

Evaluation of Knowledge, Attitude and Behaviour on Oral Health Through COVID-19 Pandemic

COVID-19 Salgını Sürecinde Ağız ve Diş Sağlığına İlişkin Bilgi, Tutum ve Davranışların Araştırılması

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Keywords

COVID-19, quarantine, oral health, oral hygiene, public health dentistry, nutritional surveys

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Abstract

Objective: This research is aimed at determining the changes in individuals' knowledge, attitudes and behaviours regarding oral health in terms of nutritional habits, daily oral care and the provision of dental services during the quarantine process in the Coronavirus disease-19 (COVID-19) pandemic.

Materials and Methods: A total of 1010 volunteers (age>18) participated in this online survey which was designed to evaluate the participants' demographic information, oral hygiene habits, experiences about oral health and nutritional trends throughout the lockdown period of the COVID-19 pandemic.

Results: According to the dietary habits scores, there was a tendency towards dietary consumption that would positively affect oral health (0.381 ± 1.76) (mean \pm standard deviation). During this period, 11.4% of women and 20.2% of men smoked less. The frequency of brushing teeth in 20.6% of the participants, flossing in 9.4% and using mouthwash in 28.7% increased. Moreover, the frequency of brushing teeth, flossing and using mouthwash in 7.8%, 7.1% and 7.5% of the participants, respectively, decreased. 67.8% of the participants believed that oral health and general health were related to each other, and 80.5% thought that there was a risk of transmission of COVID-19 in dental treatment. Oral health problem was experienced in 21.7% of the participants during the COVID-19 pandemic. Finally, according to our survey, 25.6% of these people visited the dentist, while 74.4% did not.

Conclusion: During the quarantine period, positive changes were observed in individuals' nutrition and smoking behavior. Due to the pandemic, individuals who had oral health problems had reservations about seeking treatment, and treatment services were disrupted. It would be beneficial to increase the public's awareness about the re-planning of dental treatment services due to the pandemic conditions, and the measures taken for the protection of oral health.

Öz

Amaç: Bu araştırmada Koronavirüs hastalığı-19 (COVID-19) salgınında uygulanan karantina sürecinde ağız ve diş sağlığıyla ilgili olarak beslenme alışkanlıkları, günlük ağız bakımı ve diş hekimliği hizmetlerinin sunumu açısından bireylerin bilgi, tutum ve davranışlarındaki değişikliklerin tespit edilmesi amaçlanmaktadır.

Gereç ve Yöntemler: Araştırma 18 yaş üzeri 1010 gönüllü ile çevrimiçi anket yoluyla yapılmıştır. Anket katılımcıların demografik bilgilerini, COVID-19 salgını esnasında uygulanan karantina dönemindeki beslenme eğilimlerini, ağız hijyeni alışkanlıkları ile ağız ve diş sağlığı ile ilgili deneyimlerini değerlendirmek üzere planlanmıştır.

Bulgular: Beslenme alışkanlıkları puanlamasına göre ağız ve diş sağlığına olumlu yönde etki edecek beslenme tüketimine doğru bir yönelme vardır ($0,381 \pm 1,76$) (ortalama \pm standart sapma). Kadınların %11,4'ü, erkeklerin %20,2'si bu süreçte daha az sigara içmiştir. Katılımcıların %20,6'sının diş fırçalama, %9,4'ünün diş ipi, %28,7'sinin ağız gargarası kullanım sıklığı artmış, %7,8'inin diş fırçalama, %7,1'inin diş ipi, %7,5'inin ağız gargarası kullanım sıklığı azalmıştır. Katılımcıların %67,8'i ağız ve diş sağlığı ile genel sağlığın ilişkili olduğu, %80,5'i diş tedavisinde COVID-19 bulaşma riski olduğu görüşündedir. Katılımcıların %21,7'si COVID-19 sürecinde ağız ve diş sağlığı ile ilgili bir sorun yaşamıştır. Bu kişilerin %25,6'sı yaşadıkları sorun nedeniyle diş hekimine başvururken, %74,4'ü başvurmamıştır.

Sonuç: COVID-19 salgınında uygulanan karantina döneminde bireylerin beslenme ve sigara içme davranışlarında olumlu yönde değişiklikler olmuştur. Ağız bakım alışkanlıklarında ise olumlu ve olumsuz yönde farklı eğilimler sergilenmiştir. Bu dönemde ağız ve diş sağlığı ile ilgili sorun yaşayan bireylerin salgın nedeniyle tedavi arayışına girmekte çekinceleri olmuş ve tedavi hizmetleri aksamıştır. Diş tedavi hizmetlerinin salgın şartlarına göre yeniden planlanmasının ve ağız sağlığının korunması için alınacak bireysel önlemler hakkında toplumda farkındalık oluşmasına yönelik çalışmaların artması faydalı olacaktır.

Introduction

The Coronavirus disease-19 (COVID-19) outbreak started in Wuhan, China, in December 2019, has become a significant public health problem for all countries in the world in a short time (1). On January 30, 2020, The World Health Organization (2) declared this outbreak to be an alarming public health emergency on an international level and recognized it as a pandemic on March 11.2020 (3). The first COVID-19 case was reported in Turkey on March 10.2020 (4) and social isolation to prevent the spread of the outbreak in this period and various measures have been conducted.

The fact that dentistry produces a large amount of aerosols and involves close contact with patients during treatment increases the risk of transmission of respiratory COVID-19 infection, which poses a risk to the dentist and assistants (5,6). Therefore, as of April 1.2020, the COVID-19 Scientific Advisory Board of the Turkish Ministry of Health defined emergency practices in dentistry. The postponement of other treatments was suggested, and some dentists interrupted their work life in this process (7).

Calls to stay at home and curfew restrictions to control the pandemic and prevent the spread of the virus caused the disruption of people's regular activities in their home and work lives and limited social relations (8). Such unusual conditions may lead to depression and stress (9); people may prefer to consume high-calorie and high-sugar foods and beverages to feel better (10). However, the preference for such foods poses a risk to oral health (11).

Oral health, which has been shown to be related to many systemic diseases, is an integral part of general health (12,13). Today, oral health is considered an indicator of individual and social health and quality of life; the definition of oral health is not only having healthy teeth, but is made in many ways (14). The current definition of oral health includes the fact that oral health is versatile, and that there is no infection or tissue loss. In addition, it includes speech, smile, smell, taste, touching, chewing, swallowing, as well as facial expressions, enabling us to convey our emotions without pain or discomfort (15). This definition is very comprehensive, and it is vital in ensuring that the quality of life that oral health is not limited to the oral cavity but affects our goodness and health very closely.

Awareness of individual routines, such as well-balanced nutrition and optimum oral hygiene, is essential to maintain good oral health. Dietary consumption and frequency of fermented carbohydrates, acidic foods, and beverages should be under control (16). Brushing teeth with a fluoride toothpaste and using dental floss are the most essential practices to ensure oral hygiene, and the use of antimicrobial mouthwashes is also recommended (17,18). Moreover, smoking is known to be a threat to oral health (19) and makes it difficult to treat patients with COVID-19 (20).

The importance of nutritional preferences and oral hygiene practices comes to the fore when the risk of getting COVID-19 infection is high due to the close relationship between oral health and general health. In the present study, we aimed to report personal

experiences into scientific data by identifying changes in individuals' knowledge, attitudes, and behaviors regarding oral health in the quarantine process during the COVID-19 outbreak.

Materials and Methods

The present cross-sectional study was approved by the Ethics Committee on Science, Social and Non-Interventional Health Sciences Research of İstanbul Yeni Yüzyıl University (protocol no: 2020/06-466), and data collection was carried out between 06/18/2020 and 06/30/2020 via an online Google survey. Inclusion criteria were volunteers over the age of 18 who could use the internet and wanted to participate in the survey. The survey consisted of the demographic information of the participants, nutritional trends in the period of COVID-19, oral hygiene habits, and experiences about oral health.

Statistical Analysis

The data obtained from the survey were analyzed with IBM SPSS V23. Compatibility with normal distribution was examined with the Kolmogorov-Smirnov test. A chi-square test was used to compare categorical variables according to the groups. Questions 2-6 were scored as "+1, 0, -1" to evaluate positive or negative changes in dietary habits in terms of oral health. The results were expressed as mean and standard deviation (sd) and median [minimum (min)-maximum (max)] for quantitative data, and frequency (percent) for categorical data. The significance level was $p < 0.05$.

Results

1010 people participated in the survey from Turkey's 71 cities. The demographic features of the participants are shown in Table 1. The findings of nutritional habits during the COVID-19 pandemic are shown in Table 2. As a result of the scoring related to nutritional habits, the average nutritional score of the participants was 0.3381 ± 1.76 (mean \pm sd), and the median was 0 (-5-5) (min-max). According to the average nutritional score, there was a tendency towards dietary consumption positively affecting oral health (Figure 1).

Smoking habits were shown to vary depending on gender through the period evaluated ($p < 0.001$). While 78.4% of women did not smoke, the rate was 56% for men. 11.4% of women and 20.2% of men stated that

they smoked less during this period. Smoking status varies depending on marital status ($p = 0.017$). 72.2% of married people, 62.7% of divorced people, and 61.7% of single people did not smoke. Smoking did not vary depending on other conditions ($p > 0.050$) (Table 3).

71.6% of the participants stated that there was no change in their brushing habits during the COVID-19 period whereas 20.6% stated that they brushed their teeth more frequently, and 7.8% decreased the frequency of brushing. 28.3% of participants used dental floss. The rate of dental floss usage of healthcare professionals (63.6%) was higher than in other professions (24.1%). Dental floss usage was also higher among those with postgraduate education (48.9%) compared to individuals with other education levels including primary education (17.7%), high school (19.6%), associate's degree (24.8%), and those with a license (34%) ($p < 0.001$). In this study, 7.1% of those using dental floss decreased their floss usage,

Table 1. Demographic features of the participants

	Frequency (n)	Percent (%)
Gender		
Female	580	57.4
Male	430	42.6
Age		
61-70	31	3.1
51-60	140	13.9
41-50	306	30.3
31-40	253	25.0
18-30	280	27.7
Marital status		
Married	687	68.0
Single	264	26.1
Divorced	59	5.8
Education status		
Master and doctorate	141	14.0
License	297	29.5
Associate degree	141	14.0
High school	280	27.8
Primary education	147	14.6
Occupation		
Healthcare professionals	107	10.6
Other professionals	903	89.4

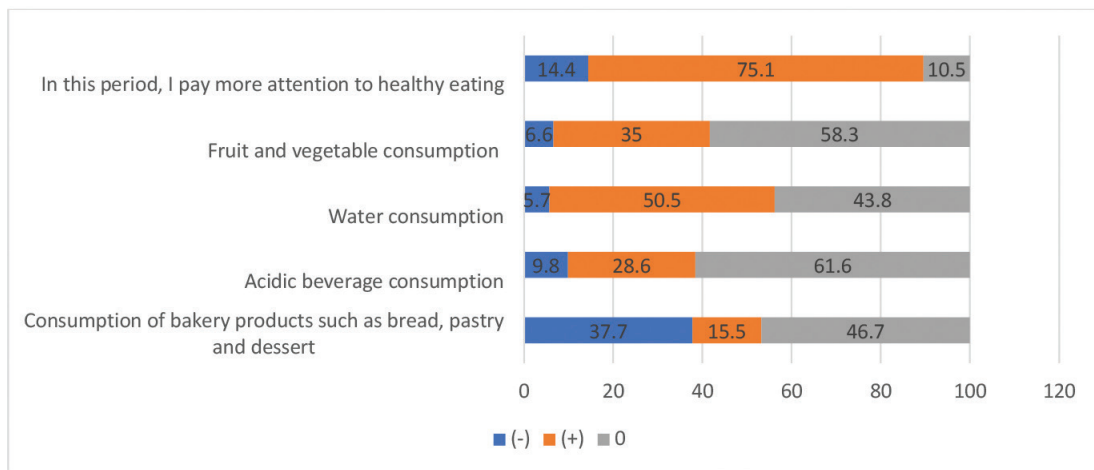


Figure 1. Clustered bar graph of cases that would affect oral health positively and negatively

Table 2. Nutritional habits of the participants in the COVID-19 process		
	Frequency (n)	Percent (%)
Question 1. In the pandemic process, please mark the options appropriate for eating and drinking status*		
I eat more in this process	324	32.2
I eat less during this process	117	11.6
I am snacking all day long	113	11.2
There was no change in my eating and drinking habits	516	51.2
Question 2. In this process, fruit and vegetable consumption		
There was no change	589	58.3
Decreased	67	6.6
Increased	354	35
Question 3. In this process, the consumption of bakery products such as bread, pastry, and dessert		
There was no change	472	46.7
Decreased	157	15.5
Increased	381	37.7
Question 4. In this process, consumption of acidic beverage		
There was no change	622	61.6
Decreased	289	28.6
Increased	99	9.8
Question 5. In this process, the consumption of water		
There was no change	442	43.8
Decreased	58	5.7
Increased	510	50.5
Question 6. In this period, I pay more attention to healthy eating		
No	145	14.4
Yes	759	75.1
I have no idea	106	10.5
*Multiple answers, COVID-19: coronavirus diseases-2019		

while 9.4% increased, and 83.5% did not change their floss usage.

The mouthwash use rate was 32.8%. 7.5% of the users stated that mouthwash usage decreased in this process, 28.7% increased, and 63.8% stated that there was no change in usage habits.

67.8% of the participants thought that oral health, dental health, and general health were related to each other. While 90.7% of healthcare professionals agreed with this idea, only 65.1% of those who belonged to other professions agreed with this idea ($p < 0.001$). According to the state of having any general health problem, there was no statistically

significant difference between the distribution of the level of knowledge about whether there was a relationship between oral health and general health ($p > 0.050$) (Table 4). 80.5% of the participants thought that there was a risk of COVID-19 transmission in dental treatment. This thought varied depending on the profession. 98.1% of healthcare professionals and 78.4% of other professional groups thought that there was a risk of COVID-19 transmission in dental treatment ($p < 0.001$).

21.7% of the participants experienced a problem with oral health during the COVID-19 process. 36.1% of those who had oral health problems ($n = 219$) had

Table 3. Distribution of smokers by gender, educational background, occupation, and marital status

	Not smoke	No change	More smoke	Less smoke	Test statistics	p
Gender						
Female	455 (78.4) ^a	46 (7.9) ^a	13 (2.2) ^a	66 (11.4) ^a	$\chi^2 = 59.743$	<0.001
Male	241 (56) ^b	74 (17.2) ^b	28 (6.5) ^b	87 (20.2) ^b		
Education status						
Master and doctorate	108 (73.5)	16 (10.9)	2 (1.4)	21 (14.3)	$\chi^2 = 16.164$	0.184
License	186 (66.4)	30 (10.7)	14 (5)	50 (17.9)		
Associate degree	97 (68.8)	18 (12.8)	7 (5)	19 (13.5)		
High school	192 (64.6)	40 (13.5)	14 (4.7)	51 (17.2)		
Primary education	110 (78)	16 (11.3)	3 (2.1)	12 (8.5)		
Occupation						
Healthcare professionals	75 (70.1)	17 (15.9)	2 (1.9)	13 (12.1)	$\chi^2 = 3.766$	0.288
Other professionals	621 (68.8)	103 (11.4)	39 (4.3)	140 (15.5)		
Marital status						
Married	496 (72.2) ^c	72 (10.5)	24 (3.5)	95 (13.8)	$\chi^2 = 15.525$	0.017
Single	37 (62.7) ^{cd}	12 (20.3)	1 (1.7)	9 (15.3)		
Divorced	163 (61.7) ^d	36 (13.6)	16 (6.1)	49 (18.6)		
Total	696 (68.9)	120 (11.9)	41 (4.1)	153 (15.1)		

χ^2 : Chi-square test statistics, ^{a-d}: There is no difference between groups with the same letter in columns

Table 4. Distribution of responses related to the relationship between oral health and general health

	Wrong	Right	No idea	Test statistics	p
Occupation					
Healthcare professionals	3 (2.8)	97 (90.7) ^a	7 (6.5) ^a	$\chi^2 = 29.222$	<0.001
Other professionals	44 (4.9)	588 (65.1) ^b	271 (30) ^b		
Have any general health problems					
No	18 (4.6)	266 (68.2)	106 (27.2)	$\chi^2 = 0.043$	0.979
Yes	29 (4.7)	419 (67.6)	172 (27.7)		
Total	47 (4.7)	685 (67.8)	278 (27.5)		

χ^2 : Chi-square test statistics, ^{a-b}: There is no difference between groups with the same letter in the columns

a mild toothache, 24.2% had tooth sensitivity, 22.4% had a severe toothache, 16.9% had cracked or broken teeth, 13.7% had swelling, 12.3% had lost a posterior filling, 12.3% had slight bleeding in the mouth area, 9.1% had loss of a permanent bridge or crown, and 8.2% had loss of a temporary filling or crown.

While 25.6% (n=56) of people with oral health problems during the COVID-19 process visited the dentist, 74.4% (n=163) did not. 58.3% of the participants who did not visit the dentist stated that they did not want to leave the house due to the virus. 44.8% stated that they were afraid of getting infected during dental treatment, and 40.5% thought that health institutions were risky. 19% stated that their dentist did not accept them, and 16% did not

visit the dentist for economic reasons. The problems experienced by patients who did not visit the dentist are given in Table 5.

Among the people who had oral health problems during the COVID-19 pandemic, 66.1% of the 56 people who tried could easily reach a dentist, while 32.1 could not. 36.4% of the patients went to the public hospital for treatment, 32.7% to a private practice, and 12.7% to health institutions such as hospitals, medical centers, or outpatient centers. 5.5% went to the university hospital and 5.4% met with dentists over the phone. The patients with oral health problems who visited a dentist are listed in Table 6. While 67.3% of the people going to the dentist stated that dentists could only perform emergency treatments, 12.7% stated

Table 5. Distribution of oral and dental health problems experienced by patients who did not apply to the dentist

	Frequency (n)	Percent (%)
Mild toothache	66	40.5
Tooth sensitivity	47	28.8
Filling fall out	30	27.3
Cracked or broken tooth	29	17.8
Severe toothache	26	16
Swelling	21	12.9
Mild bleeding in the mouth area	20	12.3
Falling out of permanent bridge or crown	15	9.2
Falling out of temporary filling or crown	14	8.6
Prosthesis incompatibility	3	1.8
Other	82	50.2
*Multiple answers		

Table 6. Distribution of oral health problems experienced by patients applying to the dentist

	Frequency (n)	Percent (%)
Severe toothache	23	41.1
Mild toothache	13	23.2
Swelling	9	16.1
Cracked or broken tooth	8	14.3
Falling filling	7	12.5
Mild bleeding in the mouth area	7	12.5
Tooth sensitivity	6	10.7
Falling out of permanent bridge or crown	5	8.9
Falling out of temporary filling or crown	4	7.1
Other	26	46.5
*Multiple answers		

that they would not be able to do any treatment, while 10.9% were offered other non-emergency treatments, but not emergency treatments. 72.7% of patients who visited dental treatment institutions observed that more importance was given to hygiene due to the pandemic; 14.5% stated that they did not see a difference.

Discussion

During the COVID-19 pandemic process, the time spent at home increased due to the calls to stay at home and the curfews instituted to prevent the spread of the outbreak. It was observed that there was no change in eating and drinking patterns of 51.2% of the participants from 71 provinces in Turkey. This result is compatible with Scarmozzino and Visioli's (21) studies in Italy regarding the nutritional habits during the quarantine period (49.6%). Frequent snacking is one of the dietary habits that negatively affect oral health (22). In our study, the rate of individuals who stated that they had a snack during the day in the quarantine period was 11.2%. This rate was 51.8% in the study conducted in Poland (23). While the proportion of participants who did not change the consumption of carbohydrate-weighted products during the quarantine period was 46.7%, 37.7% stated that they consumed this type of food more often. 58% of the participants stated that there was no change in their fruit and vegetable consumption, 6.6% decreased, and 35% increased. In the studies of Scarmozzino and Visioli (21), it was observed that the foods they call "comfort food" such as sweets and chocolate were consumed by 42.5% and salty snacks by 23.5% more. In the same study, it was observed that 69.2% of the individuals did not change their consumption of vegetables and fruits, while 21.2% increased. In our study, according to the average healthy nutrition score obtained by scoring nutritional habits, it was seen that there was a nutritional tendency that should positively affect oral health in the quarantine period. In our study, it was determined that 31.1% of the participants were smokers. This rate was 40% for men and 21.6% for women. According to the 2012 Turkey Statistics Institute (TUIK) data, the proportion of people using tobacco and tobacco products in Turkey was 27%, 13.1% in women, and 41.4% in men (24). In this study, we could not obtain any information about tobacco products other than cigarettes. However, it

was seen that smoking was slightly higher than the usage rates of tobacco and tobacco products reported in the TUIK data.

The smoking rate in married people was lower than among singles. During COVID-19, 38% of the participants who smoked stated that the amount of smoking did not change, while 13% stated that they smoked more; 48.7% smoked less. In Poland' study, it was shown that 40% of smokers did not change the amount of smoking, while 45.2% smoked more (23). In our study, the rate of participants who stated that they smoked more was found to be lower than that of this study, and that the rate of those who reduced their amount of smoking was high. Medical professionals have stated the importance of healthy eating to making the immune system stronger since the beginning of the COVID-19 pandemic. They have also emphasized that the COVID-19 infection significantly affects the lungs and that smoking affects the prognosis of the disease negatively. We think that individuals who internalize the warnings about this issue positively changed their food preferences and smoking behavior.

When the toothbrushing habit was examined, it was seen that 71.6% of the participants did not change their brushing habits, 20.6% brushed their teeth more frequently and 7.8% less frequently. In our study, the proportion of participants using dental floss was 28.3%. This rate was 28.6% in South America (25), 16.8% in Iran (26), 11.8% in Kuwait (27), and 11% in Denmark (28). 7.1% of those using dental floss decreased their usage, while 9.4% increased. The dental floss usage rate is higher in health staff than in other occupational groups, and the dental floss usage rate of those who have graduate education was higher than individuals at other education levels. Mouthwash use rate was 32.8%. 7.5% of the users stated that mouthwash use decreased and 28.7% increased in this process. Our study shows that there were individuals with positive and negative changes in oral care habits in the quarantine process. It is thought that changing daily life routines may have affected oral care habits in this period. In addition, stress levels can increase during pandemic periods, and psychological disorders such as depression and anxiety can be observed (9). One of them is health anxiety. Health anxiety is a condition that occurs when one interprets the changes in the body as a symptom of being sick (29). This anxiety

is experienced to some extent by everyone, and this anxiety contributes to pay attention more (30). However, in cases where health anxiety is high, no changes were seen in healthy living indicators such as healthy eating, attention to sleep, exercising, and smoking compared to those without health anxiety. Similarly, low levels of health anxiety may cause the person to not pay attention to their health and to not continue their health-related behaviors (31). Based on this information, it is thought that individuals' health anxiety levels may play a role in the changes in nutrition, smoking, and oral care habits during the COVID-19 pandemic. We think that measuring the relationship between health anxiety levels and these factors may contribute to future studies in the literature.

67.8% of the participants thought that there was a relationship between oral health and general health, while 27.5% stated that there was no relationship. It is thought that awareness on this issue is related to education. Awareness level was higher among graduate-school educated and healthcare professionals. Zulfiqar et al. (32) also showed that medical school students' oral health awareness was higher than students in other faculties. The level of knowledge on this subject did not differ in individuals with any general health problems from those without general health problems. In some studies, the awareness of individuals with systemic disease about the relationship between oral health and general health was low (33-37). Considering that individuals with chronic diseases are more at risk for COVID-19 infection (38), we think that low awareness of oral health will further increase this population's health risks.

In previous studies, it was shown that the first reason for visiting the dentist was pain. 9% visited the dentist for only control without a complaint (39), and 84.4% (40) said, "I do not go to the dentist unless obliged to do so." In this period, it was determined that the COVID-19 outbreak was a factor that prevented patients from seeking treatment. It was seen that individuals were worried about the risk of virus infection within health institutions and during dental procedures and were reluctant to leave the house. 80.5% of the participants thought that there was a risk of COVID-19 transmission during dental treatment. The level of awareness of health

professionals regarding this issue was significantly higher than that of other professionals. 98.1% of healthcare professionals knew that there was a risk of transmission of COVID-19 infection during dental treatment. 80% of patients who contacted dental treatment institutions observed that more emphasis was placed on hygiene due to COVID-19. In this period, some of the dentists did not accept patients due to the risk of COVID-19 infection, which led to a disruption of the dental treatment of the patients. 16% of the patients who did not visit the dentist experienced problems such as severe toothache (16%), swelling (12.9%), loss of a temporary filling or cap (8.6%). 5.6% of the participants who had any oral problems did not contact a treatment institution. Although the patients who visited dental clinics experienced urgent problems, such as severe toothache (41.1%) and swelling (16%), some patients saw the dentist due to non-emergency situations, such as mild toothache (23.2%), mild bleeding in the mouth (12.5%), and tenderness (10%). In a study conducted in China, Guo et al. (41) found that the number of patients receiving treatment at dental institutions decreased by 38% with the onset of the pandemic, and the most common reason for treatment was pain and swelling related to pulpal and periapical lesions.

In our study, 32.1% of 55 people who looked for treatment related to oral health stated that they could not easily reach a dentist. 5.4% of the participants received information about their problems by making phone calls with their dentists, except for patients who contacted different institutions of the state and private sector. 67.3% of the dentists stated that they could only perform emergency treatments, while 12.7% said that they could not do any treatment. 10.9% of them offered their patients other non-urgent procedures. During the COVID-19 process, patients had difficulties in reaching the dentist, and the treatment requests of the patients who could reach a dentist were selectively met according to their urgency. Considering the presence of patients who had any dental problems and could not seek treatment with various concerns, it is thought that telecommunication practices should be at the forefront in these periods and possible future epidemics (42).

With the widespread practice of telemedicine, it will be possible to question the patients' urgency situations before providing care and, if necessary,

to make recommendations or direct them to the treatment institutions by sharing images. In this way, it will be easier to resolve the patients' problems, and the risk of spreading the infection will decrease by decreasing the accumulation in health institutions (43-45).

Our study shows that dentistry services are disrupted due to virus-related causes in the COVID-19 process. It is not possible to say that this disruption will cause socially permanent negativity in oral and dental health, considering the three months from March 10.2020, when the first case was announced, to the time of the survey. However, due to limited data on the COVID-19 virus, no precise prediction can be made about how long the outbreak will last (46). Oral health is related to general health, and they share and affect each other with non-communicable diseases such as cancer, diabetes, respiratory tract, and cardiovascular diseases (12,13). It is also known that COVID-19 infection progresses more severely in individuals with chronic disease (38). Therefore, during a long-term epidemic, the health of individuals both who are healthy or have chronic diseases might have a worsening oral health which appears to be a disadvantage in terms of COVID-19 infection.

Conclusion

In the quarantine period applied after the onset of the COVID-19 pandemic, there were positive changes in individuals' nutrition and smoking behavior. In this period, there were different positive and negative trends in oral care habits. It has been determined that individuals who have oral health problems during the quarantine have reservations about treatment due to the COVID-19 outbreak, and there are disruptions not only in emergency treatments but also in routine dental treatment services. Considering the relationship between oral health and general health, we think it will be beneficial to plan dental treatment services according to the current situation and increase the awareness of the individual measures to be taken to protect oral health.

Ethics

Ethics Committee Approval: The present cross-sectional study was approved by the Ethics Committee on Science, Social and Non-Interventional Health Sciences Research of İstanbul Yeni Yüzyıl University (protocol no: 2020/06-466), and data collection was

carried out between 06/18/2020 and 06/30/2020 via an online Google survey.

Informed Consent: Inclusion criteria were volunteers over the age of 18 who could use the internet and wanted to participate in the survey.

Authorship Contributions

Peer-review: Internally and externally peer-reviewed.

Concept: Z.H.K., Design: Z.H.K., Supervision: H.Ş.S., Data Collection or Processing: Z.H.K., Analysis or Interpretation: H.Ş.S., Literature Search: Z.H.K., Critical Review: H.Ş.S., Writing: Z.H.K.

Conflict of Interest: No conflict of interest was declared by the authors.

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