

Impact of COVID-19 Pandemic on the Frequency and Reasons for Dental Visits of Pediatric Patients

Sevda Rimalovska¹, Nina Musurlieva², Tanya Bozhkova^{3*}, Veselina Kondeva¹, Mariana Dimitrova¹

1. Department of Pediatric Dentistry, Faculty of Public health, Medical University – Plovdiv, Bulgaria.

2. Department of Social Medicine and Public Health, Faculty of Public health, Medical University – Plovdiv, Bulgaria.

3. Department of Prosthetic Dentistry, Faculty of Dental Medicine, Medical University – Plovdiv, Bulgaria.

Abstract

The study aims to assess the impact of COVID-19 pandemic on the frequency and causes of dental visits during the past year of lockdown and to evaluate the perception of the parents of the influence of the pandemic on their children's oral health.

An anonymous questionnaire was submitted online to a total of 132 parents of children aged 5 through 12 years.

During the lockdown period, 69,70% of the children had one dental appointment and 6,06% visited a dentist twice. Those who did not visit a dentist during the pandemic were 23,48%. The main reason for a dental visit was failure of dental restoration (31,06%). The majority of the respondents think that the COVID 19 pandemic did not affected their child's oral health (66.67%), but women were more likely to think so. Most of the participants (75,00%) reported that they had no difficulty in making an appointment for their child and for 66.67% dental treatment was not refused due to the pandemic.

The COVID-19 pandemic affected the frequency and the reasons for pediatric dental visits. Further research should be carried out on the actual situation of the long-term impact of the COVID-19 pandemic on children's oral health.

Clinical article (J Int Dent Med Res 2022; 15(3): 1211-1216)

Keywords: COVID-19, Dental Visit, Oral Health, Pediatric.

Received date: 28 April 2022

Accept date: 25 May 2022

Introduction

The emergence of a coronavirus infection, first identified in Wuhan, China in 2019, now called coronavirus disease 2019 (COVID-19), spread rapidly worldwide and on March 11, 2020, the outbreak was declared a global pandemic. Social distancing and lockdown were recommended to reduce transmission¹. The clinical presentation of 2019-nCoV infection ranges from asymptomatic to very severe pneumonia with acute respiratory distress syndrome, septic shock and multi organ failure, which may result in death². The virus that causes COVID-19 is thought to spread from person to

person, mainly through respiratory droplets produced from an infected person. Other routes have also been implicated in the transmission of coronaviruses, such as contact with contaminated surfaces and inhalation of aerosols, produced during aerosol generating procedures. Transmission of SARS-CoV-2 from asymptomatic individuals (or individuals within the incubation period) has also been described³. Health care workers are at serious risk of being exposed to the virus and constitute 9% of all infected people⁴. Dental practitioners have a higher likelihood of exposure to the coronavirus due to the direct exposure to saliva, blood, and a variety of dental procedures generating aerosols^{4,5}. As a part of the preventive measures, dentists were advised by WHO to provide only emergency treatments, managing severe pain, or maintaining the patient's quality of life. It was advised that non-urgent procedures, such as examinations, prophylaxis, preventive care, and esthetic treatments, be delayed until there was a substantial reduction in COVID-19 community

*Corresponding author:

Tanya Bozhkova,
Department of Prosthetic Dentistry, Faculty of Dental Medicine,
Medical University – Plovdiv, Bulgaria.
E-mail: dr.tanq.bojkova@gmail.com

transmission^{6,7}. As a result from this along with the fear of the patients from possible cross-infections the frequency of dental visits decreased significantly during the pandemic⁸. Dental care is the most common health care need of children and regular dental visits are essential for maintaining good oral health. Due to restricted dental services during lockdown, pediatric dental needs were severely compromised. The fear from infection and the unavailability of dental services at many places led to a lack of routine dental visits of the children. Parents contacted pediatric dentist only in need of emergency such as trauma, oral swelling and severe pain and relied on medicines to relieve pain and postpone the required dental treatment, which could lead to an increase in dental treatment needs of child patients during the post-pandemic period⁹.

Aim

This study aims to assess the impact of COVID-19 pandemic on the frequency of dental visits before and during the outbreak, the causes for the dental visits of the child during the past year of lockdown, difficulties in making an appointment with a dentist. We searched also whether dental treatment had been refused due to the pandemic situation, whether according to the parents the pandemic had affected the child's dental health and whether they believe that a visit to the dentist would endanger their or their child's health.

Materials and methods

An anonymous questionnaire was performed online through school educational electronic platform to provide rapid access to parents during the COVID -19 lockdown in the period September – October, 2021. The study was conducted in a school in the city of Plovdiv, Bulgaria. The respondents participated voluntarily and were informed about the purpose of the study and the privacy of the results. Before the study, the questionnaire was reviewed by all authors and validated by 10 parents to verify reliability of the results.

A total of 132 parents of children aged 5 through 12 years responded to the form submitted online. The questionnaire consisted of 10 items that evaluated demographic data

(gender and age); usual frequency of dental visits and how many times the child visited a dentist in the last year; how the parents generally assess their child's oral health and the main reasons for their child's dental visit in the past year. Questions were included to analyze if there were difficulties in making a dental appointment for their child in the past year of lockdown and whether the child was refused treatment by a dentist due to the COVID-19 pandemic. In addition, the questionnaire investigated the perception of the parents of the impact of the pandemic period on the frequency of their child's dental visits; whether they believe that the pandemic situation had affected their child's oral health and whether according to their opinion a visit to the dentist would endanger their or their child's health.

The categorical variables were expressed as frequency. The distribution of responses is presented as the mean and standard deviation. Differences in rates were calculated using the Chi-square test. The significance level was set below 0.05. The statistical program used was the Statistical Package for Social Sciences (SPSS) for Windows, version 12.0.

Results

The study included a total of 132 respondents, of whom 74 were women (56.06%) and 58 (43.93%) were men ($p = 0.01$). The share of the participants in the sample was almost the same in the different age groups: 20-30 years ($n = 28, 21.21\%$), 30-40 years ($n = 33, 25\%$), 40-50 years ($n = 32, 24.24\%$). Most of the participants identified themselves with high social status (75%). The majority of respondents (87%) generally consider the oral health of their children as good.

The results obtained from the study showed that majority of the children (56,82%), usually in the non-pandemic period, visit dental practitioner twice per year, followed by those who visit pediatric dentist usually at least once a year (35,61%). The usual frequency of children's dental visits is presented in Table 1.

The results for the frequencies of child's dental visits during the lockdown period are presented on Table 2.

Usually, how many times a year does your child visit a dentist?	n	%	SD
Once a year	47	35,61	4,17
Twice a year	75	56,82	4,31
More than 2 times a year	7	5,30	1,95
Only when needed	3	2,27	1,9

Table 1. Usual frequency of dental visits.

How many times has your child visited a dentist in the past year?	n	%	SD
Once	92	69,70	4,00
Twice	8	6,06	2,07
More than twice	1	0,75	0,75
Has not visited	31	23,48	3,70

Table 2. Frequency of child's dental visits during the lockdown period.

Comparing the results for the frequency of child's dental visits a statistical difference was found between the number of pediatric dental visits before and during the pandemic period. Most respondents reported that before the pandemic their children had visited a dentist usually twice a year, in contrast to the time of the pandemic - only once a year ($p < 0.01$; $\chi^2 = 10.57$).

To the question "Do you think that the pandemic situation has affected the frequency of your child's visits to the dentist?", most of the respondents (67.53%) answered with "No". The gender of the respondents was found to influence the answers to the question whether the pandemic situation affects the frequency of dental visits as women were more likely to think so ($p < 0,01$; $\chi^2 = 12,30$).

The main reasons for the dental visits during the lockdown period are presented on Table 3.

The results showed that nearly 1/3 from the pediatric dental visits were due to failure of dental restorations $n=41$, (31,06%±4,03). We found also a relatively high share of routine dental check-up $n=28$, (21,21%±3,55) as second most frequent cause for a dental visit.

The majority of the respondents (75,00%) reported that they had no difficulty in making an appointment with a dentist for their child. More than half of the parents (66.67%) also reported that their child's dental treatment was not refused due to the pandemic.

What were the reasons for your child's visit to the dentist last year?	n	%	SD
Routine dental check-up	28	21,21%	±3,55
Pain	24	18,18%	±3,35
Defect/fractured restoration	41	31,06%	±4,03
Swelling	11	8,33%	±2,40
Fractured tooth	26	19,70%	±3,46
Other reason	2	1,51%	±1,06

Table 3. What were the reasons for your child's visit to the dentist last year?

To the question: "Do you think that the COVID 19 pandemic has affected your child's oral health?", most of the respondents (66.67%) answered "No", 31.06% answered "Yes", and 2.27% - "I can't decide". Women tend to think that the pandemic from COVID 19 had affected the dental health of their children, while men were of the opposite opinion ($p < 0,001$; $\chi^2 = 32,09$).

To the question: "Due to the pandemic situation, are you afraid that a visit to the dentist would endanger your health or the health of your child?", the majority of respondents (69.5%) gave a negative answer. No difference was found in the answers to this question depending on the gender and age of the respondents ($p > 0,05$).

Discussion

This survey-based study investigated the perception of parents on the impact of COVID-19 pandemic on the frequency of dental visits, reasons for making a dental appointment during the lockdown and the possible impact on their children's oral health.

After Covid-19 pandemic was declared, restrictions and regulations have been placed in many aspects of the public life such as home-office work, distance education system, quarantine practices and etc, which caused changes in the physical activity, nutritional and hygiene habits especially in children^{10,11}. Since regular dental visits are essential for maintain good oral health in children we aimed to explore how the pandemic situation affected the routine dental check-ups. Our results showed that frequencies of children's dental visits were seriously decreased during the pandemic from COVID-19. From usually visiting a dentist twice a year (56,82%), during the pandemic period most of the children had a dental appointment only

once per year (69,70). The share of those who visited a dentist twice in the pandemic period dropped to only 6,06%. A large relative share of children (23,48%) did not visited a dentist at all in the past year. The difference between the number of pediatric dental visits before and during the pandemic period was found to be statistically significant.

Several factors could have contributed to the lower frequency of dental visits during the pandemic. First, at the beginning of the pandemic, the information on COVID-19 was scarce, and the fear of possible exposure to the infection in the dental practices discouraged many people from routine visits and examinations and even treatment. The literature shows that many countries suspended nonemergency dental treatment and called for providing emergency dental care only^{12,13}. There were also some other limitations for patients visiting dental offices, even when they were open and functional. The Ministry of Health in Bulgaria implemented regulations for dental practices according to which dentists are advised to keep their offices closed to all but urgent and emergency procedures and must follow strict rules for acceptance and treatment of patients including preliminary questioner on the overall status, searching for possible symptoms of coronavirus infection or estimating a suspected contact with an infected person. Furthermore, access to dental clinics has become challenging for certain people and groups who commute mainly via public transportation. Due to safety concerns, the primary reason for travel changed, and there was also a shift from public to private and community transport¹⁴.

A recent study of the frequency and pattern of outpatient dental visits during the COVID-19 pandemic at hospital and community clinics¹⁵ indicated that not only did the frequency of dental visits decrease, but the pattern of visits changed. More patients visited oral surgeons and pediatric dentists than general dentists, but fewer sought care from dental hygienists, which is in line with guidelines and policies persuading patients to schedule urgent treatments. Another important finding of the same study was that people with better economic status visited dental clinics more frequently than socially disadvantaged groups during the pandemic. In our study even though most of the respondents identified themselves with high social status we

found decreased rate of dental visits for children.

We found that the main reason for a dental appointment of a child during the lockdown period was a failure of a dental restoration (31,06%), followed from tooth fracture (19,70%). Routine dental check-up was the reason for a pediatric dental visit in 21,21% of the cases. According to another study on the influence of COVID-19 pandemic on pediatric dental attendance, along with dramatic decline in non-emergency routine dental visits a serious decrease in the rate of emergency visits was also observed and the most frequently reported urgent dental complaints that patients applied to the pediatric dental clinic during the pandemic period were severe dental pain due to pulpal inflammation and abscess or swelling¹⁶. In our study complaints from pain had 18,18% of the patients and swelling 8,33%. According to several other studies, the chief complaint in emergency dental visit in children was pain and the second most common chief complaint was an abscess^{17,18}. In a study conducted by Martens et al., orodental-trauma was the most prominent (47.1%) chief complaint reporting to a pediatric dental emergency, whereas in our study trauma is the reason for dental visit during the pandemic period in 19,70% of the cases¹⁹.

Our study showed that even though the majority of the respondents (67.53%) reported that the COVID-19 pandemic did not affect the frequency of dental visits of their children, the gender of the participants was found to influence the answers to the question and women were more likely to think that it had. Most of the parents (75%) confirm that they had no difficulty in making an appointment with a dentist for their child, but in the same time nearly 1/3 admit that their child's dental treatment was refused because of the pandemic.

The results from the present study also showed a relationship between gender and parents' opinion on whether the pandemic situation had an impact on children's oral health. Although most of the respondents (66.67%) answered negatively to this question, women tend to think that the pandemic from COVID 19 had affected the dental health of their children. Similar results have been reported from another study aimed to assess mothers' knowledge of coronavirus disease and their attitudes and fears about pediatric dental visits during the pandemic. The authors found that mothers were generally

afraid to visit a dentist during the pandemic. Only a minority of them reported that their child had already gone to the dentist during the pandemic. More than one-third viewed dental clinics as being a more dangerous place to contract the virus than public places were. Only 13% were willing to take their children to the dentist and the majority stated they would do so for an emergency only²⁰. According to the same study, mothers had little or no confidence in infection control measures at dental clinics: fear of noncompliance with infection control measures was their highest perceived barrier to dental visits, second only to fear of contracting the virus from someone in the clinic. Usually mothers who were willing to go to the dentist themselves, were more likely to take their children to the dentist. Campagnaro et al. reported that 86% of children who endured dental trauma during the pandemic did not seek dental care. They also found that parents with higher fear levels and that when the number of COVID-19 cases increases; parents are less likely to take their children to dental appointments²¹.

Majority of respondents in our study (69.5%) answered negatively to the question whether they believe that a visit to the dentist would endanger their health or the health of their child. These results were similar to a study where was found that 34% of the parents thought that dental clinics were more dangerous than other social areas, and 39.2% thought their children could be infected by medical instruments during dental treatment. The educational levels of the parents were found significant for the answers given about the transmission paths of the virus, the danger of dental clinics in terms of the virus, the permitted dental treatment procedures, and the personal protective equipment of the dentist²².

Conclusions

The COVID-19 pandemic affected not only the frequency but also the reasons for pediatric dental visits. Women were more likely to think that the pandemic from COVID 19 had affected the dental health of their children.

Dental appointments only in case of real or emergency need of dental treatment and postponement of preventive dental examinations and procedures due to fear of possible consequences for the general health could lead

to an increase in dental treatment needs of pediatric patients in the post pandemic period. Due to the limits of the present study, further research should be carried out on the actual situation of the long-term influence by the COVID-19 pandemic on the dental treatment needs of pediatric patients.

Acknowledgements

We gratefully acknowledge the contribution of all participants and the possibility for performing this study.

Declaration of Interest

The authors report no conflict of interest.

References

1. Centers for Disease Control and Prevention. COVID-19: Guidance for dental settings. Accessed December 4, 2020. Available at: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/dental-settings.html>.
2. Guan W, Ni Z, Hu Y, Liang W, Ou C et al. Clinical Characteristics of Coronavirus Disease 2019 in China. *N Engl J Med* 2020; 382(18): 1708-1720.
3. Wei WE, Li Z, Chiew CJ, Yong SE, Toh MP, Lee VJ. Presymptomatic Transmission of SARS-CoV-2 - Singapore, January 23-March 16, 2020. *MMWR Morbidity and Mortality Weekly Report* 2020; 69 (14): 411-415.
4. Spagnuolo G, De Vito D, Rengo S, Tatullo M. COVID-19 outbreak: an overview on dentistry. *Int J Environ Res Public Health*. 2020;17(6):2094.
5. Ge Z-Y, Yang L-M, Xia J-J, Fu X-H, Zhang Y-Z. Possible aerosol transmission of COVID-19 and special precautions in dentistry. *J Zhejiang Univ Sci B*. 2020;21(5): 361-368.
6. Considerations for the provision of essential oral health services in the context of COVID-19: interim guidance. World Health Organization. Accessed October 3, 2021. Available at: <https://www.who.int/publications/i/item/who-2019-nCoV-oral-health-2020.1>.
7. Van Viet Dam, Hanh Nguyen, Hans Erling, Manoj Humagain, Sonika Khanal. The Expanded Role of Dentists in the COVID-19 Pandemic Worldwide. *J Int Dent Med Res* 2021; 14(3): 1169-1176.
8. Moharrami M, Bohlouli B, Amin M. Frequency and pattern of outpatient dental visits during the COVID-19 pandemic at hospital and community clinics. *J Am Dent Assoc*. 2022 Apr;153(4):354-364.
9. Goswami M, Grewal M, Garg A. Attitude and practices of parents toward their children's oral health care during COVID-19 pandemic. *J Indian Soc Pedod Prev Dent*. 2021 Jan-Mar;39(1):22-28.
10. Bülbül Se, Gülbahçe A, Koç Gülşen N, Ata AE, Kocagözoğlu SG. Domestic Lifestyle and Nutritional Status of Children During Covid-19 Pandemics. *Trends Pediatr* 2021;2(2):78-85.
11. Yani, Ristya Widi Endah; Ma'rufi, Isa; Rahayu, Titah. Dental Caries Status and Dietary Characteristics During the Covid-19 Pandemic Towards Increased Risk of Stunting among Preschool Children. *J Int Dent Med Res* 2022; 15(1): 151-157.
12. Dave M, Seoudi N, Coulthard P. Urgent dental care for patients during the COVID-19 pandemic. *The Lancet* 2020; 395 (10232): 1257.
13. Guo H, Zhou Y, Liu X, Tan J. The impact of the COVID-19

- epidemic on the utilization of emergency dental services. *J Dent Sci.* 2020 Dec;15(4):564-567
14. Abdullah M, Dias C, Muley D, Shahin M. Exploring the impacts of COVID-19 on travel behavior and mode preferences. *Transp Res Interdiscip Perspect.* 2020; 8:100255.
 15. Moharrami M, Bohlouli B, Amin M. Frequency and pattern of outpatient dental visits during the COVID-19 pandemic at hospital and community clinics. *J Am Dent Assoc.* 2022 Apr;153(4):354-364.
 16. Üstün N, Akgöl BB, Bayram M. Influence of COVID-19 pandemic on paediatric dental attendance. *Clin Oral Investig.* 2021 Nov;25(11):6185-6191.
 17. Goswami M, Gogia M, Bhardwaj S. From Lockdown to Slow Release: Pediatric Dental Services during COVID-19 Pandemic-Emergency Preparedness and Impact on Future. *Int J Clin Pediatr Dent.* 2021 May-Jun;14(3):398-402.
 18. Shqair AQ, Gomes GB, Oliveira A, et al. Dental emergencies in a university pediatric dentistry clinic: a retrospective study. *Braz Oral Res.* 2012;26(1):50-56.
 19. Martens LC, Rajasekharan S, Jacquet W, et al. Paediatric dental emergencies: a retrospective study and a proposal for definition and guidelines including pain management. *Eur Arch Paediatr Dent.* 2018; 19(4):245-253.
 20. Farsi D, Farsi N. Mothers' Knowledge, Attitudes, and Fears About Dental Visits During the COVID-19 Pandemic: A Cross-sectional Study. *J Int Soc Prev Community Dent.* 2021 Jan 30; 11(1):83-91.
 21. Campagnaro R, Collet GO, Andrade MP, Salles JPDSL, Calvo Fracasso ML, Scheffel DLS, et al. COVID-19 pandemic and pediatric dentistry: Fear, eating habits and parent's oral health perceptions. *Child Youth Serv Rev.* 2020;118:105469.
 22. Surme K, Akman H, Cime Akbaydogan L, Akin M. Evaluation of Parents' Knowledge and Attitudes Towards Pediatric Dental Practice during the COVID-19 Pandemic. *Oral Health Prev Dent.* 2021 Jan 7;19(1):271-277.