ORİJİNAL ARAŞTIRMA ORIGINAL RESEARCH

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Evaluation of Parents' Approaches to Dental Treatment During the COVID-19 Pandemic in İstanbul/Türkiye: Cross-Sectional Research

COVID-19 Pandemisi Sırasında İstanbul/Türkiye'deki Ebeveynlerin Diş Tedavisine Yaklaşımlarının Değerlendirilmesi: Kesitsel Araştırma

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ABSTRACT Objective: Due to the transmission of coronavirus by particle or droplet, diagnosis and treatment of dental problems during the pandemic period in dental settings has been seen as a direct infection risk. This study aimed to compare parents' approach to dental treatment with their educational background during the coronavirus disease-2019 (COVID-19) outbreak in İstanbul. **Material and Methods:** The parents were invited to answer the questionnaire via electronic form. The questionnaire form consists of 3 parts: (i) the sociodemographic characteristics of the parents (age, gender, educational level and number of children) (ii) parents' behaviors, risk perceptions and knowledge levels during the COVID-19 pandemic (iii) parents' approaches to dental treatment during the pandemic period (risk perceptions, behaviors and attitudes). The data was evaluated through the SPSS 25.0 statistical package program. Chi-square, Fisher's exact, Bonferroni correction and student t-tests were used to evaluate the difference for categorical variables ($p<0.05$). **Results:** Response rate was 73.2% (366 parents). The average age of parents is 28.76. Parents with university or higher education level preferred not to go out as a precaution in the pandemic compared to parents with high school or less education level ($p=0.044$). When their children had toothache complaints during the pandemic period, the situation of taking them to the dentist was statistically significant and higher in parents with a university or higher education level ($p=0.003$). **Conclusion:** All these evaluations show that people with a high level of education have behaved more sensitive in terms of both virus protection and dental treatment behaviors during the pandemic period.

Keywords: COVID-19 pandemic; pediatric dentistry; oral health

ÖZET Amaç: Koronavirüsün partikül veya damlacık yoluyla bulaşması nedeniyle pandeminin ilk dönemlerinde diş hekimliği ortamlarında diş problemlerinin teşhis ve tedavisi doğrudan enfeksiyon riski olarak görülmüştür. Bu çalışma, İstanbul'da koronavirüs hastalığı-2019 [coronavirus disease-2019 (COVID-19)] salgını sırasında ebeveynlerin diş tedavisine yaklaşımlarını eğitim seviyeleri ile karşılaştırmayı amaçlamıştır. **Gereç ve Yöntemler:** Ebeveynler, elektronik form aracılığıyla anketi yanıtlamaya davet edildi. Anket formu 3 bölümden oluşmaktadır: (i) ebeveynlerin sosyodemografik özellikleri (yaş, cinsiyet, eğitim düzeyi ve çocuk sayısı) (ii) COVID-19 pandemisi sırasında ebeveynlerin davranışları, risk algıları ve bilgi düzeyleri (iii) pandemi döneminde ebeveynlerin diş tedavisine yaklaşımları (risk algıları, davranışları ve tutumları). Veriler SPSS 25.0 istatistik paket programı ile değerlendirildi. Kategorik değişkenler arasındaki farkı değerlendirmek için ki-kare, Fisher's exact, Bonferroni düzeltmesi ve student t-testleri kullanıldı ($p<0,05$). **Bulgular:** Yanıt oranı %73,2 (366 ebeveyn) idi. Ebeveynlerin yaş ortalaması 28,76'dır. Üniversite ve üzeri eğitim düzeyine sahip anne-babalar, lise ve altı eğitim düzeyine sahip anne-babalara göre pandemide önlem olarak dışarı çıkmamayı tercih etti ($p=0,044$). Pandemi döneminde çocuklarının diş ağrısı şikâyeti olduğunda diş hekimine götürme durumu üniversite ve üzeri eğitim düzeyine sahip ebeveynlerde istatistiksel olarak anlamlı ve daha yüksekti ($p=0,003$). **Sonuç:** Tüm bu değerlendirmeler, eğitim düzeyi yüksek kişilerin pandemi döneminde hem virüsten korunma hem de diş tedavisi davranışları açısından daha duyarlı davrandığını göstermektedir.

Anahtar Kelimeler: COVID-19 pandemisi; çocuk diş hekimliği; ağız sağlığı

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In December 2019, few cases which is called atypical pneumonia of unknown etiology were reported in Wuhan, China. It has been determined that this pathogen causing pneumonia is a new virus that has not been seen in humans before, and it has been understood that this virus is from the Coronavirus family. This virus was called the new coronavirus-2019 (nCoV-2019), later on renamed as severe acute respiratory syndrome (SARS)-CoV-2, and the infection it caused was named coronavirus disease-2019 (COVID-19).[1,2]

The transmission of SARS-CoV-2 is generally thought to be through aerosols or droplets by an infected person. Therefore, dental treatment carries a high risk of spread of the virus as it mostly involves procedures that may cause the spread of saliva or blood of the patient.[3,4] Because of that dental disease diagnosis and treatment in a clinical setting involve direct risk of infection.[5] Along with the direct risk of transmission between dentists, assistants, and patients, there is also an indirect contact risk transmission due to the many instruments and surfaces used in clinics.[3] The American Academy of Pediatric Dentistry, the American Dental Association as well as Centers for Disease Control and Prevention have published periodically updated guidelines along with recommendations to consider before, arrival, and during the dental visit so as to eliminate exposure to the virus and protect dental staff and patients.[6] After the first confirmed COVID-19 case on March 10, 2020 in Türkiye, dental care providers started to accept only urgent cases and rescheduled and delayed elective procedures and non-critical dental treatments.[2]

It can be more difficult to prevent contact in the pediatric patient. The indirect contact risk is higher with children and adolescents patients in the waiting room. Even though it is required to wear personal protective equipment during dental visits, it is not possible for children to wear them. Another factor that increases the risk of infection in pediatrics clinics is the need of at least one accompanying person during visits, especially for young children.[3,7]

During the restriction period, dental treatments were delayed by parents to prevent the spread of the virus as cross-infection was feared and most dental clinics stopped non-urgent dental services around the globe in the first period of the pandemic.[3,5]

This study aimed to compare parents' approach to dental treatment with their educational background during the COVID-19 outbreak in İstanbul.

MATERIAL AND METHODS

STUDY DESIGN

A study of cross-sectional survey was conducted from June to September 2020 during the controlled social life phase with the approval of the Clinical Research Ethical Board of Faculty of Dentistry, İstanbul University, İstanbul, Türkiye (date: July 2, 2020, no: 2020/33) following the Helsinki Declaration guidelines.

The questionnaire was filled out by parents who applied to İstanbul University Faculty of Dentistry clinics in the last 2 years (before pandemia) and had electronic mail information in their contact details. The questionnaires were sent to the 500 (with an e-mail address) parents and the questionnaire forms were filled in electronically by 366 parents. Before beginning the survey, the parents were informed about the aim of the research and participated in the study after their consent was obtained.

The questionnaire form consists of 3 parts: In the first part, the parent's age, gender, their level of education and number of children are asked to determine sociodemographic features of the group. In the 2nd part, there are questions to find out how COVID-19 pandemic affected behavior, approach to risk and level of knowledge of the parents. In the 3rd part, parents' approach to dental treatment during the pandemic period (risk perceptions, behaviors and attitudes) are questioned. This study was terminated when the target sample number (232) reached 366, which is 57.8% more.

Patients over the age of 18 and parents of patients under the age of 18 who applied in the last 2 years but do not have an email address and incomplete questionnaires were not included in the study. Except for those who refuse to participate in the questionnaires sent electronically, people who did not fill in the form were sent a questionnaire reminder mail

1 week later. The answers given by the participants who filled the questionnaire completely were recorded and evaluated in the computer system.

SAMPLE SIZE

The minimum number of samples targeted in this study; the sample size=$(Z\alpha^2*(P)*(1-P))/C^2$ is obtained by the formula. When the sample was calculated with 95% confidence interval, 5% margin of error, and 81.5% prevalence, it was found to be 231.6.[8] In this study, it was aimed to reach at least 232 parents.

STATISTICS

Data were evaluated using SPSS 25.0 (IBM Corp. SPSS Statistics for Windows, Version 25.0. Armonk, NY: IBM Corp.) statistical package program. Descriptive findings are presented as mean, standard deviation (SD), median, minimum, maximum, frequency distribution and percentage. The suitability of continuous variables to normal distribution was evaluated using visual (histogram and probability charts) and analytical methods (Kolmogorov-Smirnov). For categorical variables, whether there is a difference between groups in terms of frequency was compared using the chi-square test. The chi-square test was not preferred in cases where the observed value is below 2 or more than 20% of the expected value is below 5, and Fisher's exact test was used instead. Paired group comparisons were analyzed with Bonferroni correction. Measurements of variables determined to show normal distribution were analyzed by independent samples t-test (student t-test) between 2 independent groups. The kappa value was calculated to evaluate the coherence of parents and children regarding the equipment used by the dentist. In the Kappa value evaluation; "Values ≤0 as indicating no agreement and 0.01-0.20 as none to slight, 0.21-0.40 as fair, 0.41-0.60 as moderate, 0.61-0.80 as substantial, and 0.81-1.00 as almost perfect agreement."[9] Statistically significant differences were considered when $p<0.05$.

RESULTS

Overall, 366 parents responded the questionnaire with a response rate of 73.2%. The mean age of the participants was 28.76 and their ages range between 25 and 53. Mothers constitute the majority 70.2% (257) of the parents participating in the study. Seventy six percent of the participants had a university or higher education level.

Sociodemographic and some characteristics of the parents were evaluated according to their education level. Employment status of parents with a university or higher education level was statistically higher than that of parents with a high school or lower education level ($p<0.001$). When the relationship between working frequency and education level during the pandemic period was evaluated, it was found to be statistically significant ($p<0.001$). When paired groups were compared, it was determined that the groups that work every day and don't work at all ($p=0.002$), who work from home for certain days ($p<0.001$), who work from home or who don't work at all ($p<0.001$) are the groups that create statistical significance. When the risk of dental treatment was compared according to their working status during the pandemic period, no significant results were found between the groups ($p>0.05$) (Table 1).

It was found that the children of parents with high school and below education have more chronic diseases than the children of parents with university or higher education levels ($p=0.039$). The proportion of individuals with COVID-19 in the family of those with high school or below education level was higher than those with a university or higher education level ($p<0.001$). There was a relationship between the child's going out status and parental education level ($p=0.048$). In pairwise group comparisons, this relationship was only between going out with their parents and never going out in the pandemic. Children of parents with a university or higher education level were more likely to go out with their parents than parents with high school or lower education levels ($p=0.015$) (Table 1).

Five percent (n=20) of the participants stated that a family member has had COVID-19 disease. It was stated that 16 (4.4%) of the family relatives who had the disease were 1st degree relatives (mother, father, sibling or spouse) and the rest were 2nd degree relatives (Table 1).

TABLE 1: The relationship between some parameters and education level.

The relationship between sociodemographic and some characteristics of parents and education level	High school and below (n=83)	University and above (n=283)	p value
Gender, n (%)			
Male	22 (26.5)	87 (30.7)	0.458[1]
Female	61 (73.5)	196 (69.3)	
Age			
Mean±SD	38.41±7.16	38.86±5.92	0.600[3]
Employment status before the pandemic, n (%)			
Yes	43 (51.8)	217 (76.7)	<0.001[1]
No	40 (48.2)	66 (23.3)	
Working frequency during the pandemic period (n=260), n (%)			
Everyday	10 (23.3)	70 (32.3)	<0.001[2]
Certain days	19 (44.2)	60 (27.6)	
From home	0 (0)	64 (29.5)	
Never worked	14 (32.6)	23 (10.6)	
Number of children, n (%)			
2 and below	75 (90.4)	268 (94.7)	0.152[1]
3 and above	8 (9.6)	15 (5.3)	
Children chronic illness, n (%)			
Yes	8 (9.6)	10 (3.5)	0.039[1]
No	75 (90.4)	273 (96.5)	
Having COVID-19 in the family, n (%)			
Yes	12 (14.5)	8 (2.8)	<0.001[1]
No	71 (85.5)	275 (97.2)	
The child's going out situation, n (%)			
Yes, almost everyday	5 (6)	11 (3.9)	0.048[1]
Yes, only mom and dad	21 (25.3)	103 (36.4)	
Certain days	16 (19.3)	72 (25.4)	
No, never	41 (49.4)	97 (34.3)	
Relation between parents' perception of risk for COVID-19 and their education level	**High school and below (n=83)**	**University and above (n=283)**	**p value**
Public transport			
Not risky	2 (2.4)	1 (0.4)	0.244[2]
Less risky	0 (0)	2 (0.7)	
Medium risky	10 (12)	29 (10.2)	
Very risky	71 (85.5)	251 (88.7)	
Outdoor sports			
Not risky	18 (21.7)	54 (19.1)	0.603[1]
Less risky	41 (49.4)	163 (57.6)	
Medium risky	19 (22.9)	51 (18)	
Very risky	5 (6)	15 (5.3)	
Dental treatment			
Not risky	6 (7.2)	4 (1.4)	<0.001[1]
Less risky	12 (14.5)	47 (16.6)	
Medium risky	39 (47)	92 (32.5)	
Very risky	26 (31.3)	140 (49.5)	
Shopping mall/sports hall usage			
Not risky	1 (1.2)	1 (0.4)	0.828[2]
Less risky	3 (3.6)	10 (3.5)	
Medium risky	9 (10.8)	33 (11.7)	
Very risky	70 (84.3)	239 (84.5)	
Hospitality at home			
Not risky	2 (2.4)	4 (1.4)	0.426[1]
Less risky	6 (7.2)	10 (3.5)	
Medium risky	28 (33.7)	109 (38.5)	
Very risky	47 (56.6)	160 (56.5)	

TABLE 1: The relationship between some parameters and education level *(continue)*.

The relationship between parents' protective measures and their education level	High school and below (n=83)	University and above (n=283)	p value
Quarantine, n (%)			
Yes	64 (77.1)	185 (65.4)	0.0441
No	19 (22.9)	98 (34.6)	
Mask and face shield, n (%)			
Yes	70 (84.3)	229 (80.9)	0.4791
No	13 (15.7)	54 (19.1)	
Mask, face shield and gloves, n (%)			
Yes	36 (43.4)	111 (39.2)	0.4981
No	47 (56.6)	172 (60.8)	
Frequent hand washing, n (%)			
Yes	79 (95.2)	272 (96.1)	0.7532
No	4 (4.8)	11 (3.9)	
Holding shopping outdoor, n (%)			
Yes	60 (72.3)	235 (83.0)	0.0291
No	23 (27.7)	48 (17.0)	
Frequent changing clothes/bathing, n (%)			
Yes	69 (83.1)	223 (78.8)	0.3871
No	14 (16.9)	60 (21.2)	
Increasing daily cleaning of the house, n (%)			
Yes	58 (69.9)	155 (54.8)	0.0141
No	25 (30.1)	128 (45.2)	
The relationship between parents' status of taking their children to dental treatment according to their complaint status and parental educational level	**High school and below (n=83)**	**University and above (n=283)**	**p value**
Toothache, n (%)			
Yes	34 (41)	168 (59.4)	0.0031
No	49 (59)	115 (40.6)	
Orthodontic treatment, n (%)			
Yes	20 (24.1)	51 (18)	0.2181
No	63 (75.9)	232 (82)	
Tooth extraction, n (%)			
Yes	4 (4.8)	7 (2.5)	0.2791
No	79 (95.2)	276 (97.5)	
Relationship between parents' level of knowledge and educational level	**High school and below (n=83)**	**University and above (n=283)**	**p value**
Contamination, n (%)			
Full answers (7 answer)	3 (3.6)	21 (7.4)	0.2181
Missing answer (<7)	80 (96.4)	262 (92.6)	
Symptom, n (%)			
Full answers	28 (33.7)	86 (30.4)	0.5631
Missing answer	55 (66.3)	197 (69.6)	
Definition of aerosol, n (%)			
Infectious bacteria/virus/germ	3 (3.6)	10 (3.5)	0.0421
Any liquid or solid	27 (32.5)	139 (49.1)	
Odor during dental procedures	11 (13.3)	36 (12.7)	
Don't know	42 (50.6)	98 (34.6)	
Appointment procedures, n (%)			
Full answers	13 (15.7)	65 (23.0)	0.1531
Missing answer	70 (84.3)	218 (77.0)	

[1]Pearson's chi-squared test; [2]Fisher's exact test; [3]Student t-test; SD: Standard deviation; COVID-19: Coronavirus disease-2019.

The risks posed by the parents in terms of getting COVID-19 disease by public transportation, doing sports in the open area, dental treatment, use of shopping malls/gym and hosting guests at home were evaluated according to the education level of the parents. A statistically significant relationship was found with the dental treatment risk perception with education level ($p<0.001$). In paired comparisons of risk perception in dental treatment, the dual groups that were statistically significant are; not risky-low risk ($p= 0.008$), not risky-high risk ($p<0.001$) and medium risk-high risk ($p=0.004$) groups (Table 1). When the parents who perceive it as not risky-medium-risk and not-risky-too risky are compared according to their education level, parents with high school and below education level see dental treatment as a non-risky procedure more than parents with university or higher education level. In addition, when the parents who perceive moderate risk and high risk are compared according to their education level, the parents with university and above education level see dental treatment as high risk more than parents with high school and below education level.

Parents with university or higher education level preferred not to go out as a precaution in the epidemic compared to parents with high school or less education level ($p=0.044$). It was found that parents with a university or higher education level made the behavior of keeping the shopping products outside, statistically significantly higher than parents with high school or lower education levels ($p=0.029$). Increasing the daily cleaning of the house was found to be statistically higher in parents with high school education and below compared to parents with a university or higher education level ($p=0.014$) (Table 1).

Ninety seven percent (n=358) of the parents think that the dentist or employee should take precautions with equipment such as masks, face shields, goggles, and protective overalls. Ninety three percent (n=342) of the parents stated that they would warn the patient-facing dentist without equipment. Parents, during the pandemic period, 14.2% (n=52) are comfortable, 16.4% (n=60) undecided, 43.7% (n=160) stressed, 25.7% (n=94) stated that they would feel very stressed (Table 1).

Regarding having toothache complaints of their children during pandemic period, the status of taking them to a dentist was found to be statistically significant and higher than parents with a university or higher education level ($p=0.003$) (Table 1).

When the relationship between the knowledge level of the parents and the education level was evaluated, no statistical relationship was found between the mode of transmission of COVID-19 disease, the state of responding to the symptoms and the education level. A statistically significant relationship was found between the definition of aerosol, the answer given to the problem and the level of education. On the other hand, the paired group constituting the statistical significance was between the answers of "any liquid or solid..." and "I don't know" and parents with a high level of education gave more correct answers than parents with a low level ($p=0.04$) (Table 1).

The reactions of parents and children to the protective equipment used by dentists were evaluated. It was found that the rate of full agreement in the feelings of parents and children about the use of equipment was 70.5% and the kappa value was 0.344 and was low ($p<0.001$).

Those who see dental treatment at high risk also see public transport at higher risk than the other group ($p<0.001$). Outdoor sports activities, indoor sports activities and hosting guests seem to be at higher risk than the other group ($p=0.023$, $p=0.001$, $p<0.001$) (Table 2).

When the chronic disease status in their children and the perception of dental treatment risk were evaluated, it was determined that there was no statistically significant relationship between the presence of chronic disease and the risk ($p=0.169$) (Table 3). When the education level of the parents and the risk perception of dental treatment are evaluated, it is seen that the parents with a university or higher education level see dental treatment at higher risk than the parents with a high school education or below ($p=0.004$). When the children are evaluated according to the presence of chronic disease, parents with a high education level in children without chronic disease see dental treatment as more risky than parents with a high school or lower education level ($p=0.001$). It

TABLE 2: The relationship between dental treatment risk perception and working status and risk perception in various places.

	Dental treatment risk		
	No risk+low risk+ moderate risk	High risk	p value
Working status			
Never working+working from home	63 (41.7)	38 (34.9)	0.263
Occasionally and daily	88 (58.3)	71 (65.1)	
Public transport			
No risk+low risk+moderate risk	36 (18.0)	8 (4.8)	<0.001
High risk	164 (82.0)	158 (95.2)	
Sports at the outdoor			
No risk+low risk+moderate risk	194 (97.0)	152 (91.6)	0.023
High risk	6 (3.0)	14 (8.4)	
Sports at the mall			
No risk+low risk+moderate risk	43 (21.5)	14 (8.4)	0.001
High risk	157 (78.5)	152 (91.6)	
Guest at home			
No risk+low risk+moderate risk	110 (55.0)	49 (29.5)	<0.001
High risk	90 (45.0)	117 (70.5)	

was determined that there was no statistical difference between the risk perception evaluations of the parents of children with chronic diseases (p=0.914) (Table 4).

There was no statistical difference between a family member's with COVID-19 and dental treatment risk perception (p=0.060) (Table 5). Dental treatment is seen as higher risk in those with a university or higher education level compared to those with high school and below (p=0.004). It seems to be more risky in those who have no family history of COVID-19, and those with a university or higher level of dental treatment education (p=0.016). There is no difference in terms of risk perception at the level of education in individuals with a family history of COVID-19 (p=0.347) (Table 6).

TABLE 3: The relationship between dental treatment risk perception and children with chronic illness.

	Children with chronic illness		
Dental treatment risk	Yes	No	p value
No risk+low risk+moderate risk	7 (38.9)	193 (55.5)	0.169
High risk	11 (61.1)	155 (44.5)	

DISCUSSION

Since the outbreak of the COVID-19 pandemic, the daily life of billions of people around the world has changed completely. People from every age has had to adapt to new ways to study, work and interact with others. The changes in daily life may have negative outcomes to family wellbeing due to reduced income and increased fears, anxiety, stress, and instability.[10-12]

TABLE 4: The relationship between dental treatment risk perception and children with chronic illness and education.

			Education		
		Dental treament risk	High school and below	University and above	p value
Children with chronic illness	No	No risk+low risk+moderate risk	54 (72.0)	139 (50.9)	0.001
		High risk	21 (28.0)	134 (49.1)	
	Yes	No risk+low risk+moderate risk	3 (37.5)	4 (40.0)	0.914
		High risk	5 (62.5)	6 (60.0)	
	Total	No risk+low risk+moderate risk	57 (68.7)	143 (50.5)	0.004
		High risk	26 (31.3)	140 (49.5)	

TABLE 5: The relationship between dental treatment risk perception and family members with COVID-19.

	Family members with COVID-19		
Dental treatment risk	Yes	No	p value
No risk+low risk+moderate risk	15 (75.0)	185 (53.5)	0.060
High risk	5 (25.0)	161 (46.5)	

COVID-19: Coronavirus disease-2019.

In addition to the new regulations regarding social life, it has been necessary to establish different routines in education and health-related activities. In Türkiye, the primary caregiver is often mothers who look after children's needs most of the time and it is usually mothers who bring them to their medical appointments. Seventy percent of the participants of this study were mothers and 29.8% were fathers.

There are few studies conducted with parents on dental treatment during the pandemic period. Peloso et al. intended to evaluate quarantine period's effect on dental care and appointments due to the COVID-19 outbreak and clarifying patients' status and concerns about ongoing dental treatments. With respect to the quarantine, 78% said they only went out when it was necessary, 12.8% never left home, and 4.5% kept on with their daily activities and left home on a regular basis.[12] In this study 71% stated that they went to work during the pandemic. Thirty three percent of the people stated that they go out with their children every day. While 87.9% people think that public transport is very risky in terms of contamination, only 0.81% people see it as no risk.

In a study conducted in Türkiye, parents' self-medication use was questioned due to dental problems they encountered during the pandemic period. Eventually, higher self-medication was found to be prevalent in children during the COVID-19 pandemic.[2] As a reason, it can be shown that families postpone their dental treatment needs and find temporary solutions during the pandemic period.

In a similar research done with dental patients, it was revealed that 38.3% of patients would choose to go to a dental visit in case dental staff call to arrange it, 44.2% of them stated that only in an emergency they would go, and 17.5% said they would not go even when there is an emergency. Majority of patients who were already under treatment stated they would attend a clinical appointment (55.9%), while the ones that were not receiving treatment would go in an emergency or not go at all (51.4%). One of the concerns that the patients in the study reported was the fear of getting infected or spreading the virus to family members (18.5%); while only 5% of patients stated their fears were caused because the dentists are among the highest risk group in contamination. A high number of patients thought their treatment could be delayed (20.2%) and most of them (56.3%) stated no concern.[12] In another research, two-thirds of respondents report that they are anxious to make an appointment with a dentist for dental treatment for their children due to fear of COVID-19.[13] In this study, parents' took the child to the dentist 55.1% people for toothache, 19.3% for orthodontic treatment, 3% for tooth extraction in the pandemic. While 45.3% people consider dental treatment very risky as a contamination environment, 0.2% people see dental treatment as risk-free.

Farsi and Farsi's research showed that majority of participants believed that an infected person can

TABLE 6: The relationship between dental treatment risk perception and family member's with COVID-19 and education.

			Education		
		Dental treament risk	High school and below	University and above	p value
Family members COVID-19	No	No risk+low risk+moderate risk	47 (66.2)	138 (50.2)	0.016
		High risk	24 (33.8)	137 (49.8)	
	Yes	No risk+low risk+moderate risk	10 (83.3)	5 (62.5)	0.347
		High risk	2 (16.7)	3 (37.5)	
	Total	No risk+low risk+moderate risk	57 (68.7)	143 (50.5)	0.004
		High risk	26 (31.3)	140 (49.5)	

COVID-19: Coronavirus disease-2019.

spread virus even though they have no fever or symptoms (76%), while 4% believed that the virus cannot be transmitted, and 20% of participants reported no knowledge on transmission.[14] In this research, when the relationship between the knowledge level of the parents and the education level was evaluated, no statistical relationship was found between the mode of transmission of COVID-19 disease, the state of responding to the symptoms and the education level. Only a small number of mothers (1%) felt it is completely not safe to bring children to dental/orthodontic treatment and emergencies were the main reason for dental visits during the pandemic period (38%) in the Farsi' study. More than half of the parents in Sun's study reported that in case their child had a severe toothache, they would take them to the dentist during the outbreak, while the rest of them would not do in any case.[4] In this study, 44% of the participants stated that even if the tooth was painful, they would not bringing their child to the dentist during the pandemic period just 19.3% of participants can bring to the dentist for orthodontic treatment their children. Participants with a university or higher education level stated that they would bring their child to the dental clinic at a statistically significant rate in this painful situation.

In a study conducted to evaluate the knowledge of mothers about COVID-19 and to assess their concerns and attitudes towards dental visits during the pandemic, 79% of participants believe that in cross infection cases, patients are the transmitters to staff, and 77% believe the opposite is possible and 62% believed that transmission occurs staff to staff and patient to patient. They also stated that dentists were among the occupational groups at a rate of 70% at risk and 36% of respondents found dental clinics more risky than public places. Likewise 42% of responders stated that they find hospitals/medical clinics more risky than public places.[14] In a similar study, it was revealed that dental clinics were perceived as more dangerous than other public places by more than two-thirds of parents, on the other hand the remaining parents perceived it as similarly dangerous or not dangerous.[4] In this research as high as 97.2% of participants believed that dental treatment is very risky for transmission followed by 87.9% public transportation and 84.4% shopping malls.

Sun et al' results revealed that, parents with a junior college degree thought dental treatment is riskier while parents with undergraduate or graduate degree thought the risk is lower. Majority of parents saw dental treatment as risky as children could get easily infected during treatment, few of them saw the risk as the same as other public places or the risk is not significant.[4] In this study, this result was found to be higher in individuals with higher education, in contrast to the findings of Sun et al. The reason for this can be interpreted as it was research conducted during the first quarantine period and there is not yet clear information about COVID-19 around the world.

The limitation in this study is that mostly participants with a high level of education answer the questions in the electronic environment.

CONCLUSION

All these evaluations show that throughout pandemic period, people with a higher level of education have been more conscious of the virus protection and showed more informed dental treatment behaviors.

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Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: *Figen Seymen, Mine Koruyucu;* ***Design:*** *Mine Koruyucu, Ceren İlisulu;* ***Control/Supervision:*** *Figen Seymen, Mine Koruyucu;* ***Data Collection and/or Processing:*** *Yelda Kasımoğlu, Ceren İlisulu;* ***Analysis and/or Interpretation:*** *Mine Koruyucu, Caner Baysan;* ***Literature Review:*** *Mine Koruyucu, Yelda Kasımoğlu, Ceren İlisulu;* ***Writing the Article:*** *Mine Koruyucu, Caner Baysan;* ***Critical Review:*** *Figen Seyman.*

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