




Evaluation of the Knowledge Levels of the Turkish Population on Emergency Dentistry Practices Determined After the COVID-19 Outbreak

Türk Toplumunun COVID-19 Salgını Sonrası Belirlenen Acil Diş Hekimliği Uygulamaları Hakkındaki Bilgi Seviyelerinin Değerlendirilmesi

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Abstract

Background: Oral and dental treatments cause frequent exposure to saliva, blood, and other body fluids. Therefore, dental clinics are considered to be at high risk of coronavirus contamination. To reduce the risk of contamination, the Coronavirus Scientific Committee decided that only emergency dental applications (EDAs) should be performed. In this study, we aimed to evaluate the general population's knowledge, attitude, and practices regarding EDAs.

Materials and Methods: An online questionnaire was sent to people aged 16–70 years, using WhatsApp, email, and private social platforms, from April 1 to 7, 2020. The questionnaire was designed to gauge an individual's demographic characteristics, knowledge of EDAs, and attitude toward visiting dentists during the coronavirus disease (COVID-19) pandemic.

Results: A total of 1112 individuals were included, and dentists were excluded. The participants were aged 16–68 years (mean age, 30.92 ± 11.14 years) and comprised 453 men and 659 women. The median value of the participants' knowledge scores was 13 (3–19), and the scores were significantly higher for women, university graduates, and healthcare professionals ($p < 0.05$).

Conclusions: Although some participants were still unaware of the seriousness of COVID-19, most were aware of the risk of contamination at dental clinics and possessed sufficient knowledge about EDAs.

Key Words: COVID-19, Emergency Dental practices, Toothache

Öz.

Amaç: Ağız ve diş tedavileri sıklıkla tükürük, kan ve diğer vücut sıvılarına maruz kalmaya neden olur. Bu nedenle diş hekimliği kliniklerinde koronavirüs bulaşma riskinin yüksek olduğu düşünülmektedir. Koronavirüs Bilim Kurulu, kontaminasyon riskini azaltmak için yalnızca acil diş tedavilerinin yapılması gerektiğine karar verdi. Bu çalışmada, genel popülasyonun acil diş tedavilerine ilişkin bilgi, tutum ve uygulamalarını değerlendirmeyi amaçladık.

Materyal ve Metod: 1-7 Nisan 2020 tarihleri arasında WhatsApp, e-posta ve özel sosyal platformlar kullanılarak 16-70 yaş arası bireylere online bir anket gönderildi. Anket, bireylerin demografik özelliklerini, acil diş tedavileriyle ilgili bilgilerini ve koronavirüs (COVID-19) salgını süresince diş hekimliği kliniklere başvurularına yönelik tutumlarını tespit etmek üzere tasarlandı.

Bulgular: Anket çalışmamıza toplam 1112 kişi dahil edildi ve diş hekimleri dışlandı. 453 erkek ve 659 kadından oluşan 16-68 yaş aralığındaki katılımcıların yaş ortalaması 30.92 ± 11.14 idi. Katılımcıların acil diş tedavileri hakkındaki bilgi seviyeleri puanlandırıldığında, ortanca puan değeri 13 (3-19) olarak tespit edildi. Puanlar cinsiyet, eğitim durumu ve mesleğe göre karşılaştırıldığında; kadınlarda, üniversite mezunlarında ve sağlık çalışanlarında anlamlı olarak daha yüksek olduğu görüldü ($p < 0.05$).

Sonuç: Katılımcıların bir kısmı hâla COVID-19'un ciddiyetinin farkında olmasa da, çoğunluğu diş hekimliği kliniklerindeki kontaminasyon riskinin farkındaydı ve acil diş tedavileri hakkında yeterli bilgiye sahipti.

Anahtar kelimeler: COVID-19, Acil diş hekimliği uygulamaları, Diş ağrısı

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Introduction

Coronavirus disease (COVID-19) is an emerging respiratory disease that was first detected in December 2019 in Wuhan, China. The causative virus is highly contagious and the main clinical symptoms of the disease are dry cough, fever, fatigue, shortness of breath, and muscle pain (1, 2). The World Health Organization (WHO) declared the COVID-19 outbreak as a "pandemic" based on the evaluation of the contagiousness, spread, and other risk factors of the disease (3).

Coronaviruses are mainly transmitted through direct contact and droplets (4,5). Thus, COVID-19 is likely to be contracted by those who get exposed to high concentrations of aerosols in relatively closed environments. Consequently, such aerosols generated during routine dental treatments pose a potential risk to dentists, assistant staff, and patients (5). Because dentists communicate with patients face-to-face, and are exposed to their saliva, blood, and other body fluids, they are at a potential risk of acquiring COVID-19, and subsequently infecting others, as a result of using sharp instruments (6).

After careful consideration, the Coronavirus Scientific Community, established by the Ministry of Health, Republic of Turkey, decided to postpone urgent and non-compulsory dental applications. On March 23, 2020, the committee met to decide the criteria for the determination of emergency dental applications (EDAs) and the provision of services at dental institutions (7). Based on these decisions, EDAs were defined as follows:

- a) Treatment of severe toothache caused by pulpal inflammation
- b) Treatment of severe pain caused by pericoronitis or an impacted/infected 3rd molar
- c) Treatment of postoperative osteitis or alveolitis
- d) Treatment of an abscess and/or bacterial infection causing localised pain and swelling
- e) Treatment of a tooth fracture causing pain or soft tissue trauma
- f) Treatment of traumatic dental avulsion/luxation
- g) Treatment of fractures of the chin or other facial bones
- h) Treatment of acute and painful lesions/ulceration of the oral mucosa
- i) Treatment of life-threatening or uncontrolled bleeding
- j) Treatment of intraoral/extraoral infections that compromise the airway
- k) Essential treatment of patients who are receiving, or are planned for receiving, radio- and/or chemotherapy before organ transplantation
- l) Dental consultation for medical problems
- m) Suture removal procedures
- n) Treatment of injuries, by a non-aerosol generating method, that prevent the use of removable

dentures and repair of loss of temporary restorations/fractures

- o) Attending to dislocation and breakage of brackets and wires in patients undergoing orthodontic treatment

Although these decisions have been promptly conveyed to dental institutions, patients needing dental treatment should also have sufficient knowledge of when to visit the dentist. Otherwise, those requiring non-urgent care would continue to visit dental hospitals, thereby crowding these institutions and increasing the risk of disease transmission. Therefore, the level of knowledge and sensitivity of individuals regarding EDAs play an important role in reducing the risk of transmission of COVID-19. Since the knowledge of the general public on this subject remains unknown, we aimed to evaluate the knowledge, attitude, and practices of the general population regarding EDAs.

Materials and Methods

The Ethics Committee of Harran University approved the study protocol and procedures, and informed consent was obtained from all participants before the formal survey was conducted (reference number: HRU/20.12.16).

A new questionnaire regarding emergency applications in dentistry was developed for this study. Four experts (one statistician, one maxillofacial radiologist, and two paediatric dentists) assessed the clarity of the statements and the adequacy of the content of the questionnaire that was prepared using Google forms. We performed a pilot survey with 10 participants who were later excluded from the final analysis. According to the suggestions of these participants, we revised the questions that used the term "disorder," those that were difficult to understand, and those with grammatical errors.

The final online questionnaire was sent to people aged 16–70 years by WhatsApp, email, and private social platforms, such as Instagram and Facebook. A stratified random sampling method was used in this cross-sectional observational study. Dental professionals were excluded from the study, and data were collected between April 1 and 7, 2020.

Participants were informed of the purpose, risks, and benefits of the study, and they had the option of opting out of the study. The questionnaire comprised 10 questions (single choice, numeric, and open-ended). First, the participants were directed to complete the self-report questionnaire, and minimal personal information (e.g., age, sex, and education status) was collected through four questions (Q1, Q2, Q3, and Q4). The participants were then asked to grade the urgency of dental applications and the risk of COVID-19 transmission in dental institutions between 1 and 10 (Q5, Q6). Thereafter, a question (Q7) with 19 sub-questions evaluated the participants' knowledge of emergency applications in dentistry.

Table 1. Distribution of demographic characteristics of participants along with their scores for the 5th and 6th questions and knowledge level scores of emergency dental applications

	n	Q5: Can you score the urgency of dental applications between 1 and 10?				Q6: Can you rate the risk of coronavirus transmission between 1 and 10 in dental institutions?				Q7: Which of the following conditions do you think is an emergency dental treatment? Please mark.			
		Median (min-max)	Mean rank	Test statistics	p-value	Median (min-max)	Mean rank	Test statistics	p-value	Median (min-max)	Mean rank	Test statistics	p-value
GENDER													
Female	659	8 (1-10)	588,35	U =	< 0.001*	7 (1-10)	567,19	U = 142216	0.176	13 (3-19)	582,33	U =	0.001*
Male	453	8 (1-10)	510,17	128276		7 (1-10)	540,94			12 (3-19)	518,92	132238	
EDUCATION													
Bachelor's degree and above	794	8 (1-10)	566,47	U = 118331	0.095	7 (1-10)	555,80	U = 125688	0.907	13 (3-19)	578,23	U = 108989	< 0.001*
High school and below	318	8 (1-10)	531,61			7 (1-10)	558,25			12 (3-18)	502,23		
SECTOR													
Health	269	9 (2-10)	662,03	U = 84995	< 0.001*	6 (1-10)	510,41	U = 100984	0.006*	13 (4-19)	628,94	U = 93897	< 0.001*
Others	843	8 (1-10)	522,83			7 (1-10)	571,21			12 (3-19)	533,38		

*: p<0.05

Table 2. Distribution of the answers to question 7 that assessed the level of knowledge of EDAs

Q7: Which of the following conditions do you think is an emergency dental treatment? Please mark	True n (%)	False n (%)
Treatment of toothache experienced at the time of eating and drinking	816 (73.4)	296 (26.6)
Treatment of dental pain that is causing referred pain to the ear, head, and/or neck, and swelling in Wisdom tooth	619 (55.7)	493 (44.3)
Treatment of pain and non-healing wounds in the area of a previously extracted tooth	501 (45.1)	611 (54.9)
Implant treatment for missing teeth	1006 (90.5)	106 (9.5)
Treatment of sensitivity in teeth while eating and drinking cold items (ice cream, cold water, etc.)	941 (84.6)	171 (15.4)
Treatment of an abscess causing pain and swelling in the head and neck area	808 (72.7)	304 (27.3)
Treatment of tooth fracture causing pain and soft tissue injury	592 (53.2)	520 (46.8)
Treatment of a dislocated tooth due to impact or fall	546 (49.1)	566 (40.9)
Treatment of traumatic jaw fracture	911 (81.9)	201 (18.1)
Treatment of severe toothache that is disrupting sleep	729 (65.6)	383 (34.4)
Treatment of painful sores/ulcers within the mouth	667 (60.0)	445 (40.0)
Treatment of unexplained and continuous bleeding within the mouth	773 (69.5)	339 (30.5)
Treatment of a swelling in the head and neck area or an infection; large enough to compromise breathing	826 (74.3)	286 (25.7)
Treatment of bleeding gums during tooth-brushing with continuous bleeding for at least 5 minutes	767 (59.0)	345 (31.0)
Treatment of a patient who is referred to the dentist by a medical doctor for oral and dental treatments before organ transplantation	531 (47.8)	581 (52.2)
Removing remaining stitches from a previous operation	370 (33.3)	742 (66.7)
Treatment of a painful wound in the mouth created by previously made dentures	416 (37.4)	696 (72.6)
Treatment of bad breath	1027 (92.4)	85 (7.6)
Fixing broken metal wires that hurt the cheek tissues and were placed in the mouth to true the teeth (during orthodontic treatment)	481 (43.3)	631 (56.7)
Total	13,327 (63.1)	7,801 (36.9)

Table 3. Reasons of the participants to visit the dentist

Q9: Why did you visit a dentist?	n (%)
Severe toothache that was disrupting sleep	9 (19,1)
Toothache experienced during eating and drinking	6 (12,8)
Painful wound in the mouth created by previously made dentures	5 (10,7)
Abscess causing pain and swelling in the head and neck area	4 (8,5)
Sensitivity in teeth while eating and drinking cold items (ice cream, cold water)	4 (8,5)
Broken metal wires that hurt the cheek/lip and were placed within the mouth to true the teeth (orthodontic treatment)	4 (8,5)
Pain and non-healing wounds in the area of a previously extracted tooth	3 (6,4)
Tooth fracture causing pain and soft tissue injury	2 (4,3)
Referred dental pain to the ear, head, and/or neck; and swelling in the wisdom tooth	2 (4,3)
Non-stop, unexplained bleeding within the mouth	
Implant treatment for missing teeth	1 (2,1)
Referred to the dentist by a medical doctor for oral and dental treatments before organ transplantation	1 (2,1)
Removing remaining stitches from a previous operation	1 (2,1)
Dislocated tooth due to impact or fall	1 (2,1)
Painful sores/ulcers in the mouth	1 (2,1)
Others...	2 (4,3)
Total	47 (100,0)

Table 4 Approach of the dentist toward patients who visited them during the COVID-19 pandemic

Q10: What did your dentist do about your complaint?	Urgent n (%)	Not urgent n (%)	Total n (%)
Dentist said that my situation was urgent, and he/she did what was necessary	27 (57.5)	8 (17.0)	35 (74.5)
Dentist said that the situation was not urgent, but he/she still treated me	6 (12.7)	2 (4.3)	8 (17.0)
Dentist said that my situation was not urgent, and he/she did not take care of it	1 (2.1)	3 (6.4)	4 (8.5)
Total	34 (72.3)	13 (27.7)	47 (100.0)

All these sub-questions had the following two responses to choose from: "Urgent" or "Not urgent." Incorrect and correct answers were assigned scores of 0 and 1, respectively. The total knowledge scores ranged from 0 to 19, and a higher score indicated better knowledge of EDAs. The Cronbach's alpha coefficient (indicating acceptable internal consistency) of our questionnaire was 0.73 (8). Finally, the participants were asked whether they felt the need to visit a dentist during the COVID-19 pandemic, and what would their attitude be like if they needed to do so (Q8). The participants who stated that they had visited their dentists were asked about the reasons for their visits and the dentist's approach to them during these visits (Q9, Q10). The data were analysed using Statistical Package for Social Science version 23.0 (SPSS Inc., Chicago, IL, USA). The median, minimum-maximum, and percentage values were calculated for descriptive statistics. The normality of the data distribution was tested using histograms and the Kolmogorov-Smirnov test. As the data were not normally distributed, the Mann-Whitney U-test was used for inter-group comparisons. The relationships between categorical variables were calculated using the Pearson chi-square test. In all analyses, $p < 0.05$ was considered to indicate statistical significance.

Results

A total of 1119 participants completed the survey questionnaire; however, seven respondents withdrew consent and were excluded. The final sample consisted of 1112 participants, aged 16–68 years (mean age: 30.92 ± 11.14 years), and comprised 453 (40.7%) men and 659 (59.3%) women. Among the participants, 794 (71.4%) had a bachelor's or higher degree, and 269 (24.2%) were health workers. Distribution of the demographic characteristics of the participants and their scores regarding the knowledge level of EDA along with their responses to Q5 and Q6 are presented in Table 1. The risk of transmission of COVID-19 in dental institutions was rated to be significantly higher by women and health workers than by men ($p < 0.05$) and other professionals ($p < 0.05$), respectively. However, the urgency of dental application was scored significantly lower by health workers than by other professionals ($p < 0.05$). No significant differences were observed in the scores of urgency of dental applications according to sex and educational status of the participants ($p > 0.05$). In Q7 that comprised 19 sub-questions, the participants were questioned on their knowledge of EDAs. The participants' knowledge scores were calculated by assigning false and true answers with values of 0 and 1, respectively.

Knowledge scores were significantly higher in women, bachelor's degree holders, and healthcare professionals ($p < 0.05$). Among the responses, 63.1% and 36.9% were true and false, respectively (Table 2). Most participants knew that implant treatment (90.5%) and treatment of bad breath (92.4%) were not urgent, while jaw fractures (81.9%) and common abscesses (72.7%) required urgent care.

In Q8, the participants were asked whether they needed to visit a dentist during this pandemic. Of the 421 (37.8%) participants who reported the need to visit the dentist, 47 (4.2%) had visited the dentist. There were 374 participants (33.6%) who did not visit the dentist due to the pandemic, while 516 participants (46.4%) stated that they did not visit the dentist, but would avoid doing so even if they needed to, because of the pandemic. Further, there were 175 participants (15.7%) who answered "I did not need, if I needed, I would not avoid visiting."

Among the 47 participants who visited a dentist, 34 visited the dentist for genuine emergent concerns, while 13 visited for non-urgent reasons (Table 3).

Thirty-four patients, who visited the dentist, responded with "Dentist said that my situation was urgent and he/she did what was necessary," while four responded with "Dentist said that my situation was not urgent and he/she did not take care of it" (Table 4).

Discussion

Oral and dental treatments frequently expose dentists to saliva, blood, and other body fluids (4,9). In dental treatments, creation of large amounts of aerosols or droplets mixed with blood is inevitable. This makes dental institutions one of the biggest risk groups for COVID-19 contamination and transmission. Hence, the Coronavirus Scientific Committee decided that no dental procedures, other than emergency treatments, should be performed during the COVID-19 outbreak. This decision was announced on the websites of official entities, such as the Ministry of Health, and professional organisations and/or their social media accounts. As patients who require non-urgent treatment continue to visit dental hospitals, the crowding at these high-risk institutions will not decrease. Hence, in addition to dentists, it is important for the general population, who need dental treatment, to have sufficient knowledge of EDAs. Thus, this study aimed to evaluate the knowledge, attitude, and practices of individuals regarding EDAs.

In this study, 24.2% of participants were health workers. While the risk of transmission of COVID-19 in dental institutions was scored significantly higher by health workers than by other professionals, the urgency of dental applications was scored significantly lower by the former than by the latter ($p < 0.05$). Since health workers face many emergencies in their professional lives, they may have considered dental applications to be less urgent.

In Q7 that consisted of 19 sub-questions, the participants were asked regarding their knowledge of EDAs. The total knowledge score ranged from 0 to 19, with a higher score indicating better knowledge of EDAs. The median value of the knowledge score was 13 (range, 3–19). Additionally, 63.1% of the answers were true. Based on these results, we can infer that most participants followed the new decisions regarding COVID-19 quickly and effectively in Turkey.

Among all participants, 46.4% reported that they did not need to visit the dentist and that they would avoid doing so even if needed, because of the pandemic. The number of participants who visited the dentist during the pandemic was only 47 (4.2%); of these, 72.3% met the criteria for EDAs. Participants generally avoided visiting the dentist during the pandemic, except in case of an emergency because participants were aware of the transmission risk at dental institutions and had sufficient knowledge of emergency dental conditions.

Unfortunately, eight (61.5%) of the 13 patients who visited for non-emergency situations, received treatment. According to one study, while 49.95% of Turkish dentists avoided performing aerosol-generating procedures as much as possible, 63.79% used strong intraoral suction during dental procedures (10). Although the treating dentists reported that they had adopted the necessary precautions, this result indicated that although in small number, there were clinicians and patients who were still unaware of the severity of COVID-19.

While many countries, such as Italy, Spain, and the USA, continue to face serious problems in their healthcare systems, Turkey has recovered smoothly from the outbreak (11). Due to the initial preventive measures introduced in Turkey, the number of cases has begun to reduce (11). The results of our study showed that the decision to postpone applications other than emergency treatments was taken at the right time to reduce the risk of COVID-19 transmission. It definitely helped to contain the disease, considering the risk of transmission and patient density in dental institutions. We believe that in countries that are still struggling with the pandemic, taking decisions to only perform emergency dental applications will aid in containing the COVID-19 outbreak.

During this pandemic, due to the limited access to Internet and online health information resources, the vulnerable sections of the society, such as the rural people at the grassroot level and the elderly, are more likely to have poor knowledge, inappropriate preventive practices, and negative attitudes toward COVID-19. Therefore, we believe that further research should be directed at assessing their knowledge of and attitude toward COVID-19. Besides the issue of limited representation by our sample, another limitation of our study was the inadequate and unstandardized

assessment of the knowledge, attitude, and practices of individuals regarding EDAs during the COVID-19 pandemic. Due to the very limited time available for developing the questionnaire, our patients were assessed with only simple questions.

In conclusion; although there were some participants who were unaware of the seriousness of COVID-19, most were aware of the risk of contamination at dental institutions, and had sufficient knowledge of EDAs. The decision of the scientific committee to postpone applications other than emergency treatments was an important factor for containing the COVID-19 outbreak.

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Conflict of Interest: *The authors declare that they have no conflict of interest.*

Ethical Approval: *This study was approved by the Harran University Clinical Research Ethics Committee (reference number: HRU/20.12.16) by the principles of the World Medical Association Helsinki Declaration, which was last revised in 2013.*

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