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ANALYZING COLLECTED DATABASE BY USING GOOGLE FORMS TO DETECT AN INCREASE IN THE NUMBER OF FUNGAL INFECTIONS AMONG CHILDREN POST-COVID-19 PERIOD

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Abstract

The data was collected from parents in favor of the Google Form questionary by us in order to find out the number of children who got fungal otolaryngologic diseases after Coronavirus infection. The main aim of this research was to detect any increase in the number of fungal infections among children after the Coronavirus pandemic. As the viral high transmitted disease, coronavirus disease 2019 (COVID-19), caused by severe acute respiratory syndrome coronavirus (SARS-CoV-2), has been an emerging global public health event. Till October 19th, 2022, COVID-19 has rapidly spread to 212 countries and caused nearly 618 million laboratory-confirmed cases and more than 6.5 million deaths globally. Even after the pandemic its effects remain and influence people. This article summarizes answers collected by Google Form from parents that have children who experienced Coronavirus infection.

32 responses were collected from parents in Google Survey, according to these data, 23 of them first time in children's lifetime, noticed a fungal infection in

their children during and after the COVID-19 pandemic. This means that during the pandemic overusing medications, such as antibiotics and steroids, and also an immunosuppressive effect of the virus caused well spread of fungal infections.

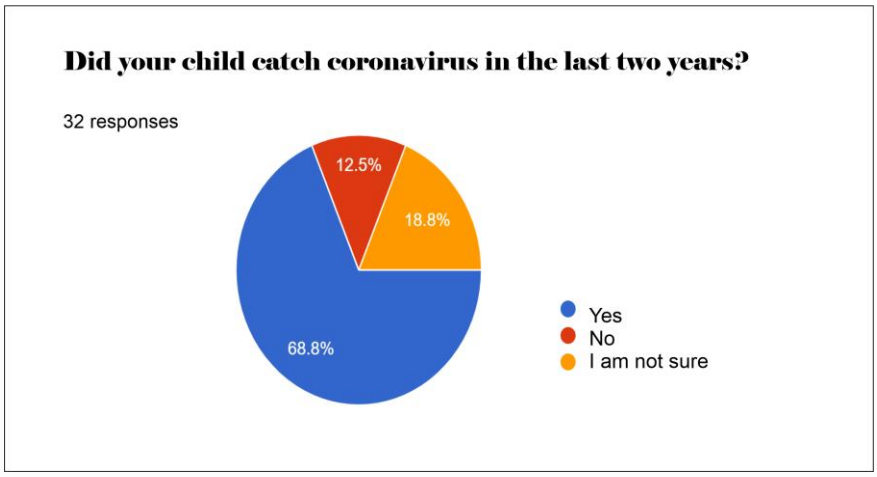
Key words: fungal infections, post-COVID-19, children, pandemic, data analysis, Google Form, Candida albicans, Aspergillus fumigatus.

Introduction. As similar to Middle East Respiratory Syndrome and SARS-CoV Coronavirus (MERS-CoV), SARS-CoV-2 leads lower respiratory infection and can cause Acute Respiratory Distress Syndromes (ARDS). Besides, the diffuse alveolar damage with severe inflammatory exudation, COVID-19 patients always have immunosuppression with a decrease in CD4 + T and CD8 + T cells. Critically ill patients, especially the patients who were admitted to the intensive care unit (ICU) and required mechanical ventilation, or had a longer duration of hospital stays, even as long as 50 days, were more likely to develop fungal co-infections. Hence, it is important to notice that COVID-19 patients can develop further fungal infections during the middle and latter stages of this disease, especially severely ill ones. And our goal for this research was to figure out if there are any connections between fungal diseases and Coronavirus in children. According to the information we were given that fungal infections among children were getting more and more common so we decided to check this information by using a Google survey. Google form consisted of 10 questions and 4 of them were personal questions related to their name, age, and contacts while 6 queries were specifically about the research.

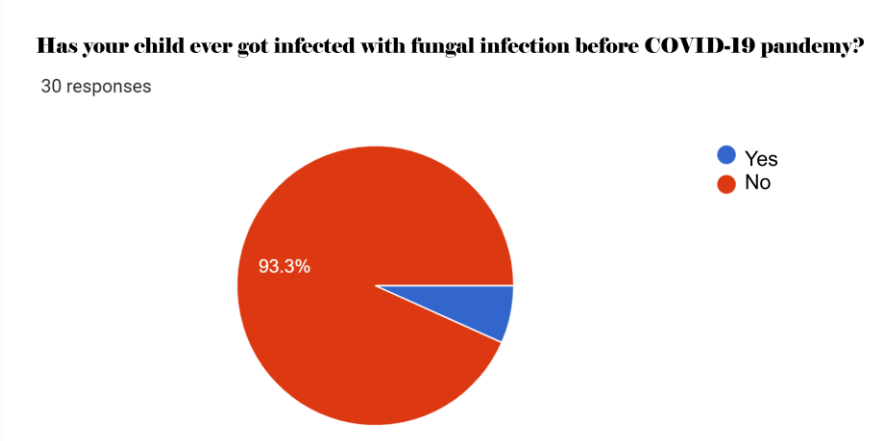
The project was intended to analyze a real number of fungal cases in this situation. Google survey was spread via Telegram channels and emails, in order to target the right people. We asked for help from Public policlinic nurses to find parents who have children who got ill with fungal infections. The most common disease among these children is otitis media. Fungi, like Candida albicans and Aspergillus fumigatus, usually cause otitis media. We were eager to figure out if is this normal among children or if something bad factor caused this. And also our mission was to find connections between COVID-19 and fungal infections.

Research methods: Data analysis with MySQL, Google Forms, and Google Docs examination and questionnaire data. Because of the small size of our research, we did not use IBM SPSS statistics, simply Power BI was used to analyze and visualize the data.

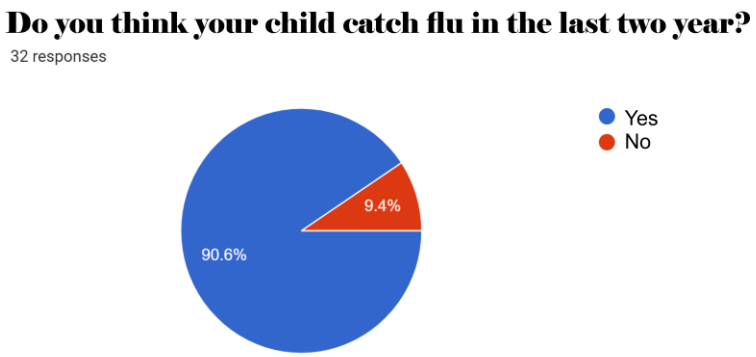
According to the survey, 68,8 percent of respondents confirmed that their children contracted Coronavirus infections additional this 18.8 percent of parents were not sure about this question while only 12.5 % people surely told us their children had not suffered COVID-19 in the past two years



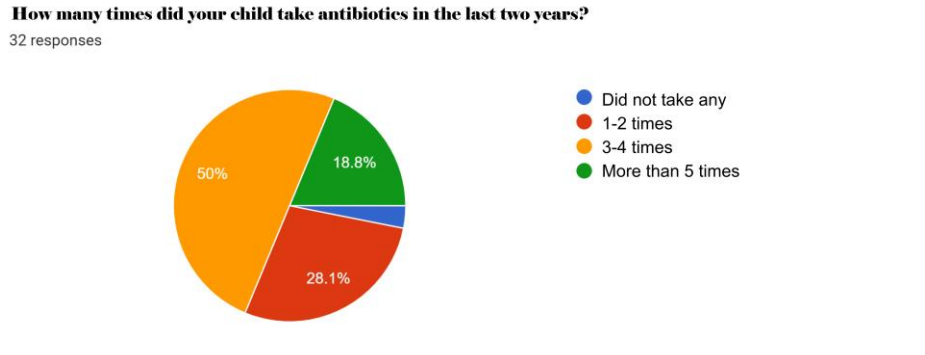
The most interesting part of this research was 93.3 percent of respondents said that their children had never contracted fungal infections before COVID-19. The following pie chart shows the proportion of answers to this query. And this is important because particularly after COVID-19, the percentage of fungal infections significantly increased. The following charts illustrate the number of fungal infections that affected children in the post-COVID period.



We should add that, 90,6 percent of respondents said that their children caught influenza in the last two years. This is much higher than normal so two reasons can lead to these results. The former reason is people usually could not differentiate between the flu and light version of coronavirus infection which means COVID-19 infection contributed to this sort of high percentage. The latter reason is coronavirus infection made children vulnerable to the influenza virus so this caused an increase in the number of children who had flu.

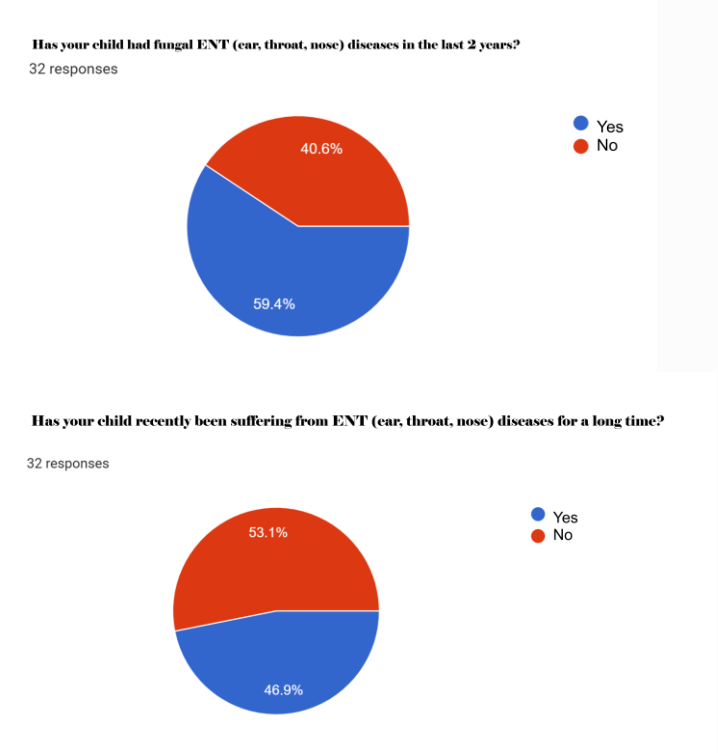


We were interested in medications that children took during the last two years in this survey because it would give us reliable information about the effects of drugs on the children. Overused antibiotics can create a convenient environment for fungi, and the next consequence of this is a fungal infection. 50 percent of parents informed us their children took 3 or 4 times antibiotic therapy while 28.1 percent of respondents claimed that their children took only 1 or 2 times this sort of therapy. In the graph below divisions of percentages in 4 sections.



A huge percentage 59.4 of our respondents answered positively our next question about fungal ENT disease history in the last 2 years while 93.3 percent of them said that their children have never been ill with fungal ENT diseases until the pandemic. It means there is a dramatic increase in this situation. Only a tiny 6.7 percent of children caught fungal ENT disease before COVID-19 whereas after the pandemic this number reached 59.4 percent. These numbers revealed that COVID-19 had a negative effect on the children to be more specific either the coronavirus or its treatment caused a rise in the number of fungal ENT disorders. Coronavirus infection might decrease the immune system of children against fungi it usually causes fungal infections. Spread of fungal infection in India[2] in 2021 would be a great example of this. The majority of experts said that especially coronavirus caused this kind of rare occasion.

On the other hand, misusage of antimalarial and antibiotics would weaken the protection of children's bodies in consequence It would lead to fungal infection. Antibiotics kill all bacteria even good bacteria which live in our intestines and produce vitamins. If we kill them all of our body's metabolic equilibrium gets destroyed so our immune system faces problems fighting against fungi.



Conclusion:

This fundamental research was accomplished among the population of Ferghana city in the period between 3rd August and 22nd August. The study was carried out using an online questionnaire created in the Uzbek language using the Google form. A comfortable sampling method was applied and individuals who understand Uzbek and online survey were approached. The questionnaire became accessible after accepting the terms and conditions of the study. Data cleaning was done by one of the investigators and it was cross-checked by a second investigator. Data analysis was carried out using MySQL and PowerBI. A total of 32 responses were analyzed from the respondents of Ferghana city.

As a conclusion of our research, we would say, the coronavirus pandemic affected children and made them vulnerable to fungal infections. A significant number of parents confirmed that their children got infected with fungus compared to pre-pandemic time. This might be the effect of the coronavirus itself or the consequence of its treatment. To clarify the situation and analyze the causes of this occasion we need to accomplish further research.

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