalik amaliyotda CAP va UTT ancha qulay xisoblanadi ammo bu tekshiruvlarda operatorning mahorati katta ro`l o`ynaydi, shuningdek AI-asosli yondashuvlar kirish imkonini kengaytirmoqda. O‘zbekistonda isteqomab qiluvchi aholi uchun uchun realistik yo‘l: FIB-4 → VCTE/ELF → MRE/biopsiya (zarur bo‘lsa) tekshiruvlarini amalga oshirish va kardiometabolik agressiv xavflarni boshqarish bilan birga kasllikni avj olishi erta profilaktika qilishga erishish mumkin. Bu qilingan hamma ishlar kasallikni oldini olish va erta aniqlash imkonini yanada kengaytiradi. Bu esa kasallikdan keying bo`ladigan asoratlar va nogironlik darajasini sezilarli darajada kamaytiradi deb o`ylayman.

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MODERN APPROACHES, ALGORITHMS, AND PRACTICAL RECOMMENDATIONS FOR EARLY DETECTION OF METABOLIC DYSFUNCTION–ASSOCIATED STEATOTIC LIVER DISEASE (MASLD)

Abstract: *Metabolic dysfunction–associated steatotic liver disease (MASLD; formerly NAFLD) affects a significant share of the population and is closely linked to cardiometabolic risk factors such as type 2 diabetes, obesity, and dyslipidemia. Early diagnosis is particularly important in the spectrum of liver diseases because the key prognostic determinant—fibrosis stage—often remains clinically silent for a long time. In recent years, clinical guidelines have proposed a two-step strategy (initial triage + confirmation): first, simple serum-based scores such as FIB-4/NFS to identify a "low-risk" group, followed in "intermediate/high-risk" patients by noninvasive imaging and elastographic methods (VCTE/FibroScan, 2D-SWE, MRE) for early detection of fibrosis. For quantitative assessment of steatosis, MRI-PDFF is considered the reference method; the Controlled Attenuation Parameter (CAP, on FibroScan) and newer ultrasound attenuation metrics are increasingly used in practice. For fibrosis risk prediction, the ELF test (HA, PIIINP, TIMP-1) is widely applied; fibrogenesis markers such as PRO-C3 are also promising. This review systematizes current terminology (MASLD/MASH), identifies target groups for screening, provides practical cut-offs, outlines strengths and limitations of key tools, and proposes a simplified, practice-oriented algorithm adapted to the healthcare context of Uzbekistan. (Sources: AASLD 2023 guidance; EASL-EASD-EASO 2024 guidelines; meta-analyses and large studies.) (PubMed)*

Key words: *MASLD (NAFLD), MASH (NASH), early diagnosis, FIB-4, NFS, VCTE/FibroScan, CAP, MRI-PDFF, MRE, ELF, PRO-C3.*

1. Terminology and why "early" matters

1.1. Renaming NAFLD → MASLD

In 2023, leading professional societies proposed replacing "NAFLD" with "MASLD" (metabolic dysfunction–associated steatotic liver disease). This change not only reduces the stigma implied by the term "non-alcoholic" but also more accurately reflects disease biology by placing metabolic dysfunction at the center of pathogenesis. Under the umbrella term SLD (steatotic liver disease), different causes of steatosis are grouped, while the inflammatory phenotype is now termed MASH (metabolic dysfunction–associated steatohepatitis). Diagnostic criteria were also refined: to establish the diagnosis, evidence of hepatic steatosis must be combined with at least one cardiometabolic risk factor. (journal-of-hepatology.eu)

1.2. Why detect early?

Long-term outcomes in steatotic liver disease are determined primarily by the stage of fibrosis. At early stages (F0–F2), changes are potentially reversible: lifestyle modification and strict control of metabolic risk can reduce progression and sometimes induce regression. By contrast, stages F3–F4 are associated with higher risks of decompensated cirrhosis, hepatocellular carcinoma (HCC), and liver transplantation. Therefore, modern practice emphasizes "fibrosis-oriented" screening in which the primary goal is to identify, as early as possible, patients likely to harbor advanced fibrosis. (journals.lww.com)

2. Who should be prioritized for screening?

European (EASL–EASD–EASO, 2024) and American (AASLD, 2023) guidelines agree that active case-finding is warranted among high-risk groups. These include patients with type 2 diabetes, obesity (especially BMI ≥30 and central adiposity), atherogenic dyslipidemia and other components of the metabolic syndrome, as well as individuals with persistently abnormal ALT/AST or incidentally detected steatosis on imaging. For adults over 65, score cut-offs should be recalibrated to account for age-related features. (PMC)
Practical takeaway for Uzbekistan: at the primary care level (family physician/endocrinologist), targeted assessment of liver risk should be considered standard quality care for every patient with type 2 diabetes or obesity.

3. Primary laboratory stratification: simple scoring systems

3.1. FIB-4 (Fibrosis-4)

FIB-4 is the most validated rule-out tool and helps safely exclude advanced fibrosis in many patients. In those aged 35–65 years, values <1.3 indicate a low probability of advanced fibrosis (high negative predictive value), whereas values ≥2.67 increase the likelihood of advanced fibrosis (rule-in). In adults ≥65 years, the lower cut-off is raised to about 2.0 to reduce false positives. The indeterminate zone 1.3–2.67 requires further testing. (aasld.org)

3.2. NAFLD Fibrosis Score (NFS)

Classic NFS cut-offs remain useful: <−1.455 supports exclusion of fibrosis, whereas >0.676 suggests advanced fibrosis. In older adults, false positives are more common, so interpretation should be cautious and context-aware. (PMC)

3.3. APRI and other simple indices

AST/ALT-based indices, including APRI, can be used, but in MASLD they usually perform worse than FIB-4 and NFS. Consequently, most algorithms retain FIB-4 as the first-line test. (aasld.org)

Strengths of this approach: low cost, ready availability from standard chemistry panels, and the ability to quickly identify a low-risk group. **Limitations:** age-dependent threshold shifts, influence of comorbidities (e.g., thrombocytopenia), and a relatively broad "gray zone" requiring additional evaluation.

4. Early detection of fibrosis using noninvasive biomarkers

4.1. ELF (Enhanced Liver Fibrosis)

ELF is a certified test combining hyaluronic acid (HA), PIIINP, and TIMP-1. Lower values (<9.8) are associated with a lower 10-year risk of liver-related outcomes, while higher values (≥11.3) indicate higher risk. When combined with FIB-4, ELF enhances both rule-out and rule-in performance. Regulatory documents specify pre-analytical requirements (e.g., potential effects of biotin, hemolysis). (PMC)

4.2. PRO-C3 and composite panels (FIBC3, ADAPT, ABC3D)

PRO-C3 is a neoepitope of collagen III reflecting active fibrogenesis. Large studies show its utility for detecting advanced fibrosis; it performs best as part of multi-marker panels, which improves robustness and prognostic value. For now, widespread routine use of PRO-C3 lags behind ELF. (PMC)

4.3. Cytokeratin-18 (M30/M65)

CK-18 fragments have been investigated as apoptosis markers in MASH; however, as standalone screening tests they lack sufficient accuracy. They may be useful within expanded multi-marker panels. (PLOS)

Practical summary: in resource-limited settings, the "FIB-4 → VCTE" pathway provides reliable early stratification; when available, ELF and/or PRO-C3 increase informativeness in the indeterminate group.

5. Early detection of steatosis: imaging modalities

5.1. Conventional ultrasound (B-mode)

Meta-analyses show good sensitivity and specificity for moderate-to-severe steatosis (~85%/85%), but sensitivity declines markedly in mild steatosis and results are operator-dependent. Thus, ultrasound is convenient for screening-stage "present/absent" assessment but not for precise quantitative monitoring. (PMC)

5.2. CAP (Controlled Attenuation Parameter, FibroScan)

CAP is broadly comparable to MRI-PDFF in identifying steatosis: pooled data suggest working ranges such as <~249 dB/m to exclude and >~328 dB/m to confirm steatosis, while accounting for device and population specifics. (PMC)

5.3. MRI-PDFF — the quantitative "gold standard"

MRI-PDFF quantifies hepatic fat fraction; in practice, a threshold around 5–6% PDFF is frequently interpreted as indicating steatosis. Research reports provide refined levels aligning with histology (e.g., 5.75%, 15.5%, 21.35%). Clinically, MRI-PDFF is invaluable for accurate therapy monitoring and in drug trials. (kjronline.org)

6. Elastography as the backbone of early noninvasive fibrosis detection

6.1. VCTE (FibroScan) and working cut-offs

Liver stiffness measurement (LSM) by VCTE rapidly stratifies risk. Many sources pragmatically denote zones: <~8 kPa (low risk), 8–12 kPa (intermediate), >~12 kPa (high), acknowledging that exact cut-offs vary by population and clinical context. A 2024 meta-analysis for NAFLD/MASLD indicates 7.1–7.9 kPa as an optimal range for advanced fibrosis detection. (PubMed)

6.2. Magnetic resonance elastography (MRE)

MRE offers higher diagnostic accuracy and helps resolve gray-zone cases, providing slice-by-slice liver maps. Limitations include cost and availability. Many studies discuss thresholds around ~3.6–3.9 kPa for F3. (PMC)

Practical algorithm: if FIB-4 is indeterminate or elevated, perform VCTE; if results are doubtful or discordant with clinical context, add MRE; consider biopsy when the clinical decision is pivotal or discrepancies persist.

7. Advanced MR metrics: cT1 and others

Iron-corrected T1 (cT1) is being explored as a composite marker of inflammation and fibrosis with prognostic value and sensitivity to treatment response. Nevertheless, most guidelines do not yet consider it a routine standard test. (PMC)

8. Genetics and "omics": early-risk stratification

Variants such as PNPLA3 (I148M), TM6SF2, and MBOAT7 may increase the likelihood of fibrosis progression; however, broad genotyping is not recommended for primary screening. In practice, decisions rely mainly on phenotypic risk and clinical context, with simple laboratory and elastographic tools remaining central.

9. Children, women, and other special populations

In pediatrics, ultrasound remains the first step, while VCTE/SWE are gaining ground; MRI-PDFF is appropriate for complex cases and research. During pregnancy, indices should be interpreted with caution and invasive procedures avoided unless essential. In adults ≥65 years, the lower FIB-4 threshold is reasonably raised. (journal-of-hepatology.eu)

10. A simplified "primary care → specialist" algorithm

A stepwise scheme aligned with guidelines is practical in real-world settings. **Step 1 (family physician/endocrinologist):** if T2D, obesity, metabolic syndrome, atherogenic dyslipidemia, persistent ALT/AST abnormalities, or incidental steatosis are present, calculate FIB-4. If <1.3 (or <2.0 in ≥65 years), advanced fibrosis is unlikely: implement lifestyle change, strict cardiometabolic control, and reassessment in 1–2 years. If 1.3–2.67 (or 2.0–2.67 in ≥65 years), proceed to VCTE and/or ELF. If ≥2.67, refer to a specialist center for VCTE ± MRE and consider biopsy. **Step 2 (specialist care):** interpret LSM with population-appropriate cut-offs; stage steatosis by CAP or MRI-PDFF; add ELF for prognostic layering; use MRE to resolve discordance. (PMC; aasld.org; PubMed)

For quantitative steatosis monitoring, MRI-PDFF remains the reference; ultrasound is a practical screening tool; CAP is a convenient quantitative alternative for everyday practice. (ScienceDirect)

11. New horizons: AI and automated ultrasound analysis

Deep-learning approaches to liver ultrasound show encouraging performance in detecting steatosis and possible MASH, with potential to shorten screening times and reduce operator dependence. These technologies are currently mainly in the research phase, but their clinical potential is high. (PMC)

12. Practical “packages” for Uzbekistan

Minimal package (limited resources): routine FIB-4 calculation in patients with T2D/obesity; if FIB-4 ≥1.3, arrange FibroScan (VCTE + CAP) at regional centers; if FIB-4 <1.3, implement lifestyle intervention and reassess in 12–24 months.

Optimal package: FIB-4 → VCTE/CAP; in gray-zone or conflicting cases, add ELF and, if needed, MRE; use MRI-PDFF for clinical trials, complex cases, and precise response monitoring.

13. Brief clinical scenarios

A 52-year-old with T2D and BMI 32: FIB-4 ≈1.1 indicates low risk; recommend lifestyle modification, glycemic and lipid control, and reassessment in 12 months. (aasld.org)

A 60-year-old with severe obesity and T2D: FIB-4 ≈1.6 — VCTE/CAP is required; if LSM is ~9.5 kPa, add ELF or MRE and, once rule-in/rule-out confidence is adequate, decide on biopsy. (PubMed)

A 67-year-old with hypertension and T2D: FIB-4 2.4 (considering ≥2.0 as the lower cut-off for ≥65 years) — expedited VCTE ± ELF; if LSM >12 kPa, plan specialist management and HCC surveillance. (journal-of-hepatology.eu)

14. Strengths and limitations — concise recap

FIB-4/NFS: accessible tools with high NPV, but sensitive to age and comorbidity. ELF: strong prognostic marker but requires laboratory infrastructure. PRO-C3 and composite panels are promising yet still diffusing. Ultrasound is widely available and effective in moderate-to-severe steatosis but limited in mild cases. CAP is a practical quantitative tool with population-dependent cut-offs. MRI-PDFF is a quantitative reference but costly. VCTE is fast and portable with variable thresholds; MRE provides the highest accuracy but limited access. (PMC; PubMed; kjronline.org)

15. The “step-up” algorithm — in one paragraph

Start by identifying risk groups (T2D, obesity, metabolic syndrome, persistent ALT/AST abnormalities, or ultrasound-detected steatosis) and calculating FIB-4. A value <1.3 (or <2.0 in ≥65 years) classifies the patient as low risk, prompting immediate lifestyle optimization and reassessment in 12–24 months. Values 1.3–2.67 (or 2.0–2.67 in ≥65 years) call for VCTE/ELF. A threshold ≥2.67 warrants referral to specialist care, where VCTE (±CAP) is interpreted, ELF and MRE are added as needed, and biopsy is considered. This stepwise approach reduces burden on tertiary services and improves decision accuracy. (aasld.org; PMC; PubMed)

16. Frequently asked questions and common pitfalls

Normal ALT does **not** exclude MASLD/MASH or advanced fibrosis: screening decisions are phenotype-driven, primarily by the presence of T2D and obesity. (PMC) A normal ultrasound does **not** guarantee absence of disease, since mild steatosis and moderate fibrosis can be missed; FIB-4 and VCTE are required for fibrosis stratification. (CGH Journal) No single test is sufficient: the strategy relies on a sequence in which methods complement each other. (PMC)

17. Conclusion

Early MASLD diagnosis should be two-step, fibrosis-focused, and adapted to healthcare resources. In primary care, FIB-4 functions as a high-NPV "sieve"; at the specialist level, VCTE (±CAP), ELF/MRE as needed, and quantitative steatosis assessment (MRI-PDFF) increase diagnostic confidence and help timely identify high-risk patients. In Uzbekistan, a pragmatic pathway is FIB-4 → VCTE/ELF → MRE/biopsy (as indicated) alongside aggressive management of cardiometabolic risk factors.

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METABOLIK DISFUNKTSIYA BILAN BOG‘LIQ STEATOZLI JIGAR KASALLIGINI (MASLD) ERTA TASHXISLASH USULLARI

Annotatsiya: *Metabolik disfunktsiya bilan bog‘liq steatozli jigar kasalligi (MASLD; ilgari NAFLD) bugungi kunda global sog‘liqni saqlashning muhim muammolaridan biri bo‘lib, 2-tip qandli diabet, ortiqcha vazn va semirish, aterogen dislipidemiya, arterial gipertenziya va metabolik sindromning boshqa komponentlari bilan chambarchas bog‘liq. Kasallikning eng xavfli tomoni shundaki, u ko‘p hollarda yillar davomida klinik alomatlarsiz kechadi, biroq aynan shu sokin davrda jigar parenximasida yog‘ to‘planishi (steatoz) va yallig‘lanish-fibroz jarayoni bosqichma-bosqich chuqurlashib boradi. Erta diagnostika aynan shuning uchun dolzarb: fibrozning past darajalari (F0–F2) qaytuvchan bo‘lishi va turmush tarzini o‘zgartirish hamda metabolik xavflarni agressiv boshqarish orqali teskari yo‘nalishda harakat qilish imkonini beradi, F3–F4 bosqichlarida esa dekompensatsiyalangan siroz, portal gipertenziya va gepatotsellyulyar karsinoma (HCC) kabi og‘ir oqibatlar xavfi ortadi. So‘nggi yo‘riqnomalar diagnostikani ikki bosqichga bo‘lishni taklif qiladi: birlamchi bo‘g‘inda oddiy laborator indekslar yordamida xavfni dastlabki baholash, so‘ng ixtisoslashgan bosqichda elastografiya va miqdoriy tasviriy usullar bilan fibroz va steatozni aniqroq qatlamlash. Ushbu obzor erta diagnostika konsepsiyasini yoritadi, asosiy test va kesim qiymatlari haqida tushunarli izoh beradi, shuningdek O‘zbekiston sharoitida resursga mos va amaliy bo‘lgan bosqichma-bosqich yondashuvni taklif qiladi.*

Kalit so‘zlar: *MASLD; erta diagnostika; skrining; noinvaziv testlar; FIB-4; NAFLD Fibrosis Score (NFS); elastografiya; VCTE (FibroScan); CAP; MRI-PDFF; MRE; ELF testi; PRO-C3; metabolik sindrom.*

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METHODS FOR EARLY DIAGNOSIS OF METABOLIC DYSFUNCTION–ASSOCIATED STEATOTIC LIVER DISEASE (MASLD)

Abstract: *Metabolic dysfunction–associated steatotic liver disease (MASLD; formerly NAFLD) is one of today’s major global health challenges and is closely linked to type 2 diabetes, excess body weight and obesity, atherogenic dyslipidemia, arterial hypertension, and other components of the metabolic syndrome. The most concerning feature of the disease is its frequent asymptomatic course over many*

years; yet during this "silent" period fat accumulates in the hepatic parenchyma (steatosis) and the inflammatory–fibrotic process progressively advances. Early diagnosis is therefore crucial: at low stages of fibrosis (F0–F2) changes are potentially reversible and may regress with lifestyle modification and aggressive control of metabolic risk factors, whereas at stages F3–F4 the risks of decompensated cirrhosis, portal hypertension, and hepatocellular carcinoma (HCC) increase substantially. Contemporary guidelines propose a two-step strategy: in primary care, an initial risk assessment using simple laboratory indices, followed at the specialist level by more precise stratification of fibrosis and steatosis employing elastography and quantitative imaging methods. This review outlines the concept of early diagnosis, provides clear explanations of key tests and threshold values, and offers a stepwise, resource-adapted approach tailored to the context of Uzbekistan.

Key words: *MASLD; early diagnosis; screening; noninvasive tests; FIB-4; NAFLD Fibrosis Score (NFS); elastography; VCTE (FibroScan); Controlled Attenuation Parameter (CAP); MRI-PDFF; magnetic resonance elastography (MRE); ELF test; PRO-C3; metabolic syndrome.*

Kirish

So‘nggi o‘n yillikda steatozli jigar kasalliklari spektri bo‘yicha terminologiya sezilarli yangilandi. «NAFLD» atamasi o‘rniga «MASLD» (metabolic dysfunction-associated steatotic liver disease) qo‘llanilishi patogenez markazida metabolik disfunktsiya turganini aniqroq aks ettiradi. Bu o‘zgarish nafaqat ilmiy tilni soddalashtirdi, balki klinik amaliyotda ham diagnostik mezonlar va skrining strategiyalarini qayta ko‘rib chiqishga undadi. Bugun MASLD tashxisi steatoz isboti bilan birga hech bo‘lmaganda bitta kardiometabolik xavf omilining mavjudligini talab qiladi. Praktik nuqtai nazardan bu juda muhim: klinisyen steatozni tasodifan aniqlaganida ham, bemorning glikemik profili, lipidlari, arterial bosimi, bel atrofi o‘lchami va boshqa metabolik ko‘rsatkichlariga darhol e’tibor qaratadi va aksincha, endokrinologik yoki kardiologik qabuldagi har bir T2D yoki semirish bilan kelgan bemorda jigar xavfini erta tekshirishga qaror qiladi. Erta aniqlash deganda biz, avvalo, fibrozning klinik jihatdan ahamiyatli bosqichlariga yetib borishidan oldin bemorni topish va xavfni qatlamlashni tushunamiz. Shu maqsadda birlamchi bo‘g‘inda arzon, tez va sezgir «rule-out» vositalar, ixtisoslashgan bosqichda esa «rule-in» sifatida kuchli, yuqori ijobiy bashorat qiymatiga ega testlar qo‘llanadi.

Terminologiya va konseptual asoslar

«Steatotic Liver Disease» (SLD) soyabon atamasi ostida steatozga olib keladigan turli sabablar jamlanadi. Ulardan metabolik disfunktsiya bilan bog‘liq turi MASLD deb yuritiladi, steatohepatit fenotipi esa endilikda MASH (metabolic dysfunction-associated steatohepatitis) nomi bilan ataladi. Bunday qayta nomlash tarixiy «no-alcoholic» atamasining salbiy semantik yukini kamaytiradi va klinik qarorlarni sabablilik (etiologiya) va xavf qatlamlashuvi tamoyillariga yaqinlashtiradi. Mualliflar stigmadan xoli, bir vaqtning o‘zida ilmiy aniqligi yuqori

bo‘lgan diagnostik muloqotni yo‘lga qo‘yishni maqsad qiladilar, chunki real amaliyotda «alkogolsiz» degan ta’rif ko‘pincha tashxisni to‘g‘ri qo‘yishga emas, balki noto‘g‘ri eksklyuziya suhbati va bemor bilan ‘alkogol miqdori’ munozaralariga sabab bo‘lib qolardi. Endilikda klinisyen steatoz belgisini ko‘rishi bilan bemorning metabolik profilini tizimli baholaydi, bu esa diagnostikani ham, profilaktikani ham tezlashtiradi.

Epidemiologik va klinik ahamiyati

MASLD dunyo aholisining sezilarli qismida uchraydi va iqtisodiy yuk bilan birga kardiometabolik kasalliklar xavfini oshiradi. Eng muhim klinik dars shuki: prognozni asosan fibrozning darajasi belgilaydi. Boshqacha aytganda, steatozning o‘zi ko‘p hollarda alohida simptom bermaydi, biroq u bilan birga kechadigan yallig‘lanish (MASH) va undan keyin boshlanuvchi fibrogenez jigar arxitekturasini izdan chiqaradi. Aynan shuning uchun erta diagnostika fibroz markazli bo‘lishi, ya’ni birinchi navbatda ilg‘or fibrozga ega bo‘lishi mumkin bo‘lgan bemorlarni aniqlashga qaratilishi kerak. Ilg‘or fibroz (F3) va siroz (F4) nafaqat jigar bilan bog‘liq o‘lim xavfini oshiradi, balki kardioserebrovaskulyar hodisalar bilan ham assotsiatsiyalangan. Demak, MASLDga nisbatan «jigar kasalligi» emas, balki «kardiometabolik xavf sindromi» sifatida qarash, skrining paradigmasini butunlay yangilaydi.

Erta diagnostika tamoyillari va ikki bosqichli yondashuv

Bugungi amaliyotda eng maqbul strategiya ikki bosqichdan iborat. Birinchi bosqichda, birlamchi bo‘g‘in mutaxassisi aniq risk fenotiplari — 2-tip qandli diabet, semirish, metabolik sindrom, aterogen dislipidemiya, shuningdek, sababsiz ALT/AST ko‘tarilishi yoki tasodifiy USG-steatoz aniqlangan bemorlarni ko‘rishi bilanoq, oddiy laboratoriyadan hisoblanadigan indekslar yordamida fibroz xavfini baholaydi. FIB-4 shu yerda asosiy rolni o‘ynaydi: u AST, ALT, trombotsitlar soni va yoshdan foydalanib, ilg‘or fibroz ehtimolini past, oraliq yoki yuqori deb taxmin qiladi. Maqsad — imkon qadar ko‘proq bemorni «past xavf» sifatida xavfsiz tarzda chiqarib yuborish va ixtisoslashgan tekshiruvlarga faqat «o‘rta/yuqori xavf» qatlamini yo‘naltirishdir. Ikkinchi bosqichda esa, elastografiya usullari (eng avvalo VCTE/FibroScan) va ba’zan MRE yordamida fibroz miqdoriy baholanadi, CAP yoki MRI-PDFF bilan steatoz darajasi aniqlashtiriladi, va zarurat bo‘lsa, laborator biomarker panellari (ELF va boshqalar) diagnostik ishonchlilikni oshiradi. Bu tartib nafaqat iqtisodiy jihatdan samarali, balki bemor oqimini ham mantiqan boshqaradi: qaysi bemorlar profilaktik dasturlarga yuboriladi, qaysilari esa ixtisoslashgan nazoratga olinadi — hammasi aniq bo‘ladi.

Kimlarni skrining qilish kerak?

Endokrinologik amaliyotda T2D bilan kelgan deyarli har bir bemorda jigar xavfi bor deb qabul qilinadi. Shunga o‘xshash tarzda, semirish, bel atrofi katta bo‘lishi, aterogen dislipidemiya, arterial gipertenziya va metabolik sindromning boshqa komponentlari ham ehtiyotkor yondashuvni talab qiladi. Ko‘plab bemorlarda jigar fermentlari normal diapazonda qolgan bo‘lishi mumkin; bu MASLDni inkor etmaydi va «ALT normasi – xavf yo‘q» degan oson xulosadan saqlanish lozim. Aksincha, metabolik fenotipning o‘zi skrining uchun yetarli

sababdir. Birlamchi bo‘g‘inda aniq algoritmga amal qilish muhim: risk fenotipi aniqlansa — FIB-4 hisoblanadi; u past xavfni ko‘rsatsa — hayot tarzi bo‘yicha chuqur maslahat, glyukoz va lipid nazorati, 12–24 oy ichida qayta baholash tavsiya etiladi. Oraliq yoki yuqori xavf bo‘lsa, bemor ixtisoslashgan bosqichga o‘tkaziladi.

Boshlang‘ich laborator yondashuv: FIB-4 va NFS

FIB-4 oddiy laborator ko‘rsatkichlardan tuzilgan bo‘lib, klinik qaror qabul qilishda nihoyatda qulay. Amaliy talqinda 35–65 yosh guruhi uchun past chegara taxminan 1,3 atrofida, yuqori chegara 2,67 atrofida qabul qilinadi; 65 va undan katta yoshda past chegara 2,0 ga ko‘tariladi. Bu raqamlar klinik oqimni soddalashtiradi: 1,3 dan past natijada bemorni quyi xavf sifatida kuzatuvga qaytarish, 1,3–2,67 oralig‘ida elastografiya bilan to‘ldirish, 2,67 dan yuqorida esa ixtisoslashgan baholash va, agar zarur bo‘lsa, biopsiya masalasini ko‘tarish mumkin. NAFLD Fibrosis Score (NFS) ham foydali bo‘lishi mumkin, biroq yoshi katta bemorlarda soxta ijobiylik ehtimoli yuqoriroq; shu bois amaliy algoritmlarda FIB-4 ko‘proq tanlanadi. APRI va AST/ALT nisbatlari kabi indekslar esa steatozli jigar kontekstida FIB-4 darajasida farqlash qobiliyatini ko‘rsata olmaydi. Muhimi, birlamchi bosqichda maqsad «rule-out»: ya’ni, ilg‘or fibroz ehtimoli past bemorlarni ishonch bilan chiqarib yuborishdir.

Noinvaziv biomarkerlar: ELF, PRO-C3 va boshqalar

Ixtisoslashgan bosqichda laborator biomarker panellari diagnostikaning ishonchliligini kuchaytiradi. ELF (Enhanced Liver Fibrosis) skori hialuron kislota, PIIINP va TIMP-1 ni birlashtiradi va fibrozning «biologik izlari»ni aks ettiradi. Klinik talqinda u prognoz bilan yaxshi bog‘liq: past qiymatlar uzoq muddatli jigar hodisalari xavfining pastligini, yuqorilari esa yuqori xavfni ko‘rsatadi. Shuningdek, PRO-C3 — kollagen III ning neo-epitopini ifodalovchi marker — faol fibrogenezni tutib olishga qodir. U ko‘pincha kompozit panellar (masalan, FIBC3 yoki ADAPT) tarkibida yanada barqaror ishlaydi. CK-18 fragmentlari (M30/M65) tarixan MASH uchun qiziqarli bo‘lgan, biroq mustaqil skrining testi sifatida yetarli sezgirlik-spetsifiklik kombinatsiyasini bermaydi. Ushbu biomarkerlar ayniqsa elastografiya natijasi «kulrang zona»da qolgan yoki klinik manzara bilan mantiqiy kolliziya kuzatilgan holatlarda muhim ahamiyat kasb etadi, chunki ular fibrogenez jarayonining dinamik tarafini yoritadi va klinik qarorni aniqroq qiladi.

Steatozni baholash: USG, CAP va MRI-PDFF

Oddiy ultratovush tekshiruvi steatozni «bor-yo‘q» darajasida aniqlashda qulay, arzon va ommabop bo‘lsa-da, yengil darajadagi yog‘lanishni ko‘p hollarda sog‘lom parenxima fonida o‘tkazib yuborishi mumkin. Shu sababli, steatozni miqdoriy baholash zarur bo‘lgan paytda CAP (Controlled Attenuation Parameter) yoki MRI-PDFF (proton density fat fraction) afzal bo‘ladi. CAP ko‘rsatkichini FibroScan qurilmasi bilan bir vaqtda olish mumkin, bu esa tashxis jarayonini tezlashtiradi va iqtisodiy samaradorlikni oshiradi; biroq kesim qiymatlari aholi va apparat xususiyatlariga bog‘liq bo‘lib, talqin qilishda klinik kontekstdan uzilmaslik kerak. MRI-PDFF esa yog‘ fraksiyasini aniq miqdorlaydi, dori sinovlari va murakkab klinik vaziyatlarda «oltin standart»ga yaqin qadr topadi. Miqdoriy baholashning mavjudligi klinik muloqotni osonlashtiradi: bemor bilan hayot tarzi

o‘zgarishlari natijasida yog‘ foizi qanchaga kamaygani haqida aniq raqamlar bilan suhbatlashish motivatsiyani oshiradi.

Elastografiya: VCTE va MRE

Fibrozni erta aniqlashning amaliy tayanchi — elastografiya. Vibratsion o‘tkaziluvchanlikka asoslangan VCTE (FibroScan) bugun ko‘plab markazlarda mavjud bo‘lib, liver stiffness measurement (LSM) orqali fibroz ehtimolini qatlamlaydi. Klinik talqin ko‘pincha uch zonaga bo‘linadi: past, oraliq va yuqori xavf, bunda chegaralar populyatsiyaga va hamroh omillarga qarab o‘zgarishi mumkin. Afzalligi — tezkorligi, invaziv emasligi va bemor uchun qulayligi. Magnetic Resonance Elastography (MRE) esa fibrozni tasdiqlashda juda yuqori aniqlik ko‘rsatadi, ayniqsa «kulrang zona»ni hal qilishda. Uning narxi va mavjudligi cheklov bo‘lib qolmoqda, biroq murakkab klinik holatlarda MRE shifokorga ishonchli «rule-in» dalilini beradi. Elastografiya natijalarini har doim klinik manzara, laborator profillar va tasviriy usullar bilan birgalikda talqin qilish zarur: FIB-4 yuqori bo‘lib, elastografiya past natija berganida yoki aksincha bo‘lganda, qaror qabul qilishga yordam beradi.

Maxsus guruhlar: pediatriya, homiladorlik va keksa yosh

Bolalarda steatoz ko‘pincha semirish epidemiyasi fonida uchraydi. Ular uchun birlamchi baholashda USG afzal bo‘lib qoladi, biroq elastografiyaning pediatrik protokollari ham tobora takomillashmoqda. MRI-PDFF ilmiy tekshiruvlarda va diagnostik murakkab vaziyatlarda muhim o‘rin tutadi. Homiladorlik davrida laborator ko‘rsatkichlarning fiziologik o‘zgarishi kuzatilishi mumkin; shuning uchun indekslarni ehtiyotkor talqin qilish lozim, invaziv tekshiruvlardan esa imkon qadar cheklanish kerak. Keksa yoshdagi bemorlarda FIB-4 uchun past chegara ko‘tarilishi diagnostika aniqligini oshiradi, biroq bu guruhda ham har bir natija klinik kontekstda qayta tekshiriladi, chunki trombotsitopeniya yoki hamroh kasalliklar indeksi noto‘g‘ri ko‘tarib yuborishi mumkin.

Sun’iy intellekt va avtomatlashtirilgan tasvir tahlili

So‘nggi yillarda ultratovush tasvirlarini chuqur o‘rganish asosida avtomatlashtirilgan steatoz aniqlash modellariga qiziqish kuchaydi. Bu yondashuvlar operatorga bog‘liqlikni kamaytirish, skrining jarayonini tezlashtirish va mehnat xarajatlarini optimallashtirish imkonini beradi. Hozircha ko‘plab ishlanmalar ilmiy bosqichda bo‘lsa-da, yaqin yillarda ular amaliyotga kirib kelishi ehtimoldan xoli emas. Klinik realitet nuqtai nazaridan, AI tizimlari shifokorga yordamchi bo‘lib, qaror qabul qilishni qat’iyroq va barqarorroq qiladi, ayniqsa birlamchi bo‘g‘inda katta oqim bilan ishlaganda.

O‘zbekiston sharoitida amaliy algoritm va resurs boshqaruvi

Mamlakatimiz sharoitida erta diagnostika strategiyasi oddiy, arzon va qayta-takrorlanuvchi bosqichlarga tayanishi lozim. Birlamchi bo‘g‘inda T2D va semirish bilan kelgan bemorlarga FIB-4 hisoblashning ommaviy joriy etilishi — katta qadam. Past xavf guruhidagi bemorlarda hayot tarzi intervensiyalari (ovqatlanish tuzilmasi, jismoniy faollik, uyqu gigiyenasi, stressni boshqarish) va kardiometabolik nazorat (HbA1c, lipidlar, arterial bosim) markaziy o‘rin tutadi.

Oraliq xavf aniqlansa, viloyat darajasidagi markazlarda FibroScan orqali elastografiya va CAP o‘lchovi bajarilishi maqsadga muvofiq. Zarurat bo‘lsa, ELF qo‘shilishi klinik ishonchni kuchaytiradi; murakkab kolliziyalar esa poytaxt yoki yirik ixtisoslashgan markazlarda MRE yordamida hal qilinadi. Bu oqim byudjetga mos bo‘lib, bir vaqtning o‘zida eng ko‘p foyda keltiradigan bemor qatlamini aniq nishonga oladi. Shuningdek, birlamchi bo‘g‘inda bemorga tushunarli til bilan natijalarni izohlash, motivatsion suhbat va real maqsadlar qo‘yish (masalan, 6 oyda 5–7% vazn kamayishi) terapeutik natijani keskin yaxshilaydi.

Klinik holatlar orqali izoh

Birlamchi qabulda 52 yoshli, 2-tip diabetli bemor nazorat tahlillari bilan keladi. AST va ALT me’yor chegarasidan biroz yuqori, trombotsitlar normada. FIB-4 past xavfni ko‘rsatadi. Bunday vaziyatda asosiy vazifa — metabolik xavflarni bosqichma-bosqich kamaytirish, ovqatlanish va jismoniy faollikni o‘zgartirish, statin va glyukozani nazorat qiluvchi terapiyani to‘g‘ri tanlash, 12 oy ichida takroriy baholashni rejalashdir. Boshqa holatda 60 yoshli, semirish darajasi yuqori bo‘lgan T2D bemorda FIB-4 oraliq zona chiqdi. U ixtisoslashgan bosqichga yo‘naltirildi, VCTE LSM qiymati ehtiyotkorlik bilan talqin qilindi va natijaga qarab ELF qo‘shildi. Agar elastografiya yuqori xavfni ko‘rsatsa, bemor siroz va HCC skriningi bo‘yicha qo‘shimcha kuzatuv rejasiga olinadi. Nihoyat, 67 yoshli, bir nechta hamroh kasalliklarga ega bemorda FIB-4 yuqori bo‘lib, elastografiya ham yuqori ko‘rsatkichlar berdi. Bunday paytda qaror keskinlashadi: biopsiya zarurati va davolash strategiyasi bo‘yicha multidisiplinar muhokama o‘tkaziladi, chunki prognozni belgilovchi kalit omillar aynan shu bosqichda hal etiladi.

Xulosa

Erta diagnostika strategiyasi fibrozga yo‘naltirilgan, bosqichma-bosqich va resursga mos bo‘lishi zarur. Birlamchi bo‘g‘inda FIB-4 kabi oddiy indekslar ko‘plab bemorlarni xavfsiz tarzda quyi risk sifatida saralashga yordam beradi; ixtisoslashgan bosqichda esa VCTE va zarurat bo‘lsa MRE, shuningdek miqdoriy steatoz bahosi (CAP yoki MRI-PDFF) klinik aniqlikni keskin oshiradi. Biomarker panellari, avvalo ELF, qaror qabul qilishning prognostik qatlamini mustahkamlaydi. Shifokor va bemor o‘rtasidagi aniq, motivatsion muloqot esa erta aniqlangan MASLDni qaytuvchan davrida ushlab qolish va uzoq muddatli nojo‘ya hodisalarni kamaytirishning eng muhim asboblaridan biridir. O‘zbekiston amaliyoti uchun FIB-4 → VCTE/CAP → ELF/MRE → biopsiya zanjiri, kardiometabolik xavflarni agressiv boshqarish bilan birga, eng realistik va samarali yo‘l sifatida taklif etiladi.

Foydalanilgan adabiyotlar

1. AASLD Practice Guidance on the clinical assessment and management of MASLD/NAFLD (Hepatology, 2023).
2. EASL–EASD–EASO Clinical Practice Guidelines on MASLD (Journal of Hepatology, 2024).
3. Multisociety Delphi consensus on renaming NAFLD to MASLD/MASH (J Hepatol, 2023).
4. Noninvasive assessment in MASLD: FIB-4 as primary triage tool (AASLD Liver-Fellow Network, 2023).

5. Ultrasonography and steatosis: diagnostic performance and limitations (Hepatology meta-analyses).
6. CAP and MRI-PDFF for steatosis quantification: comparative studies and thresholds (recent systematic reviews).
7. VCTE and MRE in fibrosis staging: cut-offs and clinical application (Clin Gastroenterol Hepatol; Frontiers in Medicine).
8. ELF, PRO-C3 and multi-marker panels in risk stratification (JAMA Netw Open; JHEP Reports).
9. AI-assisted ultrasound analytics in fatty liver screening: emerging evidence (recent reviews).

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CYTOPHYSIOLOGY OF THE JUXTAGLOMERULAR APPARATUS OF THE KIDNEY: STRUCTURAL FEATURES AND REGENERATIVE POTENTIAL OF THE KIDNEYS

Abstract: the present study investigates the cytophysiological features and adaptive responses of the juxtaglomerular apparatus (jga) of the kidney under various physiological conditions, such as sleep deprivation and dehydration. The jga plays a pivotal role in regulating systemic blood pressure, sodium homeostasis, and renal hemodynamics through the secretion of renin. A total of 115 clinically healthy volunteers aged 18–25 years participated in this research conducted at the tashkent state medical university. Participants were divided into three groups: sleep deprivation (group a), dehydration (group b), and control (group c). Physiological and biochemical parameters, including blood pressure, heart rate, urine volume, and urinary sodium levels, were assessed. The findings demonstrated that both sleep restriction and moderate dehydration significantly increased renin activity, reduced sodium excretion, and slightly elevated arterial pressure, reflecting activation of the jga. These results highlight the remarkable sensitivity and adaptability of renal regulatory mechanisms. Moreover, the study discusses the regenerative potential of jga cells, emphasizing their ability to maintain functional integrity under physiological stress. The outcomes broaden our understanding of renal autoregulation and may contribute to developing early preventive approaches for kidney dysfunction.

Keywords*: kidney, glomeral apparatus, renin, nephron, regeneration, sleep deprivation, dehydration, histology.*

INTRODUCTION

The juxtaglomerular apparatus (JGA) is a specialized cellular complex of the nephron responsible for the regulation of arterial pressure, glomerular filtration rate, and water–electrolyte balance. Its core components—juxtaglomerular cells, macula densa, and extraglomerular mesangium—work in synchrony to monitor renal perfusion and sodium concentration, ensuring the stability of internal homeostasis. Recent studies suggest that physiological stressors such as sleep deprivation and dehydration can significantly influence renal endocrine function and activate renin secretion. However, the specific cytophysiological mechanisms underlying these adaptations remain insufficiently explored. The aim of this study was to analyze the

functional and structural behavior of the JGA in response to altered hydration and sleep conditions, and to evaluate its potential for adaptive regeneration under short-term physiological stress.

MATERIALS AND METHODS

The research involved 115 volunteers aged 18–25 years, all students of the Tashkent State Medical University, without any history of renal or cardiovascular disease. Participants were divided into three groups: Group A (n = 38) — moderate sleep deprivation; Group B (n = 40) — controlled dehydration; Group C (n = 37) — control group. During a five-day observation period, each participant underwent daily measurement of arterial blood pressure, heart rate, urine output, and urinary sodium concentration. Subjective fatigue levels were also recorded using a 0–5 scale. Laboratory analyses were performed under standardized conditions. Statistical evaluation used Student's t-test, with significance determined at $p < 0.05$.

ANALYSIS AND RESULTS

Participants in Groups A and B exhibited a statistically significant increase in mean arterial pressure by 8–10 mmHg compared to the control group ($p < 0.05$). Heart rate increased by 6–9 bpm, and daily urine volume decreased by 12–15%. Urinary sodium concentration was reduced by 15–18%, indicating activation of the renin–angiotensin system.

Parameter	Group A (Sleep deprivation)	Group B (Dehydration)	Group C (Control)
Arterial pressure (mmHg)	128 ± 4	130 ± 5	120 ± 3
Heart rate (beats/min)	82 ± 5	85 ± 6	76 ± 4
Daily urine volume (ml)	1350 ± 120	1280 ± 110	1550 ± 100
Urinary Na^+ (mmol/L)	78 ± 6	75 ± 5	92 ± 4
Subjective fatigue (0–5)	3.4 ± 0.6	3.7 ± 0.5	1.2 ± 0.4
Significance (p)	< 0.05	< 0.05	—

These findings demonstrate that short-term sleep deprivation and dehydration trigger compensatory activation of the JGA, reflected by increased renin secretion, altered sodium handling, and mild hemodynamic adjustments. The results suggest that the renal system possesses an inherent ability to adapt and partially restore balance under moderate stress.

CONCLUSION

The study confirms that the juxtaglomerular apparatus is an exceptionally sensitive component of renal physiology, capable of rapid activation in response to mild homeostatic disturbances such as sleep loss and dehydration. The observed changes in renin activity, sodium excretion, and systemic hemodynamics underscore the integrated regulatory capacity of the kidney. Moreover, the data

indicate a potential regenerative and adaptive mechanism within JGA cells that helps preserve renal function during transient physiological stress. Understanding these adaptive processes provides new insights into renal resilience and may form the basis for preventive strategies in the early management of kidney dysfunction.

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SYMPTOM COMPLEXES MANIFESTED IN PATIENTS WITH IRRITABLE BOWEL SYNDROME

Abstract: *Irritable bowel syndrome (IBS) is a biopsychosocial disease consisting of a set of functional disorders not explained by organic changes in the intestine. A total of 117 patients and healthy people were examined. Patients were divided into 2 groups: the first group were patients with IBS, which were divided into 2 subgroups: IBSd (diarrhea) - 51 patients (20 men and 31 women), IBSc (constipation) - 66 patients (33 men and 33 women). More abdominal pain syndrome was noted in patients with a clinical form of IBS with a predominance of diarrhea. The ordinal assessment of the severity of SRC symptoms allows to objectify the severity of clinical manifestation of intestinal dysfunction in patients, identify the clinical features of the course of this pathology.*

Keywords: *irritable bowel syndrome, clinical symptoms, psychological status.*

Introduction

Irritable bowel syndrome (IBS) is a biopsychosocial disease consisting of a set of functional disorders not explained by organic changes in the intestine (Sheptulin A.A., Vize Khripunova MA, 2016, Hanyukov A.A., Fedorova N.S., 2017). A meta-analysis published in 2012 found that the prevalence of IBS in the world was 11.2% when 80 clinical trials were conducted on a total of 260,960 patients, subject to strict selection criteria (Lovell RM, Ford AC., 2012). Only 12-15 percent of patients seek medical attention. IBS incidence is 7% in Southeast Asia, 20% in Europe and 21% in South America. According to the literature, the number of patients with functional disorders of the gastrointestinal tract, including IBS, in specialized gastroenterological hospitals reaches 41-45% (Pogromov AP, Mnatsakanyan MG, Tashchyan OV, 2016). The incidence of IBS among women remains higher than that of men. Young people are more likely to get the disease than people over the age of 50. Any manifestation of the clinical manifestations of IBS in patients of the older age group should alert the physician to the exclusion of organic pathology.

Analysis of modern data on the etiology and pathogenesis of functional pathology of the digestive tract allows us to comment on the concept of disease formation, obviously, it is not one, but several etiological factors, and in turn these

factors are associated with not one but several pathophysiological mechanisms. And the complexity of controlling such patients is that the combination of etiopathogenetic mechanisms in each individual case is individual. Among them are: socioeconomic status, genetic predisposition, the possibility of disease in children of parents with IBS, psychological aspects, hypersensitivity of the internal organs, disorders of the gastrointestinal tract, changes in the neuroendocrine system (brain-intestinal) axis), low-grade- inflammation, the concept of post-infectious IBS, microflora imbalance and, finally, nutritional factors (Maev I.V., Cheremushkin S.V., Yu.A.Kucheryavyy, 2016, Maev I.V., Cheremushkin S.V. et al., 2016).

The purpose of the study. A study of the clinical symptoms of patients with different forms of IBS and assessment of quality of life using a special questionnaire.

Material and research methods. The study was conducted in the gastroenterology department of BRMMC (Bukhara Regional Multidisciplinary Medical Center) and all patients treated with IBS in an inpatient setting for 2017-2019 were selected. The diagnosis of IBS was made based on IV Roman criteria (2016), using the Bristol fecal forms scale to determine the clinical form of IBS (Blake M.R., Raker J.M., Whelan K., 2016). Determination of the composition of chemical elements was carried out in the laboratory of the Institute of Nuclear Physics of the Academy of Sciences of the Republic of Uzbekistan.

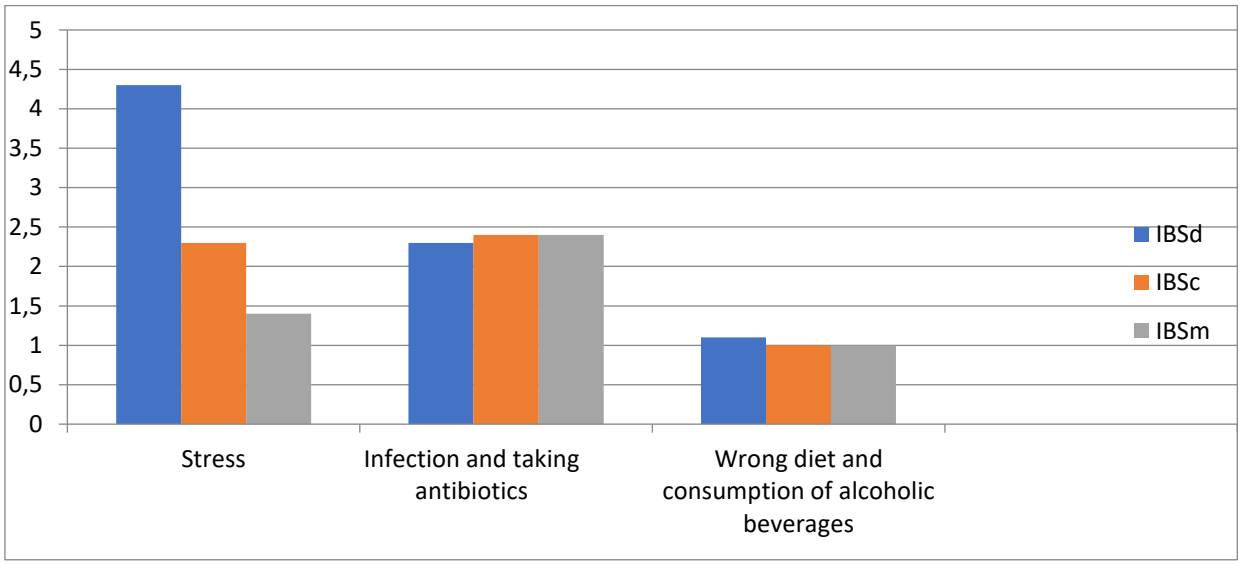
Criteria for inclusion: Conformity of the diagnosis of IBS to the IV Roman criteria, age - from 18 to 45 years, a letter of written consent.

Exclusion criteria: patients older than 45 years, "anxiety symptoms" (weight loss; onset of disease in old age; nocturnal symptoms; colon cancer, celiac disease, ulcerative colitis and Crohn's disease among relatives, persistent severe abdominal pain as the only symptom of gastrointestinal tract injury) , fever, hepatitis - and splenomegaly, anemia, leukocytosis, increased ECG, the presence of occult blood in the stool, changes in the biochemical analysis of blood, steatorrhea and polyphagia).

A total of 117 patients and healthy people were examined. Patients were divided into 2 groups: the first group were patients with IBS, which were divided into 2 subgroups: IBSd (diarrhea) - 51 patients (20 men and 31 women), IBSc (constipation) - 66 patients (33 men and 33 women). The control group included 20 healthy volunteers (6 males and 14 females) who underwent prophylactic screening as part of the examination of gastrointestinal tract pathology at BRMMC. The mean age of the control group was 25.75 ± 4.02 years.

Esophagofibrogastroduodenoscopy in all patients (FUGINON. FUGI FILM EPX-2500, 2014, Japan; FUGI FILM-EG-530PF, 2014, Japan), colonoscopy (FUGI FILM-EG-530FL, 2014, Japan), organ ultrasound examination, stool dissection (Vivid S-60,2014, Norway), micronutrient status testing (mass spectrometry method, perkinelmer inc., Shelton, CT 06484, USA) and a special survey to determine quality of life - GSRS.

Results and discussion. The relationship between disease onset and stress was observed in 65 (53.7%) patients with IBS, 36 (29.7%) reported symptoms after infection, and 20 (16.5%) reported symptoms after taking antibiotics. appeared against the background of non-compliance with diet, alcohol consumption and exercise. The duration of the disease averaged 4.18 ± 2.11 years, ranging from 1 to 15 years (Fig. 1).



For a more correct clinical analysis, we have developed a form-based medical history that took into account the diagnostic criteria of the IBS, as well as the anamnestic, clinical, laboratory peculiarities of the flow pathology in patients. For the convenience of analyzing and subsequent processing, these, we accepted a ballroom system for evaluating symptoms: the lack of a sign was evaluated as 0 points, from weak severity to moderate manifestations - 1 point, expressed manifestations - 2 points. We summarized the number of points for each patient for three signs (the presence of diarrhea, constipation, pain). Patients who score 5-6 points were attributed to a group with severe / pronounced manifestations that scored 3-4 points - to a group with moderate / mid-severity manifestations, and received 1-2 points - to a group with light manifestations. The criteria for the severity of symptoms are presented in Table 1.

Table 1

Basic group-forming symptoms	0 points	1 points	2 points
Diarrhea	<3 times / day 1 time per week	3-5 times / day 1-2 times a week	5-6 times / day> 3 times a week
Constipation	<1-2 times a week	1-2 times a week	> 2 times / week + long strain
Pain	"Not very serious", rarely	"Not very serious", often	Very strong, "terrible"
Flatulence	+	++	+++
Feelings of incomplete emptying of the intestine	+	++	+++

The distribution of the patents depending on the severity of the clinical manifestations of the IBS, obtained as a result of the use of a ball assessment of the symptoms of symptoms as follows (table 2).

Table 2

Distribution of patients in the severity of the course of the IBS

Group	Course of IBS		
	heavy	moderate	mild
Group with predominance of constipation n = 51	8 (15,6%)	28 (54,9%)	15 (29,5%)
Group with a predominance of diarrhea n = 66	18 (27,2%)	34 (51,5%)	14 (21,3%)
Total n = 117	26 (22,2 %)	82 (70%)	29 (24,8 %)

As can be seen from Table 2, most often, in about half of the patients in each group, with all the clinical manifestations of IBS, the patients had an average severity of the corresponding group-forming symptoms. A point assessment of the severity of symptoms in patients with IBS made it possible to identify the clinical features of the course of this pathology, to objectify the severity / severity of clinical signs, to take a differentiated approach to the factors of anamnesis to determine their causal significance and participation in the pathogenesis of this suffering.

The distribution of patients depending on the severity of the manifestations of the IBS in the group with the predominance of the ceiling is presented in table 3.

Table 3

Severity of signs in patients with IBS with predominance of constipation

Sign \ patients	Course		
	heavy	moderate	mild
Pain syndrome	4 (7,8%)	39,2 (46,8%)	14 (27,4%)
Constipation	8 (15,6%)	28 (54,9%)	15 (29,5%)

In order to more objectively, judge the severity / severity of the manifestations of the IBS, we summarized the number of points for each patient on these two features. Patients who scored 5-6 points were attributed by us to a group with severe / pronounced manifestations that scored 3-4 points - in a group with moderate / secondary severity by manifestations, and received 1-2 points - in a group with light manifestations. A further analysis of clinical data, a clear assessment of some of the initiatives allows you to divide patients with the 2nd group, depending on the severity of IBS symptoms. The distribution of patients depending on the severity of manifestations of the IBS in a group with a predominance of diarrhea is presented in table 4.

Table 4

The severity of signs in patients with IBS with a predominance of diarrhea

Sign \ patients	Course		
	heavy	moderate	mild
Pain syndrome	15 (22,7%)	31 (46,9%)	9 (13,6%)
Diarrhea	18 (27,2%)	34 (51,5%)	14 (21,3%)

Conclusion.

1. More abdominal pain syndrome was noted in patients with a clinical form of IBS with a predominance of diarrhea.

2. The ordinal assessment of the severity of SRC symptoms allows to objectify the severity of clinical manifestation of intestinal dysfunction in patients, identify the clinical features of the course of this pathology.

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ГЕМОРРАГИЧЕСКИЙ ДИАТЕЗ: КЛИНИЧЕСКИЙ ОБЗОР, РАСПРОСТРАНЕННОСТЬ, ДИАГНОСТИЧЕСКИЕ ПОДХОДЫ И СТРАТЕГИИ ВЕДЕНИЯ

Аннотация: *это исследование представляет собой обновленный обзор клинических и эпидемиологических аспектов геморрагического диатеза с уделением особого внимания лабораторной диагностике и терапевтическим методам. Геморрагический диатез включает широкую группу наследственных и приобретенных нарушений свертываемости крови, характеризующихся повышенной склонностью к кровотечениям вследствие дисбаланса системы гемостаза. Исследование сосредоточено на подходах к ранней диагностике, лабораторных маркерах и алгоритмах лечения, направленных на улучшение контроля над заболеванием. Особое внимание уделяется сочетанию клинической оценки, лабораторных данных и современных терапевтических практик для улучшения результатов лечения пациентов и уменьшения осложнений.*

Ключевые слова: *генетическая предрасположенность, приобретенные нарушения, популяционные исследования, гемофилия, дисфункция гемостаза, каскад свертывания крови, склонность к кровотечениям, геморрагический диатез, нарушения свертываемости крови, клинический случай, диагностика, лечение.*

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HEMORRHAGIC DIATHESIS: CLINICAL REVIEW, PRESENCE, DIAGNOSTIC APPROACHES, AND MANAGEMENT

Annotation: *This study presents an updated review of the clinical and epidemiological aspects of hemorrhagic diathesis, with a particular emphasis on laboratory diagnostics and treatment methods. Hemorrhagic diathesis includes a wide group of hereditary and acquired disorders of blood clotting, characterized by an increased tendency to bleed due to the imbalance of the hemostasis system. The study focuses on approaches to early diagnosis, laboratory markers, and treatment algorithms aimed at improving disease control. Special attention is paid to combining clinical assessment, laboratory data, and modern therapeutic practices to improve patient treatment outcomes and reduce complications.*

Keywords: *genetic predisposition, acquired disorders, population studies, hemophilia, hemostasis dysfunction, blood clotting cascade, tendency to bleed, hemorrhagic diathesis, blood clotting disorders, clinical case, diagnosis, treatment.*

Введение

Геморрагический диатез (от греческого haimorrhagikos — “склонный к кровотечениям”, и diathesis - “восприимчивость”) представляет собой патологическое состояние, характеризующееся аномальным или чрезмерным кровотечением из-за нарушений в механизме гемостаза. Такие состояния могут возникать из-за нарушений целостности сосудов, функции тромбоцитов, факторов свертывания плазмы или фибринолитических процессов.

Это заболевание может быть наследственным или приобретенным и встречается во всем мире со значительными различиями в распространенности. Своевременное распознавание, основанное на подробном анамнезе, клиническом обследовании и лабораторных исследованиях, по-прежнему имеет важное значение для минимизации заболеваемости и смертности. Современное ведение пациентов делает упор на индивидуальную терапию, фокусируясь на устранении основной причины, нормализации факторов свертывания крови и предотвращении повторных эпизодов кровотечений.

Материалы и методы

Это исследование было проведено в виде всеобъемлющего описательного и аналитического обзора, основанного на клинических наблюдениях, медицинских записях и рецензируемых публикациях, связанных с геморрагическим диатезом. Цель состояла в том, чтобы определить эпидемиологическое распространение, причинные факторы, диагностические критерии и лечение

Данные были собраны на основе следующего:

- Научные базы данных, такие как PubMed, ScienceDirect и SpringerLink;
- Официальные рекомендации Всемирной федерации гемофилии (WFH) и Всемирной организации здравоохранения (ВОЗ);
- Отчеты Всемирного регистра нарушений свертываемости крови (2022-2023);

Клинические данные, собранные по подозрительным случаям, наблюдаемым в Бухарском государственном медицинском институте.

Лица, у которых диагностированы или подозреваются наследственные (например, гемофилия A/B, болезнь Виллебранда фон) или приобретенные (например, ДВС-синдром, печеночная недостаточность) геморрагические состояния.

Исследования, описывающие методы диагностики, включая PT, aPTT, CBC и анализы факторов свертывания крови.

Исследований, оценивая современные способы лечения, такие как Десмопрессин терапии, антифибринолитиков, и из плазмы крови, концентратов факторов.

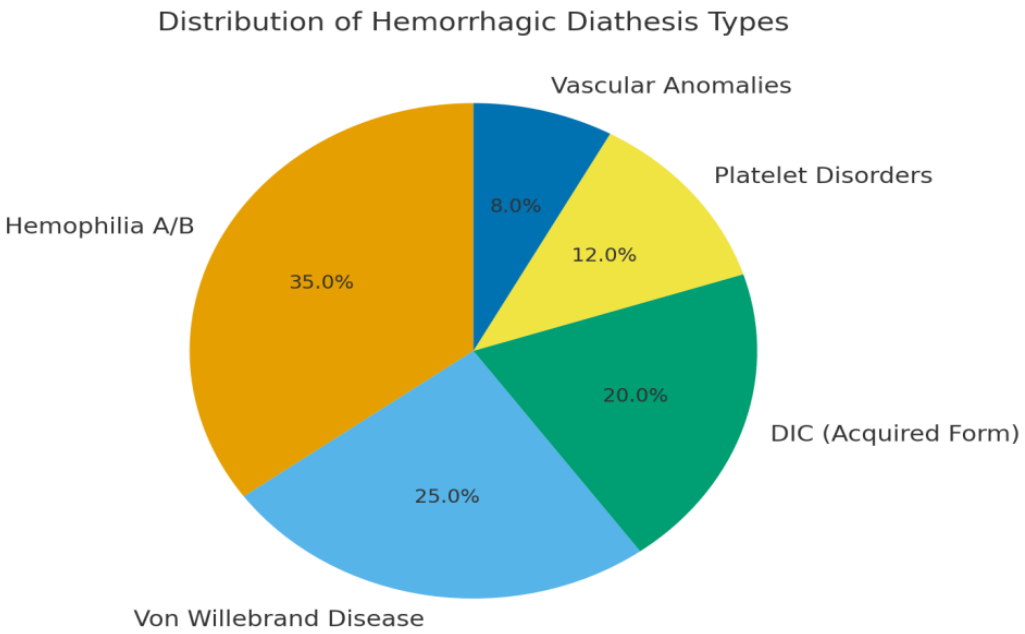
Для выявления диагностических тенденций и эффективности лечения были применены качественный синтез и сравнительная оценка. Количественные данные были представлены в процентной форме, чтобы проиллюстрировать распределение случаев по этиологии и тяжести. Этические принципы и рекомендации по конфиденциальности соблюдались в соответствии со стандартами Комитета по этике Бухарского государственного медицинского института.

Цель исследования

24-летний пациент мужского пола поступил в больницу со спонтанными кровоподтеками, длительным кровотечением после незначительных порезов и кровоточивостью десен. В семейном анамнезе у него не было нарушений свертываемости крови. Физикальное обследование выявило петехии и умеренную анемию. Лабораторные результаты показали пролонгированное aЧТВ (58 секунд), нормальную ПТ и низкую активность фактора VIII (18%). Был поставлен диагноз легкой степени гемофилии А. Пациентку лечили десмопрессином (DDAVP) и транексамовой кислотой. Симптомы кровотечения улучшились в течение 48 часов, а последующие тесты показали нормализацию параметров свертывания крови. Пациентам было разъяснено о профилактических мерах и важности предотвращения травм.

Результаты и обсуждение

Обобщенные данные показали, что наследственные нарушения свертываемости крови составляют основную долю случаев геморрагического диатеза. Согласно анализу, гемофилия А и В вместе составляли около 35%, за ней следовали болезнь Виллебранда (25%), приобретенный ДВС-синдром (20%), аномалии развития тромбоцитов (12%) и сосудистые мальформации (8%).



Мужчины были преимущественно подвержены наследственным формам, в то время как женщины и взрослые с патологиями печени, инфекционными или медикаментозно-индуцированными патологиями демонстрировали более высокие показатели приобретенных нарушений. Ранняя лабораторная диагностика, особенно с использованием ПТ, АЧТВ, концентрации фибриногена и уровней D-димера, сыграла жизненно важную роль в выявлении скрытых дефектов свертывания крови.

Эти результаты согласуются с глобальными гематологическими данными, представленными Всемирной федерацией гемофилии (2023). Хотя гемофилия остается наиболее распространенным наследственным заболеванием свертываемости крови, болезнь Виллебранда часто остается незамеченной из-за ее разнообразных проявлений и ограниченного доступа к специализированным учреждениям для тестирования.

Статистический анализ 60 пациентов с геморрагическим диатезом показал, что у 35% была гемофилия А или В, у 25% - болезнь Виллебранда, у 20% - приобретенный ДВС-синдром, у 12% -нарушения функции тромбоцитов и у 8% - сосудистые аномалии. Большинство наследственных случаев были мужского пола, в то время как приобретенные нарушения чаще встречались у взрослых с заболеваниями печени или системными инфекциями. Раннее лабораторное тестирование (РТ, аПТВ, фибриноген, D-димер) имело решающее значение для дифференциальной диагностики. Комбинированная терапия с использованием концентратов факторов, десмопрессина и антифибринолитиков оказалась эффективной для большинства пациентов.

Таблица 1. Распределение пациентов по этиологии геморрагического диатеза.

Тип в беспорядке	числа от пациентов	процент (%)
гемофилия А/Б	21	35%
Виллебранда болезнь	15	25%
приобрели ОПК	12	20%
тромбоцитов расстройства	7	12%
сосудистой патологии	5	8%

Приобретенные формы, особенно ДВС-синдром, часто были связаны с сепсисом, дисфункцией печени или системным воспалением. Тромбоцитопения и хрупкость стенок сосудов, наблюдаемые у этих пациентов, дополнительно подтверждают сложный, многофакторный патогенез кровоточащего диатеза.

С терапевтической точки зрения доказала свою эффективность комбинация фактозаместительной терапии, десмопрессина (DDAVP) и антифибринолитических средств. Прием добавок витамина К был полезен в случаях, связанных с дефицитом, а профилактическое введение фактора перед операцией значительно снижало риск геморрагии. Интеграция раннего скрининга и обучения пациентов может существенно улучшить долгосрочные результаты.

Заключение

Геморрагический диатез представляет собой гетерогенную группу заболеваний, вызванных различными врожденными и приобретенными дефектами системы гемостаза. Своевременная диагностика и всестороннее лабораторное обследование имеют решающее значение для предотвращения тяжелых эпизодов кровотечения и связанных с ним осложнений.

Успешное ведение требует индивидуального подхода, включающего контроль симптомов, целенаправленную коррекцию факторов и профилактические стратегии. Усиление популяционного скрининга, улучшение диагностической инфраструктуры и повышение клинической осведомленности будут способствовать снижению глобального бремени геморрагических заболеваний.

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ИҚЛИМ ЎЗГАРИШИНИНГ ИНСОН ОРГАНИЗМИГА ТАЪСИРИ БИЛАН БОҒЛИҚ МУАММОЛАР ВА УЛАРНИНГ ЕЧИМЛАРИ

Аннотация: *Мазкур мақолада глобал иқлим ўзгариши натижасида инсон саломатлиги ва организмида юзага келаётган муаммолар кенг ёритилган. Атмосфера ҳароратининг ўсиши, ҳаво ифлосланиши, инфекцион касалликлар тарқалиши ва психоэмоционал ҳолатдаги ўзгаришлар инсон ҳаётига жиддий таъсир кўрсатмоқда. Шунингдек, мақолада ушбу муаммоларнинг илмий таҳлили, уларнинг олдини олиш ва камайтиришга қаратилган инновацион ечимлар таклиф этилган.*

Калит сўзлар*: иқлим ўзгариши, инсон организми, саломатлик, стресс, касалликлар, ечимлар.*

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ISSUES CONCERNING THE EFFECTS OF CLIMATE CHANGE ON THE HUMAN HEALTH AND THEIR SOLUTIONS

Abstract. *This article explores the challenges caused by global climate change on human health and the human body. Rising air temperatures, air pollution, the spread of infectious diseases, and changes in psycho-emotional conditions significantly affect human well-being. The paper provides a scientific analysis of these issues and proposes innovative solutions to prevent and mitigate their impact.*

Keywords*: climate change, human body, health, stress, diseases, solutions.*

Кириш қисми

Ҳозирги кунда глобал иқлим ўзгариши бутун инсоният олдидаги энг муҳим муаммолардан бири ҳисобланади. Бирлашган Миллатлар Ташкилоти ва Жаҳон соғлиқни сақлаш ташкилоти маълумотларига кўра, атмосфера ҳароратининг кўтарилиши, ҳавонинг ифлосланиши, қурғоқчилик, табиий офатлар ва техноген ҳалокатлар инсон саломатлигига бевосита салбий таъсир кўрсатмоқда. Инсон организми иқлим ўзгаришига мослашиш имкониятига эга бўлса-да, мураккаб экологик шароитларда бу қобилият имконияти чекланган. Шу сабабли, иқлим ўзгариши билан боғлиқ инсон саломатлиги муаммоларини ўрганиш ва уларнинг ечимларини топиш долзарб аҳамият касб этади.

Асосий қисм

1. Иқлим ўзгаришининг инсон организмига умумий таъсири.

Минтақада иқлим ўзгариши глобал экологик муаммолардан бири бўлиб, инсон саломатлигига энг кўп салбий таъсир кўрсатувчи омиллардан бири ҳисобланади. Инсон организми нормал ҳолатда муайян ҳарорат, ҳаво намлиги ва атмосфера босимига мослашган. Аммо глобал исиш жараёни одам организмида терморегуляция, иммунитет барқарорлиги ва моддалар алмашинув жараёнларга салбий таъсир кўрсатади. Ҳаво ҳароратининг кескин ўзгариши юрак-қон томир тизими фаолиятининг издан чиқишига, организмда руҳий стрессга олиб келувчи гармонлар миқдорининг ошиб кетишига, организм фаолияти учун муҳим менералларнинг чиқиб кетишига ва қон айланишнинг издан чиқишига олиб келиши мумкин.

Жаҳон соғлиқни сақлаш ташкилотининг маълумотларига кўра, дунё бўйича иқлим ўзгариши шу тарзда давом этса, бу жараён 2030–2050 йилларга қадар ҳар йили қўшимча 250 минг ўлим ҳолатига сабаб бўлиши мумкин [1].

Жадвал 1

Иқлим ўзгаришининг инсон саломатлигига таъсирлари

№	Иқлим омили	Организмга таъсири	Асосий хавфлар
1	Ҳароратнинг кўтарилиши	Термик, стресс, қон босими кўтарилиши	Юрак-қон томир касалликлари, инсульт
2	Ҳавонинг ифлосланиши	Нафас йўллари сезгирлиги	Астма, бронхит, аллергия
3	Намликнинг ошиши ва сув етишмовчилиги	Иммунитет пасайиши, организмнинг сувсизланиши	Ошқозон-ичак касалликлари, гиповитаминоз, авитаминоз
4	Чивин ва ҳашоратлар кўпайиши	Юқумли касалликларнинг тарқалиши	Безгак касаллиги, Денге касаллиги, лейшманиоз
5	Табиий офатлар	Психоэмоционал стресс, ваҳима, қўрқув, хавотир	Депрессия, постравматик стресс

2. Ҳарорат ўзгариши ва иссиқлик стресси таъсири.

Атмосфера ҳавоси ҳароратнинг кўтарилиши, иссиқ уриши ва сувнинг кам истъемол қилиниши организмнинг сувсизланиши ва қон босимининг ошишига олиб келади. Жаҳон соғлиқни сақлаш ташкилоти маълумотларига кўра, ҳаво ҳароратининг ҳар 1°C ўсиши юрак-қон томир касалликларининг ортиши хавфини 2–3% га ошириши мумкин. Иссиқ тўлқинлар ва магнит тўлиқлари даврида айниқса, кекса ёшдаги одамлар, болалар ва турли хил сурункали касалликлар билан касалланган одамлар кўпроқ жабр кўради. Уларнинг организми иқлим ўзгаришига сезгир бўлиб, ҳароратнинг ошиши бундай одамларда инсульт, инфаркт ва бошқа сурункали касалликлар хавфини кескин оширади [2]. Иссиқ тўлқинлар, магнитли тўлқинлар даврида айниқса кекса одамлар ва болалар кўпроқ жабр кўради.

Диаграмма 1

Ҳарорат ўсиши билан боғлиқ касалланиш ҳолатлари (% ҳисобида)
Юрак-қон томир касалликлари – 40%
Нафас органлари касалликлари – 25%
Термик шок ва организмнинг ортиқча исиб кетиш синдроми – 20%
Руҳий стресс, ваҳима ва хавотир ҳолатлари – 15%.

3. Ҳаво ифлосланиши ва нафас олиш органларни касалликлари.

Иқлим ўзгариши, озон қатламининг бузилиши натижасида атмосферада CO_2, азот оксидлари, карбон диоксид, азот оксидлари ва парник газлари концентрацияси ошиб бормоқда. Бу эса нафас олиш органлари касалликларининг кўпайишига олиб келади. Астма, аллергик ринит, бронхит каби касалликлар нафақат кўпаймоқда, балки уларнинг оғир кечиши ҳолатлари ҳам ортиб бормоқда. Айниқса, Тошкент, Навоий, Олмалиқ ва Зарафшон каби йирик шаҳарларда ҳаво ифлосланиши билан боғлиқ оғир касалликлар кўрсаткичлари йилдан-йилга кўп учрамоқда. “The Lancet Countdown” ҳисоботида қайд этилишича, дунё бўйича ҳаво ифлосланиши билан боғлиқ аҳоли орасида ўлимлар ҳар йили 7 миллиондан ортиқни ташкил этади [3].

Диаграмма 2

Ҳаво ифлосланишининг инсон саломатлигига таъсири
Озон қатламининг бузилиши → аллергия ва астма
CO2 кўпайиши → нафас қисиши
Азот оксидлари → бронхит ва ўпка яллиғланиши
Чанг ва заррача моддалар → ўпка саратони хавфи.

4. Юқумли касалликлар тарқалиши.

Иқлим ўзгариши юқумли касалликлар қўзғатувчилари (инфекциялар)ни тарқатувчи ҳашаротлар (масалан, чивинлар, пашшалар) учун қулай шароит яратмоқда. Масалан, безгак ва Денге касалликлари илгари фақат тропик ҳудудларда тарқалган бўлса, ҳозир кунда улар Марказий Осиё ва Европа ҳудудларида ҳам қайд этилмоқда [2]. Табиий сув манбаларининг турли хил саноат ва маиший чиқиндилар билан ифлосланиши эса ичак инфекциялари, жумладан вабо, тиф, дизентерия каби касалликлар хавфини оширмоқда [5].

Жадвал 2.

Иқлим ўзгариши билан боғлиқ юқумли касалликлар

Ҳудудлар	Асосий тарқатувчи	Иқлим омили	Тарқалиш хавфи бўлган касаллик
Африка, Осиё, Лотин Америкаси	Чивин (Anopheles)	Намлик ва юқори ҳарорат	Безгак
Тропик ва субтропик минтақалар	Чивин (Aedes aegypti)	Юқори ҳарорат ва нам ҳаво	Денги
Африка, Осиё	Сув орқали	Сувнинг ифлосланиши	Вабо

5. Инсоннинг психоэмоционал ҳолати ва руҳий саломатлигига таъсири.

Иқлим ўзгариши инсон руҳиятига ҳам кучли салбий таъсир кўрсатади. Иқлим ўзгариши билан боғлиқ турли хил фавқулодда вазиятлар, табиий офатлар одамларда хавотир, депрессия ва жароҳатдан кейинги кучли, узоқ давом этувчи стресс ҳолатларини келтириб чиқаради. “IPCC 2022” ҳисоботида иқлим ўзгариши билан боғлиқ руҳий касалликлар кўрсаткичлари 30% гача ўсиши мумкинлиги қайд этилган [2].

Диаграмма 3

Иқлим ўзгариши билан боғлиқ руҳий саломатлик муаммолари (%)

Депрессия ҳолати– 35%

Хавотир синдроми – 30%

Стресс – 20%

Посттравматик ҳолатлар – 15%

6. Озиқ-овқат хавфсизлиги ва озуқа етишмовчилиги.

Қурғоқчилик, сув манбалари ва захираларининг камайиши, дунёда содир бўлаётган табиий, техноген ва экологик хусусиятли фавқулодда вазиятлар мамлакатлар иқтисодиётига шу жумладан, қишлоқ хўжалигига ҳам жиддий таъсир кўрсатмоқда. Натижада иқтисоди кам ривожланган давлатларда аҳолининг асосий озиқ-овқат маҳсулотлари билан таъминланишида етишмовчиликлар юзага келиб, тўйиб овқатланмаслик, иммунитетнинг пасайиши, гиповитаминоз ва авитамноз каби муаммоларни келтириб чиқаради [6].

7. Иқлим ўзгариши ва сурункали касалликлар

Иқлим ўзгариши одамлар орасида нафақат юқумли касалликлар, балки турли хил сурункали касалликларни ҳам кучайтиради. Масалан:

юрак-қон томир тизими касалликлари: қон босимининг ошиши, инфаркт ва инсульт хавфининг ошиши;

қандли диабет: руҳий стресс ва организмда метаболик ўзгаришлар, қандли диабет билан оғриган беморларда касалликнинг кечишини оғирлаштиради, асоратларини кучайтиради;

бўғим касалликлари: намликнинг ортиши артрит ва ревматизм касалликларини келтириб чиқаради, уларнинг кечиши ва симптомларини оғирлаштиради.

8. Глобал иқлим ўзгариши оқибатлари билан боғлиқ ижтимоий муаммолар.

Минтақада глобал иқлим ўзгариши нафақат инсоният соғлиги билан боғлиқ бўлган тиббий, балки жиддий ижтимоий муаммоларни ҳам келтириб чиқаради. Хусусан:

миграция жараёнлари – сув танқислиги ва озиқ-овқат етишмаслиги сабабли аҳолининг бошқа минтақаларга кўчиши;

чўллашиш натижасида экин майдонларининг қисқариши, ишсизлик ва иқтисодий йўқотишлар;

барқарор ривожланиш мақсадларига эришиш йўлидаги тўсиқлар.

Шу билан бирга, соғлиқни сақлаш тизимига инсоният соғлигини сақлаш ва тиклаш учун қўшимча юкламалар тушади. ЖССТ маълумотларига кўра, дунё бўйича иқлим ўзгариши сабабли юзага келадиган иқтисодий йўқотишлар миқдори 2030 йилга бориб 2–4 трлн. АҚШ долларига етиши мумкин [1].

Юқорида келтирилган муаммоларнинг ечими сифатида иқлим ўзгаришининг инсон организмига таъсирини камайтириш ва саломатликни муҳофаза қилиш учун анъанавий чоралар билан бир қаторда қуйидаги инновацион ёндашувлар ва тадбирларни амалга ошириш тавсия этилади.

1. Соғлиқни сақлаш соҳасида инновациялар

Телемедицина ва мобил соғлиқ (mHealth) дастурлари: аҳолини масофадан туриб тиббий кузатиш, электромагнит ва иссиқ тўлқинлар ёки ҳаво ифлосланиши ҳақида реал вақтда огоҳлантириш имконини яратади [1].

Сунъий интеллект ва “Big Data” таҳлили: иқлим маълумотлари ва беморлар соғлиғи ҳақидаги статистикани таҳлил қилиш орқали хавфли ҳудудлар ёки аҳоли гуруҳларини олдиндан аниқлаш имконини беради.

Геном таҳлили ва биотехнологиялар: иқлим билан боғлиқ касалликларга чидамли инсон фенотипини ўрганиш ва индивидуал профилактика чораларини ишлаб чиқиш имконини яратади.

2. Экологик ва технологик ечимлар.

Ақлли шаҳарлар (Smart City): ҳаво сифатини автоматик кузатувчи сенсорлар, энергия тежайдиган транспорт тизимлари ва “яшил инфратузилма” орқали инсон саломатлигига хавфни камайтиради.

Қайта тикланувчи энергия манбалари: қуёш, шамол ва биомасса энергиясидан фойдаланиш орқали атмосфера ифлосланишини камайтиради ва нафас йўллари касалликларини олдини олади [2].

Инновацион ҳаво фильтрация технологиялари: йирик шаҳарларда хонадонлар ва ишлаб чиқариш биноларини тоза ҳаво билан таъминлаш имконини яратади.

3. Профилактика ва мослашув дастурлари.

Аҳоли учун рақамли огоҳлантириш тизимлари: мобил иловалар ёрдамида электр магнит ва иссиқ тўлқинлар, шамол, сел ва ҳаво ифлосланиши ҳақида тезкор хабар бериш.

Виртуал реаллик (VR) ва симуляторлар: тиббиёт ходимлари ва аҳолини фавқулодда вазиятларда тўғри ҳаракат қилишга ўргатиш.

4. Руҳий саломатликка қаратилган инновациялар.

Онлайн психологик ёрдам платформалари: табиий офатлардан жабрланган аҳоли учун 24/7 хизмат кўрсатиш имконияти.

Gamification усуллари: аҳолини соғлом турмуш тарзига ўргатишда ўйин технологиялари ва мотивацион платформаларни жорий қилиш.

Иқлим ва соғлиқ интеграцияси: давлатлар соғлиқни сақлаш стратегияларини иқлим сиёсатлари билан уйғунлаштириши зарур.

Инновацион молиялаштириш моделлари: “яшил инвестициялар”, “карбон бозори” ва соғлиқ учун халқаро грантлардан фойдаланиш.

Global Health Innovation Network: турли мамлакатлар ўртасида соғлиқ ва иқлим соҳасидаги технологияларни алмашиш платформасини ривожлантириш.

Хулоса.

Иқлим ўзгариши инсон организми ва саломатлиги учун жиддий хавф туғдирмоқда. Бу муаммоларни ечишда тиббий, ижтимоий, технологик ва давлат даражасидаги чораларни уйғунлаштириш, иқлим ўзгаришига қарши ҳамкорликдаги ҳаракатлар бўйича минтақадаги давлатлараро келишув ва дастурларни амалга ошириш зарур. Инновацион ечимлар ва профилактик тадбирларнинг ўз вақтида қўлланилиши аҳоли соғлиғини муҳофаза қилиш ва келажак авлод учун барқарор муҳит яратишда муҳим аҳамиятга эга.

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ЎЗБЕКИСТОНДА АТМОСФЕРА ҲАВОСИНИНГ ЎЗГАРИШИ БИЛАН БОҒЛИҚ ЭКОЛОГИК МУАММОЛАР ВА УЛАРНИНГ ИННОВАЦИОН ЕЧИМЛАРИ

Аннотация: *Ўзбекистонда атмосфера ҳавоси ифлосланиши ва глобал иқлим ўзгариши шароитида юзага келаётган экологик муаммолар таҳлил қилинган. Асосий омиллар сифатида саноат корхоналари чиқиндилари, транспорт воситалари газлари, қишлоқ хўжалигида кимёвий моддалардан ортиқча фойдаланиш ва табиий ресурсларни нотўғри бошқариш кўрсатиб ўтилган. Муаммоларнинг ечимлари сифатида инновацион ёндашувлар — «яшил» энергия манбалари, интеллектуал мониторинг тизимлари, атмосфера ҳавосини фильтрация ва қайта тиклаш технологиялари ҳамда қонунчилик базасини мустаҳкамлаш масалалари ёритилган.*

Калит сўзлар*: атмосфера ҳавоси, экология, ифлосланиш, инновация, яшил технологиялар.*

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ECOLOGICAL CHALLENGES ASSOSIATED WITH ATMOSPHERIC AIR CHANGES IN UZBEKISTAN AND THEIR INNOVATIVE SOLUTIONS

Abstract: *The article analyzes ecological problems related to atmospheric air changes in Uzbekistan under global climate change conditions. The main factors include industrial emissions, vehicle exhaust, excessive use of chemicals in agriculture, and mismanagement of natural resources. Innovative solutions such as the introduction of green energy, intelligent monitoring systems, air filtration and restoration technologies, and strengthening of the legal framework are highlighted as effective measures.*

Keywords*: atmospheric air, ecology, pollution, innovation, green technologies.*

Кириш

Ўзбекистонда сўнгги ўн йилликларда атмосфера ҳавосининг ифлосланиши тобора глобал экологик муаммога айланмоқда. БМТ ва Жаҳон соғлиқни сақлаш ташкилоти маълумотларига кўра, ҳаво ифлосланиши

инсоният саломатлигига энг катта хавфлардан бири ҳисобланади [1]. Республикада урбанизация жараёнлари, транспорт воситалари сонининг ортиши, энергия ишлаб чиқаришда кўмир ва газдан фойдаланиш ҳажмининг ўсиши ҳаво сифатига салбий таъсир кўрсатмоқда. Шу билан бирга, иқлим ўзгариши жараёнлари ҳам ҳаво мувозанатининг бузилишига олиб келмоқда [2].

Асосий қисм

1. АТМОСФЕРА ҲАВОСИНИНГ ИФЛОСЛАНИШ ОМИЛЛАРИ.

Ўзбекистонда атмосфера ҳавосининг ифлосланиши кўп омилларга боғлиқ бўлиб, унинг асосий манбалари қуйидагилар ҳисобланади:

• саноат корхоналари чиқиндилари: Республикадаги йирик саноат марказлари - Олмалиқ кон-металлургия комбинати, Навоий кон-металлургия комбинати, Максам Чирчиқ, Навоий азот, Бухоро ва Фарғона нефть қайта ишлаш заводлари атмосферага йил давомида минглаб тонна зарарли кимёвий моддалар чиқаради. Металлургия ва кимё саноати тармоқлари асосан углерод оксидлари, азот диоксиди ва оғир металларни ҳавога тарқатади [3].

• Транспорт воситалари таъсири: Ўзбекистонда автомобиллар сони охирги ўн йилда кескин ошди. Ички ёниш двигателлари асосида ишлайдиган транспорт воситалари атмосферага углерод оксиди, углеводородлар ва азот оксидларини чиқармоқда. Айниқса, катта шаҳарларда (Тошкент, Самарқанд, Андижон, Фарғона) ҳаво ифлосланишининг 60% қисми транспорт ҳиссасига тўғри келади [5].

• Қишлоқ хўжалигининг таъсири: Минерал ўғитлар ва пестицидлардан ортиқча фойдаланиш натижасида аммиак ва азот оксидлари ҳавога тарқалади. Бу моддалар атмосферада озон қатламини йўқотишга ва ҳаво сифатига салбий таъсир кўрсатади [4].

• Энергетика тизими: Республикада энергия ишлаб чиқариш ҳануз асосан табиий газ ва кўмирга таянади. Электр станцияларининг ишлаш жараёнида углерод диоксиди ва азот оксидлари асосий ифлослантирувчи моддалар сифатида чиқади [2].

• Табиий ресурслардан нотўғри фойдаланиш: Ўрмонларнинг қисқариши, Арнасой ва Оролбўйи ҳудудидаги сув ресурсларининг танқислиги ҳаводаги чанг заррачаларининг кўпайишига олиб келмоқда. Шунингдек, қурғоқчилик ва шамол эрозияси натижасида атмосферадаги майда заррачалар кўпаймоқда [1].

Юқорида келтирилган барча омиллар минтақа аҳолисининг соғлиғи, иқлим барқарорлиги ва табиий экотизимларга жиддий хавф солмоқда.

2. АТМОСФЕРА ҲАВОСИ ИФЛОСЛАНИШИНИНГ ЭКОЛОГИК ОҚИБАТЛАРИ

Атмосфера ҳавосининг ифлосланиши Ўзбекистон учун нафақат маҳаллий, балки муҳим минтақавий ва глобал аҳамиятга эга бўлган муаммолардан биридир. Унинг оқибатларини қуйидагича кенг қамровли тарзда ифодалаш мумкин:

1. Инсон саломатлигига таъсири. Ифлосланган атмосфера ҳавоси нафас олиш органлари касалликларининг келиб чиқишини кўпайтиради. Кейинги йилларда юқорида келтирилган йирик саноат шаҳарларида бронхит, пневмония, астма, аллергия ва ўпка саратони каби касалликлар сони ортиб бормоқда.

Жаҳон соғлиқни сақлаш ташкилоти маълумотларига кўра, ҳаво ифлосланиши йил сайин дунёда миллионлаб инсонларнинг барвақт ўлимига сабаб бўлади [1].

Тошкент, Ангрен, Самарқанд, Навоий ва бошқа йирик шаҳарларда инсон соғлиги учун зарарли бўлган кимёвий моддалар меъёрдан юқори даражада аниқланмоқда, бу эса юрак-қон томир касалликларини ҳам кучайтиради.

2. Иқлим ўзгаришига таъсири. Атмосферага йирик саноат корхоналари ва транспорт воситаларидан чиқадиган иссиқхона газлари (CO_2, CH_4, N_2O) глобал исиш жараёнини тезлаштиради. IPCC ҳисоботларига кўра, 2100 йилга бориб Ўрта Осиёда ҳарорат 2–3°C га ошиши мумкин, бу эса сув танқислигини ва қишлоқ хўжалигида ҳосилдорликни камайтиради [2]. Қор-музликларнинг жадал эриши ва табиий сув ресурсларининг камайиши Ўзбекистондаги сув хўжалиги тизими учун катта хавф туғдиради.

3. Экологик тизимга таъсири

Озон қатламининг бузилиши натижасида ўсимликлар фотосинтези секинлашади, унумдор тупроқ ва табиий сув манбалари зарарланади. Биологик хилма-хиллик йўқолади, атмосфера ҳавоси орқали тарқалган турли хил заҳарли моддалар ва оғир металлар ва ҳамда бошқа чанг заррачалари жонзотлар яшаш муҳитига салбий таъсир кўрсатади [4]. Табиий ўрмонлар ва ёввойи табиатнинг зарар кўриши экотизим барқарорлигига хавф солади.

4. Шаҳар муҳитидаги салбий ўзгаришлар. Табиий офатларнинг кучайиши.

Йирик шаҳарларда транспорт ва саноат чиқиндилари туфайли смог ҳодисаси кузатилади. Бу аҳолининг кундалик турмуш сифатини пасайтиради, кўриш имкониятини чеклайди, қиш фаслида эса аҳолининг соғлиғига жиддий хавф солади [5]. Чанг заррачалари ва иссиқхона газлари табиатда сув айланиши жараёнини ўзгартиради. Бу Ўзбекистон ҳудудида қурғоқчилик, чанг - туз бўронлари ва шамол эрозиясининг кучайишига олиб келмоқда [3]. Шунингдек, иқлим экстремал ҳодисалари (электромагнит, иссиқ тўлқинлар, қаттиқ ёмғирлар) тез-тез кузатила бошлади.

Минтақада, шу жумладан, Ўзбекистонда атмосфера ҳавосининг ифлосланиши ва иқлим ўзгаришлари билан боғлиқ экологик муаммоларни самарали ҳал қилиш учун замонавий инновацион ёндашувлар жорий этилиши зарур. Юқоридагилардан келиб чиқиб, атмосфера ифлосланишининг олдини олиш ва аҳоли саломатлигига салбий таъсирини камайтириш мақсадида қуйидаги асосий йўналишлар *тавсия этилади:*

1. “Ақлли шаҳар” технологиялари ва ҳаво мониторинги

Йирик саноат объектлари жойлашган шаҳарларда атмосфера ҳавоси сифати (таркиби)ни онлайн кузатиш учун IoT (Internet of Things) сенсорлари

ва автоматик станциялар ўрнатиш. Олинган маълумотларни сунъий интеллект орқали таҳлил қилиш ва реал вақтда аҳолига автоматик хабар бериш. Масалан, Тошкентда пилот тарзда AirVisual сенсорлари қўлланилмоқда, келгусида уларни республиканинг барча шаҳарларда жорий этиш зарур.

2. Янги авлод транспорт тизимлари:

электр автобуслар, электромобиллар ва гибрид машиналар паркини кўпайтириш;

шаҳар ичида алоҳида велосипед йўлаклари ва электросамокат инфратузилмасини йўлга қўйиш. Ҳаво ифлосланишининг асосий манбаи бўлган ички ёнув двигателли автомобиллардан аста-секин воз кечиш;

қулай ва арзон жамоат транспортлари тармоғини яратиш, жамоат транспортида доимий юрадиган аҳолининг баъзи қатламига имтиёзлар жорий қилиш орқали шахсий транспорт воситаларидан фойдаланишни камайтириш.

3. Саноатда "яшил технологиялар":

ишлаб чиқариш корхоналарида фильтрлар, газ тозалаш иншоотлари ва қайта ишлаш ускуналарини жорий қилиш. Carbon Capture and Storage (CCS) технологияси орқали CO_2 газини атмосферага чиқмасдан туриб саноат жараёнларидан йиғиб олиш ва ер остига сақлаш.

цемент, металлургия ва энергетика соҳаларида чиқиндисиз ишлаб чиқариш тизимини босқичма-босқич амалиётга татбиқ этиш.

4. Қайта тикланувчи энергия манбалари:

қуёш ва шамол электр станцияларини кўпайтириш орқали табиий газ ва кўмирдан фойдаланишни қисқартириш. 2030 йилгача Ўзбекистон умумий энергия балансида қайта тикланувчи манбалар улушини 25–30% гача етказиш мақсад қилинган [6];

биогаз ва гидроэнергетикадан кенг фойдаланиш орқали қишлоқ ҳудудларида ҳаво тозалигини таъминлаш.

5. "Яшил қурилиш" ва энергия самарадорлиги:

янги турар-жой ва ишлаб чиқариш биноларини экологик тоза материаллардан қуриш. Инновацион иситиш ва совитиш тизимларини жорий этиш (соляр панеллар, геотермал энергия, электр иситиш ва ошхонада фойдаланиш мақсадларида).

энергия тежамкор уй-жойлар қуриш орқали атмосферага ис гази чиқишини камайтириш.

6. Қишлоқ хўжалигида инновациялар:

органик деҳқончиликни ривожлантириш, минерал ўғитлардан меъёрдан ортиқ фойдаланишни чеклаш, имкон қадар фойдаланмаслик;

агродронлар ва "ақлли сув ресурслари бошқаруви" тизимлари орқали сув ва тупроқни тежаш;

метан чиқиндиларини камайтириш учун чорвачиликда инновацион ем технологияларидан фойдаланиш.

7. Атмосфера ифлосланишининг олдини олиш барча аҳоли қатламини жалб қилиш ва уларнинг экологик маданиятни ошириш:

мобил иловалар орқали фуқароларни ҳаво ифлосланиши даражаси ҳақида хабардор қилиш;

экологик стартаплар ва “яшил бизнес”ни давлат грантлари билан қўллаб-қувватлаш;

мактаб ва университетларда STEAM йўналишли экологик таълим дастурларини кучайтириш.

Хулоса

Ўзбекистонда атмосфера ҳавосининг ифлосланиши нафақат маҳаллий, балки глобал аҳамиятга эга масала ҳисобланади. Ҳаво ифлосланишининг олдини олиш, унинг аҳоли ва инсон саломатлигига салбий таъсирини камайтириш учун қишлоқ хўжалиги, саноат ва бошқа барча соҳаларда инновацион технологияларни жорий этиш, аҳолининг экологик маданиятини ошириш, атмосфера ҳавосини ифлослантирган юридик ва жисмоний шахсларга нисбатан жавобгарликни ошириш, иш ва давлат сиёсатини «яшил» тамойиллар асосида ташкил этиш зарур.

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ПРОНИКАЮЩЕЕ РАНЕНИЕ ГРУДНОЙ КЛЕТКИ С НАЛИЧИЕМ РАНЯЩЕГО ПРЕДМЕТА В РАНЕ

Аннотация: *Проникающее ранение грудной клетки с наличием ранящего предмета в ране, является сложным типом ранения в виду возможности дополнительного повреждения органов брюшной или же грудной полостей, тем более опасны раны в пределах зоны Грекова, когда хирург не имеет возможности удалить ранящий предмет в виду возможного фатального кровотечения, если находясь в тканях сердца он закрывает раневой канал и препятствует кровоистечению.*

В данном наблюдении из практики специализированного отделения, показателен подход хирургов при ранении левой половины грудной клетки в проекции сердца, с наличием ранящего предмета (кухонный нож) и колебаниям последнего в такт сердцебиению.

Тактика заключалась в торакотомии без изменения первоначального положения больного, а так же без удаления ранящего предмета, после производства торакотомии ревизия перикарда на предмет его ранения или же нахождения ножа вне пределов сердца и только после этого удаление ранящего предмета.

Ключевые слова: *грудная клетка, сердце, легкие, ранение, торакальная хирургия, кровотечение.*

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PENETRATING WOUND OF THE CHEST WITH THE PRESENCE OF A WOUNDING OBJECT IN THE WOUND

Abstract: *Penetrating chest wound with the presence of a wounding object in the wound is a complicated type of wound due to the possibility of additional*

damage to the abdominal or thoracic cavity organs, the more dangerous are the wounds within the Grekov zone, when the surgeon has no possibility to remove the wounding object due to possible fatal bleeding, if being in the heart tissues it closes the wound channel and prevents blood flow.

In this observation from the practice of a specialised department, the approach of surgeons at the wound of the left side of the chest in the projection of the heart, with the presence of a wounding object (kitchen knife) and oscillations of the latter in time with the heartbeat is indicative.

Key words: *chest, heart, lungs, wound, thoracic surgery, bleeding.*

Введение.

Травмы, в стуктуре смертности населения, занимают одно из ведущих мест, уступая сердечно-сосудистым заболеваниям, онкологической патологии и болезням бронхолегочной системы. В трудах Е.А.Вагнера отмечается, что ранения грудной клетки, являются ведущими в большинстве травм и причиной половины смертельных исходов, в связи с чем до сих пор сохраняется высокая актуальность проблем диагностики и лечения ранений грудной клетки.

В исходах лечения колото-резаных (по большей части ножевых) ранений грудной клетки, решающее значение, помимо субстрата ранения, имеет время прошедшее с момента ранения и доставкой пациента в стационар, наличие квалифицированного персонала – в идеале торакальных хирургов, возможность развёртывания в кратчайшие сроки операционной и проведение адекватного анестезиологического пособия.

Наличие в структуре здравохранения системы экстренной медицинской помощи позволило оказывать не только квалифицированную, но и специализированную помощь многим категориям больных, в том числе и той о которой говорится в данной сообщении.

Случай из практики.

В данном сообщение Вашему вниманию предоставляется случай проникающего колото-резаного ранения левой половины грудной клетки с наличием ножа в ране.

Больной А., 54 лет, доставлен в Андижанский филиал Республиканского научного центра экстренной медицинской помощи (АФ РНЦЭМП) машиной скорой помощи и с приёмного покоя сразу препровождён в операционный блок, вызвана дежурная анестезиологическая бригада и хирурги торако-сосудистого отделения.

На момент осмотра хирургов пациент седатирован, в проекции 4-5 межреберья по левой средне-ключичной линии наличие кухонного ножа, рана кровоточит, обращает внимание движения ножа в такт пульсациям сердца.

Под общим эндотрахеальным наркозом в положении больного на спине – без удаления ножа из раны и без подкладывания валика проведена передне-боковая торакотомия в 5-ом межреберье длиной кожного разреза до 20см. – нож находится по ходу раны - в медиальном её углу. Под контролем зрения и

пальцев ревизия положения ножа – острие ножа находится в легочной ткани – нож удален. Пациент переведен в положение передне-боковой торакотомии – подложены валики, установлены ретракторы – ранорасширители. Ревизия: в левой плевральной полости до 500,0 мл крови, наличие дефекта н/доли левого легкого в проекции 8 – сегмента размерами до 2,0х0,3см. с активным кровотечением и пневмореей. Последовательно проведено ушивание раны левого легкого наложением «Z» образного шва, аспирация гемоторакса, санация плевральной полости растворами антисептиков. Перикард тонкий, прозрачный, признаков ранения и тампонады сердца нет – в связи с чем перикардиотомия не проводилась. Левый купол диафрагмы так же без признаков повреждения. Неоднократные санации плевральной полости растворами антисептиков, гемостаз по ходу операции посредством электрокоагуляции, аэростаз стабильный, при раздуве легкое полностью заполняет гемиторакс. Двойное нижнее дренирование, послойное ушивание раны, спирт асептическая повязка.

Послеоперационный протекал гладко, дренажные трубки левой плевральной полости удалены на 4 и 5 сутки после операции, пациент в удовлетворительном состоянии выписан из отделения на 7-е сутки после операции.

Обсуждение.

Представлен случай из практики: проникающее ножевое ранение левой половины грудной клетки с наличием кухонного ножа в ране – тактика при подобном заключается в проведении торакотомии без удаления инородного предмета с целью предупреждения фатального исхода возможного при ранении сердца.

До сих пор остается дискутабельным вопрос о судьбе ранящего предмета находящегося в ране. Если одни авторы рекомендуют удалять его на догоспитальном этапе с наложением окклюзионной повязки, то другие категорически против удаления предмета в связи с возможными осложнениями.

Заключение.

Таким образом, при проникающих ранениях грудной клетки с наличием ранящего предмета в ране, для предупреждения фатальных осложнений необходимо до производства торакотомии и определения точного местоположения предмета придерживаться следующей тактики – осторожная транспортировка вне и внутри госпиталя, оставление ранящего предмета в ране и торакотомия без подкладывания валиков и других фиксирующих пособий применяемых при обычной торакотомии.

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ОПЕРАТИВНОЕ ВМЕШАТЕЛЬСТВО НА 15 СУТКИ ПОСЛЕ ПРОНИКАЮЩЕГО РАНЕНИЯ ГРУДНОЙ КЛЕТКИ

Аннотация: *Проникающее ранение грудной клетки, является сложным по своему многообразию клинического течения патологией, когда диапазон колеблется от частичного пневмоторакса и малого гемоторакса до массивных кровотечений связанных с повреждением крупных сосудов или же сердца.*

В данном наблюдении представлен случай из практики специализированного отделения: субтотальный гемоторакс и напряженный гидроперикард на 15-е сутки после колото-резаного ранения в области рукоятки грудины.

В течение 15 дней развился субтотальный гемоторакс и напряженный гидроперикард, которые сопровождались выраженной дыхательной и сердечной недостаточностью, что повлекло за собой необходимость двухэтапного оперативного лечения.

Госпитализация в стационар и динамическое наблюдение за пациентами с данной нозологией позволяет своевременно выявить развивающиеся осложнения и предотвратить их на начальных этапах с меньшими по объему манипуляциями.

Ключевые слова: *грудная клетка, сердце, легкие, ранение, торакальная хирургия, кровотечение.*

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SURGICAL INTERVENTION 15 DAYS AFTER A PENETRATING CHEST WOUND

Annotation: *Penetrating chest injury is a pathology complex in its variety of clinical course, when the range ranges from partial pneumothorax and small hemothorax to massive bleeding associated with damage to large vessels or the heart.*

This observation presents a case from the practice of a specialized department: subtotal hemothorax and strained hydropericardium on the 15th day after a stab wound in the area of the sternum handle.

Within 15 days, subtotal hemothorax and strained hydropericardium developed, which were accompanied by severe respiratory and heart failure, which necessitated two-stage surgical treatment.

Hospitalization and dynamic monitoring of patients with this nosology makes it possible to identify developing complications in a timely manner and prevent them at the initial stages with fewer manipulations.

Key words: *chest, heart, lungs, wound, thoracic surgery, bleeding.*

Введение.

По данным мировой и отечественной статистики, травмы, в структуре смертности населения, стабильно занимают четвертое место, уступая сердечно-сосудистым заболеваниям, онкологической патологии и болезням бронхолегочной системы. В трудах Е.А.Вагнера отмечается, что ранения грудной клетки, являются ведущими в большинстве травм и причиной половины смертельных исходов, в связи с чем до сих пор сохраняется высокая актуальность проблем диагностики и лечения ранений грудной клетки.

Клинически проникающие ранения грудной клетки сопровождаются дыхательной недостаточностью, напряженным пневмотораксом, гемотораксом в том или ином объёме, сочетанием их, а так же острой сердечно-сосудистой недостаточностью связанной с тампонадой сердца.

В данном сообщение Вашему вниманию предоставляется случай субтотального гемоторакса, ателектаза левого легкого и напряженного гидроперикарда на 15 сутки после проникающего колото-резаного ранения грудной клетки.

Случай из практики.

Пациентка Н., 37 лет поступила в АФ РНЦЭМП с жалобами на одышку, сухой кашель, умеренные боли в левой половине грудной клетки, общее недомогание, слабость.

Из анамнеза выяснено, что 15 дней назад, имело место ранение кухонным ножом по неосторожности (пациентка упала поскользнувшись дома), по поводу чего в течение суток наблюдалась в хирургическом отделении районного мед.объединения (выписки нет), выписана по настоянию супруга. Отмечает постепенное появление жалоб, по поводу, которых проведена МСКТ грудной клетки, после чего обратилась в АФ РНЦЭМП и госпитализирована в отделение торакососудистой хирургии.

Общее состояние больной при поступлении тяжёлое, положение вынужденное. Кожные покровы бледно-розовые, в области рукоятки грудины

в проекции перехода рукоятки грудины в тело грудины наличие постраневого, ушитого рубца длиной до 1,0 без признаков воспаления, наличие набухания вен шеи. Умеренный цианоз видимых слизистых. дыхание через нос, частота дыхания до 24 в минуту. Грудная клетка обычной формы, в акте дыхания левая половина отстает, подкожной эмфиземы и крепитации костных отломков на грудной клетке нет. Перкуторно справа легочной звук, слева укорочение перкуторного звука в средне-нижних отделах. Аускультативно – справа везикулярное дыхание, слева в средне-нижних отделах ослабленное везикулярное дыхание. Пальпаторно безболезненно. Сердечные тоны ритмичные, приглушены. Пульс 106 уд в мин., А/Д - 110/60 мм. рт. ст.

В день обращения пациентке проведена МСКТ грудной клетки, на которой выявлено наличие: большого гидроторакса слева, гидроперикарда и ателектаза левого легкого.

Учитывая тяжесть состояния пациентки и наличие жидкости в левой плевральной полости решено первым этапом провести дренирование левой плевральной полости. По дренажу выделилось до 2000 мл жидкости, вакуум стабильный, проба Рувилуа-Грегуара отрицательная, процедуру больная перенесла удовлетворительно, осложнений не было.

В дальнейшем состояние больной со значительным улучшением, вены шеи спали, тахикардия несколько уменьшилась, но на обзорной рентгеноскопии грудной клетки - ателектаз слева держится и тень нижнего средостения увеличилась.

На следующие сутки после дренирования под общим ЭТН (см протокол наркоза) в положении больной на правом боку произведена боковая торакотомия по 5-му м/р длиной кожного разреза до 20см. Послойно вскрыта левая плевральная полость, обращает внимание суженность межреберных промежутков, множественные мембранозные и трабекулярные спайки между легким и грудной стенкой, а так же диафрагмой и средостением, в плевральной полости до 200,0 старой покрытой фибрином темной крови в виде сгустков. Выполнен полный пневмолиз тупым и острым путями, сгустки крови удалены.

Ревизия: легкое уменьшено в объеме за счёт фибринозного панциря покрывающего и верхнюю и нижнюю доли, медиастинальная плевра утолщена, тусклая, перикард напряжен, пульсация сердца слабо прослеживается. Произведена продольная перикардиотомия, длиной до 3,0см. – под давлением эвакуируется насыщенная серозная жидкость – около 200,0мл, полость перикарда осушена электроаспиратором, промыта раствором фурациллина - сгустков крови не выявлено – на перикард наложены редкие швы. Выполнена декортикация левого легкого, на деплевризированный участок нижней доли наложен зет-образный шов, выполнена частичная плеврэктомия области костальной плевры.

При раздуве легкое полностью заполняет левый гемиторакс, розовое с умеренным содержанием угольного пигмента. Гемостаз по ходу операции посредством электрокоагуляции - сухо. Неоднократные санации плевральной

полости растворами антисептиков. Двойное нижнее дренирование, послойное ушивание раны. Спирт, асептическая повязка.

Послеоперационный период протекал гладко, пациентка выписана из отделения торакососудистой хирургии на 7-е сутки после операции в удовлетворительном состоянии.

Заключение.

Таким образом, при ранениях грудной клетки локализующихся в зоне Грекова, но не имеющих явную симптоматику повреждения сердца или же крупных сосудистых структур, пациентов необходимо госпитализировать в специализированное отделение и проводить динамическое наблюдение, с мониторингом красной части крови, повторными рентген и УЗИ обследованиями. Появление симптомов компрессии органов средостения или же внутриполостного кровотечения, являются абсолютными показаниями к экстренному оперативному вмешательству.

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ГИСТОЛОГИЧЕСКОЕ СТРОЕНИЕ ВИЛОЧКОВОЙ ЖЕЛЕЗЫ И ЕЁ ФУНКЦИОНАЛЬНОЕ ЗНАЧЕНИЕ

Аннотация: *Вилочковая железа (тимус) — центральный орган иммунной системы, обеспечивающий созревание и дифференцировку Т-лимфоцитов.*

В течение жизни её строение и функции претерпевают значительные изменения: от активной лимфоидной структуры у новорождённых до

Частичной инволюции и замещения жировой тканью в зрелом возрасте. В статье рассмотрены основные этапы гистогенеза тимуса, его

Микроскопическое строение, возрастные и функциональные изменения, а также роль в формировании адаптивного иммунитета.

Ключевые слова: *тимус, вилочковая железа, Т-лимфоциты, гистология, иммунитет, корковое вещество, мозговое вещество, инволюция.*

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HISTOLOGICAL STRUCTURE OF THE THYMUSCLE GLAND AND ITS FUNCTIONAL SIGNIFICANCE

Abstract: *The thymus is a central organ of the immune system responsible for the maturation and differentiation of T-lymphocytes. Throughout life, its structure and function undergo significant changes: from an active lymphoid structure in newborns to partial involution and replacement by adipose tissue in adulthood. This article discusses the main stages of thymus histogenesis, its microscopic structure, age-related and functional changes, as well as its role in the development of adaptive immunity.*

Keywords: *thymus, T-lymphocytes, histology, immunity, cortex, medulla, involution.*

Введение

Иммунная система человека представляет собой сложный комплекс органов и клеток, обеспечивающих защиту организма от

Чужеродных антигенов. Центральное место среди лимфоидных органов занимает вилочковая железа (тимус) — орган, в котором происходит созревание и дифференцировка Т-лимфоцитов, обеспечивающих

клеточный иммунитет.

Тимус формируется на ранних этапах эмбриогенеза и активно

функционирует в детском возрасте, когда идёт становление иммунной системы. После периода полового созревания в железе наблюдаются инволюционные процессы, однако остаточная активность сохраняется на протяжении всей жизни.

Методы и материалы:

Гистологические препараты тимуса человека (новорождённые, дети, взрослые, пожилые). Окрашивание: Гематоксилин-эозин (Г-Э)

Иммуногистохимия (по необходимости — для выявления Т-лимфоцитов, эпителиальных клеток и т.д.)

Микроскоп световой (с возможностью фотофиксации изображений).

Микротом, препараты, предметные и покровные стёкла, фиксирующие и окрашивающие растворы.

Изучение гистологического строения тимуса имеет важное значение для понимания иммуногенеза, механизмов толерантности и развития

аутоиммунных заболеваний.

Тимус: строение, функции и возрастные изменения

1. Происхождение и развитие тимуса

Тимус формируется из третьего и частично четвёртого жаберных карманов эмбриона. К 6–7 неделе внутриутробного развития эпителий начинает ветвиться, формируя дольчатую структуру, куда мигрируют предшественники Т-лимфоцитов из печени и костного мозга. К 10–12 неделе формируется типичное строение: корковое вещество с незрелыми Т-лимфоцитами и мозговое вещество с более зрелыми клетками. После рождения орган увеличивается в размерах, достигая максимальной массы (30–40 г) к 10–12 годам, затем начинается инволюция — замещение лимфоидной ткани жировой.

2. Макроскопическое строение

Тимус расположен в переднем средостении, состоит из двух долей, покрытых капсулой, от которой внутрь отходят перегородки, формирующие дольки. Каждая долька содержит:

Корковое вещество (cortex) — тёмное, из-за большого числа лимфоцитов;

Мозговое вещество (medulla) — светлое, содержит больше эпителиальных клеток и зрелых лимфоцитов.

3. Микроскопическое строение

Корковое вещество:

Эпителиоретикулоциты — создают каркас для лимфоцитов;

Тимоциты — незрелые Т-клетки, проходящие дифференцировку;

Макрофаги — фагоцитируют дефектные клетки (до 95% подвергаются апоптозу);

Капилляры с гемато-тимусным барьером, защищающим тимоциты от антигенов до завершения "обучения".

Мозговое вещество:

Зрелые Т-лимфоциты (Т-хелперы, Т-киллеры, Т-супрессоры);

Макрофаги, дендритные клетки, тельца Гассаля;

Посткапиллярные венулы, через которые Т-клетки покидают тимус.

4. Функции тимуса

1. Созревание Т-лимфоцитов— приобретение рецепторов CD4/CD8.

2. Отбор клеток — позитивный и негативный отбор исключают нефункциональные и аутоиммунные клетки.

3. Гормональная функция — выработка тимозина, тимопоэтина и тимулина.

4. Иммунологическая толерантность — предотвращение аутоиммунных реакций.

5. Возрастные и функциональные изменения

С пубертата начинается физиологическая инволюция: уменьшается количество лимфоидной ткани, увеличивается содержание жира. Однако остаточная функция сохраняется в пожилом возрасте. Инволюция ускоряется при хроническом стрессе, инфекциях, нарушениях питания и гормонального фона. У детей тимус особенно чувствителен к внешним факторам. Удаление тимуса приводит к резкому снижению Т-клеточного иммунитета.

Заключение

Тимус — уникальный орган с двойной (лимфоидной и эндокринной) природой. Его гистология обеспечивает созревание и отбор функционально активных Т-лимфоцитов. Понимание его структуры и возрастных изменений важно для иммунологии, трансплантологии и геронтологии. Поддержание активности тимуса может стать важным направлением в борьбе со старением и снижением иммунной защиты.

Понимание микроструктуры и возрастных изменений тимуса имеет большое значение для клинической иммунологии, трансплантологии и

геронтологии. Современные исследования показывают, что поддержание активности тимуса может стать одним из ключевых направлений в борьбе со старением и снижением иммунитета.

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ЭКСПЕРИМЕНТАЛЬНИЙ МОДЕЛ МОРФОФУНКЦИОНАЛЬНОГО СОСТОЯНИЕ ПЕЧЕНИ ПРИ ВЫСОКОЖИРОВОЙ И ВЫСОКОУГЛЕВОДНОЙ ДИЕТЕ

Аннотация: *Целью исследования явилась разработка экспериментальной модели метаболического синдрома (МС) у крыс с использованием высокожировой и высокоуглеводной диеты в течение 12 недель и изучение ее влияния на морфофункциональное состояние печени. Установлено, что несбалансированный рацион приводит к развитию характерных морфологических нарушений в печени экспериментальных крыс, включая дискомплексацию балочно-радиального строения, дистрофию гепатоцитов (белковая и жировая), а также активацию регенераторных процессов (увеличение двуядерных гепатоцитов в 1,5 раза) и пролиферации стромы. Наблюдалось достоверное уменьшение объема паренхимы и увеличение стромально-паренхиматозного индекса ($p<0,05$), что свидетельствует о риске развития фиброза и стеатогепатита. Разработанная модель признана адекватной для воспроизведения большинства типичных признаков МС у грызунов и изучения его морфологических основ.*

Ключевые слова: *Метаболический синдром, экспериментальная модель, высокожировая диета, высокоуглеводная диета, печень, гепатоциты, морфофункциональные нарушения.*

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EXPERIMENTAL MODEL OF MORPHOFUNCTIONAL STATUS OF THE LIVER UNDER HIGH-FAT AND HIGH-CARBOHYDRATE DIETS

Abstract: *The aim of the study was to develop an experimental model of metabolic syndrome (MS) in rats using a high-fat and high-carbohydrate diet over*

12 weeks and to study its influence on the morphofunctional status of the liver. It was established that the unbalanced diet leads to the development of characteristic morphological disorders in the liver of experimental rats, including the decompaction of the beam-radial structure, hepatocyte dystrophy (protein and fatty), as well as the activation of regenerative processes (a 1.5-fold increase in binucleated hepatocytes) and stromal proliferation. A significant decrease in parenchymal volume and an increase in the stromal-parenchymal index ($p<0.05$) were observed, indicating a risk of developing fibrosis and steatohepatitis. The developed model is recognized as adequate for reproducing most typical signs of MS in rodents and studying its morphological basis.

Keywords: *Metabolic syndrome, experimental model, high-fat diet, high-carbohydrate diet, liver, hepatocytes, morphofunctional disorders.*

Введение.

Метаболический синдром — это комплекс метаболических, гормональных и гемодинамических нарушений, увеличивающих риск развития сердечно-сосудистых заболеваний. По данным Kwitek A.E. (2019) наиболее значимыми факторами развития МС считаются абдоминальное ожирение и инсулинорезистентность. Международной федерации диабета (IDF) определяет МС как состояние, включающее висцеральное ожирение и повышенное артериальное давление (АД) и гипергликемию.

По информации ВОЗ патология печени занимает одно из ведущих мест среди заболеваний органов пищеварения. В мире более 2 млрд человек страдают заболеваниями печени, что в 100 раз превышает распространённость ВИЧ-инфекции. Согласно статистическим данным, за последние годы в структуре поражений печени преобладают алкогольные и вирусные гепатиты и циррозы, увеличился процент опухолевой патологии печени, поражение печени вследствие нарушений обмена веществ, в том числе ожирения [Чабанова Н.Б. 2016].

Наибольшие экспериментальные исследований посвящено изучению влияния ожирения, вызванного высокожировым рационом питания на организм крыс самок [Васендин Д.В. и др. 2014, Ilyasov A.S. 2024]. Но, несмотря на наличие работ, посвященных изучению влияния экзогенных факторов на организм крыс, комплексное действие несбалансированного рациона питания с избытком жиров и углеводов на морфофункциональное состояние печени крыс остаётся не до конца изученным. По мнению Ильясов А.С., и др. (2024) диета при эксперименте наиболее приближена к питанию современного человека и считается максимально адекватной для МС и воспроизведения и феноменологии морфологических факторов нарушения у крыс.

В связи с этим **целью исследования** явилась разработка экспериментальной модели МС крыс на основе высокожировой и высокоуглеводной диеты.

Материал и методы исследования.

Животные содержались в стандартных условиях вивария с 12-часовой продолжительностью светового дня и свободным доступом к пище и воде. Для исследования крыс всего 30 животных массой 180 – 210 г, возраст на начало исследования 3 месяц были случайным образом распределены на контрольную (n = 15) и экспериментальную (n = 15) группы.

Исследование выполнено на крысах. Контрольной групп животных находились на стандартной диете. Экспериментальная группа крыс в течение 12 нед получали высокожировую и высокоуглеводную диету. После чего животные подверглись эвтаназии. Для подтверждения развития метаболического синдрома у крыс, содержавшихся на высокожировой и высокоуглеводной диетой, в конце исследования измеряли массу тела. Подготовленные объекты исследования заливали в парафиновую среду и на автоматическом микротоме выполняли тонкие 4–6 мкм срезы. Срезы окрашивали гематоксилином – эозином и по ван-Гизону.

В гистологических препаратах контрольной и экспериментальной группы измеряли структурные элементы печени крыс: строму, паренхиму (в %) и определяли стромально-паренхиматозный индекс.

Результаты и их обсуждение.

Печень является одним из наиболее важных и крупных органов, накапливающих и поставляющих для использования в различных процессах энергоемкие вещества, большая часть которых представлена гликогеном.

Макроскопическое исследования существенных различий в строениях печени у крыс контрольной и экспериментальной групп не выявлено. При микроскопическом исследовании в печени крыс, получавших высокожировой и высокоуглеводной питания, установлены существенные отличия от печени крыс контрольной группы. У интактных крыс цитоплазма гепатоцитов характеризовалась мелкой базофильной зернистостью (рис. 1).

Микрофотография срезов печени экспериментальных крыс 6-месячного возраста показаны в рисунке 2. Где виден дискомплексации балочнорадиарного строения. В центрах долек гепатоциты зачастую были в состоянии белковой дистрофии, а перипортально обнаруживались набухшие гепатоциты со светлой пенистой цитоплазмой и пикнотичными гиперхромными ядрами, что свидетельствует о нарушении их морфофункциональной активности.

Дистрофические изменения гепатоцитов являются морфологическим выражением нарушения комплекса функциональных механизмов, обеспечивающих углеводножировой, водно-электролитный и белковый обмен. Одной из причин элиминации энергетических трофических веществ из печени, является расходование энергии на процессы адаптации.

Преобладание изменений со стороны клеток печени свидетельствует, что оптимальные адаптационные возможности обеспечиваются более высоким, чем в норме напряжением регуляторных систем. Благодаря механизмам компенсации заболевание не выражено или находится в начальной стадии. Однако, если окружающая среда предъявит этим животным

дополнительные нагрузки, может возникнуть срыв гомеостатических систем и развитие заболевания. В таблица 1. показано, морфометрические показатели клеток печени крыс при влиянии высокожировой и высокоуглеводной питании.

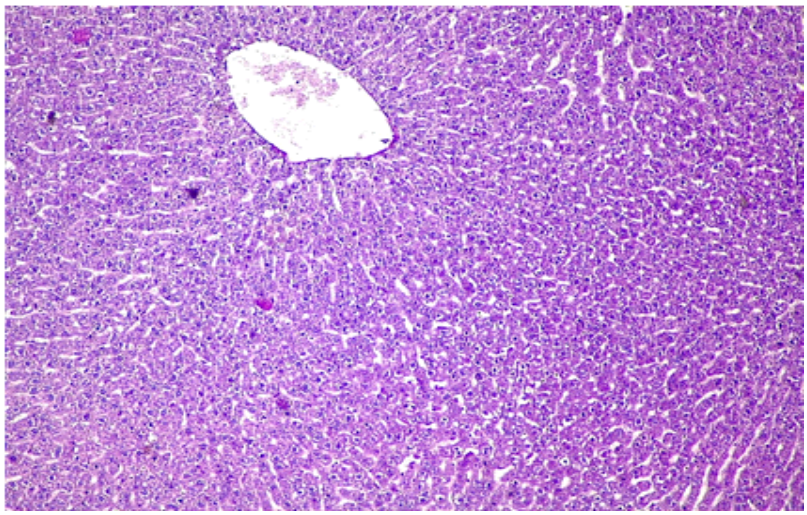


Рис. 1. Микрофотография срезов печени крыс контрольной группы 6-месячного возраста; 1. гепатоциты, 2. печеночные дольки с гепатоцитами, центральная вена. Окраска по гематоксилину-эозину. Об.10 х ок.20.

Степень повреждения паренхимы печени оценивали на основании определения регенераторной активности и относительного объёма элементов паренхимы и стромы с вычислением стромально-паренхиматозного индекса.

В рисунке 3. показаны микрофотография срезов печени экспериментальных крыс 6-месячного возраста, окрашенных по методу ван-Гизон в нем видна дискомплексацией балочнорадиарного строения паренхимы печени.

Регенераторную активность печени оценивали на основании подсчёта количества двуядерных гепатоцитов в процентном соотношении к их одноядерным формам.

Установлено, что у крыс экспериментальной группы количество двуядерных гепатоцитов в 1,5 раза ($p < 0,05$) превышает их количество у животных контрольной группы на 3,6±0,03% и 2,4±0,03% соответственно. Это свидетельствует об умеренной интенсивности повреждения печени и активации процесса регенерации паренхимы.

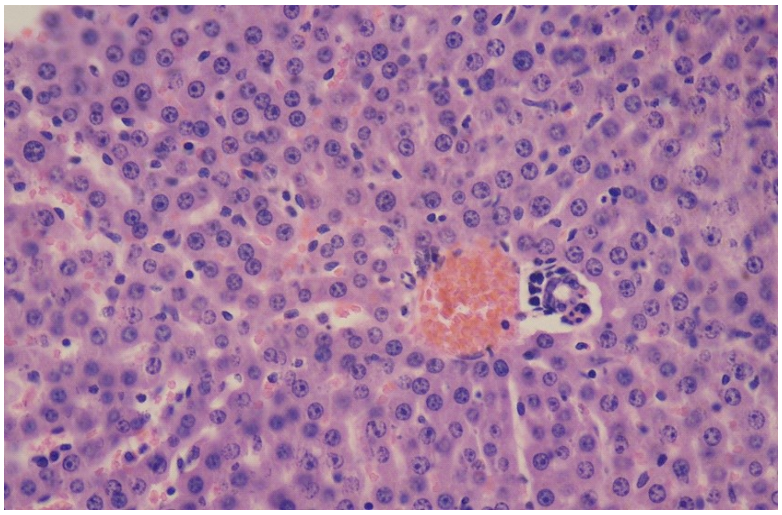


Рис. 2. Микрофотография срезов печени экспериментальных крыс 6-месячного возраста; 1. печеночные дольки с гепатоцитами. 1. клеточной инфильтрации. 2. дискомплексацией балочнорадиарного строения. 3. дистрофия гепатоцитов. 4. двуядерные гепатоциты. Окраска по гематоксилину-эозину. Об.10 х ок.40.

Таблица 1.

Морфометрические показатели клеток печени крыс при влиянии высокожировой и высокоуглеводной питании

(M±m)

Структурные элементы	**Группа крыс**	
	контрольная	**экспериментальная**
Размер гепатоцитов в мкм^2	131,2 - 307,9 208,7	123,2 - 231,3 191,5*
Размер ядра гепатоцитов в мкм^2	26,7 - 57,8 38,7	22,5 - 36,7 35,3*
Я/Ц в усл. ед.	0,14- 0,46 0,24	0,11- 0,31 0,19*

Примечание: * p <0,05 - достоверно значимые отличия от контроля;

Я/Ц - ядерно-цитоплазматическое отношение;

По данным Кравчук Е.Н., Галагудза М.М. (2014) периодическое употребление несбалансированного рациона, обедненного белками и содержащего избыточное количество соли и других небезразличных для организма млекопитающих компонентов, приводит к нарушению комплекса функциональных механизмов, обеспечивающих углеводно-жировой, водно-электролитный и белковый обмен в печени. В результате морфофункциональный статус одного из самых наиболее важных органов метаболизма характеризуется неспецифическими изменениями, несущими черты донозологического состояния.

Установлено, что у крыс экспериментальной группы имеет место достоверное уменьшение объёма паренхимы, увеличение объёма стромальной части печени и стромально-паренхиматозного индекса равно (p <0,05).

Полученные данные свидетельствуют об активации процесса пролиферации в строме печени, что возможно развитием её фиброза в дальнейшем. В таблица 2. показаны стромально-паренхиматозного индекса печени крыс при влиянии высокожировой и высокоуглеводной диеты.

Таблица 2.

Стромально-паренхиматозного индекса печени крыс при влиянии высокожировой и высокоуглеводной диеты

(M±m)

Структурные элементы	**Группа крыс**	
	контрольная	**экспериментальная**
Строма %	22,6 - 31,2 27,1 ± 1,1	24,5 - 33,6 29,3 ± 1,1*
Паренхима %	68,8 - 77,4 72,9 ± 1,1	66,4 - 75,5 70,7 ± 1,1*
Стромально-паренхиматозный индекс	0,32 - 0,4 0,39 ± 0,01	0,36 - 0,45 0,41 ± 0,0*

Примечание. * p <0,05 по сравнению с контрольной группой.

Таким образом, питание с избытком жиров и углеводов в рационе крыс приводит к морфофункциональным нарушениям печени, проявляющимся дискомплексацией балочнорадиарного строения и повышением стромально-паренхиматозного индекса. Исследованием подтверждается, что наличии функциональных нарушений в органе может стать причиной развития стеатогепатита. При моделировании МС воспроизводит большинство типичных признаков данного синдрома у грызунов и может быть полезна в изучении морфологических основ развития МС.

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ЭКСПЕРИМЕНТАЛЬНОЕ ИЗУЧЕНИЕ ЗАВИСИМОСТИ «ДОЗА - ЭФФЕКТ» ПРИ ИММУНИЗАЦИИ СТАФИЛОКОККОВЫМ АНАТОКСИНОМ

Резюме. *Мы поставили перед собой задачу изучить зависимость «доза - эффект» при заражении иммунизированных стафилококковым анатоксином мышей разными штаммами стафилококка. Животных иммунизировали подкожно двукратно с 14-дневным интервалом очищенными анатоксинами серии № 22 (с содержанием 20 ЕС/мл) и 29 (12 ЕС/мл) и высокоочищенным анатоксином серии № 41 (30 ЕС/мл). Все препараты были полностью сорбированы Al $(OH)_3$. Проведенные эксперименты позволяют считать, хотя и с известными оговорками, что при двукратной иммунизации белых мышей стафилококковым анатоксином на каждую прививку целесообразно брать дозу антигена, равную 1 ЕС.*

Ключевые слова: *иммунологический эффект, резистент, антитоксин, эксперимент, стафилококковая культура.*

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EXPERIMENTAL STUDY OF THE "DOSAGE-EFFECT" RELATIONSHIP IN IMMUNIZATION WITH STAPHYLOCOCCAL TOXOID

Summary. *The author studied the dependence of immunological effect on the dose of purified sorbed on Al $(OH)_3$ staphylococcal toxoid in double immunization of albino mice. The antitoxin titres in blood serum and the resistance of mice to challenge with microbial culture of 7 various staphylococcal strains were examined. Direct close correlation existed between the dosage of toxoid and the level of antitoxin in sera of immunized animals.*

On the contrary, no marked correlation was found between the dosage of toxoid and the resistance of mice to challenge with microbial culture of staphylococci. The resistance of animals to a great extent depended on the properties of strains used for the challenge. In experiments dealing with examination of the resistance of immunized mice to staphylococcal culture apparently it is expedient to take I BU (binding unit) of toxoid each immunization.

Keywords: *immunological effect, resistance, antitoxin, experiments, staphylococcal culture.*

Изучение зависимости иммунологического эффекта от дозы антигена, помимо определенного теоретического интереса, имеет и практическое значение. Последнее связано с подбором оптимальных доз антигенов при иммунизации животных разных видов, а также с определением наиболее эффективных схем прививок при контроле иммунологических препаратов. Применительно к разным анатоксинам эти вопросы разработаны далеко не одинаково. Хорошо они изучены в отношении столбнячного и дифтерийного анатоксинов и слабо - в отношении стафилококкового [1, 2, 4].

Многочисленными экспериментами показано, что при иммунизации животных дифтерийным и столбнячным анатоксинами зависимость между

дозой антигена и иммунологическим эффектом в довольно широком интервале доз приближается к прямолинейной регрессии при соответствующей трансформации экспериментальных данных: дозы антигена - в логарифмы, показатели эффекта - в логарифмы антитоксических титров или пробиты летальности (выживаемости). Результаты обоих методов оценки иммунологического эффекта (уровень антитоксина в крови привитых животных и их устойчивость к соответствующему токсину) совпадали. Это понятно, если учесть, что экзотоксины играют основную роль в патогенезе дифтерии и столбняка [3, 5].

Со стафилококковой инфекцией, в патогенезе которой большое значение имеет не только α -токсин, но и ряд других факторов токсической и ферментативной природы, дело обстоит значительно сложнее. Так как, устойчивость иммунизированных животных (мыши, кролики) к стафилококковому α -токсину соответствует уровню антитоксина в их крови, нам кажется более правильным, учитывая патогенеза этой инфекции, испытывать устойчивость привитых животных не только к токсину, но и к достаточно вирулентной микробной культуре [6].

В литературах сообщается, что уровень иммунитета к разным штаммам стафилококка может быть различным [9, 10].

В связи с этим мы поставили перед собой задачу изучить зависимость «доза - эффект» при заражении иммунизированных стафилококковым анатоксином мышей разными штаммами стафилококка. Одновременно у привитых мышей исследовали уровень стафилококкового антитоксина в крови. Было поставлено 4 опыта примерно на 80 мышах. Животных иммунизировали подкожно двукратно с 14-дневным интервалом очищенными анатоксинами серии № 22 (с содержанием 20 ЕС/мл) и 29 (12 ЕС/мл) и высокоочищенным анатоксином серии № 41 (30 ЕС/мл). Все препараты были полностью сорбированы Al $(OH)_3$. Разные дозы анатоксинов вводили мышам в одном и том же объеме (0,5 мл) при постоянном содержании гидроокиси алюминия (3 мг Al_2O_3 в 1 мл). Внутрибрюшинное заражение животных отмытой суточной агаровой культурой стафилококков и взятие крови для определения уровня антитоксина проводили на 8-й день после второй прививки. Для заражения животных мы взяли токсигенные штаммы О-15, Л-17, Б-42, Т-89, Л-23, слаботоксигенный штамм Б-28 и нетоксигенный штамм 20 Р. Учитывали сроки гибели животных и для каждой группы мышей, иммунизированных одной дозой антигена, определяли показатель вирулентности штамма *V* и иммунологический индекс *I*. Уровень антитоксина определяли в смеси сывороток, полученных от 4 мышей. Третий опыт был специально посвящен изучению титров антитоксина. Каждой дозой антигена прививали группу из 24 мышей и определяли количество антитоксина для каждой из 6 подгрупп (по 4 мыши), после чего вычисляли средний геометрический титр антитоксина для данной группы животных.

В первую очередь следует отметить, что иммунологический эффект в значительной степени зависел от того, каким штаммом заражали

иммунизированных мышей. Уровень иммунитета против штаммов Л-17 и Л-23 был высоким, против штаммов 0-15, Т-89 и Б-42 - средним и против штаммов Б-28 и 20 Р иммунитета практически не наблюдалось.

Чтобы установить наличие или отсутствие связи между дозой антигена и иммунологическим эффектом, мы вычисляли коэффициент корреляции r, где x-lg дозы антигена, y - иммунологический индекс I или lg титра антитоксина [7, 8,11].

Коэффициент корреляции, полученный при обработке результатов третьего опыта, указывал на наличие тесной прямой связи между дозой стафилококкового анатоксина и титром антитоксина в крови привитых мышей, что подтверждалось также и графическим изображением этой связи.

Для установления характера связи данные третьего опыта были подвергнуты дисперсионному анализу, результаты которого показали, что зависимость титра антитоксина от дозы его в исследованном интервале доз антигена выражалась прямолинейной регрессией и подчинялась следующему уравнению:

$$y = 0{,}16+0{,}72\ (x-1{,}94),$$

где x - lg дозы анатоксина в ЕС, а y - lg антитоксического титра в АЕ. Результаты титрования антитоксина в первом и четвертом опытах согласовывались с выявленной закономерностью. Следовательно, обнаруженная при иммунизации стафилококковым анатоксином зависимость между дозой антигена и эффектом, выраженным в титрах антитоксина, не отличалась от выявленной при вакцинации другими анатоксинами.

Совершенно другая картина наблюдалась, когда мы изучали иммунологические индексы, полученные при заражении иммунизированных животных разными штаммами стафилококка. В большинстве случаев вычисленные коэффициенты корреляции указывали либо на отсутствие связи между дозой и эффектом, либо на весьма слабую связь, причем иногда она носила обратный характер, т.е., при увеличении дозы анатоксина иммунологический эффект проявлял тенденцию к снижению (штаммы Л-17, Б-28, 20 Р, Л-23 - серия № 9.

Исключение составляли результаты, полученные при иммунизации мышей высокоочищенным анатоксином серии № 13 и последующем заражении их штаммом Л-23: высокий коэффициент корреляции (0,88) указывал на наличие тесной связи между дозой антигена и иммунологическим эффектом.

В целом, однако, приходится признать, что заметной зависимости между дозой стафилококкового анатоксина и устойчивостью мышей к заражению микробной культурой нам обнаружить не удалось. Учитывая наличие тесной связи между дозой анатоксина и титром его в крови привитых мышей, можно прийти к заключению об отсутствии четко выраженной зависимости между уровнем стафилококкового антитоксина у иммунизированных животных и их устойчивостью против микробной культуры стафилококка.

Причина этого явления не вполне ясна, однако есть основание думать, что при иммунизации стафилококковым анатоксином у мышей, помимо антитоксина, появляются антитела, не связанные с последним, которые тоже способствуют повышению устойчивости привитых животных против микробной культуры. Это может быть связано с наличием в препарате анатоксина дополнительных антигенов, отличных от α-анатоксина. Интересен тот факт, что наиболее четкое совпадение между титром антитоксина и устойчивостью животных против микробной культуры наблюдалось при иммунизации мышей анатоксином серии № 13, максимально очищенным от других антигенов. Кроме того, иммунологический эффект в значительной мере связан со свойствами штаммов, применяемых для заражения мышей.

Соотношение разных факторов, определяющих вирулентность различных штаммов стафилококка для экспериментальных животных, широко варьирует, что не могло не сказаться на результатах заражения как неиммунных, так и иммунных мышей.

Оставалось сделать вывод о целесообразности применения той или иной дозы стафилококкового анатоксина в иммунологических экспериментах на мышах. Основываясь на величине антитоксических титров, можно было прийти к заключению, что оптимальный эффект обеспечивала доза, равная 10 ЕС. Однако эта доза слишком велика для того, чтобы использовать ее в повседневных экспериментах. Кроме того, нет оснований считать ее оптимальной в обычном понимании этого слова, поскольку характер зависимости «доза – эффект» указывает на возможность получения более высоких титров антитоксина при использования больших доз анатоксина. Более целесообразно выявить оптимальную дозу антигена по результатам испытания устойчивости иммунизированных мышей к микробной культуре. Здесь, однако, мешают отмеченные выше трудности, связанные с отсутствием четкой зависимости между дозой анатоксина и иммунологическим индексом. Мы считаем, хотя и с известными оговорками, что при двукратной иммунизации мышей наиболее целесообразно на каждую при прививку использовать дозу стафилококкового анатоксина, равную 1 ЕС. Эта доза обусловила наилучший иммунологический эффект в отношении штамма Л-23 и достаточно хороший - в отношении штамма Л-17. Кроме того, согласно приведенной выше формуле, 1 ЕС анатоксина соответствовал антитоксический титр, равный 1,6 АЕ, т.е. вполне достаточный для защиты мышей от смертельной дозы α-токсина.

Выводы. 1. При иммунизации белых мышей разными дозами стафилококкового анатоксина обнаружена тесная прямолинейная связь между дозой антигена и уровнем стафилококкового антитоксина в крови привитых животных.

2. Результаты испытания устойчивости иммунизированных мышей против микробной культуры различных штаммов стафилококка зависели в значительной степени от штамма, которым заражали животных, и лишь в небольшой степени - от дозы анатоксина.

3. Проведенные эксперименты позволяют считать, хотя и с известными оговорками, что при двукратной иммунизации белых мышей стафилококковым анатоксином на каждую прививку целесообразно брать дозу антигена, равную 1 ЕС.

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СОВРЕМЕННЫЕ ПОДХОДЫ, АЛГОРИТМЫ И ПРАКТИЧЕСКИЕ РЕКОМЕНДАЦИИ ДЛЯ РАННЕГО ВЫЯВЛЕНИЯ МЕТАБОЛИЧЕСКИ АССОЦИИРОВАННОЙ СТЕАТОЗНОЙ БОЛЕЗНИ ПЕЧЕНИ (MASLD)

Аннотация*: Метаболически ассоциированная стеатозная болезнь печени (MASLD; ранее NAFLD) встречается у значительной доли населения и тесно связана с кардиометаболическими факторами риска, такими как сахарный диабет 2-го типа, ожирение и дислипидемия. Ранняя диагностика особенно актуальна в структуре заболеваний печени, поскольку ключевой прогностический фактор — степень фиброза — часто длительно не проявляется клинически. В последние годы клинические рекомендации предлагают двухэтапную стратегию (первичная сортировка + подтверждение): на первом этапе— простые сывороточные шкалы, такие как FIB-4/NFS, для выделения группы «низкого риска», а в группе «среднего/высокого риска» — неинвазивные визуализирующие и эластографические методы (VCTE/FibroScan, 2D-SWE, MRE) для раннего выявления фиброза. Для количественной оценки стеатоза референс-методом считается MRI-PDFF; параметр контролируемой аттенюации CAP (на FibroScan) и новые ультразвуковые показатели аттенюации все шире внедряются в практику. Для прогнозирования фиброза широко применяется тест ELF (HA, PIIINP, TIMP-1); маркеры фиброгенеза, такие как PRO-C3, представляют перспективный интерес[1]. Настоящий обзор систематизирует современную терминологию (MASLD/MASH), определяет целевые группы для скрининга, пороговые значения (cut-off), сильные и слабые стороны методов и предлагает упрощенный практический алгоритм, адаптированный к условиям Узбекистана.*

Ключевые слова: *MASLD (NAFLD), MASH (NASH), ранняя диагностика, FIB-4, NFS, VCTE/FibroScan, CAP, MRI-PDFF, MRE, ELF, PRO-C3.*

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MODERN APPROACHES, ALGORITHMS, AND PRACTICAL RECOMMENDATIONS FOR EARLY DIAGNOSIS OF METABOLIC DYSFUNCTION–ASSOCIATED STEATOTIC LIVER DISEASE (MASLD)

Abstract: *Metabolic dysfunction–associated steatotic liver disease (MASLD; formerly NAFLD) affects a substantial share of the population and is closely linked to cardiometabolic risk factors such as type 2 diabetes, obesity, and dyslipidemia. Early diagnosis is particularly important among liver diseases because the key prognostic determinant—fibrosis stage—often remains clinically silent for a long time. Recent clinical guidelines advocate a two-step strategy (initial triage + confirmation): simple serum-based scores such as FIB-4/NFS to identify a "low-risk" group, followed in "intermediate/high-risk" patients by noninvasive imaging/elastographic tests (VCTE/FibroScan, 2D-SWE, MRE) to detect fibrosis early. For quantitative assessment of steatosis, MRI-PDFF serves as the reference method; the Controlled Attenuation Parameter (CAP) on FibroScan and newer ultrasound attenuation metrics are increasingly used in practice. For fibrosis risk prediction, the ELF test (HA, PIIINP, TIMP-1) is widely applied, while fibrogenesis markers such as PRO-C3 are promising[1]. This review summarizes current terminology (MASLD/MASH), identifies target groups for screening, presents practical cut-offs, strengths and limitations of key tools, and proposes a simplified, practice-oriented algorithm adapted to the Uzbek context.*

Key words: *MASLD (NAFLD), MASH (NASH), early diagnosis, FIB-4, NFS, VCTE/FibroScan, CAP, MRI-PDFF, MRE, ELF, PRO-C3.*

Терминология и почему важна «ранняя» диагностика

Переименование NAFLD → MASLD

В 2023 году ведущие профессиональные сообщества предложили заменить термин «NAFLD» на «MASLD» (metabolic dysfunction–associated steatotic liver disease). Эта смена названия не просто снимает стигму, связанную с упоминанием «неалкогольной» природы, но и точнее отражает суть заболевания, помещая метаболическую дисфункцию в центр патогенеза. Под «зонтичным» обозначением SLD (steatotic liver disease) объединяются разные причины стеатоза, а воспалительный фенотип теперь именуется MASH (метаболически ассоциированный стеатогепатит). Диагностические критерии также были уточнены: для постановки диагноза необходимы признаки стеатоза печени в сочетании как минимум с одним кардиометаболическим фактором риска[2].

Зачем выявлять рано?

Долгосрочный исход при стеатозной болезни печени главным образом определяется стадией фиброза. На ранних этапах (F0–F2) изменения потенциально обратимы: при модификации образа жизни и строгом контроле метаболических факторов риск прогрессии снижается и нередко возможна регрессия. Напротив, стадии F3–F4 ассоциированы с повышением риска декомпенсированного цирроза, гепатоцеллюлярной карциномы (HCC) и

трансплантации печени. Поэтому современная практика делает акцент на «фиброз-ориентированном» скрининге, когда первичная цель — как можно раньше отсеять пациентов с вероятным продвинутым фиброзом[3].

Кого следует обследовать в первую очередь?

Европейские (EASL–EASD–EASO, 2024) и американские (AASLD, 2023) рекомендации сходятся в том, что целесообразно активно «отыскивать» случаи (case finding) среди групп повышенного риска. К ним относятся пациенты с сахарным диабетом 2-го типа, ожирением (особенно при ИМТ ≥30 и центральном ожирении), атерогенной дислипидемией и другими компонентами метаболического синдрома, а также лица с устойчивыми отклонениями ALT/AST или случайно выявленным стеатозом по данным визуализации. Для людей старше 65 лет пороговые значения скоров рекомендуется перекалибровать с учётом возрастных особенностей. [4].

Практический вывод для Узбекистана: на уровне первичного звена (семейный врач, эндокринолог) у каждого пациента с диабетом 2-го типа или ожирением целенаправленная оценка риска поражения печени должна считаться стандартом качественной помощи.

Первичная лабораторная стратификация: простые скоринговые системы

FIB-4 (Fibrosis-4).

FIB-4 — наиболее валидированный «rule-out» инструмент, который помогает безопасно исключить продвинутый фиброз у значительной части пациентов. Для возрастной группы 35–65 лет значения <1,3 говорят в пользу низкой вероятности продвинутого фиброза (высокая отрицательная прогностическая ценность), а значения ≥2,67 повышают вероятность его наличия («rule-in»). У пациентов старше 65 лет нижний порог поднимают примерно до 2,0, чтобы снизить долю ложноположительных результатов. Пограничная зона 1,3–2,67 требует углублённого обследования[6].

NAFLD Fibrosis Score (NFS).

Классические пороги NFS остаются полезны в практике: значение <−1,455 позволяет исключить фиброз, а >0,676 — заподозрить продвинутый фиброз. В пожилом возрасте чаще отмечаются ложноположительные результаты, поэтому трактовка должна быть осторожной и обязательно контекстной[5].

APRI и другие простые индексы.

Индексы на основе AST/ALT, включая APRI, применимы, но в контексте MASLD обычно уступают по диагностической точности FIB-4 и NFS. Поэтому в большинстве алгоритмов именно FIB-4 остаётся тестом первой линии[6].

Сильные стороны подхода: низкая стоимость, доступность по данным стандартной биохимии, возможность быстро выделить группу низкого риска. **Ограничения:** возрастное смещение порогов, влияние сопутствующих состояний (например, тромбоцитопении), а также достаточно широкая «серая зона», требующая дообследования.

Раннее выявление фиброза с помощью неинвазивных биомаркеров ELF (Enhanced Liver Fibrosis).

ELF — сертифицированный тест, объединяющий концентрации гиалуроновой кислоты (HA), PIIINP и TIMP-1. Пониженные значения (<9,8) ассоциированы с низким 10-летним риском печёночных исходов, тогда как повышенные (≥11,3) указывают на более высокий риск. В сочетании с FIB-4 тест усиливает как «rule-out», так и «rule-in» возможности алгоритма. В регуляторной документации отдельно оговорены преаналитические требования (влияние биотина, гемолиза и т. п.)[14].

PRO-C3 и композитные панели (FIBC3, ADAPT, ABC3D).

PRO-C3 — неоэпитоп коллагена III, отражающий активный фиброгенез. По данным крупных исследований он полезен для выявления продвинутого фиброза и демонстрирует наилучшие характеристики в составе многомаркерных панелей, что повышает устойчивость результатов и прогностическую ценность. Пока что распространённость PRO-C3 в рутинной практике ниже, чем у ELF[22].

Цитокератин-18 (M30/M65).

Фрагменты CK-18 исторически рассматривались как маркёры апоптоза при MASH, однако в роли самостоятельного скринингового теста им не хватает точности; при этом они могут быть полезны как часть расширенных панелей[9].

Практический итог: в условиях ограниченных ресурсов связка «FIB-4 → VCTE» обеспечивает надёжную раннюю стратификацию; при доступности дополнительных тестов в «пограничной» группе информативность повышают ELF и/или PRO-C3.

Раннее выявление стеатоза: визуализирующие методы
Обычное УЗИ (B-режим).

Метанализы показывают хорошую чувствительность и специфичность УЗИ для средне-тяжёлого стеатоза (порядка ~85%/85%), однако при лёгком стеатозе чувствительность заметно снижается, а результат зависит от оператора. Поэтому УЗИ удобно использовать на скрининговом этапе для грубой констатации «есть/нет», но не для точного количественного мониторинга[10].

CAP (Controlled Attenuation Parameter, FibroScan).

Параметр контролируемой аттенюации сопоставим с MRI-PDFF при определении наличия стеатоза: в обобщённых данных как рабочие зоны предлагаются значения <~249 dB/m для его исключения и >~328 dB/m для подтверждения, при этом учитываются особенности конкретного устройства и популяции[11].

MRI-PDFF — количественный «золотой стандарт».

MRI-PDFF позволяет количественно оценивать долю жира в печени; на практике порог ~5–6% PDFF часто трактуют как признак стеатоза. В исследованиях приводятся уточнённые уровни согласования с гистологией

(например, 5,75%, 15,5%, 21,35%). В клинике метод незаменим для точного мониторинга ответа на терапию и в фармакологических исследованиях[8].

Эластография как основа раннего неинвазивного выявления фиброза

VCTE (FibroScan) и рабочие пороги.

Измерение жёсткости печени (LSM) при помощи VCTE позволяет быстро разделить пациентов на группы риска. Во многих источниках условно выделяют зоны: <~8 кПа — низкий риск, 8–12 кПа — промежуточный, >~12 кПа — высокий, понимая, что точные пороги зависят от популяции и клинического контекста. Метанализ 2024 года для NAFLD/MASLD указывает диапазон 7,1–7,9 кПа как оптимальный для выявления продвинутого фиброза[1].

Магнитно-резонансная эластография (MRE).

MRE обеспечивает более высокую диагностическую точность и помогает разрешать «серые зоны», давая посрезовые карты по всей печени. Ограничения — стоимость и доступность метода. Во многих работах для F3 обсуждаются пороги порядка ~3,6–3,9 кПа[5].

Практический алгоритм: при пограничном или повышенном FIB-4 — выполнить VCTE; при сомнительных или противоречивых результатах — добавить MRE; если клиническое решение принципиально или остаются расхождения — рассмотреть биопсию.

Расширенные MP-показатели: cT1 и другие

Железо-корригированный T1 (cT1) рассматривается как композитный маркер воспаления и фиброза, связанный с прогнозом и чувствительный к изменениям на терапии. В то же время большинство руководств пока не относит его к стандартным тестам для рутинного применения[6].

Генетика и «омика»: стратификация раннего риска

Варианты PNPLA3 (I148M), TM6SF2, MBOAT7 повышают вероятность прогрессирования фиброза, однако широкое генотипирование для первичного скрининга не рекомендуется. На практике решения опираются преимущественно на фенотипический риск и клинический контекст, а ключевыми остаются простые лабораторные и эластографические инструменты.

Дети, женщины и другие особые группы

В педиатрии первым этапом остаётся УЗИ, тогда как VCTE/SWE постепенно расширяют применение; MRI-PDFF актуален для сложных случаев и исследований. Во время беременности лабораторные индексы трактуют осторожно, инвазивные методы избегают без крайней необходимости. У пациентов старше 65 лет нижний порог FIB-4 обоснованно повышают[4].

Упрощённый алгоритм «первичное звено → специализированный уровень»

В реальной практике удобна поэтапная схема, согласованная с рекомендациями. На первом шаге (семейный врач/эндокринолог) при наличии

T2D, ожирения, метаболического синдрома, атерогенной дислипидемии, стойких отклонений ALT/AST или случайно выявленного стеатоза рассчитывают FIB-4. Если показатель <1,3 (или <2,0 у ≥65 лет), вероятность продвинутого фиброза низкая: рекомендуются изменения образа жизни, строгий контроль кардиометаболических факторов и повторная оценка через 1–2 года. При значениях 1,3–2,67 (или 2,0–2,67 у ≥65 лет) переходят к VCTE и/или ELF. Значения ≥2,67 — повод для направления в специализированный центр, где выполняют VCTE ± MRE и при необходимости рассматривают биопсию. На втором шаге трактуют LSM с учётом популяционных порогов, степенью стеатоза по CAP или MRI-PDFF, добавляют ELF для прогностического «слоя», а MRE используют для разрешения противоречий[4,5,7].

Для количественного контроля стеатоза MRI-PDFF остаётся эталоном, УЗИ — доступным скрининговым инструментом, а CAP — практичной альтернативой для повседневной работы[8].

Новые горизонты: ИИ и автоматизированный анализ УЗ-изображений

Глубокие нейросети для анализа печёночных УЗ-изображений демонстрируют обнадёживающие результаты в распознавании стеатоза и возможного MASH. Такие решения могут сокращать время скрининга и снижать зависимость от оператора. Пока что эти технологии преимущественно исследовательские, но их клинический потенциал высок.

Практические «пакеты» для условий Узбекистана
Минимальный пакет (ограниченные ресурсы): массовый расчёт FIB-4 у пациентов с T2D/ожирением; при FIB-4 ≥1,3 — проведение FibroScan (VCTE + CAP) в областных центрах; при FIB-4 <1,3 — коррекция образа жизни и переоценка через 12–24 месяца.
Оптимальный пакет: FIB-4 → VCTE/CAP; при «серых зонах» или расхождениях — ELF и при необходимости MRE; MRI-PDFF — для клинических испытаний, сложных случаев и точного мониторинга ответа.

Сильные и слабые стороны методов — краткое резюме

FIB-4/NFS — доступные инструменты с высокой отрицательной прогностической ценностью, но чувствительны к возрасту и коморбидности. ELF — силён как прогностический маркер, но предъявляет требования к лабораторной инфраструктуре. PRO-C3 и композитные панели перспективны, но ещё внедряются. УЗИ широко доступно и эффективно при умеренно-тяжёлом стеатозе, но ограничено при лёгком. CAP — практичный количественный инструмент, пороги зависят от популяции. MRI-PDFF — количественный эталон, однако дорог. VCTE — быстрый, переносной метод с вариабельными порогами, MRE обеспечивает наивысшую точность при ограниченной доступности[7,10,12].

«Step-up» алгоритм — в одном абзаце

Начинаем с идентификации групп риска (T2D, ожирение, метаболический синдром, стойкие отклонения ALT/AST или стеатоз по УЗИ)

и расчёта FIB-4. Значение <1,3 (или <2,0 у ≥65 лет) позволяет отнести пациента к низкому риску с рекомендацией немедленной коррекции образа жизни и повторной оценки через 12–24 месяца. Интервал 1,3–2,67 (или 2,0–2,67 у ≥65 лет) — показание к VCTE/ELF. Порог ≥2,67 требует направления на специализированный уровень, где интерпретируют VCTE (±CAP), при необходимости добавляют ELF и MRE и решают вопрос о биопсии. Такой пошаговый подход системно уменьшает нагрузку на стационарный уровень и повышает точность принятия решений[4,6,9].

Частые вопросы и типичные ошибки

Нормальный ALT не исключает MASLD/MASH и продвинутый фиброз: решение о скрининге базируется на фенотипе риска, прежде всего на наличии T2D и ожирения. Нормальное УЗИ не гарантирует отсутствие проблемы, поскольку лёгкий стеатоз и умеренный фиброз могут быть пропущены; для стратификации фиброза нужны FIB-4 и VCTE. (CGH Journal) Один-единственный тест редко даёт полный ответ: стратегия подразумевает последовательность, в которой методы дополняют друг друга.

Заключение

Ранняя диагностика MASLD должна быть двухэтапной, ориентированной на выявление фиброза и адаптированной к ресурсам системы здравоохранения. На первичном уровне FIB-4 выступает «сито́м» с высокой отрицательной прогностической ценностью; на специализированном — VCTE (±CAP), при необходимости ELF/MRE и количественная оценка стеатоза (MRI-PDFF) повышают диагностическую уверенность и помогают своевременно выделить пациентов с высоким риском. В условиях Узбекистана практичным видится путь FIB-4 → VCTE/ELF → MRE/биопсия (по показаниям) в сочетании с агрессивным контролем кардиометаболических факторов.

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ВЛИЯНИЕ ЦИФРОВЫХ ТЕХНОЛОГИЙ НА УСВОЕНИЕ ГИСТОЛОГИИ

Аннотация: *В статье рассматривается влияние цифровых технологий на усвоение курса гистологии студентами. Основное внимание уделено использованию цифровых образовательных инструментов, таких как виртуальные микроскопы, интерактивные платформы и мультимедийные материалы. Для оценки эффективности применения данных технологий был проведён опрос среди студентов, а также проанализированы показатели их успеваемости. Результаты исследования показывают, что использование цифровых ресурсов способствует лучшему усвоению материала, повышению вовлечённости и интереса к дисциплине, однако не может полностью заменить традиционные методы обучения. Полученные данные подчеркивают необходимость комплексного подхода, сочетающего классические и современные технологии в образовательном процессе.*

Ключевые слова: *Виртуальные микроскопы, студенты, цифровые технологий, интерактивные платформы, методы обучения.*

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THE IMPACT OF DIGITAL TECHNOLOGIES ON THE ASSIMILATION OF HISTOLOGY

Abstract: *This article examines the impact of digital technologies on students' assimilation of the histology course. The focus is on the use of digital educational tools such as virtual microscopes, interactive platforms, and multimedia materials. To assess the effectiveness of these technologies, a survey was conducted among students, and their academic performance was analyzed. The results of the study show that the use of digital resources contributes to better understanding of the*

material, increased engagement, and heightened interest in the subject. However, these technologies cannot fully replace traditional teaching methods. The findings highlight the need for a comprehensive approach that combines both classical and modern technologies in the educational process.

Keywords: *Virtual microscopes, students, digital technologies, interactive platforms, teaching methods.*

Введение

В условиях стремительного развития цифровых технологий происходит трансформация всех сфер общества, включая систему образования. Особенно заметны изменения в медицинском обучении, где традиционные методы постепенно дополняются и совершенствуются с использованием современных цифровых инструментов. Одной из таких дисциплин, остро нуждающихся в эффективных визуальных и интерактивных средствах обучения, является гистология.

Гистология требует от студентов высокой концентрации, пространственного мышления и умения распознавать мельчайшие структурные элементы тканей. Однако классические методы преподавания, такие как работа с микроскопом и двухмерными иллюстрациями, нередко оказываются недостаточными для полноценного усвоения материала.

В связи с этим всё большее распространение получают цифровые образовательные технологии — виртуальные микроскопы, интерактивные обучающие платформы, 3D-моделирование и мультимедийные презентации. Эти инструменты не только делают обучение более наглядным и доступным, но и позволяют адаптировать учебный процесс под индивидуальные особенности восприятия студентов.

Методы и материалы

Для оценки влияния цифровых образовательных технологий на усвоение курса гистологии было проведено анкетирование среди студентов Ташкентского государственного медицинского университета. В исследовании приняли участие 150 студентов младших курсов, обучающихся по медицинским направлениям.

Опрос был анонимным и добровольным. Анкета включала как закрытые, так и открытые вопросы, направленные на выявление уровня вовлечённости студентов в учебный процесс, их отношения к использованию цифровых инструментов (виртуальных микроскопов, онлайн-платформ, мультимедийных материалов), а также самооценки изменений в академической успеваемости после внедрения цифровых технологий в образовательный процесс.

Также были проанализированы данные об успеваемости студентов до и после внедрения цифровых методов обучения. Сравнительный анализ проводился на основе средних баллов по курсу гистологии, а также по качественным показателям усвоения материала (по данным преподавателей и самооценке студентов).

Результаты: Таблица успеваемости студентов в процентах До и После применения новых интерактивных и цифровых технологий:

№	Год обучения	До	После
1	Студенты 1 курса	70-75%	85-89%
2	Студенты 2 курса	65-75%	80-85%
3	Студенты 3 курса	75-80%	87-91%
4	Студенты 4 курса	60-70%	75-85%
5	Студенты 5 курса	68-73%	80-86%
6	Студенты 6 курса	72-80%	85-90%

В результате проведённого опроса и анализа данных об успеваемости студентов Ташкентского государственного медицинского университета были получены сведения об изменении уровня знаний по дисциплине «Гистология» после внедрения цифровых образовательных технологий. В исследовании приняли участие 150 студентов с 1 по 6 курс. Основной целью было выявить, насколько использование цифровых инструментов — таких как виртуальные микроскопы, интерактивные платформы, видео-лекции и мультимедийные презентации — способствует повышению качества усвоения материала.

Общий рост успеваемости

Все курсы продемонстрировали повышение среднего уровня знаний. Наибольший прирост зафиксирован у студентов 1 курса — в среднем на 14–15%, что может свидетельствовать о высокой эффективности цифровых методов на раннем этапе обучения.

Младшие курсы (1–2)

Студенты младших курсов отметили, что цифровые методы делают гистологию более наглядной и понятной. Особенно эффективными оказались виртуальные микроскопы, которые позволяют многократно просматривать препараты, увеличивать нужные участки и учиться в удобное время.

Интерактивность и мотивация

По результатам открытых вопросов анкеты, большинство студентов заявили, что цифровые платформы способствуют повышению интереса к предмету, делают процесс обучения более интерактивным, а также снижают утомляемость по сравнению с классическими лекциями.

Качественные изменения

Преподаватели, наблюдавшие за группами в течение семестра, также отметили повышение вовлечённости студентов, более активное участие в практических занятиях и улучшение качества ответов на семинарах.

Заключение

Внедрение цифровых образовательных технологий в процесс изучения гистологии оказывает положительное влияние на успеваемость студентов. Проведённый анализ и опрос 150 обучающихся показали, что использование виртуальных микроскопов, интерактивных платформ и мультимедийных

материалов способствует более глубокому и качественному усвоению учебного материала. Цифровые инструменты повышают мотивацию студентов, делают обучение более наглядным и интерактивным, что особенно важно для понимания сложных структур тканей.

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ИНФОРМАЦИОННЫЕ И КОММУНИКАТИВНЫЕ ТЕХНОЛОГИИ

УДК 659

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АНАЛИЗ ТЕКУЩЕГО СОСТОЯНИЯ БРЕНДА КАК ОСНОВА ФОРМИРОВАНИЯ ЕГО КОМПЛЕКСНОГО ОБРАЗА

АННОТАЦИЯ. *В статье рассматривается теоретическая роль анализа текущего состояния бренда в процессе формирования его комплексного образа. Раскрываются ключевые подходы к исследованию бренда, включающие pestel-анализ внешней среды, модель 5w шеррингтона для изучения целевой аудитории, конкурентный анализ, призму идентичности ж.-н. Капферера и swot-анализ. Показано, что аналитический этап обеспечивает целостное понимание структуры бренда, факторов его восприятия и рыночного позиционирования. Сделан вывод о том, что диагностика бренда служит методологической основой для выстраивания устойчивого стратегического и визуально-коммуникативного образа бренда.*

Ключевые слова: *бренд, анализ бренда, комплексный образ бренда, идентичность бренда, имидж, позиционирование.*

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ANALYSIS OF THE CURRENT STATE OF THE BRAND AS A BASIS FOR FORMING ITS COMPREHENSIVE IMAGE

Abstract. *This article examines the theoretical role of analyzing a brand's current state in developing a comprehensive brand image. Key approaches to brand research are discussed, including PESTEL analysis of the external environment, Sherrington's 5Ws model for target audience analysis, competitive analysis, J.-N. Kapferer's identity prism, and SWOT analysis. It is demonstrated that the analytical stage provides a holistic understanding of the brand's structure, perception factors, and market positioning. It is concluded that brand diagnostics serves as a*

methodological basis for developing a sustainable strategic and visual-communicative brand image.

Key words: *brand, brand analysis, complex brand image, brand identity, image, positioning.*

Бренд в современной экономике рассматривается как стратегический нематериальный актив, обеспечивающий устойчивое конкурентное преимущество предприятия. В условиях информационной открытости, насыщенности рынков и усиления конкуренции именно образ бренда становится инструментом дифференциации и доверия. Формирование комплексного образа бренда представляет собой многоэтапный процесс, включающий исследование, проектирование и коммуникационное внедрение. Среди этих этапов анализ текущего состояния бренда занимает фундаментальное место, так как позволяет выявить реальные характеристики бренда, определить их восприятие рынком и заложить основу для дальнейшей разработки стратегии позиционирования и айдентики.

Понятие «бренд» в научной литературе трактуется как система восприятий и ассоциаций, объединяющая рациональные и эмоциональные характеристики продукта или компании. Ж.-Н. Капферер определяет бренд как «обещание, выраженное в виде символов, опыта и ценностей, воспринимаемых целевой аудиторией» [3].

Современные исследователи выделяют два аспекта бренда – внутренний (идентичность) и внешний (имидж и репутация). Взаимосвязь этих аспектов образует комплексный образ бренда, включающий визуальные, смысловые и поведенческие элементы.

Анализ бренда – это диагностический процесс, направленный на определение его рыночного положения, восприятия, конкурентных преимуществ и слабых сторон. Он является отправной точкой при разработке стратегии формирования комплексного образа бренда, поскольку обеспечивает эмпирическую базу для всех последующих управленческих решений.

Рассмотрим основные этапы анализа состояния бренда.

1. Анализа макросреды.

PESTEL-анализ позволяет рассматривать бренд как субъект, взаимодействующий с макросредой, где политические, экономические, социальные, технологические, экологические и правовые факторы формируют его контекст существования. Пример PESTEL-анализ представлен на рисунке 1.

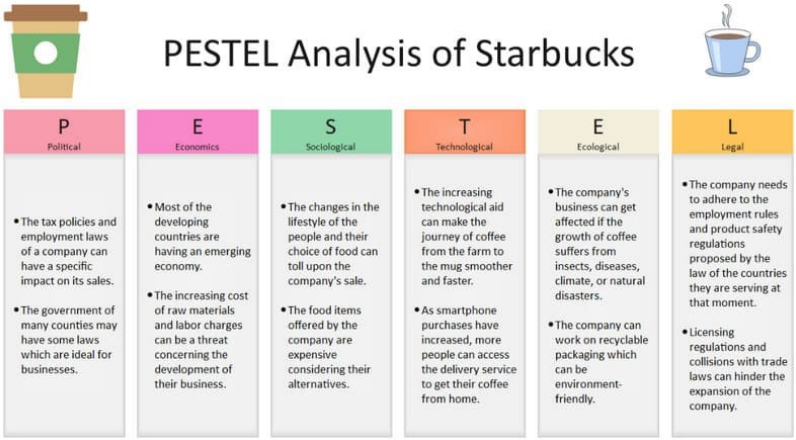


Рис. 1. Пример оформления PESTEL-анализа

В теории брендинга этот метод выполняет двойную функцию:

– определяет внешние возможности и угрозы для формирования имиджа;

– задаёт рамки идентичности бренда, соответствующие общественным ожиданиям и культурным трендам.

2. Анализ целевой аудитории.

Методика 5W рассматривается как универсальный инструмент для описания целевой аудитории и определения точек соприкосновения бренда с потребителем. Данная методика включает 5 ключевых вопросов – «что?», «кто?», «почему?», «когда?», «где?» [7]. Пример сегментирования целевой аудитории можно рассмотреть в таблице 1.

Таблица 1

Пример сегментирования целевой аудитории по методике «5W» Марка Шеррингтона [4]

Вопрос	Способ сегментации
What? / Что?	Сегментация по типу товара. Например: вода в 5 л канистрах, вода класса премиум, вода в пластиковых бутылках и т. д.
Who? / Кто?	Сегментация по типу потребителя. Например: пол – мужчины, женщины; возраст – от 14 и старше; уровень образования – не имеет значение и т. д.
Why? / Почему?	Сегментация по типу мотивации к совершению покупки. Например: необходимость пить воду каждый день, забота о здоровье, проблемы с экологией и т. д.
When? / Когда?	Сегментация по ситуации, в которой совершается покупка. Например: ежедневный поход в супермаркет, покупка летом «на бегу», чтобы утолить жажду и т. д.

Where? / Где?	Сегментация по каналам сбыта. Например: продажа в супермаркетах, местных киосках и т. д.

Методика 5W Шеррингтона позволяет системно собрать и структурировать данные о целевой аудитории, выявив ключевые характеристики и факторы, влияющие на поведение потребителей.

3. Конкурентный анализ и диагностика рыночного положения.

Конкурентный анализ является ключевым элементом в системе формирования комплексного образа бренда: он даёт понимание относительного положения компании на рынке, позволяет выявить незаполненные ниши и обосновать стратегию позиционирования.

В прикладных исследованиях целесообразно применять поэтапную методику, включающую отбор сопоставимых конкурентов, формирование набора критериев оценки, количественную (рейтинговую) оценку по каждому критерию и визуализацию результатов для интерпретации и принятия управленческих решений. Такая пошаговая структура широко используется в практических руководствах по конкурентному анализу [9].

Первый шаг – отбор круга конкурентов. Для корректного отбора рекомендуется обратиться к таким инструментам, как сайты-агрегаторы, поисковые запросы, каталоги компаний, мониторинг социальных сетей и рекламы конкурентов.

Следующий шаг – формирование набора критериев сравнения. Анализ целесообразно строить по сбалансированному набору показателей, покрывающих продуктовую, имиджевую и маркетингово-коммуникационную составляющие бренда [8]. Методология выбора критериев должна опираться на особенности отрасли (к примеру, в строительстве особенно важны репутация, опыт на рынке и визуализация проектов).

Оценка каждого из критериев путем подробного описания будет являться качественным этапом исследования конкурентной среды.

Для количественной оценки используется как правило используется пятибалльная шкала, где 1 соответствует минимальной развитости показателя, а 5 – максимальной. Сама оценка может выполняться даже одним аналитиком (метод экспертной оценки), но для снижения субъективности и повышения надёжность выводов можно привлечь группу экспертов.

Полученные баллы по каждому критерию преобразуются в единую шкалу и визуализируются с помощью радиальной («паучок») диаграммы. Каждая ось диаграммы соответствует одному критерию, а соединение точек даёт многоугольник, визуально представляющий профиль бренда [2]. Пример такой диаграммы представлен на рисунке 2.



Рис. 2. Пример многоугольника конкурентоспособности

Многоугольник конкурентоспособности удобен для сравнения нескольких компаний на одном графике: различия в форме и площади многоугольника наглядно показывают сильные и слабые стороны каждого игрока.

Завершающий шаг – интерпретация результатов и выводы для позиционирования. Значимые «провалы» конкурента по важным для потребителя критериям указывают на возможность занять нишу, сильные стороны конкурентов в свою очередь показывают, какие ценности воспринимает рынок и какие барьеры придется учитывать [2].

4. Идентичность и имидж бренда как ядро комплексного образа.

Филип Котлер и Кевин Лэйн Келлер подчеркивают, что идентичность бренда – это не то, как бренд воспринимается сейчас, а то, каким он хочет быть в сознании аудитории [5].

Самая известная модель анализа идентичности бренда – «Brand Identity Prism», предложенная Жан-Нуалем Капферером, включает шесть взаимосвязанных граней: физику, индивидуальность, культуру, взаимоотношение, отражение и самовосприятие. Ниже, на рисунке 3, можно наглядно увидеть данную модель.



РИС. 3. МОДЕЛЬ Ж.-Н. КАПФЕРЕРА

ДАННАЯ МОДЕЛЬ СОЕДИНЯЕТ ВНУТРЕННИЕ И ВНЕШНИЕ СТОРОНЫ БРЕНДА И СЛУЖИТ ОСНОВОЙ ДЛЯ ПОНИМАНИЯ ФОРМИРОВАНИЯ КОМПЛЕКСНОГО ОБРАЗА.

Имидж бренда – это восприятие бренда аудиторией на основе визуальных, коммуникативных, эмоциональных компонентов. Это то, как потребители видят бренд: через логотип, рекламу, визуальные и вербальные сигналы. Имидж может быть быстро изменяемым, когда коммуникация сильна [1]. В таблице 2 представлены наиболее популярные методы для оценки имиджа.

Таблица 2

Методы оценки имиджа бренда [6]

Метод	Что измеряется / на каких параметрах	Инструменты
Опросы / анкетирование потребителей	Ассоциации, восприятие бренда, доверие, удовлетворённость; эмоциональные и когнитивные аспекты имиджа.	Онлайн-опросы (в Google Forms, SurveyMonkey, Yandex Forms и т. п.), интервью, фокус-группы; шкалы Лайкерта.
Экспертная оценка	Внутренний взгляд, оценка качества управления, внутренняя репутация, восприятие в кругу профессионалов.	Интервью с экспертами, обзор отраслевых оценок, рейтингов.
Анализ отзывов и упоминаний (media / онлайн-рейтинги / отзовики)	Число и тональность упоминаний, отзывы клиентов, сетевые обсуждения, негативные / позитивные комментарии.	Анализ соцсетей, платформ с отзывами (Flamp, 2GIS, Яндекс Карты, Отзовик), мониторинг медийных материалов.
Наблюдение за поведением и индикаторами бренда	Поведенческие показатели: повторные покупки, рекомендации, уровень лояльности, доля рынка.	Метрики продаж, данные CRM, Net Promoter Score (NPS), Social Promoter Score или аналоги.
Сравнительный анализ на основе критериев	Сравнение конкурентов по тем характеристикам, которые влияют на имидж и репутацию (качество, устойчивость, доверие и др.).	Таблицы, рейтинги, визуализации, экспертные оценки, шкалы, весовая оценка критериев.

Необходимость оценки имиджа заключается в следующем:

– понимание слабых мест;
– формирование стратегии позиционирования и коммуникации;
– управление доверием аудитории;

– влияние на финансовые показатели.

5. Выявления сильных и слабых сторон, возможностей и гроз.

SWOT-анализ – это метод стратегического анализа, направленный на выявление внутренних сильных (Strengths) и слабых (Weaknesses) сторон бренда, а также внешних возможностей (Opportunities) и угроз (Threats). Он позволяет компании систематизировать информацию о собственных ресурсах, компетенциях и внешней среде для определения направлений развития и корректировки стратегии [10].



Рис. 4. Пример заполненной матрицы SWOT-анализа

SWOT-анализ является логическим завершением диагностического этапа. Он объединяет внутренние и внешние параметры бренда в единую систему и обеспечивает переход от диагностики к формированию образа.

Таким образом, можно сделать вывод, что диагностика текущего состояния бренда является основополагающим элементом формирования его комплексного образа. Анализ текущего состояния бренда обеспечивает системное понимание его внутренней структуры, особенностей его восприятия и факторов внешней среды, влияющих на образ. Результаты, полученные по итогу анализа, задают направление стратегического позиционирования, формирования и дальнейшего продвижения образа бренда.

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ЭТАПЫ ПРОДВИЖЕНИЯ КОМПЛЕКСНОГО ОБРАЗА БРЕНДА

Аннотация. *В статье рассматривается стратегически важный процесс продвижения комплексного образа бренда как ключевого фактора успеха в условиях современной конкурентной среды. Основное внимание уделено детальному разбору трехэтапной модели продвижения: постановке целей по методике SMART, разработке комплексной стратегии с акцентом на позиционирование, выбору каналов коммуникаций (реклама, PR, прямой маркетинг, SMM и др.) и формированию стратегического плана. Особое значение придается заключительному этапу – оценке эффективности стратегии с использованием системы метрик и ее последующей корректировке. Статья подчеркивает, что продвижение бренда является не разовым мероприятием, а непрерывным динамичным процессом, требующим стратегического планирования и адаптации, итогом которого становится создание ценного актива, обеспечивающего долгосрочную конкурентоспособность компании.*

Ключевые слова: комплексный образ бренда, продвижение бренда, этапы продвижения, SMART-цели, стратегия продвижения, маркетинговые коммуникации, оценка эффективности.

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STAGES OF PROMOTING A COMPREHENSIVE BRAND IMAGE

Abstract. *This article examines the strategically important process of promoting a comprehensive brand image as a key success factor in today's competitive environment. It focuses on a detailed analysis of a three-stage promotion model: setting SMART goals, developing a comprehensive strategy with an emphasis on positioning, selecting communication channels (advertising, PR, direct marketing, SMM, etc.), and formulating a strategic plan. Particular emphasis is placed on the final stage – evaluating the strategy's effectiveness using a system of metrics and subsequently adjusting it. The article emphasizes that brand promotion is not a one-time event, but an ongoing dynamic process that requires*

strategic planning and adaptation, the result of which is the creation of a valuable asset that ensures the long-term competitiveness of the company.

Keywords: *comprehensive brand image, brand promotion, promotion stages, SMART goals, promotion strategy, marketing communications, effectiveness evaluation.*

В современной конкурентной среде успех компании определяется не только качеством ее продукции, но и силой ее бренда. Для того чтобы занять устойчивую позицию на рынке, компаниям необходим последовательный и продуманный процесс продвижения, направленный на формирование комплексного образа. Удачное продвижение напрямую влияет на будущее восприятие бренда потребителем, что в конечном итоге определяет его долгосрочную успешность. Правильно выстроенный комплексный образ бренда приносит компании ряд неоспоримых конкурентных преимуществ:

– увеличение лояльности, когда покупатели быстрее принимают решение в пользу знакомого бренда;

– четкую идентификацию среди конкурентов;

– высокую маржинальность, позволяющую устанавливать цену выше рыночной;

– эффективную борьбу с оттоком клиентов, превращая их в постоянных приверженцев;

– формирование сплоченной команды сотрудников, которые с большим удовольствием работают в компании с устоявшимися ценностями;

– облегченное расширение товарной матрицы, так как известному бренду гораздо проще вывести на рынок новый продукт.

Для достижения этих целей процесс продвижения должен быть структурирован и последователен. Как правило, он включает три ключевых этапа: постановка цели; разработка стратегии продвижения; оценка эффективности стратегии и ее корректировка.

Рассмотрим каждый из этих этапов более детально [2].

1. Постановка цели: основа для дальнейших действий.

Сведения, полученные на этапе предварительного анализа рынка, конкурентов и целевой аудитории (ЦА), служат фундаментом для формирования целей продвижения. Эти цели могут быть ориентированы на различные аспекты: формирование положительного образа, повышение узнаваемости, усиление лояльности потребителей, завоевание новой аудитории или повышение сплоченности персонала [11].

Наиболее эффективным и удобным инструментом для формирования целей является методика SMART, предложенная экспертом по стратегическому планированию Джорджем Т. Дораном, на рисунке 1.

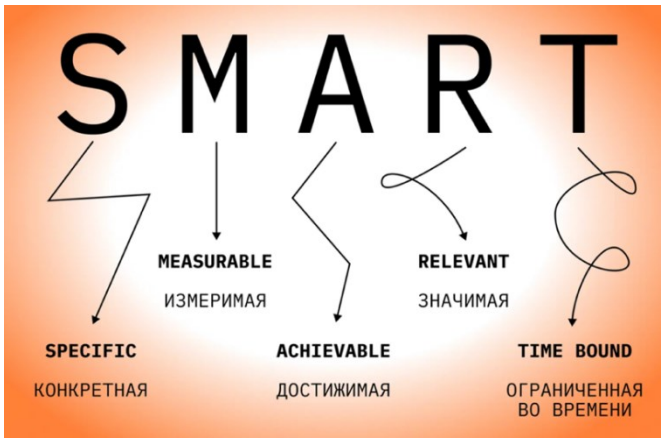


Рис. 1. Расшифровка аббревиатуры «SMART»

Согласно этой методике, цель должна быть:

– конкретной (Specific) – давать точный ответ на вопросы «Что надо сделать?» и «Каким образом?»;

– измеримой (Measurable) – иметь количественные критерии для оценки результата;

– достижимой (Achievable) – быть реалистичной с точки зрения имеющихся ресурсов и внешних обстоятельств;

– значимой (Relevant) – соответствовать общей стратегии и миссии бренда;

– ограниченной во времени (Time-bound) – иметь четкие временные рамки.

Применяя методику SMART, размытая цель «повысить узнаваемость» превращается в конкретный и измеримый план: «Путем увеличения количества контактов целевой аудитории с брендом через digital и офлайн-каналы повысить узнаваемость бренда на строительном рынке на 40% за период с 1 октября 2025 года по 31 марта 2026 года». Такая формулировка позволяет однозначно понять, к какому результату нужно прийти и в какие сроки.

2. Разработка стратегии продвижения.

После того как цель определена, можно переходить к разработке стратегии. На ее формирование влияют несколько факторов: вид рынка, целевые сегменты аудитории и стадия жизненного цикла бренда.

Позиционирование и бренд-платформа.

Основой любой эффективной стратегии является четкое позиционирование и проработанная бренд-платформа. Позиционирование направлено на создание уникального имиджа, который позволяет «отстроиться» от конкурентов и донести ключевые преимущества. Бренд-платформа – это комплекс ключевых сообщений, включающий миссию, видение и ценности. На данном этапе основное внимание уделяется разработке ключевых сообщений, которые должны быть ясными, краткими,

уникальными, согласованными с УТП, адаптивными под разные каналы и эмоциональными.

Для создания грамотных сообщений необходимо глубоко понимать потребности и барьеры каждого сегмента ЦА. Например, при строительстве частного дома для молодых семей ключевым сообщением может быть «Дома для вашей семьи в развитом районе», в то время как для инвесторов – «Инвестиции в недвижимость с гарантией роста стоимости».

Выбор каналов и инструментов маркетинговых коммуникаций.

Следующий шаг – определение оптимальных каналов для донесения этих сообщений. Рассмотрим наиболее популярные.

Реклама включает широкий спектр инструментов:

– ТВ-реклама подходит для крупных брендов, выводящих масштабные проекты;

– радиореклама отличается гибкостью и относительно низкой стоимостью;

– печатные издания (журналы, газеты) позволяют наглядно продемонстрировать визуализацию предлагаемых товаров/услуг брендов;

– POS-материал привлекают внимание в местах продаж, упрощая восприятие информации;

– наружная реклама обеспечивает высокую частоту контакта и привязку к объекту;

– внутренняя реклама размещается в помещениях, вызывая больше доверия;

– транспортная реклама эффективна для локального продвижения;

– цифровая реклама – таргетированная и контекстная, обеспечивает точный охват, измеримость и оплату за результат.

Связи с общественностью (PR) – формируют устойчивые отношения с аудиторией:

– инфлюенс-маркетинг – привлечение блогеров для усиления доверия [7];

– публикации в СМИ – экспертные статьи и пресс-релизы в профильных и местных медиа повышают авторитет компании [3];

– event-маркетинг – организация выставок, презентаций и фестивалей создает эмоциональную связь и формирует сообщество [6];

– внутренний PR – направлен на сплочение коллектива, повышение мотивации и снижение текучести кадров [4].

Прямой маркетинг: персонализированное взаимодействие через email-, SMS-рассылки и телемаркетинг, для индивидуального подхода к каждому клиенту [9].

Стимулирование сбыта – направлено на краткосрочное повышение спроса:

– промоакции – скидки, акции «приведи друга» стимулируют быстрые решения;

– программы лояльности – эффективно удерживают клиентов, поощряя их бонусами и участием в жизни бренда [1];

– трейд-маркетинг – стимулирование посредников к продажам товара/услуг брендов путем продуманной системы вознаграждений;

– SMM-маркетинг – ведение сообществ в соцсетях для создания контента, общения с аудиторией и формирования комьюнити [5];

– веб-сайт – является центральным хабом, выполняющим функции визитной карточки, инструмента для сбора лидов и демонстрации проектов (сайт требует постоянной поддержки и обновления) [10].

Определив каналы и выбрав конкретные маркетинговые инструменты, необходимо разработать план продвижения. Такой документ отражает долгосрочную стратегию, этапы, цели, способы коммуникаций и бюджет. Важно помнить, что брендинг – это не разовое мероприятие, а постоянная инвестиция в долгосрочный успех бизнеса. В бюджете целесообразно заложить резервный фонд на непредвиденные мероприятия или реакцию на активность конкурентов.

3. Оценка стратегии продвижения и корректировка

Заключительный, но непрерывный этап – оценка эффективности реализованных мероприятий. Для этого используется система метрик, которые делятся на общие и частные.

Общие метрики дают комплексную картину [8]:

– узнаваемость бренда – способность потребителей идентифицировать бренд среди конкурентов;

– лояльность к бренду – уровень привязанности и склонность к повторным покупкам/рекомендациям;

– динамика продаж – рост или снижение объема продаж;

– доля рынка – часть рынка, занимаемая брендом;

– посещаемость сайта и соцсетей – уровень интереса и вовлеченности аудитории.

Метрики для оценки отдельных инструментов позволяют точечно оптимизировать бюджет:

– Реклама – CTR, CPC, ROI, охват;

– PR – количество и тональность упоминаний в СМИ, охват аудитории;

– социальные сети – вовлеченность (лайки, комментарии, репосты), рост подписчиков, количество лидов;

– мероприятия – число участников, количество заключенных сделок;

– промоакции – рост продаж в период акции;

– веб-сайт – конверсия, поведение пользователей.

Выбор конкретных метрик зависит от изначально поставленных целей. Регулярный анализ этих показателей позволяет своевременно корректировать стратегию, перераспределять ресурсы и оптимизировать маркетинговые активность для достижения максимального результата.

Таким образом, продвижение комплексного образа бренда – это многоуровневая и динамичная задача, требующая стратегического планирования, внимания к деталям и постоянного диалога с целевой аудиторией. Четкое позиционирование, консистентность всех элементов бренд-коммуникаций, создание эмоциональной связи, адаптация к потребностям рынка и грамотное использование разнообразных каналов – все это является залогом формирования сильного и устойчивого образа. Важно помнить, что этот образ не статичен, он требует постоянного мониторинга, оценки и гибкой корректировки в условиях изменчивой рыночной среды. Инвестируя в комплексное продвижение, компания инвестирует в свое будущее, создавая не просто узнаваемый бренд, а ценный актив, который будет работать на успех компании долгие годы.

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MUAMMOLI TA'LIM TEXNOLOGIYASI TA'LIM JARAYONIDA O'RNI

Annotatsiya*: muammoli o'qitish texnologiyasining mazmunini, uni amalga oshiruvchi omillari tashkil etadi. Bu omillar - muammoli vaziyat, muammoli ta'limning pedagogik shart- sharoitlari, muammoli ta'limni amalga oshiruvchi metodlar va muammoli ta'limning o'quv motivlari tashkil etadi.*

Kalit so'zlari: *muammoli o'qitish, Dars, Didaktika, pedagogik-psixologiya, intellektual mashqlar, kreativ fikirlash, metodlar.*

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THE ROLE OF PROBLEM-BASED EDUCATIONAL TECHNOLOGY IN THE EDUCATIONAL PROCESS

Annotation: *the content of problematic teaching technology, the factors that make it possible. These factors are the problem situation, pedagogical conditions of problem education, methods that carry out problem education and educational motives of problem education.*

Keywords*: problem teaching, lesson, didactics, pedagogical-psychology, intellectual exercises, creative thinking, methods.*

Muammoli ta'lim texnologiyalari ta'lim jarayonini faollashtirish va samaradorligini oshirishga qaratilgan pedagogik yondashuvdir. Ushbu metodikaning asosiy g'oyasi shundan iboratki, inson tafakkuri dastlab muammoli vaziyatlarni hal qilish jarayonida shakllanadi, shu bilan birga u muammolarni aniqlash, ularni tadqiq qilish va samarali yechimlar topish qobiliyatiga ega. Muammoli ta'lim usullari talabalarning ijodiy fikrlash qobiliyati, kreativlik darajasi va mustaqil tahlil qilish mahoratini sezilarli darajada oshiruvchi pedagogik vosita sifatida tan olingan. Bu usullar aqliy faoliyatni rag'batlantiruvchi, shaxsni faol va izchil fikrlovchi mutaxassis sifatida shakllantiruvchi zamonaviy ta'lim texnologiyalari qatoriga kiradi. Buning asosiy sababi muammoli ta'limning faol shaxsni tarbiyalash maqsadiga mos kelishi va bilimni amaliy kontekstda qo'llashga yo'naltirilganligidadir. "Muammo — bu hal qilinishi, yechimi topilishi lozim bo'lgan masala yoki murakkab vaziyatdir". Ta'limdagi muammo deganda esa, o'quv jarayonida uchraydigan, o'qituvchi va talaba oldida turgan hal qilinishi zarur

bo‘lgan vaziyatlar, savollar yoki muayyan bilim va ko‘nikmalarni egallashga to‘sqinlik qiluvchi holatlar tushuniladi.

Muammo - javobi bevosita mavjud bilimda bo‘lmagan va yechish usuli noma’lum masala. Muammoni qo’yish va hal qilish mavjud bilimlar doirasidan chetga chiqish, yangicha yechish usullari, metodlarni qidirish taqozo qiladi.

Muammoli ta’limning asosiy vazifasi-talabalarni o‘rganilayotgan fan yoki mavzudagi muammoni chuqur anglash, uning ildizlarini tahlil qilish va optimal yechimni izlash jarayoniga faol jalb qilishdir. Bu jarayon nafaqat bilimni mustahkamlaydi, balki talabalarni real hayotdagi qiyinchiliklarga tayyorlashga ham xizmat qiladi. Maxsus tashkil qilingan faoliyatning o‘zini o‘zgartirish uchun tashkil etilgan bo‘lagi o‘qish faoliyati bo‘lib hisoblanadi. O‘qishning muhim qismi dars jarayonidagi topshiriqlar hisoblanadi. Darhaqiqat, kasbiy shakllantirsh jarayonidagi muhim aqliy harakatlar tizmi o‘quv faoliyati bo‘lib bu o‘zini-o‘zi talabalarning o‘quv faoliyatini tashkil etish va amalga oshirshga bo‘lgan yondoshuvlar muhim hisoblanadi. Tadqiqotchi olim V.Davidovning fikricha, shaxsning o‘quv faoliyatining o‘ziga xos xususiyatlari quyidagi omillar bilan belgilanadi. Shaxsiy ehtiyojlar, berilgan o‘quv topshiriqlari, motivatsiyon ommilar, amaliy harakatlar ketma-ketligi. Ayniqsa, ma’lumotlarni faol qabul qilish, mustaqil tadqiqot olib borish va ijodiy yechimlar topish bosqichlari zamonaviy ta’limda asosiy ahamiyatga ega bo‘lgan kompetensiyalarni shakllantirish uchun muhim hisoblanadi. Ushbu bosqichlar talabalarni faol o‘rganuvchiga aylantirishda hal qiluvchi rol o‘ynaydi.

Muammoli ta’limning asosiy g‘oyasi —talabalarga tayyor bilimlarni berish emas, balki ularni mavzu doirasidagi muammoli vaziyatlar orqali bilimni mustaqil izlash, o‘zlashtirish va qo‘llash jarayoniga jalb qilishdan iborat.

Jon Dyui (1859-1952)ning pedagogik g‘oyalari. Ta’lim bolaning “tabiiy ehtiyojlari” (kashfiyotchi instinkti, ijtimoiy aloqaga intilish) asosida tashkil etilishi kerak. Chikago eksperimental maktabi (1894): Dyui bu yerda bolalarni amaliy mehnat (qurish, loyihalash), badiiy ifoda (san’at orqali o‘zini namoyon qilish) va tadqiqot faoliyati (ilmiy kashfiyotlar)ga jalb qiluvchi to‘rtta innovatsion modelni amalga oshirdi. Bularga ijtimoiy aloqalar(jamoada ishlash), konstruktiv faoliyat (materiallar bilan tajriba o‘tkazish), badiiy ifoda(tasviriy san’at vositalari orqali fikr bildirish), tadqiqotchilik(noma’lumni o‘rganish) Dyui asosan nazariyaga emas, “amaliy faoliyat” asosiy o‘rin egallashini ta’kidalagan bo‘lib bolaning faolligi o‘qituvchi rolida yo‘l-yo‘riq ko‘rsatuvchi, talaba esa bilimni spontan va tabiiy tarzda egallaydi.

Muammoli ta’limning keyingi rivoji XX asrning 60-yillarida S.L.Rubinshteyn, M.I.Maxmutov, V.Okon kabi olimlar Dyui g‘oyalarini rivojlantirib, muammoli ta’limning psixologik va pedagogik asoslarini yaratdilar. Psixologik tamoyil fikrlash jarayoni muammoli vaziyat bilan boshlanadi, pedagogik tamoyil talabaning izlanish faoliyati (ma’lumotlarni tanlash, gipoteza ishlab chiqish) asosiy o‘rinda turishini ta’kidlagan. M.I.Maxmutovning kontseptsiyasining asosi 1975-yilda nashr etilgan “Muammoli ta’lim nazariyasi” asarida muammoli ta’lim tizimli pedagogik model sifatida qaralalishi hamda “Muammoli ta’lim – bu talabalarning o‘qituvchi muammoli vaziyat sharoitida tushuntirganlarini idrok etish

yo‘li bilan bilim va faoliyat usullarini o‘zlashtirishga doir muammoli vaziyatlarni mustaqil (yoki o‘qituvchi yordamida) tahlil qilish, muammolarni ta’riflash va ularni takliflar, farazlar vositasida (mantiqiy va intuitiv) ravishda asoslash va isbotlash, shuningdek yechimlarning to‘g‘riligini tekshirish yo‘li bilan hal qilishga oid o‘quv-bilish faoliyatidir” kabi fikirlarni ilgari suradi. Maxmutov o‘quv jarayonida muammoli vaziyatlarni tashkil etishning 3 bosqichli modelini taklif qildi bu modeli bugungi kunda STEM ta’limida keng qo‘llaniladi.

Muammoli o‘qitish usuli – bu talabalarning muammoli shaklda berilgan o‘quv materiali bilan faol hamkorlik qilishini ta’minlovchi jarayondir. Ushbu metodika davomida talabalar ilm-fan sohasidagi ob’yektiv ziddiyatlar va ularning echimlari bilan tanishib, mantiqiy tafakkur va bilimlarni ijodiy o‘zlashtirish ko‘nikmalarini egallaydi. Ilmiy adabiyotlarda muammoli o‘qitish tushunchasi bilan bog‘liq holda “muammo” va “muammoli vaziyat” atamalari ko‘p uchraydi. Ba’zan ular bir ma’noli deb qaralsa-da, aslida bu atamalar turlicha mohiyatga ega. Muammo – muayyan tartibda joylashtirilgan muammoli masalalar majmuidan iborat. Shuning uchun muammoli masalani muammoning aniqroq va soddalashtirilgan ko‘rinishi deb tushunish mumkin.

Muammoli ta’lim texnologiyasining asosiy jihatlari va ahamiyati shundan iboratki, muammoli ta’lim texnologiyalarini barcha fan sohalarida samarali qo‘llash imkoniyati berilishi bilim olish jarayoning jadallashishiga va har qanday yosh guruhidagi talabalar uchun moslashtirish imkonini beradi. Ajdodlarimiz qoldirgan pedagogik qarashlari, G‘arb pedagogikasining nazariy asoslari va XX asrning ikkinchi yarmidagi ilmiy izlanishlar orqali muammoli ta’lim yanada evolyutsiyaga yuz tutdi bu bilim olish jarayonining yanada mukammallashishiga olib keladi. O‘zbekistonda muammoli talim texnologiyalari STEAM ta’lim dasturlarida integratsiyaning oliy o‘quv yurtlarida joriy etilishi talabalarning mustaqil fikrlash qobiliyatini oshirishi, bilimlarni uzoq muddat saqlab qolish samaradorligini oshiradi. Xalqaro miqyosda ta’lim tizimlarida keng qo‘llanishi yuqori malakali mutaxassislar tayyorlashning asosini bo‘lib xizmat qiladi.

Muammoli ta’lim - bu nafaqat bilim olishning samarali usuli, balki yangi avlodni kreativ fikrlashga, innovatsion yechimlar topishga o‘rgatuvchi kuchli pedagogik vosita hisoblanadi. Uning kelajakda ham qo‘llanishi va takomillashtirilishi O‘zbekiston ta’lim tizimining rivojlantirishning muhim yo‘nalishlaridan biri bo‘lib qoladi.

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BO‘LAJAK PEDAGOGLARNING MUSTAQIL FAOLIYATIDA HUQUQIY FANLARINING AHAMIYATI

Annotatsiya: *Bo‘lajak pedagoglarning mustaqil faoliyatida huquqiy fanlar bo‘yicha bilimlarni shakllantirishda ularning kitob bilan mustaqil ishlashi alohida ahamiyatga ega. Maqolada bo‘lajak pedagoglarning mustaqil faoliyatida huquqiy fanlarning ahamiyati yoritib berilgan.*

Kalit so‘zlar: *yuridik ta’lim, mustaqil faoliyat, xuquq, bilim, ko‘nikma, malaka, amaliyot, ijtimoiy hodisa.*

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THE IMPORTANCE OF LEGAL SCIENCES IN THE INDEPENDENT ACTIVITIES OF FUTURE TEACHERS

Abstract. *In the independent work of future teachers, their independent work with books is of particular importance in the formation of knowledge on legal subjects. The article emphasizes the importance of legal disciplines in the independent work of future teachers.*

Key words: *legal education, independent activity, law, knowledge, skills, abilities, qualifications, practice, social phenomenon.*

Jahonning bir mamlakatida ro‘y berayotgan ijtimoiy-iqtisodiy larzalarning muqarrar ravishda boshqa mamlakatlarga ham o‘z ta’sirini o‘tkazishi bo‘lajak pedagoglarning mustaqil faoliyatida xuquqiy fanlarni o‘rganishning ahamiyati katta ekanligini ko‘rsatadi. Bo‘lajak pedagoglarning mustaqil faoliyati o‘quv auditoriyasidagi mashg‘ulotlarni to‘ldiradi va rivojlantiradi. Mustaqil ta’lim - olingan bilim, ko‘nikma va malakalarni mustahkamlash, qo‘shimcha ma’lumot yoki materialni mustaqil o‘rganish maqsadidagi o‘quv shaklidir.

Bo‘lajak pedagoglarning mustaqil faoliyatida huquqiy fanlarni bilish umumiy ilmiy bilimlarning bir qismini tashkil etadi. Huquqiy fanlar nafaqat huquqiy bilimlar tizimini, balki yuridik amaliyot sohasini ham anglatadi. Yuksak darajadagi huquqiy madaniyatga erishishning yagona yo‘li – huquqiy ta’lim va huquqiy tarbiyani isloh qilish va rivojlantirishdir. Chunki huquqiy savodxonlik huquqiy madaniyat asosidir.

Aynan bilimlarni mustaqil egallash jarayonida shaxsning mustaqilligi shakllanadi, bu murakkab vazifalar va muammoli vaziyatlarni hal qilishda amalga oshiriladi va shaxsning ichki o‘zini o‘zi boshqarish tizimining mexanizmlarini

rivojlantirish, shu jumladan bilish va aqliy faoliyat natijasi hisoblanadi. Mustaqillik o‘z oldiga vazifa qo‘yish, samarali mehnat qilish, yangi vaziyatlarda tashabbus ko‘rsatishda o‘z ifodasini topadi. Bilish jarayoni nuqtai nazaridan: diqqatni boshqarish, mustaqillik, mantiqiy dalillar va qaror qabul qilish uchun zarur faoliyat usullarini tanlashda o‘z aksini topadi, o‘z-o‘zini baholash obyektivligi “mustaqil bilish” tushunchasiga kiritiladi.

Jahonning bir mamlakatida ro‘y berayotgan ijtimoiy-iqtisodiy larzalarning muqarrar ravishda boshqa mamlakatlarga ham o‘z ta’sirini o‘tkazishi bo‘lajak pedagoglarning mustaqil faoliyatida xuquqiy fanlarni o‘rganishning ahamiyati katta ekanligini ko‘rsatadi.

2020 yil 29 aprelda O‘zbekiston Respublikasi Prezidentining “O‘zbekiston Respublikasida yuridik ta’lim va fanni tubdan takomillashtirish bo‘yicha qo‘shimcha chora-tadbirlar to‘g‘risida”gi Farmoni qabul qilindi [1]. Mamlakatimizda amalga oshirilayotgan sud-huquq tizimidagi tub islohotlar yangi bosqichga ko‘tarildi. Bu islohotlarning asl mohiyati xalq farovonligini oshirish, jamiyatda ijtimoiy adolat va demokratiya tamoyillarining ustuvorligini ta’minlashga qaratilgan bo‘lib, ularning sur’ati va natijalari har birimizning bugungi kundagi shijoatimiz va harakatimizga bog‘liqdir.

Yuqori malakali mutaxassislar tayyorlash bugungi kunning dolzarb vazifalaridan biri hisoblanadi. Bo‘lajak pedagoglarning mustaqil faoliyati o‘quv auditoriyasidagi mashg‘ulotlarni to‘ldiradi va rivojlantiradi. Mustaqil ta’lim - olingan bilim, ko‘nikma va malakalarni mustahkamlash, qo‘shimcha ma’lumot yoki materialni mustaqil o‘rganish maqsadidagi o‘quv shaklidir [5].

Bo‘lajak pedagoglarning mustaqil faoliyatida xuquqiy fanlar hamda talaba tomonidan o‘zlashtirilishi lozim bo‘lgan bilim, ko‘nikma va malakalarni shakllantirish o‘qituvchi maslahati va tavsiyalari asosida auditoriya yoki auditoriyadan tashqarida bajariladi.

Bo‘lajak pedagoglarning mustaqil faoliyati masalalari Z.Nishonova [2], J.Tolipova [3] va N.Xalilov [4]larning mustaqil ta’lim shakllari haqidagi tadqiqotlarida ko‘rib chiqilgan.

O.Qo‘ysinov kasb ta’limi yo‘nalishi bo‘yicha ta’lim olayotgan bo‘lajak bakalavr-o‘qituvchilarda mustaqil bilim olishga qiziqish va qobiliyatni, pedagogik madaniyatni takomillashtirishga oid ilmiy ishlarida mustaqil bilim olish usullariga to‘xtalib o‘tgan [6].

Mustaqil ta’lim o‘quv faoliyatining barcha bosqichlarida katta ahamiyatga ega. Ular qatoriga: bilish muammolarni yaratish; muammoli turdagi topshiriqlarni bajarish; olingan bilimlarni mustahkamlash; ilgari egallangan bilimlardan foydalanish ko‘nikma va malakalarini rivojlantirish va boshqalarni kiritish mumkin.

Bo‘lajak pedagoglarning mustaqil faoliyatida huquqiy fanlarni bilish umumiy ilmiy bilimlarning bir qismini tashkil etadi. Huquqiy fanlar nafaqat huquqiy bilimlar tizimini, balki yuridik amaliyot sohasini ham anglatadi.

Huquqiy fanlar bir qator asosiy xususiyatlarga ega:

- bu siyosatshunoslik, chunki u huquq, davlat va siyosat sohalariga taalluqli ijtimoiy hodisalarni o‘rganadi;

- bu ijtimoiy fan, chunki ijtimoiy hodisalarni o‘rganadi;

- bu ijtimoiy fan amaliy xarakterga ega, chunki huquqshunoslik huquqiy hodisalarni amaliy ehtiyojlar uchun o‘rganadi.

Avvalo, huquqiy fanlar predmeti davlat va huquqning faoliyat ko‘rsatish qonuniyatlari, ularning kelib chiqish va rivojlanish qonuniyatlari, muhim belgilari, shuningdek, huquq materiyasining o‘zi – dogmadir. Huquqiy dogma deganda huquqiy nazariya va amaliyot asos bo‘lgan, o‘rnatilgan va umume’tirof etilgan qoidalar tushuniladi. Huquqiy fanlar, shuningdek, huquqiy ishlarni yuritish, qonunlar va boshqa normativ hujjatlarni yaratish, huquqiy hujjatlarni ishlab chiqish qoidalari va usullarini ifodalovchi yuridik texnikani ham o‘z ichiga oladi.

Har bir insonning kundalik hayotida tez-tez uchraydigan savollar tug‘iladi, ya’ni ishdagi ro‘y beradigan har xil vaziyat (sharoitlar)da unga qanday to‘g‘ri yondoshish, yoki jamoat joylarida, uyda va hokazo hollarda. Umuman qisqacha aytganda, davlat jamiyat va boshqa kishilarning manfaatlaridan kelib chiqqan holda o‘zingni qanday tutish zarur, degan savol tug‘iladi.

Bu savollarga javobni ko‘pchilik hollarda kishilarning bir necha avlodlari tajribalaridan kelib chiqib, jamiyatda o‘z shaklini topgan (yoki shakllangan) ijtimoiy (sotsial) normalardan izlash mumkin.

Lekin shuni ta’kidlash kerakki, sotsial (ijtimoiy) normalar tizimi normativ tartibga solish tizimining faqat ma’lum qismi sifatida yuzaga chiqadi. Sababi jamiyatda ikki xil normalar (huquqiy qoidalar) harakat qiladi, bularga:

a) sotsial (ijtimoiy) texnik;

b) ijtimoiy (sotsial) shaxsiy normalar kiradi.

Jumladan, normalar inson hulqining ijtimoiy munosabatlar doirasi tabiat, texnika bilan munosabatlarini tartibga solishda qo‘llaniladi.

Yuksak darajadagi huquqiy madaniyatga erishishning yagona yo‘li – huquqiy ta’lim va huquqiy tarbiyani isloh qilish va rivojlantirishdir. Chunki huquqiy savodxonlik huquqiy madaniyat asosidir. “Huquqiy madaniyat – fuqarolarning yetukliligi va ongliligini ko‘rsatuvchi mezon. Huquqiy madaniyat tushunchasi huquqning rivojlanish darajasi, aholining huquq haqidagi tushunchasi, qonunlarning ahvoli, huquqni amalga oshirish ishlarini tashkil etish darajasi, huquqning obro‘yi singari elementlardan tashkil topadi... Shaxs qanchalik huquqiy bilimga ega bo‘lmasin, qonun va boshqa qoidalarga amal qilmasa, u jamiyat uchun katta zarar bo‘lib, bu huquqiy madaniyatsizlikni keltirib chiqaradi. Demak, huquqiy madaniyatga shaxsning o‘z huquq, erkinliklarini anglaganligini ko‘rsatuvchi mezon sifatida qarashimiz mumkin... Huquqiy madaniyat insonning huquq, jamiyat va davlatga bo‘lgan munosabatining alohida shaxs, uning huquq va manfaatlariga bo‘lgan munosabati bilan chambarchas bog‘liq, huquqiy madaniyat darajasi huquqiy tizimning rivojlanganlik darajasi, davlat va jamiyat institutlarining xalqchilligi, aholining bilim darajasi, huquqiy ong va jamiyatdagi huquqiy mafkura bilan uzviy aloqadorlikdadir”.

Aynan bilimlarni mustaqil egallash jarayonida shaxsning mustaqilligi shakllanadi, bu murakkab vazifalar va muammoli vaziyatlarni hal qilishda amalga oshiriladi va shaxsning ichki o‘zini o‘zi boshqarish tizimining mexanizmlarini

rivojlantirish, shu jumladan bilish va aqliy faoliyat natijasi hisoblanadi. Aqliy mustaqillik shaxs mustaqilligining ajralmas qismi bo‘lib, u o‘z navbatida hayotiy faollikning shakllanishi va namoyon bo‘lishining asosini tashkil etadi, ular uchun zaruriy shart bo‘lib xizmat qiladi.

Yangi ijtimoiy sharoitlarda, axborot maydonining sezilarli darajada kengayishi, yangi manbalar va axborot tashuvchilarning paydo bo‘lishi bilan bilim olish shartlari shunga mos ravishda o‘zgardi, mustaqil ta’lim metodikasi va didaktikasi sezilarli darajada rivojlandi, shuningdek mustaqil ta’lim jarayonining tashkiliy-pedagogik shartlarini ham o‘zgartirish kerak bo‘lib qoldi. Aytish mumkinki, kerakli bilimlar miqdorini o‘zlashtirishga shaxsning o‘z faolligi, bilim olishga intilishi, o‘z faoliyatiga ijodiy munosabati orqali erishish mumkin.

“Mustaqillik” va “bilish faoliyati” tushunchalari bir xil tartibdagi hodisalardir. Mustaqillikni shaxsning o‘zligi, qobiliyati, insonning faoliyat ko‘rsatkichi sifatida qarash mumkin. Mustaqillik - bu tashqaridagilarning ishtiroki va yordamisiz, tashqi undashlarsiz faoliyatni amalga oshirishdir. Mustaqillik o‘z oldiga vazifa qo‘yish, samarali mehnat qilish, yangi vaziyatlarda tashabbus ko‘rsatishda o‘z ifodasini topadi. Bilish jarayoni nuqtai nazaridan: diqqatni boshqarish, mustaqillik, mantiqiy dalillar va qaror qabul qilish uchun zarur faoliyat usullarini tanlashda o‘z aksini topadi, o‘z-o‘zini baholash obyektivligi “mustaqil bilish” tushunchasiga kiritiladi. O‘quvchilarning bilish qobiliyatlarini rivojlantirish mustaqil ish jarayonida yuz beradi, u amaliy ko‘nikma va malakalarni shakllantirishga yordam beradi, egallangan bilimlarni o‘zlashtirilishiga yordam beradi.

Huquqiy fanlar qonun va qonuniyatlar bilan bir qatorda isbot talab qilmaydigan o‘zgarmas haqiqatlarni, ya’ni huquqiy tamoyillar va aksiomalarni o‘rganadi. Qadim zamonlardan beri ko‘plab tamoyillar va aksiomalar shakllantirilgan, ammo adolatning eng oddiy elementar universal insoniy talablari tufayli bizning davrimizda ham o‘z ahamiyatini yo‘qotmagan.

Huquqiy fanlarga odatda yuridik ta’limotlar tarixi sifatida qaraladi. U o‘z predmeti bo‘yicha yangi obyektiv bilimlar olish, bu bilimlarni tizimlashtirish, o‘zi ochgan qonuniyatlar asosida turli davlat-huquqiy hodisa va jarayonlarni tavsiflash, tushuntirish va bashorat qilishni maqsad qilib qo‘yadi.

Huquqiy fanlarning zamonaviy metodologiyasida ko‘plab huquqshunos olimlar inqiroz hodisalarini qayd etadilar. Ko‘pincha tavsiflovchi xarakterga ega bo‘lgan va hech qanday ilmiy ahamiyatga ega bo‘lmagan huquqiy hujjatlarni sharhlash bilan chegaralangan tadqiqotlarga duch kelinadi.

Bo‘lajak pedagoglarning mustaqil faoliyatida huquqiy fanlar bo‘yicha bilimlarni shakllantirishda ularning kitob bilan mustaqil ishlashi alohida ahamiyatga ega. Huquqiy fanlarga kelsak, bular darslik, o‘quv qo‘llanma, qo‘shimcha adabiyotlar, ma’lumotnomalar, texnik hujjatlar, maxsus jurnallar, organlar va xizmatlarining ilmiy-texnik axborot nashrlari, ilmiy-ommabop adabiyotlar hisoblanadi. Kitob bilan ishlash qobiliyatini har qanday shakllantirilishi kerak bo‘lgan qobiliyatlar bilan birga shakllantirish kerak. Bo‘lajak pedagoglarning mustaqil faoliyatida huquqiy adabiyotlar va hujjatlar (qo‘llanmalar, jadvallar,

diagrammalar, texnik talablar, standartlar va boshqalar)dan ma’lumotlarni mustaqil ravishda izlash va qo‘llay olish uchun bibliografik ko‘nikmalarini shakllantirish kerak.

Natijada, aytish mumkinki, ko‘rib chiqilgan metodikalar inkor etib bo‘lmaydigan tarzda birlashtirilgan va tizimlashtirilgan afzalliklarga ega. Bo‘lajak pedagoglarning mustaqil faoliyatida huquqiy fanlarni o‘rganishda darslik bilan mustaqil ishlash talabani subyekt sifatida faoliyat tizimiga kiritadi, dastlab uning ongli va maqsadli faoliyat yuritish qobiliyatini nazarda tutadi, bajarilgan harakatlarning miqdori va sifatiga mos natijalarni olish (ko‘nikma, bilim, malaka, shaxsiy xususiyatlar) imkonini beradi. Darslik shunday ta’lim vositasi bo‘lib, uning yordamida talabalar mustaqil ravishda bilim, kasbiy mahorat asoslarini egallaydilar, o‘zlaridagi ijodiy qobiliyatlarni rivojlantiradilar, izlanish va tadqiqot faoliyati bilan shug‘ullanadilar.

Mamlakatdagi iqtisodiy-ijtimoiy islohotlarning samarali bo‘lishini ta’minlash, ishlab-chiqarishda va ijtimoiy hayotning barcha bo‘g‘inlarida inson omilidan foydalanish, har bir ijtimoiy shaxs imkoniyatlarini to‘la-to‘kis yuzaga chiqarish masalasi bevosita huquqiy bilimlarni ta’lim tarbiya jarayoniga keng tadbiq etish vazifalarni amalga oshirish ulkan ahamiyatga egadir Shu boisdan hozirgi kunda barcha rivojlangan va rivojlanish yo‘lidan borayotgan mamlakatlar birinchi galda o‘z fuqarolarining ma’naviy va intellektual, jismoniy va ruhiy barkamolligiga va undan ijtimoiy manfaatlar uchun samarali foydalanish yo‘llarini izlashga jiddiy e’tiborni qaratmoqdalar. Shu nuqtai nazardan, har bir mamlakatda inson va uning faoliyati o‘rtasidagi uyg‘unlikni ta’minlashga qaratilgan ijtimoiy-siyosiy bilimlarni amaliyotga tadbiq etish alohida ahamiyat kasb etadi.

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RESEARCH INTO THE LOW-FREQUENCY REGION OF THE VIBRATION SPECTRUM OF CONDENSED MATTER

Abstract: *In this study we investigate vibrational and rotational relaxation of a bromobenzene molecule in the broad spectral region at the room temperature using the Raman scattering spectroscopy method. Experimentally, and by using quantum-chemical calculation, it has been shown that hydrogen atom can have H – bond with carbon atom both inside the molecule, as well as between bromobenzene molecules. Intense lines of the Raman scattering can be observed in the low frequency region of the spectrum, which opens the possibility for observation of the detection of rotational swings of the separate atomic groups in complex molecules.*

Key words: *spectrum, Raman scattering, bromobenzene, intermolecular interaction, rotational-shaking motion.*

Introduction

Combinational or Raman scattering of light (RSL) – is still continuing to be one of the informative methods in the study of the subtle processes in condensed matter systems [1-5]. Despite the rather extensive experimental information on the behavior of various physical characteristics of monohalosubstituted benzenes, there is currently no unified idea of the processes occurring in these liquids at the molecular level. This situation stimulates further studies of these promising objects.

In this work we present results of investigation of vibrational and rotational relaxation of the bromobenzene molecule – C_6H_5Br in the broad spectral range. The bromobenzene molecule belongs to the group of monohalosubstituted benzene. Regarding the geometric structure of monohalobenzenes, there is no consensus in the literature. The most common model is a planar structure with a benzene ring in the form of a regular hexagon.

Experimental part

Bromobenzene, depending on the grade of purity of the initial product, was purified according to refs [6]. The degree of purity of the object was controlled by the ratio of the intensities of the shifted and unshifted Mandelstam-Brillouin components of the polarized part of molecular light scattering and by the boiling point.

The Raman spectra were obtained with a laser scanning confocal microscope (Fig.1.). The STR250 laser Raman spectrometer with confocal microscopy is a very compact and flexible system with high sensitivity for measuring weak Raman scattering from different materials.

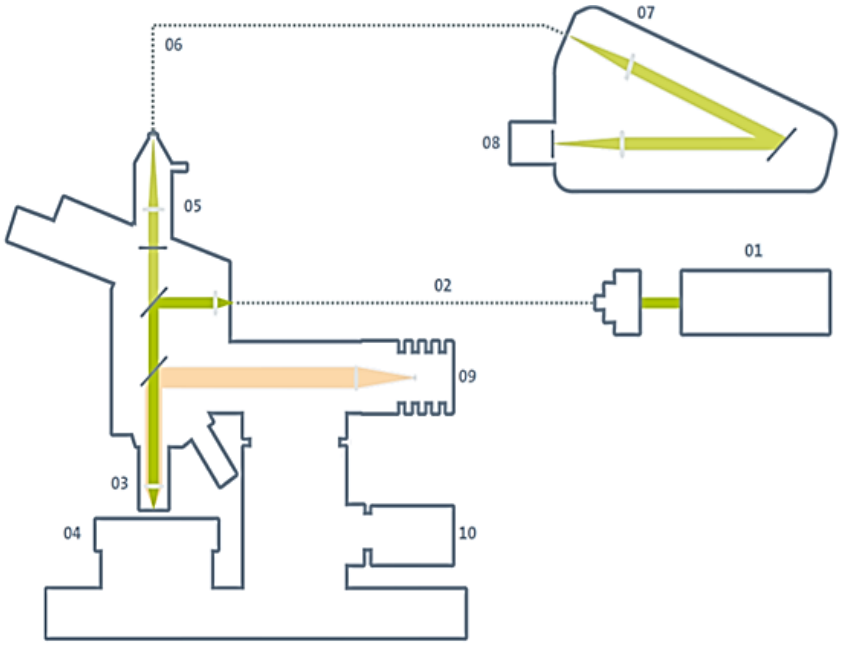


Figure 1. Scheme of the experimental setup for recording the spectra of Raman scattering of light: 01 - exciting laser; 02, 06 - optical fiber connection with a bandwidth of up to 90%; 03 - tuned lens; 04 - microscope stage; 05 - set of filters; 07 - STR250 spectrometer; 08 - piezoelectric detector; 09 - white lighting; 10 - focus screw.

Results and discussion

The Raman spectrum of bromobenzene recorded in the region of intramolecular interactions at room temperature in the spectral frequency range 50 ÷ 3200 cm^{-1} is shown in Fig. 2.

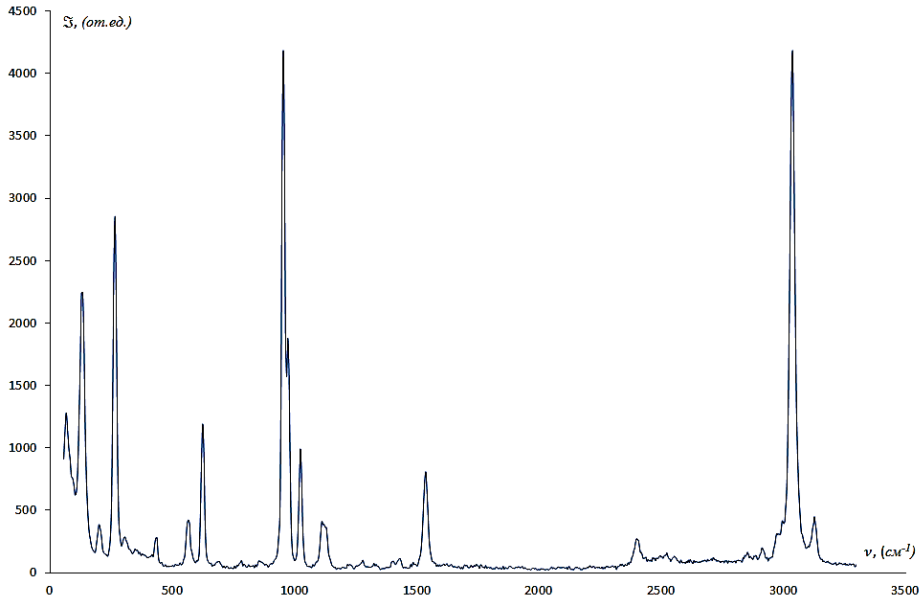


Figure. 2. Raman spectrum of bromobenzene at room temperature in the frequency range 50 ÷ 3200 cm^{-1}

According to the spectrum shown in Fig.2, a large number of lines are present in the low-frequency region of the Raman spectrum, the most intense of which has a frequency value of 266 cm^{-1}, close to the value calculated by the quantum chemical method. In addition, the spectrum contains intense lines with frequency values of 133 cm^{-1} and 624 cm^{-1}. In general, significantly more lines are found in the observed spectrum than in the literature data on the Raman spectra for the object under discussion.

An analysis of works on the investigations of the Raman spectra of liquids in the low frequency range showed that such works are very limited. Nevertheless, observations of rotational swings in the Raman spectra of methyl and heavier atomic groups are known. Note that a direct observation of spectral lines caused by rotational swings greatly facilitates the determination of the thermodynamic functions of molecules by means of statistical calculations. In this regard, special attention was paid to the observation of rotational swings of molecules.

The interpretation of the observed Raman lines, in particular, the assignment of some of the lines to rotational oscillations, is difficult without a special theoretical analysis, because the low-frequency spectrum of bromobenzene is rich in lines. This means that deformation oscillations are also observed along with rotational oscillations. For molecules containing heavier groups, as in our case, bromobenzene, the lines lying in the lowest frequency range of the spectrum are usually referred to as rotational swings. If the height of the potential barrier of rotational oscillations is known, it is quite easy to determine the corresponding frequency ($\nu \sim\sqrt{U}$), and by comparing the calculated values of the frequencies with those observed in the experiment, one can select the frequencies of rotational oscillations.

We calculated potential barriers using the methodology described in works [3,5]. To determine the height of potential barriers, we need structural data values with high accuracy, such as bond length and angles between bonds of bromobenzene atoms, determined by quantum chemical calculations. The results of such calculations, considering the intramolecular interaction of bromobenzene, are shown in Fig. 3.

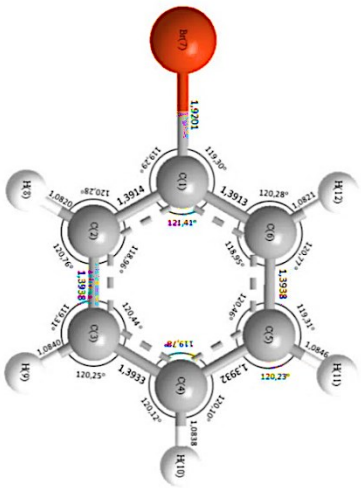


Fig.3. Calculated structure of bromobenzene

The results of the calculation of potential barriers, the calculated and experimental values of the frequencies for the most intense line of rotational oscillations of the RSL for the bromobenzene molecule are presented in Table 1.

Table 1.

Substance	U, cal/mole (calculated)	ν, cm^{-1}	
		Calculated	Experimental
C_6H_5Br	5500	240	266

From the data we obtained on the low-frequency Raman spectra of bromobenzene, it can be seen that we could establish the observation of rotational swings of atomic groups in the spectrum. From our point of view, the low intensity of these lines, which is also confirmed by our early observations, and the region of the spectrum which is inappropriate for work, were the reasons for the lack of systematic studies of rotational oscillations by the Raman method. However, our studies show that with careful selection of the conditions for recording Raman spectra, it is possible to obtain frequencies in the region of 150 cm^{-1} and even lower.

Conclusion

Using Raman spectroscopy, we have recorded a spectrum in the low frequency range, which indicates the observation of rotational swings of individual atomic groups of bromobenzene. It is shown that the patterns observed in scattering data can be interpreted on the basis of the mechanism of intermolecular vibrations of molecules caused by specific interactions between molecules, for example, rotational vibrations of one part of the molecules relative to another, and deformation vibrations, etc. The observed spectral bands are assigned to the type of vibrations in the Raman spectrum in bromobenzene. Intense Raman lines are observed in the low-frequency range of the spectrum, which opens up the possibility of observing the manifestation of rotational swings of molecules.

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OILADAGI ZO’RAVONLIKNI OLDINI OLISH INSTITUTLARI VA TUZILMALARI

Anotatsiya*: Ushbu maqolada oiladagi zo‘ravonlikni oldini olish masalasida xorijiy mamlakatlar tajribasi tahlil qilingan. Xususan, rivojlangan davlatlarda faoliyat yuritayotgan institutlar va maxsus tuzilmalar, ularning huquqiy asoslari hamda amaliy mexanizmlari yoritiladi. Maqolada Yevropa Ittifoqi, AQSh va boshqa mamlakatlarning oilaviy zo‘ravonlikka qarshi kurashish bo‘yicha ijtimoiy-huquqiy yondashuvlari ko‘rib chiqilib, ularning samarali jihatlari o‘rganiladi. Shuningdek, xorijiy institutlarning oila va jamiyatdagi ijtimoiy hamkorlikni rivojlantirish, ayollar va bolalarni huquqiy himoya qilishdagi o‘rni tahlil qilinadi.*

Kalit so‘zlar: *Oila, zo‘ravonlik, xorijiy tajriba, institutlar, tuzilmalar, huquqiy himoya, ayollar huquqlari, bolalar huquqlari, ijtimoiy hamkorlik.*

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DOMESTIC VIOLENCE PREVENTION: AN ANALYSIS OF INTERNATIONAL EXPERIENCE

Abstract: *This article analyzes the experience of foreign countries in the field of domestic violence prevention. Specifically, it examines the institutions and specialized structures operating in developed countries, their legal frameworks, and practical mechanisms. The article examines the socio-legal approaches of the European Union, the United States, and other countries to combating domestic violence, and examines aspects of their effectiveness. It also analyzes the role of foreign institutions in developing social cooperation in the family and society, as well as the legal protection of women and children.*

Keywords: *Family, violence, international experience, institutions, structures, legal protection, women's rights, children's rights, social cooperation.*

So‘nggi yillarda butun dunyoda salbiy tendensiyalar kuzatilmoqda, oilaviy zo‘ravonlik jinoyatlari ko‘paymoqda. Birinchi navbatda jismonan zaif yoki ijtimoiy himoyaga muhtoj oila a’zolariga (ayollar, bolalar, nogiron oila a’zolari va jinsi, yoshi, fiziologik, psixologik xususiyatlari, moliyaviy, maishiy yoki boshqa qaramliklari tufayli o‘zlariga qarshi zo‘ravonlik harakatlariga qarshilik ko‘rsata

olmaydigan boshqa shaxslar) qarshi qaratilgan zo‘ravonlik insonning asosiy huquqlarini buzish hisoblanadi.

Oilaviy zo‘ravonlikka qarshi kurash keng ko‘lamli ma’muriy-huquqiy va ma’muriy-protsessual tartibga solish masalalarini o‘z ichiga oladi huquqni muhofaza qilish organlari faoliyatida ko‘rib chiqish va qo‘llashni talab qiladi.

Zo‘ravonlik muammosi ko‘p yoki kamroq darajada har bir zamonaviy odamga ta’sir qiladi. Har bir inson hayotida kamida bir marta duch kelgan. Hayoti davomida ayollar, yoshi va ijtimoiy mavqeidan qat’i nazar, zo‘ravonlik xavfi ostida. Zo‘ravonlik buzg‘unchi kuch bo‘lib, uni kamsitadi, majburlaydi, bostiradi va ekspluatatsiya qiladi. Aynan, ayollarga nisbatan zo‘ravonlikka barham berish bilan bog‘liq muammolar inson hayotining barcha darajalarida: milliy, mintaqaviy va global darajada dolzarbdir.

Oiladagi zo‘ravonlik zamonaviy jamiyatning asosiy muammolaridan biridir. Ro‘yxatga olingan va anonim oiladagi zo‘ravonlik statistikasi shuni ko‘rsatadiki, oiladagi zo‘ravonlik ko‘pgina mamlakatlarda o‘rtacha oilada tez-tez uchraydigan hodisaga aylanmoqda [1].

A.M. Maks har bir alohida mamlakatda oilaviy tajovuz qurbonlari ahvolini yaxshilash jarayonini tezlashtiradi, deb ta’kidlaydi. Uning fikricha, “oiladagi zo‘ravonlik muammosini o‘rganishga global yondashuv olimlar va siyosatchilarga boshqa mamlakatlarning bu boradagi ijobiy va salbiy tajribasini hisobga olish va shu orqali har bir alohida mamlakatda oilaviy tajovuz qurbonlari ahvolini yaxshilash jarayonini tezlashtirish imkonini beradi” [5].

“Oilada zo‘ravonlik” tushunchasini birinchi marta I.G.Malkinoy-Pix, A.V.Vigodskoy, S.Y.Salamovoy, E.G. Krug va boshqalar o‘z tadqiqotlarida keltirib o‘tganlar. JSST ekspertlari (E.G.Krug va uning hamkasblari) oiladagi zo‘ravonlik tushunchasini quyidagicha izohlaydilar: “Oila a’zolari va sheriklar o‘rtasida sodir bo‘ladigan zo‘ravonlik (odatda doimiy bo‘lmasa)”.

Oilaviy zo‘ravonlikning ikkita asosiy qurboni mavjud: ayollar va bolalar. Erkaklarda o‘z ayollariga ko‘pincha, jismonan va subyektiv (axloqiy) tayziq o‘tkazish holatlari mavjud. R.Ismaylova ilmiy tadqiqotlarida oilada psixologik zo‘rovonlik, sabablari, oqibatlari va bartaraf etish usullari, G.P.Afonkin “Rossiyada oilaviy (maishiy) zo‘ravonlik uchun jinoiy javobgarlikni huquqiy ta’minlashning zamonaviy muammolari”, N.V.Dosina, Y.O. Smirnov “Oila hokimiyati zo‘ravonlik manbai sifatida (ijtimoiy siyosatda nazorat va yengish muammosi)”, V.M. Zakirova “Ajralish va oiladagi zo‘ravonlik - oilaviy disfunksiya hodisalari”, V.V.Pechenkin “Oilaviy zo‘ravonlik muammosini hal qilishda idoralararo hamkorlik”, zo‘ravonlik muammosini o‘rganish tajribasi”[6], A.Y.Slanova “Oiladagi zo‘ravonlik zamonaviy Rossiyada ijtimoiy muammo sifatida” kabi muammolar tahlil etilgan.

Mahalliy olimlardan zo‘ravonlik, oilaviy zo‘ravonlik masalalari bilan bog‘liq bo‘lgan tarixiy, huquqiy, falsafiy muammolari tahlil etilgan. Xususan, M.R. Sultonova asarlarida xotin-qizlarga nisbatan zo‘ravonlik muammosining ijtimoiy-psixologik jihatlari, X.SH.Ziyavutdinova ijtimoiy rollar va qadriyatlarning ayollarga nisbatan zo‘ravonlikni shakllanishiga ta’sirini tahlil etgan.

Oiladagi zo‘ravonlikning falsafiy jihatlari hokimiyat va bo‘ysunish tabiati, axloqiy tanlov va mas’uliyat axloqi, shuningdek, erkinlik, adolat va inson hayotining qadr-qimmati masalalariga bag‘ishlangan. Bunday zo‘ravonlikning sabablari gender rollari, ijtimoiy tengsizlik va hokimiyatning buzg‘unchi shakllari kabi tushunchalar, shuningdek, zo‘ravonlik oqibatlari ekzistensial tahdidlar va o‘zlikni yo‘qotish nuqtai nazaridan ko‘rib chiqiladi.

YE.S.Akimjanov va A.V. Semenistiy maqolasida oiladagi zo‘ravonlikka qarshi kurash bo‘yicha ayrim mamlakatlar tajribasi o‘rganiladi. Unda oiladagi zo‘ravonlik chegara bilmasligi, shuning uchun mamlakatlar o‘rtasida ushbu salbiy hodisaga qarshi kurashda ijobiy tajriba almashish oiladagi zo‘ravonlik holatlarini kamaytirish bo‘yicha samarali chora-tadbirlar ishlab chiqishga yordam berishi ta’kidlanadi[2]. Mualliflar davlatlar idoralararo hamkorlikdan to‘liq foydalanadigan tizimli yondashuvni ishlab chiqishlari kerak degan xulosaga kelishadi.

Albatta, oiladagi zo‘ravonlik ko‘pincha munosabatlardagi kuch nomutanosibligi sifatida qaraladi, bunda bir kishi o‘z kuchini boshqasiga hukmronlik qilish uchun ishlatadi. Falsafiy tahlil asosiy e’tiborni bu kuchning qanday amalga oshirilishi, asoslanishi va qanday shakllarga ega ekanligiga (masalan, jismoniy yoki ruhiy majburlash orqali) qaratiladi.

Oiladagi zo‘ravonlik adolat tamoyillariga zid keladi va insonning asosiy huquqlarini buzadi. Falsafiy tahlil jamiyat nima uchun bunday huquqlar hatto oilada ham buzilmasligi mumkin bo‘lgan sharoitlarni yaratishga intilishi kerakligini tushunishga yordam beradi.

Inson hayotining qadri: zo‘ravonlik inson hayotining oliy qadriyatini shubha ostiga qo‘yadi. Falsafa zo‘ravonlik jabrlanuvchining hayotini qanday qadrsizlantirishi, uning qadr-qimmatini yo‘qotishi va hayot mazmunini yo‘qotishiga olib kelishi mumkinligini o‘rganadi.

Oiladagi zo‘ravonlikning oldini olish ko‘p bosqichli dasturlarni ishlab chiqishni nazarda tutadi, masalan, maktab va universitetlarda sog‘lom munosabatlarga oid ma’rifiy kurslar, ijtimoiy normalarni o‘zgartirish va qonunchilikni mustahkamlashga qaratilgan targ‘ibot-tashviqot ishlari, shuningdek, jabrlanganlarni qo‘llab-quvvatlash va jinoyatchilarni qonuniy javobgarlikka tortish.

Muvaffaqiyatli xalqaro modellarga quyidagilar kiradi:

1. Ta’lim dasturlari.

Maktablar va universitetlardagi dasturlar: Sog‘lom munosabatlar o‘rnatish, sheriklarni hurmat qilish va zo‘ravonlikni qo‘llab-quvvatlovchi stereotiplarga qarshi kurashish ko‘nikmalarini o‘rgatadigan kurslarni amalga oshirish.

Ogohlantirish kompaniyalari: oiladagi zo‘ravonlik muammosi haqida xabardorlikni oshirish va jamiyatda murosasizlikni kuchaytirish uchun kampaniyalar o‘tkazish.

2. Qonunchilik va huquqiy chora-tadbirlar.

Qonunchilikni mustahkamlash: oiladagi zo‘ravonlikni jinoyat sifatida belgilovchi va aybdorlarga jazoni nazarda tutuvchi qonunlarni qabul qilish va amalga oshirish.

Jabrlanuvchilarni qo‘llab-quvvatlash: Jabrlanganlarni qo‘llab-quvvatlash tizimini yaratish, jumladan inqiroz markazlari, boshpanalar, huquqiy yordam va psixologik yordam.

Politsiya bilan hamkorlik: huquqni muhofaza qilish organlari xodimlarini oiladagi zo‘ravonlik holatlariga samarali javob berishga va jabrlanganlarning xavfsizligini ta’minlashga o‘rgatish.

3. Ijtimoiy qo‘llab-quvvatlash va madaniy o‘zgarishlar:

Agressorlar bilan ishlash: zo‘ravonlik sodir etganlarni reabilitatsiya qilish dasturlari ularning xatti-harakatlarini o‘zgartirishga va qaytalanishning oldini olishga qaratilgan. Jamoatchilik ishtiroki: muammolarni hal qilishda jamoalarni jalb qilish, mahalliy tashabbuslar va qo‘llab-quvvatlash tarmoqlarini yaratish.

Muvaffaqiyatli xalqaro tajribaga misollar:

Skandinaviya mamlakatlari: Erta yoshdan boshlab ta’lim dasturlari, samarali qonunchilik va jabrlanganlarni yuqori darajada qo‘llab-quvvatlashni o‘z ichiga olgan kompleks yondashuvni faol qo‘llang.

Kanada va Avstraliya: Oldini olish, aralashuv va qo‘llab-quvvatlashni o‘z ichiga olgan ko‘p darajali strategiyalarni ishlab chiqish va amalga oshirish va oilaviy zo‘ravonlikka hissa qo‘shishi mumkin bo‘lgan madaniy meyorlarni o‘zgartirishga harakat qilish.

Samarali profilaktika qilish uchun ushbu yondashuvlarning barchasini birlashtirish, ularni mahalliy sharoit va madaniy o‘ziga xosliklarga moslashtirish muhimdir.

Oiladagi zo‘ravonlikning oldini olish yoki kamaytirish uchun bir nechta strategiyalar mavjud.

Jahon amaliyotida oiladagi zo‘ravonlikning oldini olish muammosiga ikkita asosiy yondashuv mavjud: nizolarni hal qilish va oilani saqlashga qaratilgan restorativ, shu jumladan o‘rtoqlik sudlari va majburiy tibbiy va psixologik yordam dasturlari va nizolashayotgan tomonlar o‘rtasidagi munosabatlarni to‘xtatish orqali zo‘ravonlik siklini buzishga qaratilgan jazolash.

A.S.Arxipova maqolasida oiladagi zo‘ravonlikka qarshi kurashning ba’zi dolzarb muammolarini, shuningdek, boshqa mamlakatlardagi shunga o‘xshash muammolarni hal qilishda ijobiy tajribalarni o‘rganadi. Unda oiladagi zo‘ravonlikka qarshi kurashning barcha bosqichlarida – oldini olishdan tortib, allaqachon sodir bo‘lgan zo‘ravonlik harakatlari uchun jinoiy javobgarlikgacha bo‘lgan yo‘llar o‘rganiladi [3].

Oilaviy zo‘ravonlikning oldini olish bo‘yicha xalqaro tajriba jabrlanuvchilarni himoya qilishga va tajovuzkorlarni jazolashga qaratilgan qonunchilik choralarini, shuningdek, jabrlanuvchilarni qo‘llab-quvvatlash tizimlarini, jumladan, inqiroz markazlari va ishonch telefonlarini yaratishdan tashqari, zo‘ravonlik qiluvchilar bilan ishlash va aholining xabardorligini oshirish bo‘yicha ijtimoiy dasturlarni o‘z ichiga oladi.

Oiladagi zo‘ravonlik muammosi nafaqat O‘zbekistonda, balki xorijda ham dolzarb masaladir. Jamiyat va hukumat zo‘ravonlikdan xavotirda, shuning uchun ular jabrlanuvchilarga bu haqda xabar berishlari va psixologik va boshqa yordam

olishlari uchun imkoniyatlar yaratmoqdalar. Misol uchun, Qo‘shma Shtatlarda oilaviy zo‘ravonlik qurbonlariga xabar berish uchun Nyu-York shahrida 1-800-621-HOPE ishonch telefoni ishlaydi. U kuniga 24 soat ishlaydi va operatorlar o‘nta turli tilda (shu jumladan rus tilida) gaplashadi. Qo‘ng‘iroqlarga tajribali psixologlar javob berishadi, ularning asosiy maqsadi qo‘ng‘iroq qiluvchini tinglash va maslahat berishdir [4].

Buyuk Britaniyada oilaviy zo‘ravonlik qurbonlari politsiya himoyasiga murojaat qilish imkoniyatiga ega va ular ko‘rishi mumkin bo‘lgan bir qator choralar mavjud. Masalan, politsiya zo‘ravonlikda gumon qilingan shaxsni 48 soat davomida uyidan olib tashlashi mumkin. Politsiya, shuningdek, tajovuzkorning 28 kun davomida uyiga qaytishiga to‘sqinlik qiluvchi himoya buyrug‘ini olish uchun jinoiy sudga murojaat qilishi mumkin. Bu uydagi zo‘ravonlik qurbonlari uchun uyni xavfsizroq qilish va ularga qo‘shimcha yordam va himoya izlash imkoniyatini berishning bir usuli. Jabrlanuvchilar, shuningdek, tajovuzkorga nisbatan ehtiyot chorasini qo‘llash uchun fuqarolik sudiga murojaat qilishlari mumkin.

Shvetsiyada oiladagi zo‘ravonlik jinoyatlari ham davlat ayblovi sifatida tasniflanadi. Politsiya prokuror boshchiligida dastlabki tergov o‘tkazishi shart va jabrlanuvchi ishning borishiga to‘sqinlik qila olmaydi (masalan, shikoyatni qaytarib olish orqali). Dastlabki tergovni boshlash uchun prokuratura jinoyati sodir etilgan deb hisoblash uchun asoslar bo‘lishi kerak. Bu shuni anglatadiki, jinoyat tarkibining mavjudligi haqidagi ma’lumotlar tergovni boshlash uchun yetarli. Misol uchun, yaqin kishi tomonidan ko‘karishlar, yaralar yoki boshqa jarohatlarning mavjudligi ishni qo‘zg‘atish uchun asos bo‘lishi mumkin. Shvetsiya politsiyasi, shuningdek, qurbonning himoyaga muhtojligini aniqlash uchun tahdid va xavfni baholashni amalga oshiradi. Tahdidning jiddiyligiga qarab turli xil himoya darajalari mavjud. Politsiya maslahat va himoya qilish uchun turli xil texnik vositalar bilan ta’minlashi mumkin (masalan, GPS-ni qo‘llab-quvvatlaydigan favqulodda telefon va akustik signal). Jabrlanuvchiga xavfsizlik masalalari bo‘yicha suhbatlashish uchun shaxsiy aloqachi ham taqdim etiladi.

Oilaviy zo‘ravonlik qurbonlari sudga murojaat qilganidan keyin ularni himoya qilish bo‘yicha ijobiy tajribalar mavjud. Masalan, Fransiyada ish materiallari va ikkala tomonning ko‘rsatmalarini o‘rganib chiqqandan so‘ng, oila sudi sudyasi zo‘ravonlik sodir bo‘layotganligini aniqlasa, ular himoya qilish buyrug‘i (e’tiborga olish taqiqi) chiqaradi va vaqtinchalik choralar ko‘radi: bolalarni kim ushlab turishini, uydan kim foydalanishini va erkakka qanday moliyaviy majburiyatlarni belgilashni belgilaydi. Fransiya qonunchiligiga ko‘ra, oila a’zolariga nisbatan oiladagi zo‘ravonlik og‘irlashtiruvchi holat hisoblanadi va sodir etilgan jinoyatga qarab, qamoq jazosini sezilarli darajada oshirishi mumkin. Misol uchun, xotinini o‘ldirgan taqdirda, er jabrlanuvchi bilan nikohdan aloqasi bo‘lmagan taqdirda 30 yillik qamoq jazosiga emas, balki umrbod qamoq jazosiga hukm qilinadi.

O‘zbekiston Respublikasida Ijtimoiy himoya milliy agentligiga zo‘ravonlikdan jabrlanuvchi, shuningdek o‘zlariga nisbatan zo‘ravonlik sodir etish xavfi ostida bo‘lgan bolalarni aniqlash, ularning hisobini yuritish hamda zarur

hollarda ularga nisbatan zo‘ravonlikning oldini olishga doir yakka tartibdagi chora-tadbirlar qo‘llanilishini ta’minlash bo‘yicha vazifalar yuklatilmoqda.

Xulosa qilib aytish mumkinki, oila jamiyatning eng muhim bo‘g‘ini hisoblanadi. Unda tarbiya, axloq, ma’naviyat va insonlararo munosabatlar shakllanadi. Biroq, afsuski, ayrim hollarda oila muhiti zo‘ravonlikka asoslangan munosabatlarga aylanib, a’zolarning jismoniy va ruhiy sog‘lig‘iga salbiy ta’sir ko‘rsatadi. Oilaviy zo‘ravonlik nafaqat shaxsiy hayotga, balki butun jamiyat taraqqiyotiga ham xavf tug‘diradi. Shu sababli, O‘zbekiston Respublikasida oilaviy zo‘ravonlikka qarshi kurash va uning oldini olish masalasi davlat siyosatining muhim yo‘nalishlaridan biriga aylangan.

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NIZOMIY GANJAVIY VA ALISHER NAVOIY ASARLARIDA SHOHLAR VASFI TALQINI

Annotatsiya. *Ushbu tezisda Nizomiy Ganjaviy "Maxzan ul-asror" dostonining to‘rtinchi maqolati va Alisher Navoiyning "Hayrat-ul abror" asarining uchinchi maqolatidagi "Qari kampirning Sulton Sanjar bilan dostoni" va "Shoh G'oziy va zoli zar" hikoyatlari qiyosiy tahlil etiladi. Nizomiy asaridagi zolim shox va Navoiy talqinidagi adolatli shox xalqiga nisbatan qanday munosabatda bo'lganligini ma’lum darajada ko'rsatib berilgan.*

Kalit so'z: *Inson, foniy dunyo, faylasuf, ilohiy-irfoniy, adolat zo'ravonlik, timsol, tafsilot.*

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INTERPRETATION OF THE IMAGE OF KINGS IN THE WORKS OF NIZAMI GANJAVI AND ALISHER NAVOI

Abstract. *In this thesis, a comparative analysis of the fourth proverb of Nizami Ganjavi's epic "Mahzan ul-asror" and the stories "the old woman's epic with Sultan Sanjar" and "the King Gozi and the zoli zar" in the third proverb of Alisher Nawai's "Hayrat ul-abror" are carried out. The tyrant King in Nizami's work and the fair King in Navoi's work shows to some extent how their treated the people of the just branch.*

Key words: *Human, the world, philosopher, divine, justice violence, embodiment, detail.*

Jahon adabiyotining buyuk siymolaridan biri Sharq adabiyotida hamsachilikning asoschisi Nizomiy Ganjaviy va ulug' o'zbek shoiri, mutafakkiri Alisher Navoiy o‘zlarining "Xamsa"ga kirgan barcha dostonlarida shoxlarning har tomonlama ijobiy fazilatlariyu, qilgan ishlari, o'z xalqiga bo'lgan munosabatlarini ro'yi rost ochib berganlar. Ayniqsa, bu ulug‘ allomalar "Maxzan ul-asror" va "Hayrat ul-abror" dostonlarida shoxlarning o'z fuqarolariga nisbatan adolatpeshalik bilan ish ko'rishlarini talqin etadilar. Bu maqolada bir-biriga mazmunan o'xshash hikoyatlar haqida fikr yuritishni lozim topdik.

Nizomiy Ganjaviyni "Maxzan ul-asror" asaridagi to‘rtinchi maqolatdan keyin berilgan "Qari kampirning Sulton Sanjar bilan dostoni" shoir tomonidan

shoxlarning adolatli bo'lishi haqidagi falsafiy mulohazalari o'zining amaliy ifodasini topganligi ko'rinib turibdi.

"Doston"da keltirilishicha bir begunoh insonni o'ldirib jinoyat sodir bo'lgani, ammo nohaq qon to'kkan gunohkor aniqlanmay jinoyat yopilgani aytiladi. Mana shunday vaziyatda to'satdan yurtdagi fikx sohasi odamlari oyoqqa turg'izilgandan keyin talvasaga tushib qolgan posbonlar bosar tusarini bilmay qolishadi va mast-alast bo'lgan bir posbon himoyasiz bir kampirning kulbasiga bostirib kirib, uni nohaq ayblab, do'pposlab ketadi. Ayni haqsizlikdan qattiq iztirobga tushgan jabirdiyda kampir Sulton Sanjarga shunday murojaat qiladi:

K-ey malik ozarmi tu kam didaam,
V-az tu hamasola sitam didaam.
Shahnai mast omada dar ko‘i man,
Zad lagade chand faroro‘i man.
Begunah az xona ba ro‘yam kashid,
Mo‘ykashon bar sari ko‘yam kashid…[Nizomiy Ganjaviy, 1]

Mazmuni: Ey Sulton Sanjar! Men sening davroningda rahm shafqat va yoshi ulug'larga izzat hurmatni nihoyatda kam ko‘ryapman, biroq zulm-stamingni har bir qadamimda ko'p bora sezyapman. Sening rahmsiz lashkaring mening uyimga bostirib kirib, o'ta ota shafqatsizlarcha kaltaklasa, begunoh bandani qonini toksa, hech qanday sharmu-hayo qilmasdan oqargan sochlarimdan tortsa, men bir g‘arib dardlarimni kimga aytay.

Alamzada va bechora ona butun dardini, dili vayronligini podshohga to'kib soladi. Sulton Sanjar davrida mamlakatda zulmu-sitamning avj olgani, beva-bechorayu, yetimlar haq huquqining poymol bo'lib, ularning bor bisotlarini zo'ravonlik bilan tortib olinayotganligini dalillar va achchiq kinoya bilan izhor etgan onaizor shunday deydi:

3-omadani marg shumore bikun,
Merasadat dast, hisore bikun.
Adli tu qandili shabafro‘zi tust,
Mo‘nisi fardoi tu imro'zi tust...[Nizomiy Ganjaviy, 2]

Mazmuni: O'lim haq, kelishiga tayyor bo‘lganing ma'qul, kunlarni kelib ketishini sanamasdan qo‘ling yetguncha yaxshi amallar qilgin.Tunni chiroq yorug' qilgani kabi sening bugungi xayrli ishlaring adolat tarozusining ertangi kuningni xayrli oqibati bo'lur.

Garchi bu aytilgan gaplar yuzlab minglab jafokash onalarning tilidan misralarga ko'chgan bo'lsa-da, ammo ular Ozarbayjonning buyuk so‘z san'atkori Nizomiy Ganjaviy qalbidagi nidorlariday aks-sado berar edi. O'z davrining jabr-stamlaridan yuragi tilga pora bo‘lgan va bu xo'rliklarning oldini olishning yaxshiroq yo'llarini topa olmagan zabardast shoir yana ollohga qarata iltijo qiladi, bu dunyoda emas, o'lim hamda oxiratdagi manzil obod bo'lishi mumkinligini eslatib o'ziga taskin beradi. Sulton Sanjar kampirga aniq javob aytmaydi. Shoir esa uni takabburlikda, hayolsizlikda ayblash bilan cheklanadi.

Chunki so'z san'atkorlari Nizomiy to‘rtinchi maqolotning ibtidosidayoq shoxga murojaat etar ekan shunday misralarni keltiradi:

G'arra ba mulke, ki vafoyash nest
Zinda ba umre, ki baqoyash nest.

Inson bu dunyoda yo'lda ketayotgan karvon tarkibidagi bir yo'lovchi bo'lib, unga ajratilgan, taqdiriga yozilgan nasiba qaysi bekatda nihoyat topishi yolg'iz Ollohgagina ayon xolos. Shunday ekan, shoh ham gado ham shu adolatdan har doim ogoh turmog‘i darkor, chunki bu dunyo o'tkinchi, sinov dunyosi. Ayniqsa shohlar bu borada xushyor turishlari lozim, zero saltanat va boylikka mahliyo bo'lib, oxiratdan behabar qolmasliklari darkor dan. Bu dunyoda hatto 1000 yillar (ayrim manbalarda 950 yil) umr nasib etgan Nuh payg‘ambar ham dunyoga ustun bo'lolmadi deb ogoh etadi. Shunday ekan insonga berilgan umr sarhadli u mangu yashamas ekan sinov, imtihon dunyosida Odam Ato zurriyotlari o'zidan yaxshi nom, solih amallar qoldirish tadorigini ko'rishi kerak. Ayniqsa shoxlar xalqning farovonligi va osoyishta yashashlarini taminlashi kerakligini, dunyoviy boyliklar ilinjida har qanday qabohatga tayyor turgan saltanat egalarini uyalish, o'sha nopok yo'ldan qaytarish uchun pand nasihatlar beradi. Mamlakatni yaxshi boshqargan podshohning oxirati, oxirgi manzili obod bo'lishligini uqtiradi.

Xamsachilik an’anasida Nizomiy Ganjaviyni o‘zining ustozi deb bilgan Alisher Navoiy "Hayrat ul-abror"ning 13 bobida shunday yozgan edi:

Menki talab yo'lida quydum qadam,
Bordur umidimki, chu tutsam qalam,
Yo'ldasa, bu yo'lda Nizomiy yo'lum,
Qo'ldasa, Xusrav bila Jomiy qo'lum
Nukta surudida ravo bo'lmag'ay,
Buki Navoiyg'a navo bo'lmag'ay. [Alisher Navoiy,3]

Agar e'tibor bersak buyuk shoir "Panj ganj" yaratib, xamsachilik an'anasini boshlab bergan Ozarbayjon mutafakkiri Nizomiy Ganjaviyni va uni rivojlantirib yuqori taraqqiyot cho‘qqisiga olib chiqqan asli Shahrisabzlik Hindistonda yashagan Amir Xusrav Dehlaviy, hamda ustozi va hammaslaki Xurosonlik Nuriddin Abdurahmon Jomiylarni o'zining ma'naviy rahnamolari sifatida e'tirof etadi.

"Maxzan ul-asror" kabi asosiy negizini 20 maqolat tashkil etuvchi "Hayrat ul-abror" Alisher Navoiyni o‘lmas "Xamsa"sining muqaddimaviy dostonidir. Bu ikki asarning bir-biriga monandliklari "Hayrat ul-abror"ning sultonlar zikriga bag'ishlangan uchinchi maqolati hamda "Shohi G'oziy va zoli zar hikoyati" ning qiyosiy tahlili misolida yorqin ko‘rish mumkin. Navoiy muqaddimaviy dostonining ayni maqolatida hukmdorlar odil va zolim shoxlar tarzida tasnif etiladi.

Yuqorida ayrimlarini qayd etganimiz jihatlar sakson ikki misralik she’riy hikoyatda mantiqiy davomini topadi. Go‘yo shu kichik hikoyat misolida ulug‘ shoir "shohi g‘oziy qanday bo‘lishi kerak?" degan savolga javob topadi. She’riy hikoyat zamirida Sulton Husayn Boyqaroning tarixiy timsoli yotadi. Naql qilinishicha, Sulton Husayn Boyqaro Xuroson davlatini qo‘lga kiritish ilinjida jang olib borgan yillarda yurtdagi bir kampirning yakkayu yagona o‘g‘li ham shahid bo‘ladi. Toju taxt egallangach, kampir ham, uning o‘g‘li ham unutiladi. Tirikchilik

tashvishlaridan ezilgan, boquvchisi yo‘q kampir mahallasiga podshoh kelishini bilib, uning istiqboliga chiqadi va u bilan shar’iy bahsi borligini ma’lum qiladi. Alqissa, masala shariat qozisi ishtirokida o‘rganiladi va kampir haq bo‘lib chiqadi.

Nizomiy dostonida kampirning arzini tinglagan saltanat sohibi tayinli javob bermaydi. Alisher Navoiy talqinidagi shoh esa gunohini bo‘yniga oladi va onaga javob qilarkan, aytadi:

Dedi: «Qisos aylasang olingda bosh,
Siymni ol, gar g‘arazingdur maosh.
Men edim ul amrda beixtiyor,
Har ne sen etsang manga ne ixtiyor»

Ravshan, masala ijobiy hal etiladi: shohning adolatini ko‘rgan kampir uning gunohini kechiradi, ona oltin to‘la hamyonni oladi va el o‘rtasida "zoli zar" (tilla kampir) nomi bilan shuxrat topadi…

Adolat buyuk ish. Sultonlik maqomi allohdan berilgan, sultonning asosiy vazifasi zulmga barham berib, mamlakatda adolat o'rnatib fuqarolariga g'amxo‘rlik qilishdir. Shoir agar shox xato qilsa xatosini tuzatish shartligini aytgan, bu fikrini to‘ldirish hamda asoslash uchun tilla kampir hikoyatini keltirgan.

"Hayrat ul-abror" ning sharhida bu haqda quyidagi fikrlarni tahlil etilganligini ko'ramiz. Davlat boshliqlari - hukmdorlar, sultonlar, shohlar va hokazolar ham qonun oldida, adolat oldida teng bo‘lishi shart. Adolatli qonun davlat ichida hamma narsadan - shaxslardan, qudratli kuchlardan yuqori tursagina, bu davlatning chinakam qudratiga bir isbotdir. Hikoyatda sulton Husaynning muddaiy (da’vogar) kampir bilan qozi huzuriga borishi, u bilan bir qatorda tiz cho‘kib o‘tirishi, o‘z xatosini tan olib, qozi hukmiga itoat etishi adolatli qonun oldida shoh ham taslim ekanligiga bir dalil hisoblanadi.

Qozi kampirdan da’vo uchun ikki guvoh talab etganida muddaiy shohning insofi va adolatini guvohlikka chaqiradi. Bir qaraganda, bu erish tuyulishi mumkin. Lekin masalaning nozik nuqtasi ham shu. Chunki qo‘lida qudrat bo‘lgan insonni faqat shu ikki narsa - Adolat va Insof to‘g‘ri yo‘lga solib turishi mumkin. Bu ikki fazilatdan mahrum hukmdor hech qachon buyuk hukmdor bo‘la olmaydi. Zotan, saltanat rahbarini dunyo hayotida so‘roq va tergov qiladigan o‘zidan bo‘lak kuch yo‘q. Shoh G‘oziy insof va adolati oldida qilgan jinoyatidan tona olmadi va iqror bo‘ldi.

Shoh G‘oziy bu hukm qarshisida so‘zsiz bosh egib: "Shariat hukmni shunday chiqarsa, shariati Nabiy (sollallohu alayhi va sallam) hukmiga jonim fido", - degan taslimiyati zamirida ulkan ma’no yashiringan. Qozi o‘z nafsidan kelib chiqib hukm qilgani yo‘q. Qozi sultondan yoki boshqa biror insondan hayiqmayapti. Pora olmayapti. Ilohiy Qonunga itoat qilyapti va hukm beryapti. Shoh ham bu hukmga bosh egib, ilohiy hukm qoshida jon fido etishga tayyor. Bu - inson hayotining ilohiy qonunlarga bog‘lanish nuqtasidir.

Bu jo‘mardlik oldida tul kampirning yarim ko‘ngli eriydi, odil hukmdorga nafaqat yagona o‘g‘lini, balki o‘zini ham qurbon etishini bildiradi:

Tar yigitim qildi fido jon sanga
Men qari joni dog‘i qurbon sanga.

Davlat va xalq orasida ko‘p hollarda jarliklar hosil bo‘ladi. Bu davlat rahbarlarining kibri, o‘z vazifasini unutib, nafsiga qul bo‘lganligi orqasidan ro‘y beradi. Davlat, davlat rahbari, davlat amaldorlari va xalqning o‘zaro muhabbat va ishonch bilan ish ko‘rishi juda noyob hodisadir. Hikoyatga ko‘ra, kampirning shohga qurbon bo‘lishga tayyorligi haqidagi izhor davlat va xalq orasidagi ko‘prik adolat ekanligini ko‘rsatadi. Adolatni unutgan davlat xalq nafratiga uchraydi. Xalq nafratiga uchragan davlat tanazzulga yuz tutadi. Alisher Navoiy buni chuqur tushungani va hayotiy tajribalari bilan bunga guvoh bo‘lgani uchun shoh G‘oziyning adolatini ko‘rsatish orqali sultonlarni odillikka da’vat qiladi.

Hikoyatni bayon qilish avvalida zolim hukmdorning zulmiga tavba qilishi to‘g‘risida gap bor edi. Shoh G‘oziyning begunoh yigit- ni o‘ldirishi zulm edi, bu zulmning badali qarshisida u jonini tikdi. Shu bilan adolat qaror topdi. Zotan, jon o‘rtaga qo‘yilmasa, adolatga erishilmaydi.

Alisher Navoiy mazkur hikoyat vositasida sulton Husaynga davlat ishlarida qat’iyat bilan adolat o‘rnatmoq shartligini tushuntirgan. Zulm yo‘liga kirilgan bo‘lsa, undan chiqmoq mumkin. Xatolarga yo‘l qo‘yilgan bo‘lsa, tan olmoq va ularni tuzatmoq imkoni bor. Agar zolim zulm qilayotganligini anglay turib, bu ishidan to‘xtamasa, uni qiyomat kuni, shubhasiz, Allohning hisob-kitobi, adolati kutib turibdi.

Nazardan o‘tkazganimiz ixcham tafsilotlardan ayonlashadiki, sayyor voqealar tizmasidan istifoda etgan har bir ijodkor uni o‘z ijodini ro‘yobga chiqarish uchun yo‘naltirgan va ularga o‘zicha sayqal bergan. Bunday holatlarda takror, tarjima yoxud ko‘chirish emas, balki ijodiylik, mavzuga yangicha yondashuv va mutlaqo toza maqsadda sayqal berish yetakchilik qiladi.

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ADABIY MANBANI O‘RGANISHNING MUHIM NAZARIY VA AMALIY TAMOYILLARI

Annotatsiya*: Yangi o‘zbek she’riyatidagi diniy-ma’rifiy mavzular tadrijini o‘rganishda XX asr boshidagi ijtimoiy-siyosiy jarayonlarning murakkabligini hisobga olish lozim. Negaki, ayni shu davrda Turkiston hayotida o‘tkir siyosiy-ijtimoiy voqealar ko‘lami kengaydi, xalq chor Rossiyasi bosqini azoblari iskanjasida qoldi. Ushbu maqolada ayni shu masalalarga e’tibor qaratilgan.*

Kalit so‘zlar: *din, hurfikrlilik, diniy bag‘rikenglik, yangi zamon she’riyati, iymon va maslak tafakkuri, adabiy meros.*

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IMPORTANT THEORETICAL AND PRACTICAL PRINCIPLES FOR STUDYING A LITERARY SOURCE

Abstract: *When studying the development of religious and educational themes in new Uzbek poetry, it is necessary to take into account the complexity of the socio-political processes of the early 20th century. At that time, the scale of acute political and social events in the life of Turkestan expanded, and the people were exhausted by the oppression of Tsarist Russia. This article is devoted to these issues.*

Key words: *religion, freethinking, religious tolerance, contemporary poetry, faith and professional thinking, literary heritage.*

“Yangilik” va “eskilik” o‘rtasidagi azaliy kurash hamisha uchinchi bir yangilikka sabab bo‘lgan. Bu o‘zbek adabiyotida ham o‘z aksini topdi, desak mubolag‘a bo‘lmaydi. Har bir yangi asar, u qanday shaklda yoki uslubda bo‘lmasin, o‘zida ma’lum ma’noda iymon va maslak diasporasini tashiydi. Har bir asar g‘oyasining markazida iymon va maslak tafakkuri yashiringan bo‘ladi. Binobarin, XX asr boshiga kelib, Turkiston xalqlari hayotida ma’rifatparvarlik ruhi kuchaydi va bu fan, adabiyot,san’atda o‘z tajassumini topdi. Bunda albatta iymon va maslak tafakkuri ham rol o‘ynadi. Chunki har bir ijodkor avvalo, o‘zi tug‘ilib o‘sgan zamin, tarbiya topgan muhit farzandidir. U o‘zi kamol topgan el-yurtning asrdan-asrga o‘tib kelayotgan qadriyatlarini e’zozlaydi.

Din ham ana shu qadriyatlar jumlasiga kiradi. Birinchi Prezidentimiz I.Karimov ta’kidlaganidek, ”Din azal-azaldan inson ma’naviyatning tarkibiy qismi sifatida odamzotning yuksak ideallari, haq va haqiqat, insof va adolat to‘g‘risidagi

orzu-armonlarini o‘zida mujassam etgan, ularni barqaror qoidalar shaklida mustahkamlab kelayotgan g‘oya va qarashlarning yaxlit shaklidir. Ayniqsa, ko‘p asrlar mobaynida xalqimiz qalbidan chuqur joy olib, hayot ma’nosini anglash, milliy madaniyatimiz va turmush tarzimizni, qadriyatlarmiz, urf-odat va an’analarimizni bezavol saqlashda muqaddas dinimiz qudratli omil bo‘lib kelayotganini alohida ta’kidlash joiz. Nega deganda, insoniylik, mehr-oqibat, halollik, oqibatni o‘ylab yashash, yaxshilik, mehr –shafqat singari xalqimizga mansub bo‘lgan fazilatlar aynan shu zaminda ildiz otadi va rivojlanadi”[1, 36.].

Demakki, diniy-ma’rifiy tafakkur ma’naviy yoki adabiy hodisaning tub o‘zagida namoyon bo‘ladi.

Din inson ongini oldindan belgilangan maqsad tomonga yo‘naltira oladi. U o‘zining ahkomlaridagi bosh va asosiy g‘oyalarni qudratli mafkuraviy vositalar orqali individlarnining imoniga aylantirish sotsial mexanizmini shakllantirgan. Bu ta’sirchan mexanizm dunyoviy tafakkur,ziyobaxsh taraqqiyparvar dunyoqarash bilan uyg‘unlikda o‘zining badiiy tamoyillarini namoyon etadi.

Har bir asar g‘oyasida dinning quyidagi funksiyalaridan biri ishtirok etadi:

1.To‘ldiruvchilik, tasalli beruvchilik(kompensatorlik);

2.Birlashtiruvchilik (integratorlik);

3.Nazorat qilish, tartibga soluvchilik(regulyatorlik);

4.Aloqa bog‘lovchilik;

5.Legetimlashtiruvchilik(tarbiyalovchilik).

To‘ldiruvchilik, taskin beruvchilik va tarbiyaviylik funksiyalari ularning ichida eng faollari sanaladi va adabiy san’at asarlari zaminini kamolga yetkazadi.

Filologiya fanlari doktori N.Shodmonov aytishicha, har bir adabiy manbani o‘rganishda quyidagi beshta tamoyilga suyanish maqsadga muvofiqdir:

1. Asarning madaniy siyosatga muvofiqligi va dunyoviylik xarakteri.

2. Asarning adabiy merosga munosabatni belgilovchi mezonlarga muvofiqligi.

Asarning adabiy merosga bo‘lgan munosabatni belgilovchi mezonlarga(ular:a)vatanparvarlik;

b)xalqchillik;

v)insonparvarlik;

g)taraqqiyparvarlik ;

d)badiiy mukammallik) muvofiqligi;

3. Asarning adabiy manba sifatidagi darajasi va muallif ijodini kompleks o‘rganishdagi o‘rni.

4. Asarning umuminsoniy va milliy ma’rifiy-axloqiy xarakterga egalik darajasi.

5. Manbaning ilmiy tadqiqotlar taraqqiyotiga xizmat qilish darajasi[2.13-24.].

Ushbu tamoyillarning ilmiy-metodologik manbalarga tayangan holda ish yuritish va mavzuni ochib berishdagi ahamiyati beqiyos. Lekin dissertatsiyamiz o‘z oldiga qo‘ygan mavzu ko‘lami kengligi va o‘ziga xosligi hamda o‘tgan asrdagi murakkab siyosiy-ijtimoiy vaziyat murakkabligini hisobga olganda quyidagi ilmiy-metodologik tamoyillarni ham uyg‘unlashtirish zarur bo‘ladi:

1.Ijodkorlar tafakkuridagi dunyoviy va umuminsoniy fazilatlar dialektikasining badiiy talqinini o‘rganish.

2.O‘rganilayotgan adabiy asarlarning mumtoz adabiy an’analarga munosabatini tadqiq etish.

3.Shoirlar ijodiyotining milliy istiqlol g‘oyasiga muvofiqligini o‘rganish.

4.Mavjud siyosiy tuzum tufayli “g‘oyaviy tahrir”ga uchragan adabiy asarlar semiotikasi va badiiy etimologiyasiga baho berish.

5. O‘rganilayotgan asarlarning g‘oyaviy-ma’rifiy, axloqiy-estetik jihatlari bilan umuminsoniy tendensiyalarga mos kelishi va u adabiy merosga munosabatni belgilovchi mezonlarga egaligi.

6.O‘rganilayotgan adabiy asarlar haqidagi matbuotdagi chiqishlarning ilmiy-publitsistik mezonlarga muvofiqligi va badiiy ta’sirchanligini tadqiq etish.

7.Tadqiq etilayotgan asarlarlarda hurfikrlilik, diniy bag‘rikenglik tamoyillariga sodiqlik darajasini tadqiq etish.

8. Ijodkorlarning ijtimoiy pozitsiyasi va dunyoqarashi tahlilida an’anaviylik hamda zamonaviylik talqini.

Islom dinini siyosiylashtirishga dahldor kuchlar-siyosiy partiyalar, aqidaparastlar, fundamentalistlar, diniy harakatlarni keltirib chiqaruvchi ijtimoiy-iqtisodiy va ma’naviy-axloqiy sabablarini tadqiq etishning o‘zbek adabiyoti oldidagi vazifalarini ta’kidlash;

10. Jahon hamjamiyatida, shu jumladan, O‘zbekistonda fuqaro va jamiyat o‘rtasida turli g‘ayriinsoniy munosabatlarni keltirib chiqarishga va bu yo‘lda islom dinini bayroq qilib olib, g‘arazli niyatlarini amalga oshirishga urinayotgan siyosiy kuchlar va diniy harakatlar mohiyatini fosh etishda o‘zbek adabiyoti va matbuotining o‘rni muhimligini ko‘rsatish;

11. Ayni paytda global muammolar ichida jahon dinlari ta’limotidagi inson tafakkuri va jamiyat munosabatlarini tahlil qilish, qiyoslash asnosida xalqlar, millatlar hamda davlatlar o‘rtasida tinchlik va barqarorlikni ta’minlashga xizmat qiluvchi tavsiyalarni ishlab chiqishning muhimligi, bu borada adabiyot va matbuotning hissasi beqiyosligini ta’kidlash.

Mustaqilligimizning ilk kunlaridanoq birinchi Prezidentimiz mamlakat taqdirini belgilashda ma’naviy-ma’rifiy soha rivojini birlamchi o‘ringa qo‘ydi va barkamol avlodni tarbiyalash to‘g‘risidagi konsepsiya va yo‘l-yo‘riqlarni ishlab chiqdi. Shu bilar birga mafkuraviy bo‘shliqqa barham berish, diniy ekstremistik kuchlarga qarshi kurashish, globallashuv sharoitida har bir fuqaroni, xususan, yoshlarni “ommaviy madaniyat” xurujidan saqlash chora-tadbirlari ko‘rildiki, bu ezgu ishlar o‘zbek adabiyoti va matbuotida ham bunday asos, ilmiy metodologik tamoyillarni ishlab chiqishning zamini vazifasini o‘taydi.

Ijodkorning ijtimoiy pozitsiyasi va dunyoqarashini o‘rganishda u yashagan muhit va madaniyat bunyodkori bo‘lgan xalqning qalb ehtiyojlari ham muhim rol o‘ynaydi [3, 174].

Bu sohada muayyan metodologik dasturilamallar va boshqa ilmiy-falsafiy, nazariy hamda uslubiy bilimlarga tayanish lozim bo‘ladi.

Globallashib borayotgan dunyoda ramziy bosim va ularning natijasi o‘laroq maydonga keladigan ziddiyatlar asosan, din, mafkura, ta’lim va “ommaviy madaniyat” doirasida kechishini qayd etmoq lozim. Muayyan kuchlar tomonidan “ommaviy madaniyat” orqali qadriyatlar tizimini o‘zgartirishga urinilmoqda. U.Saidov ta’kidicha, “ommaviy madaniyat” jamiyatda “ildizsiz individ”larni shakllantirishga xizmat qiladi, natijada, jamiyat anomaliya holatiga tushadi(ya’ni tartib-qoida va qadriyatlarni yo‘qotish) [4, 17.].

Milliy madaniyat esa insonga shaxs martabasini beradi, ma’naviyat, tarixiy xotirani yuksaltiradi, hayotni tartibga soluvchi va faoliyatni yo‘naltiruvchi qadriyatlar tizimini shakllantiradi. Ingliz sotsilogi Z.Bauman ta’kidlaydiki, “milliy madaniyatdan xoli, “individuallashgan” jamiyatda uch xususiyat paydo bo‘ladi: Inson tomonidan ijtimoiy jarayonlar ustidan nazoratning yo‘qolishi; Kishining jamiyatdagi o‘zgarishlar qarshisidagi ularni nazorat qilish hissi yo‘qligi va o‘zi yashashi kerak bo‘lgan mavhum, noaniq voqelik qarshisidagi himoyasizligi; bularning oqibati o‘laroq inson o‘zining uzoq muddatli maqsadlarini, hayotiy strategiyalarini rejalashtirib, ro‘yobga chiqara olmaganligi tufayli, ular unchalik salmoqqa ega bo‘lmasa-da, darhol qo‘lga kiritiladigan natijalarga almashtirilishi”.

Ma’naviy-ruhiy tanazzul ildizlariga naazar tashlaganda ana shunday shaxs fojealari vujudga keladi. Shu bois yoshlarimizni turli ma’naviy tahdidlardan, hashamdor pop-psixologiyalardan, buzg‘unchi g‘oya va mafkuralardan himoya qilish, o‘zligimizni asrash, mafkuraviy immunitetni kuchaytirish, bu borada adabiy-estetik tafakkur tadriji mezonlarini keng o‘rganish, shu asnoda milliy mafkura, milliy madaniyat, umuminsoniylik fazilatlarini o‘zida jamlagan adabiy asarlarning badiiy ta’sirchan qirralarini tadqiq etish dolzarb vazifalar sirasiga kiradi. Shu ma’noda Prezidentimiz ham “Agar odamning baxti nimada, deb so‘ralsa, men kimki ichki dunyosi, boshqacha aytganda, imon-e’tiqodi amriga bo‘ysunib yashasa, shundan rozilik, qanoat tuysa, shubhasiz, ana shunday inson baxtlidir, deb javob bergan bo‘lardim, ”deb o‘rinli ta’kidlagan edi[5, 23.].

Olim N.Shodmonov aytishicha, “har bir manbani tadqiq etishda O‘zbekistonning milliy mafkurasiga xizmat qilishi bilan bog‘liq bir qator shartlar e’tiborga olinishi zarur. Bu shartlar, bizning fikrimizcha, quyidagilardan iborat:

- xalqning azaldan ardoqlab kelingan qadriyatlari ulug‘lanishi, ularga asoslanilishi;
- aholining milliy-tarixiy tafakkuri va turmush tarzidan kelib chiqilishi;
- hurfikrlilik, diniy bag‘rikenglikka munosabatning to‘g‘riligi;
- ma’naviyat va axloqiylik tamoyillariga amal qilinishi;
- ma’rifiy taraqqiyotga, yangi fikrlar tug‘ilishiga, yangi jamiyat qurilishiga xizmat qilishi;
- badiiy saviyaning yuksaklik darajasi;
- keltirilgan ma’lumotlarning asosli va haqqoniy ekanligi;
- muallif ijtimoiy pozitsiyasida biryoqlamalikka yo‘l qo‘yilmaganligi;
- urush, zo‘ravonlik, bosqinchilik; diniy, irqiy, sinfiy va tabaqaviy kamsitish kabi illatlarga yon berilmasligi [6, 15].

Mustabid tuzum mafkurasi sinfiylik va partiyaviylik mezonlari asosidagi adabiyotni talab qilgan sharoitda ham ezgu g‘oyalar tarannumi orqali o‘z so‘zini ayta olgan ijodkorning faoliyatini o‘ziga xos jasorat deyish mumkin.

Adabiy asarlar hamma zamonlarda insoniyat tafakkurining mahsuli, jamiyatdagi mavjud axloqiy tarbiyaning mehvari sifatida kamol topgan. Shu bilan birga u o‘sha davr voqeligining ma’lum ma’nodagi badiiy ifodasi hamdir. Adabiyot-bu umuminsoniy madaniyatning kishilar hayotini tartibga soluvchi va faoliyatini ezgulikka yo‘naltiruvchi faol qadriyatlar tizimidir [7, 342].

Ayni shu ma’noda XX asr boshlarida yangi o‘zbek adabiyoti shakllanishining o‘z ijtimoiy-siyosiy va adabiy sabablari bor. Albatta masalaning bu jihatlari B.Qosimov, O.Sharafiddinov, Sh.Yusupov, N.Karimov, U.Dolimov, S.Ahmedov, N.Abduazizova, D.Alimova, N.Jabborov, R.Tojiboyev, H.Boltaboyev, B.Karimov, Q.Jo‘rayev, B.Do‘stqorayev, Sh.Rizayev,U.Jo‘raqulov, R.Xolmatov, R.Tojiboyev kabi olimlar tomonidan o‘rganilgan.

Ma’lumki, chor Rossiyasi tomonidan Turkiston hududining bosib olinishi aholi mustamlakachilik zulmi ostida ezilishiga sabab bo‘ldi.

Imperator Nikolay II 1905 yil 17 oktabrda Manifest e’lon qildi. Unga ko‘ra, Rossiyada so‘z erkinligi ta’minlanishi ma’lum qilingan edi. Albatta bu hodisa barcha o‘lkalar qatori Turkistonda matbuot va kitobat ishlari ancha jonlanib ketishiga sabab bo‘ldi. Natijada kitob va gazeta chop etuvchi ishbilarmonlar soni ko‘paydi [8, 367].

Toshkentda Ilin, Yakovlev, Orifjonov, Namanganda Ibrat, Samarqandda Sliyanov, Gazarov, Qo‘qonda Shumakov, Vaynerlarga qarashli matbaaxonalarda bosma ishlari rivojlandi. Shuning barobarida gazetachilik ishi ham avj olib yuqori o‘ringa chiqdi. 1906-1913 yillarida yurtimizda “Turon”, “Taraqqiy”, “Xurshid”, “Shuhrat”, “Tujjor”, “Osiyo”, “Samarqand” kabi gazetalar chop qilindi. Zero, matbuot-katta fikr maydoni, u o‘zaro fikr almashish, dunyo, fan, adabiyot, san’at borasidagi erishilgan bilimlarni jamlash jamiyatni isloh etuvchi g‘oyalarni keng namoyon etishga imkon beruvchi ko‘zgudir. Bu ko‘zgu qanchalar ravshan, yorug‘ bo‘lsa, fikr va aql ham shuncha peshlanadi.

G‘oya g‘oyaga sabab bo‘ladi, uni rivojlantiradi, aql aqlni topadi. YA’ni matbuotning ijtimoiy institutlik vazifasi bu yerda keng ahamiyat kasb etadi. Yangi shakllanib kelayotgan o‘zbek adabiyotida yangi janrlar kirib kelishida, ijtimoiy voqelikdagi millatni qiynab kelayotgan muammo va hodisalarni adabiy olamga, badiiy obrazlar silsilasiga kiritish borasida jadid ijodkorlarining o‘rni katta bo‘ldi. Endi paydo bo‘lgan yangi adabiyot mavzu ko‘lamlari jihatidan butunlay o‘ziga xos va hayotiy edi, u xalq ruhiga yaqin va uning dardini ifoda qilish vositalarini badiiy asarlar ruhiga singdirib yubora olgan edi. Masalan, vaqtli matbuotning faollashuvi, unda paydo bo‘lgan milliy o‘zlikni anglash tuyg‘usining kuchliligi, dramaturgiyaning shakllanishi, she’riyatda barmoq vaznining ustivor hodisaga aylanishi, yangi timsol va keng bilimli qahramonlarning badiiyati-bular hammasi yangi o‘zbek adabiyoti yuksak pallaga kirayotganidan dalolat edi [9, 267].

Ayni ana shu dolg‘ali kezlarda yangi adabiyot, yangi adabiy yo‘nalish va turfa janrlar ehtiyoji pishib yetildi. Demakki, Sharq va G‘arb madaniyatining o‘ziga

xosligi, yangilanish ehtiyoji, o‘zaro uyg‘unlashuv zaruratini taqozo qildi. Bu zarurat cho‘g‘lanib ma’naviy ziyoga aylandi.

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TALABALARDA KOMMUNIKATIV MADANIYATNI SHAKLLANTIRISHNING PEDAGOGIK OMILLARI

Annotatsiya: *Ushbu maqolada kommunikativ madaniyat tushunchasining nazariy asoslari hamda uni shakllantirish jarayonida uchraydigan muammolar tahlil qilingan. Shu bilan birga ta'lim jarayonida hamda yoshlar o'rtasida muloqot madaniyatini rivojlantirishdagi asosiy to'siqlar, ijtimoiy va pedagogik omillar ko'rib chiqiladi. Kommunikativ madaniyatni rivojlantirishda pedagogik yondashuvlar, axborot-kommunikatsiya texnologiyalari hamda madaniyatlararo muloqotning ahamiyati yoritilgan.*

Kalit so'zlar: *kommunikativ madaniyat, muloqot, globallashuv, ta'lim jarayoni, madaniyatlararo muloqot, psixologik omillar, axborot-kommunikatsiya texnologiyalari.*

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PEDAGOGICAL FACTORS IN THE DEVELOPMENT OF STUDENTS' COMMUNICATIVE CULTURE

Abstract: *This article analyzes the theoretical foundations of the concept of communicative culture and the challenges that arise in its development. It examines the main obstacles and socio-pedagogical factors in the development of a culture of communication in the educational process and among young people. The importance of pedagogical approaches, information and communication technologies, and intercultural communication in the development of communicative culture is emphasized.*

Keywords: *communicative culture, communication, globalization, educational process, intercultural communication, psychological factors, information and communication technologies.*

Bugungi kunda globallashuv va axborot texnologiyalarining jadal sur'atlarda rivojlanishi zamonaviy jamiyatda samarali muloqot qilish ko'nikmalarini shakllantirishni taqozo etmoqda. Ayniqsa, oliy ta'lim muassasalarida ta'lim olayotgan talabalar uchun kommunikativ madaniyatni rivojlantirish nafaqat shaxsiy, balki kasbiy muvaffaqiyatning ham muhim omillaridan biridir. Talabaning o'z fikrini aniq, ravon va madaniyatli tarzda ifoda eta olishi, boshqalar bilan to'g'ri muloqot o'rnata bilishi uning ijtimoiy faolligi, kasbiy tayyorgarligi va hayotga moslashuvchanligini belgilab beradi.

Shu nuqtai nazardan qaralganda, talabalar orasida kommunikativ madaniyatni shakllantirish va rivojlantirishga xizmat qiluvchi pedagogik omillarni aniqlash va ulardan samarali foydalanish bugungi ta’lim tizimining dolzarb vazifalaridan biridir. Bu jarayonda o‘qituvchining shaxsiy namuna bo‘lishi, o‘quv jarayonida interfaol metodlardan foydalanish, axloqiy-me’yoriy qadriyatlarni singdirish kabi omillar muhim ahamiyat kasb etadi.

Talabalarda kommunikativ madaniyatni rivojlantirish — bu faqatgina nutq madaniyatini oshirish emas, balki ularning ijtimoiy hayotga moslashuvi, jamoada ishlash qobiliyati, hamkasblar va jamiyat bilan to‘g‘ri muloqot o‘rnata olishiga zamin yaratish demakdir. Bu borada bir qator muhim pedagogik omillar ajralib turadi:

1. O‘qituvchining shaxsiy namunasi

O‘qituvchi talaba uchun nafaqat bilim manbai, balki axloqiy, madaniy va kommunikativ namuna hisoblanadi. Talabalar ko‘pincha o‘z ustozlarining nutqi, muomala madaniyati, odob-axloqi, muammolarni hal etish uslubi va ijtimoiy munosabatlariga qarab o‘zlarining shaxsiy muloqot uslublarini shakllantiradilar. Shu sababli, o‘qituvchi o‘zining har bir harakati, so‘zlari va xulq-atvori orqali talabalarga ijobiy ta’sir ko‘rsata olishi lozim. Shaxsiy namunadorlik orqali o‘qituvchi talabalarga madaniyatli muloqot qilish, fikrni aniq yetkazish, boshqalarning fikrini tinglash kabi jihatlarni o‘rgatadi.

2. Interfaol ta’lim metodlaridan foydalanish

An’anaviy ma’ruza shaklidagi ta’lim muloqot ko‘nikmalarini rivojlantirish uchun yetarli emas. Talabaning faolligini oshirish, uni fikr bildirishga, bahslashishga, mulohaza yuritishga undovchi interfaol metodlar — masalan, “Munozara”, “Aqliy hujum”, “Rol o‘ynash”, “Kichik guruhlarda ishlash” kabi usullar kommunikativ madaniyatni shakllantirishda samarali vosita bo‘lib xizmat qiladi. Bu metodlar orqali talabalar o‘z fikrini ochiq ifoda etishga, boshqalarning nuqtai nazarini hurmat qilishga, turli ijtimoiy vaziyatlarda to‘g‘ri muloqot qilishga o‘rganadilar.

3. Axloqiy-me’yoriy qadriyatlarni singdirish

Kommunikativ madaniyatning asosida nafaqat til, balki axloqiy me’yorlar, insoniy qadriyatlar ham yotadi. O‘qituvchi ta’lim jarayonida milliy va umuminsoniy qadriyatlar — hurmat, sabr, bag‘rikenglik, to‘g‘rilik, rostgo‘ylik kabi sifatlarni o‘z ichiga olgan muloqot madaniyatini talabalarga singdirishi lozim. Talaba bu qadriyatlarni ongli ravishda o‘zlashtirganida, uning muloqoti nafaqat madaniyatli, balki ma’noli va ijtimoiy jihatdan foydali bo‘ladi.

Talabalarda kommunikativ madaniyatni rivojlantirish zamonaviy ta’lim jarayonining muhim vazifalaridan biridir. Bu jarayonda bir qancha pedagogik omillar o‘ziga xos ahamiyat kasb etadi. Jumladan, *o‘qituvchining shaxsiy namunadorligi, interfaol ta’lim metodlaridan foydalanish, axloqiy-me’yoriy qadriyatlarni singdirish* kabi jihatlar ta’lim sifatini oshirishga xizmat qiladi. O‘qituvchi talabalar uchun eng yaqin va ta’sirli model bo‘lib, uning nutqi, muloqot madaniyati, munosabatlari talabalarning o‘zaro aloqa madaniyatini shakllantirishda

asosiy omil hisoblanadi. Shuning uchun o‘qituvchining har bir so‘zi va harakati talabalar uchun namuna bo‘lib, madaniyatli va odobli muloqot qilishga undaydi.

Shuningdek, an’anaviy ma’ruza usullaridan farqli o‘laroq, interfaol ta’lim metodlari talabaning faol ishtirokini ta’minlaydi. Guruhlarda ishlash, munozaralar, rol o‘yinlari va boshqa interfaol metodlar talabalarni fikr almashishga, o‘z fikrini erkin ifoda etishga, boshqalarning nuqtai nazarini tinglashga o‘rgatadi. Bu esa ularning kommunikativ madaniyatini rivojlantirishda muhim vosita hisoblanadi.

Bundan tashqari, kommunikativ madaniyat faqatgina nutq madaniyatidan iborat emas, balki unda axloqiy va ijtimoiy qadriyatlar ham muhim o‘rin tutadi. Hurmat, sabr-toqat, samimiylik kabi sifatlar muloqotni yanada samarali va ma’noli qiladi. Shuning uchun ta’lim jarayonida talabalar axloqiy me’yorlar va madaniy qadriyatlarni chuqur o‘zlashtirishlari kerak. Bu o‘zaro hurmat va tushunishni kuchaytiradi, ijtimoiy muhitda to‘g‘ri muloqot qilishga yordam beradi.

Til ko‘nikmalarining rivojlanishi ham kommunikativ madaniyatning ajralmas qismi hisoblanadi. Talabalar nutqning grammatikasi, leksikasi, fonetikasi va stilistik jihatlarini yaxshi bilib, o‘z fikrlarini aniq va tushunarli ifoda eta olishlari lozim. Shu bilan birga, boshqa madaniyatlar vakillari bilan samarali muloqot qilish qobiliyatini shakllantirish uchun madaniyatlararo kommunikatsiya ko‘nikmalarini ham rivojlantirish muhimdir. Xalqaro seminarlar, til mashqlari va madaniyatlararo treninglar orqali talabalar bu borada o‘zlarini yanada rivojlantirish imkoniga ega bo‘ladilar.

Shunday qilib, talabalarda kommunikativ madaniyatni rivojlantirishda o‘qituvchining shaxsiy namunadorligi, interfaol metodlar qo‘llanilishi, axloqiy qadriyatlarning singdirilishi, til ko‘nikmalarining mustahkamlanishi hamda madaniyatlararo kommunikatsiya elementlarining inobatga olinishi ta’lim jarayonining samaradorligini oshiradi. Bu omillar tizimli ravishda qo‘llanilganda, talabalar jamiyatda o‘zini erkin va samarali ifoda eta oladigan, madaniyatli va hurmatga sazovor shaxslar sifatida shakllanadi.

Bizning fikrimizcha, talabalarda kommunikativ madaniyatni rivojlantirish nafaqat til va muloqot ko‘nikmalarini shakllantirishdan iborat, balki ularning ijtimoiy ongini, madaniy hamda axloqiy qadriyatlarini mustahkamlash jarayonidir. Bugungi global va tezkor dunyoda samarali muloqot qilish qobiliyati – shaxsning shaxsiy va kasbiy muvaffaqiyatini belgilovchi muhim omil hisoblanadi. Shu bois, ta’lim jarayonida faqat bilim berish emas, balki talabalarni insoniy munosabatlar, hamkorlik va ijtimoiy mas’uliyat ruhida tarbiyalash eng asosiy vazifa bo‘lishi lozim.

Bundan tashqari, o‘qituvchining shaxsiy namunadorligi va interfaol ta’lim metodlari nafaqat bilim uzatishda, balki talabalarni tanqidiy fikrlashga, o‘z fikrini aniq va madaniyatli ifoda eta olishga o‘rgatishda beqiyos ahamiyatga ega. Axloqiy me’yorlar va qadriyatlar esa, har qanday muloqotning poydevori bo‘lib, ularning singdirilishi jamiyatda sog‘lom va madaniyatli kommunikatsiya muhitini yaratadi.

Shuning uchun pedagogik jarayonda yangicha yondashuvlarni, zamonaviy texnologiyalar va innovatsion metodlarni keng qo‘llash zarur, bu esa o‘quvchilarni nafaqat o‘qishga, balki o‘z fikrini bildirishga, tinglashga va boshqalar bilan

konstruktiv muloqotga undaydi. Yakunida ta’kidlash joizki, kommunikativ madaniyatni rivojlantirish nafaqat **individual shaxs sifatida, balki jamiyatning barqaror taraqqiyoti uchun** ham muhimdir. Shu bois, bu sohada izchil va tizimli ish olib borilishi kelajak avlodning ma’naviy va madaniy jihatdan boy bo‘lishini ta’minlaydi.

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АКТУАЛЬНЫЕ ПОДХОДЫ К ФОРМИРОВАНИЮ МОТИВАЦИИ СТУДЕНТОВ В ИЗУЧЕНИИ ИНОСТРАННЫХ ЯЗЫКОВ

Аннотация: *В современных условиях глобализации и цифровизации образования мотивация студентов к изучению иностранных языков является ключевым фактором успешного обучения. Цель статьи заключается в анализе актуальных методов формирования мотивации учащихся в вузах, включая игровые, проектные и интерактивные технологии. Использованы методы анализа литературы, педагогические наблюдения и кейс-стади. В результате исследования выявлены наиболее эффективные подходы, способствующие повышению вовлеченности и самостоятельной активности студентов.*

Ключевые слова: *мотивация, иностранные языки, студенты, образовательные технологии, интерактивные методы, проектная деятельность*

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CURRENT APPROACHES TO STUDENT MOTIVATION IN FOREIGN LANGUAGE LEARNING

Abstract: *In the context of globalization and digitalization of education, student motivation for learning foreign languages is a key factor in successful acquisition. The aim of this article is to analyze modern methods for developing student motivation in higher education, including game-based, project-based, and interactive technologies. Methods of literature review, pedagogical observation, and case studies were applied. The results identified the most effective approaches that enhance student engagement and autonomous learning.*

Keywords: *motivation, foreign languages, students, educational technologies, interactive methods, project-based learning*

Мотивация является фундаментальной составляющей процесса обучения иностранным языкам. Без внутреннего интереса и стимулов студенты часто испытывают трудности в усвоении новых лексико-грамматических структур, развитии речевых навыков и активном участии в образовательной деятельности. Современные исследования подчеркивают, что традиционные методы преподавания, основанные исключительно на объяснении правил и выполнении упражнений, не всегда способствуют устойчивой мотивации и вовлеченности учащихся.

В условиях XXI века особое значение приобретает интерактивный и деятельностный подход, который рассматривает обучение иностранным языкам как процесс активного участия студента, включающий самостоятельное открытие знаний, участие в проектной деятельности и использование цифровых технологий. Таким образом, формирование мотивации становится не вспомогательной, а центральной задачей педагогического процесса.

1. Теоретические основы мотивации в обучении иностранным языкам

Современная психолого-педагогическая литература выделяет несколько ключевых типов мотивации:

1. Внутренняя мотивация — интерес студента к языку как средству общения, познания культуры и самореализации.

2. Внешняя мотивация — стимулы, исходящие от преподавателя, системы оценивания, карьеры и социальных требований.

3. Ситуативная мотивация — кратковременная заинтересованность, возникающая в процессе конкретного занятия, игры или проекта.

Понимание этих типов мотивации позволяет преподавателю строить образовательный процесс таким образом, чтобы сочетать внутренние интересы студентов с внешними стимуляторами и создавать условия для устойчивой вовлеченности.

Исследования (Deci & Ryan, 2000; Ushakova, 2018) показывают, что внутренняя мотивация является наиболее эффективной для долгосрочного освоения иностранного языка, однако её формирование требует активного вовлечения студентов в самостоятельную и проектную деятельность, где учащиеся ощущают ответственность за свой образовательный результат.

2. Игровые методы как инструмент повышения мотивации

Одним из наиболее эффективных подходов к мотивации являются игровые методы, включающие ролевые игры, языковые квесты, викторины и симуляции реальных ситуаций общения.

Примеры:

Ролевые игры: студенты разыгрывают сценарии повседневного общения — заказ еды в ресторане, покупка билета, собеседование на работу.

Используются заранее подготовленные карточки с заданиями и языковыми конструкциями.

Квесты и викторины: интерактивные задания в группах стимулируют командную работу, конкуренцию и активное применение грамматических и лексических структур.

Симуляции реальных ситуаций: моделирование переговоров, презентаций или деловой переписки позволяет студентам применять язык в естественном контексте.

Игровые методы повышают ситуативную мотивацию, снижают уровень тревожности и создают положительный эмоциональный фон, что особенно важно для начинающих студентов.

3. Проектная деятельность как средство формирования устойчивой мотивации

Проектная деятельность направлена на решение конкретных задач с использованием языка как инструмента коммуникации. Ключевые особенности:

Цель проекта: разработка презентаций, эссе, интервью, видеороликов на иностранном языке.

Командная работа: студенты работают в группах, что способствует развитию социальных навыков и сотрудничества.

Практическая значимость: результаты проекта могут быть представлены в университете, опубликованы на сайте или использованы в других учебных дисциплинах.

4. Интерактивные технологии в формировании мотивации

Современные образовательные подходы активно используют интерактивные технологии, которые способствуют активному вовлечению студентов и повышению их внутренней мотивации. К интерактивным методам относятся:

Онлайн-тренажёры и платформы (Kahoot, Quizlet, Wordwall) — позволяют студентам повторять лексику и грамматику в игровой форме, стимулируя их интерес и вовлечённость.

Флиппед-класс (перевернутый класс) — студенты изучают теоретический материал дома с помощью видео и презентаций, а на занятиях активно применяют знания в обсуждениях, проектах и практических упражнениях.

Интерактивные доски и мультимедийные презентации — визуализируют грамматические и лексические конструкции, создают наглядность и улучшают понимание сложных тем.

Заключение

Формирование устойчивой мотивации студентов в изучении иностранных языков является одним из ключевых факторов успешного овладения языком. Современные педагогические подходы, основанные на игровых, проектных и интерактивных методах, позволяют не только повысить

вовлечённость, но и развивать самостоятельность, креативное мышление, коммуникативные и когнитивные навыки учащихся.

Интеграция цифровых технологий и онлайн-платформ обеспечивает гибкое и персонализированное обучение, создаёт условия для активного использования языка в учебной и внеучебной деятельности, а также способствует формированию внутренней мотивации студентов.

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ЦИФРОВИЗАЦИЯ В ГОСУДАРСТВЕННО-ПРАВОВОЙ СФЕРЕ: ПЕРСПЕКТИВЫ, ПРОБЛЕМЫ, ТЕХНОЛОГИИ

Аннотация: *статья посвящена процессам цифровизации в государственно – правовой сфере. Подчеркивается необходимость обеспечения надлежащего уровня «цифрового присутствия» субъектов в виртуальной среде. Рассмотрены особенности алгоритмизации права, а также использование квантовых алгоритмов в области юридических наук. Особое внимание уделено применению искусственного интеллекта.*

Ключевые слова: *цифровое государство, цифровое присутствие, виртуальная среда, квантовое право, искусственный интеллект.*

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DIGITALIZATION IN THE STATE AND LEGAL SPHERE: PROSPECTS, CHALLENGES AND TECHNOLOGIES

Abstract: *this article focuses on the processes of digitalization in the state and legal sphere. It underlined the need to ensure an appropriate level of "digital presence" for subjects in the virtual environment. The article explores the features of legal algorithmization and the use of quantum algorithms in legal sciences. Special attention is paid to the use of artificial intelligence.*

Keywords: *digital state, digital presence, virtual environment, quantum law, artificial intelligence.*

Сегодня нет сомнений в том, что цифровые технологии (в том числе, искусственный интеллект) внедряются абсолютно во все сферы и отрасли человеческой жизни и государственные системы, неразрывно связывая воедино потребности человека, автоматизированные процессы, решение утилитарных задач и неизбежную алгоритмизацию важнейших зон и плоскостей прикладной науки. Все современные знания и принципы их реализации сегодня человечество структурирует через призму цифровых технологий, которые существенно ускоряют и упрощают как передачу знаний, так и их практическое применение и доступность.

На сегодняшний день тенденция цифровизации все больше охватывает различные сферы общественной жизни. Развитие информационных технологий детерминирует развитие общественных отношений в информационном пространстве. Естественно, что в связи с возникновением такой сферы жизнедеятельности общества появляются и новые правоотношения. Следовательно, образуются и новые субъекты права, которые участвуют в этих правоотношениях. Можно отметить, что в последнее время общественные отношения выходят на качественно новый, цифровой уровень [1].

Достаточно активно трансформируются государственные, политические, социальные и экономические институты. При этом цифровизация неизбежно охватывает и сферу права. Изменения касаются форм, механизмов и действия права. Происходит реорганизация всех государственно-правовых институтов под новые реалии. Нужно отметить, что процесс цифровизации представляет собой не законченный результат, который подлежит нормативному урегулированию, а непрекращающийся сложный многоуровневый процесс, происходящий в объективной реальности. В связи с этим государство будет не только инициировать новые процессы и механизмы в сферах права и управления, но также будет подстраиваться под уже существующие новые тенденции цифровой реальности [1].

В работе [2] отмечается, что на данный момент существует достаточно большое число разрозненных концепций, которые так или иначе служат «кирпичиками» для построения цифрового государства: «цифровое правосудие»; «цифровые избирательные технологии»; «цифровой общественный мониторинг над государственным и муниципальным управлением» и другие. Разумеется, все эти концепции претерпевают определенные организационно-технологические изменения в связи с развитием как самих общественных отношений в той или иной области, так и в связи с модернизацией применяемых цифровых технологий коммуникации, хранения, защиты, поиска, обработки информации и др.

Следует отметить, что цифровое государство – это платформа для реализации правоотношений не только граждан, общественных и коммерческих организаций и органов публичной власти, но и органов власти между собой [2]. При этом «внутреннее» взаимодействие в рамках информационного пространства органов публичной власти между собой является одним из главных направлений в цифровом государстве (примером чего является активно развиваемое в настоящее время межведомственное электронное взаимодействие).

Подчеркнем, что независимо от того, о каких взаимодействующих субъектах в рамках информационного пространства идет речь (граждане, организации, органы публичной власти), обязательным условием их эффективного взаимодействия в виртуальной сфере является значимый

уровень так называемого «цифрового присутствия» указанных субъектов в этой специфической среде [3].

Например, для коммерческих организаций значимый уровень «цифрового присутствия» в виртуальной среде обеспечивается созданием и поддержанием точек взаимодействия с клиентами в Интернете через различные цифровые каналы (веб-сайты, чат-боты, мобильные приложения, социальные сети, онлайн-рекламу, электронную почту, интернет-магазины, платформы распространения контента и др.), то есть, через совокупность всех онлайн-активов и коммуникаций фирмы, предоставляющих ее продукты, ее менеджеров, а также формирующих ее образ и доступность для потребителей и контрагентов в сети.

Некоторые вопросы обеспечения «цифрового присутствия» различных субъектов в виртуальной среде рассматривались автором настоящей статьи в работах [4] - [11].

В статье [12] отмечается, что цифровизация оказывает влияние и на форму права. Цифровая формализация нормативно-правовых актов может способствовать упорядочению законотворческого и правоприменительного процессов в электронном виртуальном мире. При этом с помощью математической логики возникает возможность выявлять противоречия в праве, неполноту регулирования тех или иных отношений. Алгоритмизация законотворческого процесса предполагает формирование цифрового правового языка и переход к автоматизированному законотворчеству, позволяющему предотвратить грамматические ошибки, находить дефекты и коллизии в обсуждаемых и принятых нормативно – правовых актах, унифицировать юридическую терминологию, выявлять коррупциогенные факторы, избежать дублирования в текстах нормативно-правовых актов [12].

Следует подчеркнуть, что алгоритмизация процессов как правотворчества, так и правоприменения автоматически не означает устранения человека из наиболее критичных процессов цифрового взаимодействия. Так, в работе [13] было отмечено, что рассмотрение даже типичных дел не может быть доверено «судье-автомату». При решении дел судья обязан руководствоваться не только нормами действующего законодательства (которые, действительно, вместе с примерами судебной практики могут быть представлены в удобном интерактивном цифровом виде), но и учитывать разнообразные обстоятельства конкретных дел, руководствуясь при вынесении решений не только правовыми, но и моральными принципами. Вынесение решения не может осуществляться электронным устройством или судьей-роботом, поскольку в противном случае из системы правосудия будет неизбежно устранен такой важный его компонент как судебное усмотрение [13].

Несмотря на то, что человек не заменяется полностью роботами в виртуальной среде цифрового государства, следует подчеркнуть, что формирование новых правовых механизмов происходит в условиях смены

всей научной парадигмы и типов научной рациональности, в том числе, в области правовых наук [14].

Одним из принципиальных моментов, характеризующих новую научную парадигму, является использование квантовых технологий. Особо отметим, что речь идет не только и не столько об использовании квантовых компьютеров (хотя вполне обоснованно ожидается, что их практическое использование приведет к кардинальному увеличению вычислительных возможностей, доступных человечеству). Речь идет также об использовании квантовой логики, в которой (в отличие от классической аристотелевой логики), противоположные по смыслу высказывания А и не-А образуют квантовую суперпозицию (entanglement) и могут быть одновременно истинными до момента принятия решения, вызывающего редукцию волновой функции этой квантовой смеси высказываний А и не-А.

Показательным является тот факт, что в начале XXI века квантовые теории проникли в те сферы, которые ранее практически никак не описывались с помощью математического аппарата, тем более такого, который применяется в квантовой механике.

Разумеется, многие исследователи на данный момент воспринимают термин «квантовая логика» более как метафору, восходящую к известным концепциям квантовой физики (запутанные состояния; нелокальность, то есть действие на расстоянии; неустранимое влияние наблюдателя на результат измерений, и т.д.), нежели как прямой призыв к действительному переносу аппарата, скажем, уравнений Шредингера на поле социогуманитарных наук. Тем не менее, тенденция весьма показательна, и возможно, что она отражает более глубокое присутствие квантовых явлений в нашей жизни, чем это представлялось ранее. Приведем несколько примеров.

Известны работы [15], [16] из области социологии, в которой концепция запутанного состояния квантовых объектов (entanglement) переносится на человеческое общество. При этом из гипотезы о квантовой запутанности всех людей в обществе делается вывод о научном обосновании существования морали и нравственности.

Существуют также работы в области так называемой «квантовой когнитивистики» - новой междисциплинарной области исследований на стыке квантовой механики, лингвистики, а также психологии. В этой сфере формализм квантовой теории применяется для моделирования ряда когнитивных явлений, к которым относятся, в частности, человеческая память, мышление и принятие решений [17], [18].

Известны также работы, в которых говорится о квантовых подходах в теории международных отношений [19] и, что особенно интересно в контексте настоящей статьи, о формировании новой квантовой теории права [20], [21].

Автор настоящей работы считает, что квантовые алгоритмы в области права должны в настоящее время рассматриваться исследователями скорее как перспективные цели, нежели как прямое руководство к применению

инструментария квантовых наук, однако направление движения научной мысли в этом направлении представляется весьма симптоматичным. Особенно привлекательным и многообещающим представляется использование квантовых алгоритмов для обеспечения функционирования искусственного интеллекта, поскольку многими исследователями делается обоснованный вывод о подобии мыслительной деятельности человека работе квантового компьютера. Если говорить предельно просто, то вообще есть веские основания рассматривать мозг человека как универсальный квантовый компьютер [22].

Безусловно, осмыслить масштаб внедрения искусственного интеллекта в нашу жизнь человеку еще только предстоит, однако, уже сегодня представляется справедливым утверждение о том, что применение технологий искусственного интеллекта - это явление времени неизбежное и революционное. И в этом смысле любые «неолуддитские» настроения неотвратимо разобьются об аргументы сторонников искусственного интеллекта о выгоде интеллектуальной цифровизации технологических процедур и иных процессов научно-технической эпохи.

В целях обеспечения ускоренного развития искусственного интеллекта в Российской Федерации, проведения научных исследований в области искусственного интеллекта, повышения доступности информации и вычислительных ресурсов для пользователей, совершенствования системы подготовки кадров в этой области, в России утверждена в 2019 году (в редакции Указа Президента от 15.02.2024 № 124) Национальная Стратегия развития искусственного интеллекта на период до 2030 года [23].

В Стратегии говорится: «Создание универсального (сильного) искусственного интеллекта, способного, подобно человеку, решать различные задачи, мыслить, взаимодействовать и адаптироваться к изменяющимся условиям, является сложной научно-технической проблемой, решение которой находится на пересечении различных сфер научного знания - естественно-научной, технической и социально-гуманитарной» [23].

Однако, искусственный интеллект не должен заменять человека или организацию, он не должен их подменять. Цель внедрения искусственного интеллекта - это упрощение сложного, это деление «дроби человеческих потребностей» на утилитарные части. Как говорят специалисты, фактически искусственный интеллект — это «экзосклет из нейросетей», который мы надеваем на наши задачи, тем самым расширяя и ускоряя наши собственные возможности.

Цель внедрения искусственного интеллекта в России - повысить результативность деятельности граждан, организаций и органов публичной власти во всех отраслях, ускорить обработку бурно увеличивающегося пласта информации, стать лидерами коммерческой привлекательности и экспортного потенциала технологических решений, разработанных в России с помощью искусственного интеллекта. Технологическая независимость, суверенитет, лидерство и конкурентоспособность России на мировом рынке в области

искусственного интеллекта может позволить нам «достичь значимых результатов по основным направлениям социально-экономического развития» [23].

Одним из основных базовых принципов развития и использования технологий искусственного интеллекта в России провозглашен принцип преемственности - «обеспечение постепенного перехода органов публичной власти к использованию технологий искусственного интеллекта» [23]. Основными направлениями внедрения доверенных технологий искусственного интеллекта в органах публичной власти и организациях являются цифровая трансформация органов публичной власти и субъектов Российской Федерации при включении и актуализации в них программ и стратегий цифровой трансформации.

Не менее важным этапом является методическое и нормативно-правовое обеспечение внедрения доверенных технологий искусственного интеллекта в государственном управлении, в том числе и площадок для обмена опытом и вычленения наиболее эффективных методов внедрения, а также активное развитие единой цифровой платформы РФ «РосТех», содержащей как реестр проектов, так и реестр уже апробированных доверенных технологий искусственного интеллекта для органов публичной власти и организаций и в различных отраслях экономики и социальной сферы [23].

Цель внедрения больших генеративных систем искусственного интеллекта - это ускорение экономического роста, что неизбежно приводит к росту темпов роста производительности труда, и «стимулирует работодателей к существенному увеличению доли высококвалифицированных специалистов в общей численности работников («экономика высоких зарплат»)» [23].

Самыми первыми принципами развития и использования технологий искусственного интеллекта в России заявлены следующие принципы: обеспечение защиты прав и свобод человека, гарантированных законодательством Российской Федерации, международными договорами Российской Федерации и общепризнанными принципами и нормами международного права, в том числе права на труд, и предоставление гражданам возможности получать знания и приобретать навыки для успешной адаптации к условиям цифровой экономики [23].

В этом смысле представляется новаторской идея внедрения технологий искусственного интеллекта в повседневную жизнь простого гражданина в виде некоторого индивидуального чат-бота, цифрового двойника, частично схожего по статусу с конкретным индивидом, целью которого была бы защита прав и интересов простого человека в рамках правового поля в повседневной жизни. Такой бот - это не просто индивидуальный кабинет с набором данных о человеке и его правоустанавливающих документах, а интеллектуальный помощник – двойник, который мог бы грамотно, пристрастно и детализировано вычленять нарушенные права конкретного человека и не только предлагать возможные решения его проблем, но и, возможно, в будущем, самостоятельно вовлекаться в их разрешение и устранение,

тотально защищая и оберегая индивида. Более того, данный бот мог бы заниматься и просветительской деятельностью своего «хозяина», так как не все граждане в силу уровня образованности и юридической подкованности способны грамотно оценивать последствия своих действий, а также бездействия в конкретных жизненных ситуациях и перипетиях.

Так в частности, можно предположить, что создание индивидуальной цифровой экосистемы для каждого человека позволит ему реализовывать свои права, о которых он мог не знать в силу разных причин (например, подача заявления в уполномоченный орган на получение выплаты и ее полное оформление по умолчанию системой искусственного интеллекта), а также защищать законные интересы (например, оперативно оплачивать образовавшиеся штрафы без пеней за просрочку или составлять и отправлять жалобы в государственные органы).

Однако, нельзя не упомянуть, что Национальная стратегия развития искусственного интеллекта [23] не допускает делегирование таким системам ответственного нравственного выбора (в том числе, принятие любых решений, способных оказать влияние на жизнь или здоровье человека), а также делегирование ответственности за последствия принятия решений.

Ответственность за все последствия работы систем искусственного интеллекта всегда несет физическое или юридическое лицо, признаваемое субъектом ответственности в соответствии с законодательством Российской Федерации. И в этом смысле идею передачи системам искусственного интеллекта некоторых функций по принятию решений индивидом еще предстоит детально проработать с учетом базовых принципов права и законодательства РФ. Однако, уже сейчас представляется возможным в будущем составление некой «Электронной доверенности» по принципу анкетирования, в которой каждый человек сам решит, какие функции и какие сферы своей жизни он готов делегировать системам искусственного интеллекта, с учетом сохранения принципа конечной ответственности за собой, то есть физическим лицом.

Отметим, что создание и предоставление определенной свободы и автономности такому аватару конкретного человека, его «цифровому двойнику», представляется вопросом дискуссионным, поскольку предстоит решить сложные проблемы не только технологического и юридического, но и морально – этического плана.

Тем не менее, данный вопрос (создание и автономная деятельность цифровых двойников человека), их юридическая субъектность, права и обязанности в цифровой виртуальной среде (которая все чаще обоснованно называется метавселенной), уже являются предметом заинтересованного обсуждения специалистов [24], [25].

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АНАЛИЗ РЕГИОНАЛЬНОЙ ПОЛИТИКИ МУРМАНСКОЙ ОБЛАСТИ В СФЕРЕ ФИЗИЧЕСКОЙ КУЛЬТУРЫ

Аннотация: *в основе развития любой сферы деятельности, в том числе физической культуры и спорта, лежит грамотно разработанная политика управления. В статье анализируются принципы, используемые при построении региональной политики, а также основные направления развития. Делаются выводы о влиянии региональной политики на развитие сферы физической культуры в отдельном регионе.*

Ключевые слова: *стратегия развития, региональная политика, принципы, направления, физическая культура, Мурманская область.*

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ANALYSIS OF THE REGIONAL POLICY OF THE MURMAN REGION IN THE FIELD OF PHYSICAL CULTURE

Abstract: *the development of any field of activity, including physical culture and sports, is based on a well-developed management policy. The article analyzes the principles used in the construction of regional policy, as well as the main areas of development. Conclusions are drawn about the influence of regional policy on the development of physical culture in a particular region.*

Keywords: *development strategy, regional policy, principles, directions, physical culture, Murmansk Region.*

Введение.

Формирование региональной политики Мурманской области в сфере физической культуры строится на основе использования положений различных законодательных актов, в число которых входят указы и распоряжения Президента РФ, многолетние государственные программы, связанные с совершенствованием физической культуры в нашей стране, такие как «Развитие физической культуры и спорта» и федерального проекта «Спорт - норма жизни» в рамках национального проекта «Демография».

Методы исследования: метод анализа и аналогий, анализ методов управления.

Результаты оригинального авторского исследования.

Формирование как государственной, так и региональной политики Мурманской области в области физической культуры строится на основе следующих принципов:

− непрерывности и преемственности физического воспитания различных возрастных групп граждан на всех этапах их жизнедеятельности;

− учета интересов всех граждан при разработке и реализации федеральных программ развития физической культуры и спорта, признания ответственности граждан за свое здоровье и физическое состояние;

− признания самостоятельности всех физкультурно-спортивных объединений, отвечающих требованиям настоящего Федерального закона, равенства их прав на государственную поддержку;

− создания благоприятных условий финансирования физкультурно-спортивных и спортивно-технических организаций, олимпийского движения России, образовательных учреждений и научных организаций в области физической культуры и спорта, а также предприятий спортивной промышленности.

Основные направления региональной политики в сфере развития культуры спорта Мурманской области перечислены на рисунке 1.

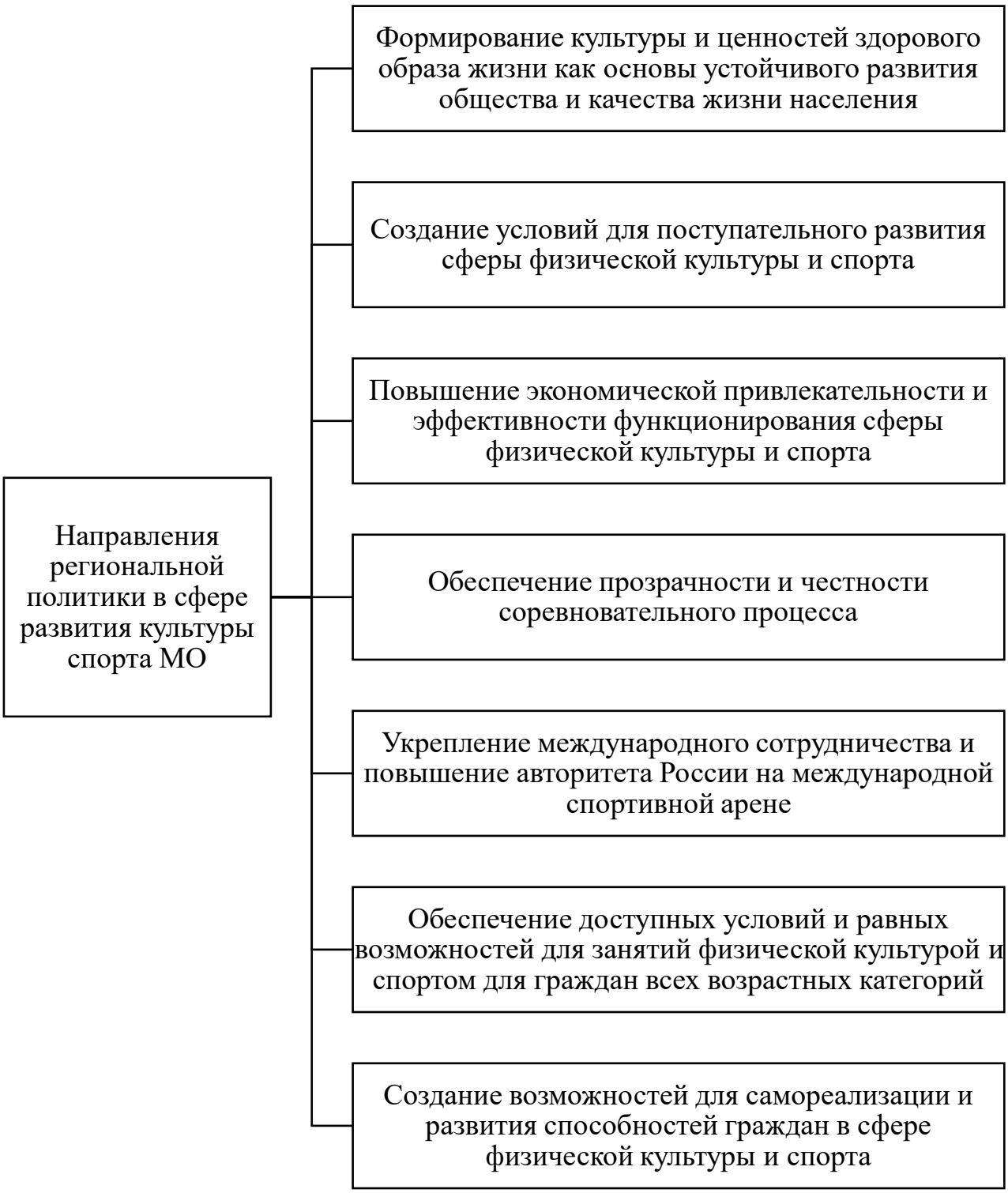


Рисунок 1 – Основные направления региональной политики в сфере развития культуры спорта Мурманской области

В 2020 году распоряжением Правительства РФ от 24.11.2020 №3081-р была утверждена «Стратегия развития физической культуры и спорта в Российской Федерации на период до 2030 года» (далее – Стратегия). В соответствии с данной стратегией региональная политика МО в области развития физической культуры включает в себя следующие направления:

1) повышение качества жизни и благополучия жителей региона за счет повышения иммунитета и укрепления здоровья. Этого можно достичь за счет организации физкультурно-спортивных клубов, расположенных поблизости от мест жительства, работы, учебы и отдыха граждан;

2) расширение системы и увеличение количества мероприятий, связанных с формированием спортивного резерва и спорта высших достижений. В ответ на внешние ограничения и санкционное давление необходима разработка и внедрение новых методов и подходов для развития профессионального спорта в регионе;

3) усиление кадрового потенциала в области физической культуры, а также спортивной медицины. Для этого необходимо реорганизовать систему профессионального образования; обеспечить условия для создания и действенной работы системы независимой оценки уровня профессиональной квалификации;

4) повышение уровня антидопингового обеспечения, например, за счет создания культуры нулевой терпимости к нарушению антидопинговых правил, восстановления имиджа России;

5) обновление и развитие имеющейся инфраструктуры объектов физической культуры и спортивной медицины, начиная от повышения рационализации процесса управления спортивной инфраструктуры страны и региона еще на стадиях планирования и проектирования, а также последующей эксплуатации;

6) повышение управляемости и уровней взаимодействия между субъектами физической культуры и спорта;

7) повышение уровня цифровизации системы управления сферы физической культуры, в том числе за счет обновления процессов по сбору и анализу данных, повышения рациональности и скорости принятия управленческих решений на основе использования современных цифровых технологий и искусственного интеллекта.

Последовательная реализация описанных мероприятий будет способствовать постепенному повышению уровня физической культуры среди жителей региона.

Заключение.

Разработка политики управления в области физической культуры с учетом региональных особенностей субъекта позволит сделать ее более рациональной и действенной, что в итоге будет способствовать повышению вовлеченности граждан региона к занятиям физической культурой.

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1. Распоряжение Правительства РФ от 24 ноября 2020 г. № 3081-р «Об утверждении Стратегии развития физической культуры и спорта в РФ на период до 2030 года» [электронный ресурс]. URL: https://www.garant.ru/products/ipo/prime/doc/74866492/ (дата обращения 13.10.2025)

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