



# Evaluation of the knowledge and attitudes about dental practices of Turkish parents who visited the pedodontics clinic in Tokat Gaziosmanpaşa University, during the COVID-19 pandemic

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## Abstract

**Purpose** This study aimed to evaluate parents' knowledge and attitudes about dental practices who visited a pedodontics clinic during the COVID-19 pandemic.

**Methods** In the present work, data were collected via questionnaires from 475 parents who brought their children (between 0 and 14 years old) to our clinic for routine pedodontic examinations. The data obtained were analyzed using Microsoft Excel. Frequency and percentage values of answers to questions were obtained.

**Results** The majority of the participants (67.9%) indicated sufficient knowledge about COVID-19. Although 75% of parents were fearful and worried about the possibility of contracting virus during admission to the hospital, it was observed that 92% of them highly counted on the measures taken by their dentists and 72% did not hesitate to take their children to dentists during the pandemic.

**Conclusion** Within the limitations of the present study, it has been shown that despite the increased level of parents' knowledge about the pandemic, it was evident that anxiety and fear were present when visiting hospitals/clinics as a result of the possible transmission due to the high number of COVID-19 cases. Therefore, it is necessary to conduct further studies on how to increase public awareness of the transmission routes of aerosols released during dental treatments.

**Keywords** COVID-19 · Pandemic · Dentistry · Dental practice · Health knowledge

## Introduction

On March 11, 2020, the World Health Organization (WHO) declared that the new type of coronavirus (COVID-19) epidemic constituted a public health emergency of international

concern and declared it a global pandemic (WHO 2020). The COVID-19 epidemic that spread to the whole world in a short time and turned into a pandemic was of particular concern to dentists and the patient group in need of dental treatment due to the characteristics of the transmission routes (Meng et al. 2020; Peng et al. 2020).

Working in proximity to the patient and being exposed to the aerosols released during treatment in the context of contagious epidemics, such as COVID-19, have put dentists at significant risk (Ather et al. 2020; Fallahi et al. 2020). Therefore, various institutions and professional organizations have recommended that all non-emergency dental treatments worldwide be postponed until the pandemic is brought under control (ADA 2020). At the beginning of the pandemic, while some dental institutions and clinics completely stopped admitting patients, some of them continued to provide only emergency treatment and care services (Karaca et al. 2020). However, after a while, since it could not be predicted how long this pandemic would last, dental treatments started to be performed following the protocols

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for infection control during dental procedures in the COVID-19 pandemic prepared by the dental associations and the Ministry of Health (Republic of Turkey Ministry of Health COVID-19 Information 2021).

The unpredictability of COVID-19 infection in children and the challenges in the diagnosis of symptoms, in addition to the reports of carrier status of the SARS-CoV-2, will present a challenge for all pediatric dentists once normal function in the dental clinics is restored worldwide. Consequently, this may result in increased anxiety for the dental healthcare providers, the parents and the patients (Al-Halabi et al. 2020).

Educating the public about COVID-19 and raising public awareness about it have a vital role in controlling and preventing the pandemic (Roy et al. 2020). Parents are a special group, and their behaviors are essential (Buldur 2020). Furthermore, parents' level of knowledge should also be high to protect their children from this epidemic disease individually.

It is essential to determine that patients are correctly informed about the mode of transmission of COVID-19 and the prevention of transmission of COVID-19. Thus, incomplete or incorrect information about COVID-19 will be detected, and studies will be conducted to correct them.

Via questionnaires, this study aimed to evaluate the general attitudes of parents who visited a pedodontics clinic during the COVID-19 pandemic, their attitudes toward visiting the dentist, and their level of knowledge about the dental treatment and the clinical equipment used during the COVID-19 pandemic.

## Methods

The questionnaire study was applied to the parents of pediatric patients (between 0 and 14 years old) who came to the Tokat Gaziosmanpaşa University Faculty of Dentistry Pedodontic clinic for a routine pedodontic examination. The inclusion criteria for the study were parents who could fill out/understand the questionnaire and agreed to participate, mentally healthy children and parents. The questionnaires in which six or more questions were not answered were recorded as missing data and were excluded from the study.

This study was approved by Tokat Gaziosmanpaşa University Clinical Research Local Ethics Committee (20-KAEK-279). This study was performed in accordance with the ethical standards of the Declaration of Helsinki (1964) and its subsequent amendments.

Before inclusion in the study, the written consent form stated that parents agreed to participate was obtained. The parents filled out the questionnaire forms in the waiting room before the participant's child's dental examination.

Individual results were not disclosed in any way to ensure privacy and confidentiality.

A questionnaire consisting of three parts was prepared to evaluate parents' knowledge and attitudes who applied to the Pedodontics clinic during the COVID-19 pandemic about dental practices. The questionnaire addressed the socio-demographic information of the participants, the general attitudes of parents during the COVID-19 pandemic, their attitudes toward visiting the dentist, and their level of knowledge about the dental treatment and the clinical equipment used during the COVID-19 pandemic.

The questions were evaluated by four experts (two pediatric dentists, an oral diagnosis specialist, and a Turkish language specialist) before the study to evaluate the content adequacy of the questionnaire and the clarity of the statements of the questions. Based on the comments made by these experts, the questionnaire was designed to include 17 questions and demographic information. A pilot test was performed to evaluate the accuracy and clarity of the questions. Twenty parents filled out the questionnaire. After each questionnaire was filled out, the parents were asked if any questions were not understood while filling out the questionnaire. The questionnaire was finalized based on all this feedback.

## Power analysis

The study design was a prospective and cross-sectional clinical study. The sample power calculation was performed using the G-Power sample size calculator (Universität Kiel, Kiel, Germany). The precision rate was %3, 10,800 population size and 95% confidence interval were used, and the needed minimal sample size was 380 (The effect size derived from reference (Dardas et al. 2020).)

## Statistical analysis

The data obtained were analyzed using Microsoft Excel. Frequency and percentage values of answers to questions were obtained.

## Results

A total of 496 parents participated in the study to fill out the questionnaire. After the review, 21 questionnaire forms were excluded due to incomplete information. A total of 475 questionnaires were evaluated.

Demographic information about the participants' age, gender, and educational status is presented in Table 1. 86.4% of the participants consisted of young adult individuals between the ages of 20–24. While 18.5% of the participants were primary school graduates, 55.1 and 27.4% were

**Table 1** Frequency and percentage of answers given to survey questions

	<i>n</i>	<i>%</i>
1. Socio-demographic information of parents		
Age		
a. 20–44	405	86.4
b. 45–54	54	11.2
c. 55–74	12	2.4
Gender		
a. Female	288	60.8
b. Male	186	39.2
Educational Status		
a. Primary education	87	18.5
b. Secondary education	255	55.1
c. Higher education	129	27.4
2. Evaluation of parents' general attitudes during the COVID-19 pandemic and their attitudes towards applying to the dentist		
Q1. What do you think about your level of knowledge about COVID-19?		
a. I don't have enough knowledge	38	8.1
b. I have partial knowledge	113	24
c. I have enough knowledge	320	67.9
Q2. Have you ever been afraid or worried that you or your child could get the virus on admission to the hospital during the COVID-19 pandemic?		
a. Yes	353	75
b. No	118	25
Q3. Have you previously visited a dentist during the COVID-19 pandemic?		
a. Yes	322	67.8
b. No	153	32.2
Q3 (1). If your answer is yes, what is the reason?		
a. Pain	159	34.1
b. Tooth extraction	56	12
c. Abscess (swelling)	51	10.9
d. Trauma (tooth fracture due to falling, tooth loosening)	19	4.1
e. Crowding	17	3.6
f. Caries	112	24
g. Bonding space maintainer	15	3.2
h. Others	37	7.9
Q4. Did you communicate with your dentist through any communication (internet-phone etc.) during the COVID-19 pandemic?		
a. Yes	63	13.3
b. No	408	86.7
Q5. Have you canceled any dentist appointments or stopped going to the hospital during the COVID-19 pandemic?		
a. Yes	133	28
b. No	341	72
Q6. Do you count on your dentist's measures against the transmission of COVID-19 infection?		
a. Yes	434	92
b. No	38	8
3. Evaluation of parents' levels of knowledge about dental treatment and clinical equipment during the COVID-19 pandemic		
Q7. Are there common areas where the probability of disease transmission may be high between waiting areas, patients and accompanying individuals or dental team staff in dentist offices during the COVID-19 pandemic?		
a. Yes	389	81.9
b. No	33	6.9
c. I do not know	53	11.2

Table 1 (continued)

	<i>n</i>	%
Q8. Is it important to minimize the number of individuals in or around the waiting areas and to distance them socially by informing patients to wait in their vehicles or outside until the appointment time during the COVID-19 pandemic?		
a. Yes	437	92.2
b. No	16	3.4
c. I do not know	21	4.4
Q9. Are pediatric patients and parents required to use hand sanitizer while entering the clinic during the COVID-19 pandemic?		
a. Yes	457	97
b. No	8	1.7
c. I do not know	6	1.3
Q10. Are pediatric patients and parents required to use hand sanitizer upon leaving the clinic during the COVID-19 pandemic?		
a. Yes	61	12.9
b. No	394	83.5
c. I do not know	17	3.6
Q11. Is it possible to get sick through aerosols (water scattering) generated during dental treatments during the COVID-19 pandemic?		
a. Yes	311	65.6
b. No	15	3.2
c. I do not know	148	31.2
Q12. Which or which of the equipment in the options should the dentist use while performing aerosol (water-scattering) procedures during the COVID-19 pandemic? (You can choose multiple options.)		
a. N95 or FFP2 or equivalent mask	356	12.4
b. Glove	417	14.4
c. Glasses	610	21.2
d. Face protectors	483	16.8
e. Apron	361	12.5
f. Surgical cap	269	9.3
g. Working clothes (uniform)	199	6.9
h. I do not know	187	6.5
Q13. Is it important that the chair for dental treatments is close to the window during the COVID-19 pandemic?		
a. Yes	226	48
b. No	81	17
c. I do not know	164	35
Q14. Which mask should the patient wear while applying to the clinic during the COVID-19 pandemic?		
a. Surgical mask	370	78.6
b. Special mask (N95,FFP2)	87	18.5
c. Surgical mask and Special mask	14	3
Q15. Which mask should the accompanying person wear during the COVID-19 pandemic?		
a. Surgical mask	368	78.1
b. Special mask (N95,FFP2)	86	18.3
c. Surgical mask and Special mask	17	3.6
Q16. Which mask should the dentist wear during the examination during the COVID-19 pandemic?		
a. Surgical mask	200	42.5
b. Special mask (N95,FFP2)	251	53.3
c. Surgical mask and Special mask	20	4.2
Q17. Which mask should the dentist wear while performing an aerosol (water-scattering) procedure during the COVID-19 pandemic?		
a. Surgical mask	175	37
b. Special mask (N95,FFP2)	290	61.3
c. Surgical mask and Special mask	8	1.7

secondary school and higher education graduates, respectively. 60.8% of the participants were female, and 39.2% of them were male.

The frequencies and percentages of the answers given to the survey questions are presented in Table 1.

Concerning the question “What do you think about your level of knowledge about COVID-19?” (Q1), while 67.9% of the participants responded that they had sufficient knowledge, 24% of them responded that they had partial knowledge, and 8.1% of them responded that they did not have enough knowledge.

The question “Have you ever been afraid or worried that you or your child could get the virus on admission to the hospital during the COVID-19 pandemic?” (Q2) was responded yes by 75%.

The question “Have you previously visited the dentist during the COVID-19 pandemic?” (Q3) was responded yes by 67.8%. The question “If your answer is yes, what is the reason?” (Q3-1) was responded as pain complaint by 34.1%, followed by caries (24%), tooth extraction (12%), abscess-swelling (10.9%). The answers of bonding space maintainer (3.2%) and crowding (3.6%) were provided as the least reason for admission.

While the question “Did you communicate with your dentist through any communication (internet-phone etc.) during the COVID-19 pandemic?” (Q4) was responded no by 86.7%, the question “Have you canceled any dentist appointments or stopped going to the hospital during the COVID-19 pandemic?” (Q5) was responded no by 72%. The question “Do you count on your dentist's measures against the transmission of COVID-19 infection?” (Q6) was responded yes by 92%.

The question “Are there common areas where the probability of disease transmission may be high between waiting areas, patients, and accompanying individuals or dental team staff in dentist offices during the COVID-19 pandemic?” (Q7) was responded yes by 81.9%, the question “Is it important to minimize the number of individuals in or around the waiting areas and to distance them socially by informing patients to wait in their vehicles or outside until the appointment time during the COVID-19 pandemic?” (Q8) was responded yes by 92.2%, the question “Are pediatric patients and parents required to use hand sanitizer while entering the clinic during the COVID-19 pandemic?” (Q9) was responded yes by 97%, the question “Are pediatric patients and parents required to use hand sanitizer upon leaving the clinic during the COVID-19 pandemic?” (Q10) was responded yes by 83.5%, and the question “Is it possible to get sick through aerosols (water scattering) generated during dental treatments during the COVID-19 pandemic?” (Q11) was responded yes by 65.6%.

The question “Which or which of the equipment in the options should the dentist use while performing aerosol

(water-scattering) procedures during the COVID-19 pandemic?” (Q12) was responded as glasses by 21.2%, face protectors by 16.8%, gloves by 14.4%, apron by 12.5%, special mask by 12.4%, surgical cap by 9.3%, uniform by 6.9%, and “I do not know” by 6.5%.

The question “Is it important that the chair for dental treatments is close to the window during the COVID-19 pandemic?” (Q13) was responded as yes by 48% and “I do not know” by 35%.

The question “Which mask should allow the patient to wear while applying to the clinic during the COVID-19 pandemic?” (Q14) related to the use of mask was responded as a surgical mask by 78.6%, special mask by 18.5%, and surgical mask and special mask by 3%. The question “Which mask should the accompanying person wear during the COVID-19 pandemic?” (Q15) was responded as a surgical mask by 78.1%, a special mask by 18.3%, and a surgical mask and special mask by 3.6%. The question “Which mask should allow the dentist to wear during the examination during the COVID-19 pandemic?” (Q16) was responded as a surgical mask by 42.5%, special mask by 53.3%, and surgical mask and special mask by 4.2%. The question “Which mask should allow the dentist to wear while performing an aerosol (water-scattering) procedure during the COVID-19 pandemic?” (Q17) was responded as a surgical mask by 37%, special mask by 61.3%, and surgical mask and special mask by 1.7%.

## Discussion

This study evaluated the general attitudes of parents during the COVID-19 pandemic, their attitudes towards applying to the dentist, and their level of knowledge about dental equipment and practices during dental treatment. The majority (67.9%) of participants, mainly from a young adult community with a low level of education, thought that they had sufficient knowledge about COVID-19 (Q1).

In a questionnaire study conducted in China in February 2020, the COVID-19 pandemic began to spread around the world. There was not enough information about COVID-19, while 66.22% of the participants reported that dental clinics were more dangerous than other public places, 91.89% of them reported that the risk of virus infection was higher in dental clinics, and 83.78% of them reported that they would take their children to the dentist in case of severe toothache (Sun et al. 2020). In the study conducted by Karaarslan et al.(2020) in Turkey in the months during which the first COVID-19 cases started to appear (before June), 48% of the participants stated that they were worried about being sick after going to the dentist. In the study conducted by Sürme et al.(2021) in August–September 2020, during which the measures taken to prevent the spread of infection in Turkey

were relaxed, while 34% of the parents stated that the risk of disease transmission in dental clinics was more dangerous than in social life, 25.2% of them stated that their children could be infected with COVID-19 during dental treatment.

In this questionnaire conducted in March–April 2020, during which the number of cases in Turkey increased rapidly. The number of cases reached the highest level. At the same time, 75% of the participants indicated that they were afraid or worried that the virus could be transmitted while applying to the hospital during the pandemic process (Q2), 81.9% of them indicated that they thought that the possibility of disease transmission might be high between the waiting areas, patients and accompanying persons or dental team staff in dentist's offices (Q7). In this study, although the increased level of parents' knowledge about the pandemic, it was observed that there was anxiety and fear while visiting hospitals/clinics because of possibility of risk of transmission due to the high number of cases.

In this study, 67.8% of the participants stated that they had previously visited the dentist during the pandemic (Q3) and 34.1, 24, and 12% provided pain, caries, and tooth extraction, respectively, as the reasons for the visit (Q3–1). Similarly, as our results, toothache was the first reason for visiting the dentist during the pandemic (Altan et al. 2021; Surme et al. 2021). It can be concluded that 92.2% of the participants highly counted on the measures taken by their dentists (Q6) and that 72% did not hesitate to take their children to the dentist during the pandemic (Q5). The question "Did you communicate with your dentist through any alternative means (such as the Internet, phone, etc.) during the COVID-19 pandemic?" (Q4) was answered "no" by 86.7% of the respondents. This result indicates that the participants mostly did not prefer the Internet for consultations or obtaining information.

During the pandemic, the Turkey Ministry of Health has actively emphasized on both television and social media that the most critical elements in the fight against COVID-19 are the "mask, distance, and cleaning." Programs and public service announcements about the subject were broadcast on television. Furthermore, information posters with the slogan "mask, distance, cleaning" were displayed in public buildings, health institutions, and billboards. It was observed that a high proportion of the participants responded correctly to the questions by which measured their knowledge levels about the rules to be followed in clinics regarding wearing a mask, keeping the distance, and cleaning one's hands (Q8–10, Q14, Q15). In conclusion, the respondents knew how to behave when they came to a clinic during the pandemic.

During the pandemic, the selection of protective equipment varied depending on whether an aerosol-generating procedure was performed. According to the FDI's (World Dental Federation) statements, it is sufficient for dentists and

auxiliary personnel to use a three-layer surgical mask during examinations and special masks (N95/FFP2) while performing aerosol-generating procedures (FDI 2020). In this study, the answer "a special mask" was provided by 53.3% of the respondents to question Q16 ("Which mask should the dentist wear during examinations during the COVID-19 pandemic?") and by 61.3% to question Q17 ("Which mask should the dentist wear while performing an aerosol (water-scattering) procedure during the COVID-19 pandemic?"). Therefore, the participants believed that dentists should wear special masks during all procedures, which is to be corrected.

While the participants in the studies of Sun et al. (2020) and Karaarslan et al. (2020) thought that the aerosols emitted during dental procedures increased the risk of transmission Ahmed et al. (2020) reported the opposite result. In this study, although 65.6% of the participants agreed that they could get sick due to the aerosols generated during dental treatments (Q11), 31.2% reported that they did not know the answer to this question. Question 13, "Is it important that the chair for dental treatments is close to the window during the COVID-19 pandemic?" was answered "yes" by 48% and "I do not know" by 35%. Regarding Q12, the parents thought that the dentist should wear glasses most of the time, followed by face protectors, gloves, apron, special mask, surgical cap, and uniform, respectively, while performing aerosol (water-scattering) procedures during the COVID-19 pandemic. It was remarkable that a higher percentage of the respondents thought dentists should use glasses or face protectors than special masks and gloves. These high rates and the responses "I do not know" to questions Q11–13 indicated that parents did not have definite knowledge about the transmission routes of aerosols.

Although there are many studies on patients' attitudes toward the cross-transmission of infections in dentistry (Shulman et al. 2001), there are limited reports on patients' attitudes toward the transmission of COVID-19 since it is a very new disease (Sun et al. 2020). Also, the literature concerning the impact of COVID-19 on pediatric dentistry is quite limited (Al-Halabi et al. 2020). The strength of this work is that a comprehensive questionnaire study evaluating parents' knowledge and attitudes about dental treatments, the dental team, and the equipment needed during the COVID-19 pandemic has not been conducted previously. Conversely, the most important limitation of this study is that it was conducted in a single center, which may not allow the generalization of the results to the entire population. In addition, only parents of healthy children were included in this study. Parents of children with systemic disease may be more susceptible to COVID-19 infection, which may affect the results of the study. There is a need for more comprehensive studies comparing the knowledge and attitudes of parents of children with systemic disease and parents of healthy children.

## Conclusions

Within the limitations of the present study, it has been shown that despite the increased level of parents' knowledge about the pandemic, it was evident that anxiety and fear were present when visiting hospitals/clinics as a result of the possible transmission due to the high number of COVID-19 cases. Therefore, it is necessary to conduct further studies on how to increase public awareness of the transmission routes of aerosols released during dental treatments.

**Author contributions** HA: conceived of and designed the work, EH: acquired the data, HA and AC: data analysis and interpretation, HA, AC and EH: led the drafting of the manuscript. All authors reviewed and revised drafts and approved the final version for submission.

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## Declarations

**Conflict of interest** The authors have no conflicts of interest to declare that are relevant to the content of this article.

**Ethics approval and consent to participate** The study protocol was approved by the Tokat Gaziosmanpaşa University Clinical Research Local Ethics Committee (20-KAEK-279). Before inclusion in the study, the written consent form stated that parents agreed to participate was obtained. This study was performed in accordance with the ethical standards of the Declaration of Helsinki (1964) and its subsequent amendments.

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