

EXAMINATION OF KNOWLEDGE AND STRESS LEVELS OF PATIENTS AND REASONS FOR THE APPLICATION FOR DENTAL TREATMENTS DURING COVID-19 PANDEMIC

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ABSTRACT

Purpose: This study was conducted to examine the stress levels of individuals who admitted for dental treatment during the normalization process of the COVID-19 pandemic, the level of knowledge about the COVID-19 and the reasons of admission for treatment.

Material and Methods: 990 people aged between 18-60+, who admitted to the dentistry faculty, participated in the study. The questionnaire directed to individuals consisted of questions measuring their democratic knowledge, reasons for applying for dental treatment and their stress levels. Analysis of the data in the study was evaluated using the Pearson Chi-Square test ($p < 0.05$).

Results: The most common reason for admission was tooth decay (40.1%), followed by toothache (35.6%). While there was no statistically significant difference between gender and COVID-19 knowledge levels, a positive correlation was found between age and education level and knowledge level. While 29.6% of the patients participating in our study stated that they did not have any stress during their dental treatments, 29.1% stated that they were little stressful, 28.3% were stressful, and 13% were very stressful.

Conclusion: Although individuals have a high level of knowledge about COVID-19, the stress caused by the risk of transmission can cause individuals to delay their dental treatment.

Keywords: COVID-19, dental treatment, dental anxiety

INTRODUCTION

Coronavirus disease 2019 (COVID-19) is an infectious disease caused by a new coronavirus (2019-nCov) and was first identified in December 2019 in Wuhan, Hubei, China and then quickly spread around the world (1,2).

The first case in Turkey has been reported on March 10, 2020, one day before the World Health Organization's (WHO) identification of coronavirus as a global outbreak (pandemic) on March 11. After the detection of the first case in Turkey, similar to many countries, some measures have been taken such as the closure of schools, shopping centers, and curfews, in order to lower the incidence rate and slow the rise in the epidemic curve. Proposals for postponing non-compulsory dental treatments and stopping services other than emergency dental treatments for a while were among these measures. Dental emergencies are referred to as potentially life-threatening conditions that require urgent attention in order to suppress tissue bleeding or severe pain or infection. Emergency dental treatments are emergency interventions applied to suppress severe pain and/or the risk of infection (3).

In Turkey, the Ministry of Health published a guide in June 2020, called "Operation Guide in Health Institutions During COVID-19 Pandemic Normalization Period". In the guide, it was stated that the risk continues until an effective treatment and/or vaccine specific to the virus is found due to the fact that the COVID-19 pandemic has not been completely eliminated, but the need for health services is also increasing, and a plan to return to normal for dental treatments was included to the guide. In line with this guide, dental hospitals have started to accept patients again. As of June 2022, despite the fact that covid 19 has been completely under control, several vaccines have been developed against covid 19, and the regulations have been relaxed significantly, it seems that patients applying to dental clinics are still worried.

It is predicted that dentists constitute a high-risk group due to the inability to provide the necessary social distance for protection from the disease in dental practices and the possibility of transmission of SARS-CoV-2 responsible for COVID-19 through aerosols and droplets formed during clinical procedures (4). Health policies for delaying non-emergency dental treatments during quarantine, deterred patients from seeking dental care except in emergency (5). When the stress caused by the process on individuals is

combined with the knowledge that dental treatments may also pose a high risk, the stress level of patients admitting to dental treatment and the reasons of admission for treatment become even more important.

Studies evaluating the knowledge level of patients applying for dental treatment about COVID-19 are limited in the literature. In this study, it was aimed to examine the stress levels of the patients who admitted to dental treatment during the normalization process, the level of knowledge about the COVID-19 epidemic and the reasons of admission for treatment. In this way, it is thought that patients, physicians and assistant staff can be protected from COVID-19 infectious disease by making predictions about additional measures according to the knowledge and behavior of patients.

MATERIAL AND METHODS

Ethical approval was obtained from the Health Sciences University Scientific Research Ethics Committee (Date: 04.09.2020; Decision: 2020/361) for the study. All patients aged 18 and over who admitted to the Gulhane Faculty of Dentistry for dental treatment and volunteered to take part in the study (whose patient's approval form was obtained) were included in the study.

During the first examinations of the patients who admitted to the Oral, Dental and Maxillofacial Radiology department for dental treatment, the dentist filled out a questionnaire containing the patient's demographic data, information about the COVID-19 epidemic and stress levels. The first examinations of the patients who admitted to Gulhane Faculty of Dentistry for dental treatment were carried out in accordance with the operation guide during the normalization period in the COVID-19 pandemic of the Ministry of Health and the necessary COVID-19 measures were applied. Since only verbal questions were filled in a questionnaire during the examination, no additional measures were taken. The study was conducted on the patients who admitted to dental treatment between 10 September 2020 and 30 October 2020. Questionnaire form (Table 1) examining the information status of individuals about the COVID-19 epidemic disease was created profiting by the form used by Zhong et al. (6)

Statistical data analysis was performed using SPSS 22.0 Statistical Program (SPSS Inc., Chicago, IL, USA). The relationship between the gender, age, education level and occupation of the patients and the

Table 1. Knowledge of patients admitting to dental treatment about COVID-19 and stress level form

No	Level of knowledge	True	False	I don't know
B1	The main clinical signs of COVID-19 are; fever, tiredness, dry cough and headache.			
B	Unlike the common cold, stuffy nose, runny nose and sneezing are less common in people with COVID-19.			
B3	There is currently no effective treatment for COVID-19, but with early symptomatic and supportive treatment, most patients will recover.			
B4	Disease will develop seriously with all individuals who contract COVID-19. Only the elderly, chronically ill and overweight individuals are more likely to have the disease severely.			
B5	Eating and coming into contact with wild animals can result in COVID-19 virus infection.			
B6	Individuals with COVID-19 infection cannot transmit the virus to others in the absence of a fever.			
B7	The COVID-19 virus spreads through the respiratory, cough and droplets of infected individuals.			
B8	Washing hands with soapy water for 20 seconds and using a mask is an effective method to prevent transmission of the COVID-19 virus.			
B9	Children and young adults do not need to take action to prevent transmission of the COVID-19 virus.			
B10	In order to be protected from COVID-19 infection, people should avoid entering crowded environments (shopping malls, subways, etc.) and pay attention to social isolation distance.			
B11	Isolation and treatment of people infected with the COVID-19 virus is an effective way to reduce the spread of the virus.			
B12	People who come into contact with someone who has been infected with the COVID-19 virus should be properly isolated immediately. Generally, the observation period is 14 days.			
	Stress Level			
S1	Please mark your stress level of getting COVID-19 disease during dental treatment?	a. I have no stress		
		b. I am little stressed		
		c. I'm stressed		
		d. I'm very stressed		

reasons of admission to dental treatment, the knowledge and stress levels about COVID-19 were evaluated with the Pearson Chi-Square test ($p < 0.05$).

RESULTS

Of the 990 patients who admitted to Gulhane Faculty of Dentistry, 578 (58.4%) were female, while 412

(41.6%) were male (Table 2). The average age of the patients was found to be 37.4. Most of the patients (397 people) admitted to the dental hospital with complaints of tooth decay (Table 2). While the reasons of admission of the patients were statistically significant according to age, education level and occupation, there was no significant difference according to gender (Table 3). It was observed that

tooth decay and toothache complaints constituted the most common reasons for admission for all age groups (Table 3). It was observed that admissions for prosthetic treatment increased in older age groups.

Twelve questions were addressed to measure the patients' level of knowledge about COVID-19. It was determined that the patients gave at least 8 correct answers. When the knowledge levels of the patients about COVID-19 were examined, no statistically significant difference was found between men and women (Table 2). The groups gave correct answers to a maximum of 12 questions in men and women. The answers given by the patients about COVID-19 according to their age groups showed a statistically significant difference (Table 3). Correct answers to questions decreased in the older age groups. There was a statistically significant difference between the education levels of the patients and the level of knowledge of COVID-19. It was observed that the higher the education level, the higher the level of knowledge (Table 4).

There was a statistically significant difference according to age, gender, education level and professions when the stress level of patients with COVID-19 contagious disease during dental treatments was evaluated (Table 2 and 3). It was observed that men experienced less stress than women. It was observed that the patients experienced more stress as they got older. It was found that housewives feel more stress than other occupational groups.

DISCUSSION

Although the COVID-19 pandemic has political, economic and social consequences since it spread to more than 200 countries and regions on a global scale and affected the whole world, today has been taken under control especially in developed countries. Dental health and dental treatments, as well as many areas affected by the pandemic, have been one of the most affected areas due to the risks such as the high aerosol formation during the dental treatments that increase the risk of contamination, the need for close contact, and the long treatment periods (4,7). In this study, it was aimed to investigate the anxiety levels of the patients who admitted to dental treatment during the pandemic period, the anxiety levels of getting COVID-19 during these treatments, their level of knowledge about COVID-19 and the reasons for admission to dental treatment.

While 29.6% of the patients participating in our study stated that they have no stress about getting COVID-19 during their dental treatments, the remaining 70.4% stated that they have different levels of stress (29.1% little stressful, 28.3% stressful, and 13% very stressful). In a study conducted among the parents of child dental patients, 66.22% of the parents thought the dental department environment was more dangerous than other public places; 91.89% believed that the dental department had a higher risk of virus infection and it can be said that they are quite worried about dental treatments (8). In another study in which anxiety related to dental treatment was evaluated with online questionnaire, 5% of the patients stated that they were afraid of getting infected due to dental treatment, and 18.5% of them were afraid of infecting their environment (9). The lower percentage of anxious patients in this study may be due to the fact that the study was conducted online, not at a dental treatment appointment, and at a very early stage of the pandemic when the full effects were not yet seen. In order to reduce the risk of contamination during dental treatment, it can be predicted that a decrease in anxiety levels due to dental treatment can be achieved by explaining the measures taken such as mouthwash before treatment, applying a rubber dam in procedures that create aerosol, and leaving more time between patient appointments. Sun et al. reported that approximately 81.08% of the dental child patient parents expressed confidence after they informed them about preventive measures and this result also supports our prediction (8). In addition to these, it is important that patients are informed that they should come to dental treatment appointments in a timely manner and without any companion unless necessary, if they have fever, weakness or other complaints, they should definitely inform the institution they will go to before the appointment, thus reducing the risk of cross contamination.

Individuals with an average age of 37.4 and ages between 18-60+ participated in our study and it was determined that the stress levels of the patients increased as they got older. The results of existing studies in general population shows that during the pandemic, the levels of anxiety, depression and stress are significantly higher in the age group of 21–40 years (10-13). In this study, it was determined that those who stated that they did not have stress in the 18-30 age group were more likely to be stressed in the other age group. Young people's milder exposure to COVID-19 (14) may have contributed to this.

Table 2. Examination of individuals' reason for admission to the dentistry faculty by gender, knowledge about COVID-19 and stress level by gender

Gender		Female	Male	Total	P
Reason for Admission	Toothaches	200 (34.6%)	152 (36.9%)	352 (35.6%)	0.126
	Tooth decay	229 (39.6%)	168 (40.8%)	397 (40.1%)	
	Gingival disease	45 (7.8%)	17 (4.1%)	62 (6.3%)	
	Tooth extraction	48 (8.3%)	33 (8.0%)	81 (8.2%)	
	Orthodontic treatment	24 (4.2%)	11 (2.7%)	35 (3.5%)	
	Prosthesis	32 (5.5%)	31 (7.5%)	63 (6.3%)	
Knowledge Level	8 true	40 (6.9%)	17 (4.1%)	57 (5.8%)	0.189
	9 true	67 (11.6%)	39 (9.5%)	106 (10.7%)	
	10 true	221 (38.2%)	173 (42.0%)	394 (39.8%)	
	11 true	171 (29.6%)	133 (32.3%)	304 (30.7%)	
	12 true	79 (13.7%)	50 (12.1%)	129 (13.0%)	
Stress level	I have no stress	136 (23.5%)	157 (38.1%)	239 (29.6%)	0.000
	I am little stressed	157 (27.2%)	131 (31.8%)	288 (29.1%)	
	I'm stressed	191 (33.0%)	89 (21.6%)	280 (28.3%)	
	I'm very stressed	94 (16.3%)	35 (8.5%)	129 (13.0%)	
	Total	578 (58.4%)	412 (41.6%)	990 (100%)	

Another study on Covid-19 and dental anxiety was conducted among pediatric patients aged 4-7 years who admitted to dental treatment (15). The research indicated that, contrary to the concerns that pediatric children will be significantly more stressed due to dental appointments during a nationwide quarantine, their anxiety levels did not differ from the pre-pandemic pediatric children. However, it is not possible to make a comparison as the age groups differ completely between our studies. But, parents act as the primary implementers or supervisors of children's daily oral care, and the behavior of the parents is almost equally important (8). So, informing parents correctly about Covid-19 and dental treatments is also very important regarding the behavior of pediatric patients.

In our study, it was observed that another factor influencing dental anxiety was gender and that female patients were more stressful than male patients. This result is consistent with both the study applied in both general population studies (12,16,17) and between dental adult patients (9). It has already been reported

that male patients tended to be calmer and were more willing to go a dental appointment than female patients. The findings of the same study also showed that women were less worried about a delay in their dental treatments (9).

The evaluation of the knowledge level of patients admitting to dental treatment about COVID-19 and the parameters affecting this is important in determining the public oral health policies and in terms of adopting study the behavioral changes recommended by dental professions. Approximately 85% of the patients participated in our answered 10 or more questions correctly. All participants answered at least 8 questions correctly. Gender was not found as an effective factor on COVID-19 knowledge level among the participants of the study. However, there was a positive association between levels of education and knowledge scores and this result is consistent with the results of other studies (6). It is reported that the COVID-19 epidemic increased people's curiosity and desire to receive news. In a study, it was reported that people's desire to follow

Table 3. Examination of individuals' reasons for admission to the dentistry faculty, their knowledge about COVID-19 and their stress levels by age

Gender		Female	Male	Total	P
Reason for Admission	Toothaches	200 (34.6%)	152 (36.9%)	352 (35.6%)	0.126
	Tooth decay	229 (39.6%)	168 (40.8%)	397 (40.1%)	
	Gingival disease	45 (7.8%)	17 (4.1%)	62 (6.3%)	
	Tooth extraction	48 (8.3%)	33 (8.0%)	81 (8.2%)	
	Orthodontic treatment	24 (4.2%)	11 (2.7%)	35 (3.5%)	
	Prosthesis	32 (5.5%)	31 (7.5%)	63 (6.3%)	
Knowledge Level	8 true	40 (6.9%)	17 (4.1%)	57 (5.8%)	0.189
	9 true	67 (11.6%)	39 (9.5%)	106 (10.7%)	
	10 true	221 (38.2%)	173 (42.0%)	394 (39.8%)	
	11 true	171 (29.6%)	133 (32.3%)	304 (30.7%)	
	12 true	79 (13.7%)	50 (12.1%)	129 (13.0%)	
Stress level	I have no stress	136 (23.5%)	157 (38.1%)	239 (29.6%)	0.000
	I am little stressed	157 (27.2%)	131 (31.8%)	288 (29.1%)	
	I'm stressed	191 (33.0%)	89 (21.6%)	280 (28.3%)	
	I'm very stressed	94 (16.3%)	35 (8.5%)	129 (13.0%)	
	Total	578 (58.4%)	412 (41.6%)	990 (100%)	

news increased by 75.8% and their desire to use social media increased by 59.1%, and an intense flow of information from these channels was realized (7). Thus, the general of society has been informed about COVID-19. However, we think that as the education level increases, it is possible to access information about the disease from more reliable scientific sources. All the same, as the education level decreases, the source of information generally shifts to social networking sites and information pollution increases. We think that this difference between information sources may be the reason why the level of knowledge increases as the education level increases. Therefore, the information to be made should be planned to reach all segments of the society.

Previous studies strongly suggest that COVID-19 significantly influenced people's dental care-seeking behavior. In a study conducted at the beginning of the pandemic in China, it has been reported that the number of emergency dental visitors reduced, the proportion of dental and oral infection increased and those of dental trauma and non-urgency decreased (5). In our study, we determined that the patients mostly admitted to the dental hospital with complaints of tooth decay (990/397). The second reason for admission was toothache (990/352). These complaints, which make up approximately 75.6% of

all admissions, are among the most common reasons for admission to the dentist in normal times and can be accepted among the emergency operations, and partially among the urgent operations group, which are recommended to be treated by WHO in pandemics. In studies examining the reasons for admission during the lockdown period in different countries, it is stated that the most common reasons for admission are pain and then swelling (5,18). Kafle and Mishra conducted a study during the pandemic and they stated that 75% of patients consulted by dentists complained of dental pain, with swelling as the second most common complaint (18). In a study conducted in the United Kingdom during the lockdown period, an increase in the incidence of infections requiring incision and drainage was reported (19). However, in our study, the rate of people admitting with swelling complaints was lower compared to these studies. This situation also suggests that the difference of a few months between the periods when the studies were carried out created a change in the reasons for admission. It has been reported that patients requiring admission because of infection rose from 35 to 80% (20). As patients who admitted for abscess were mostly prescribed medication in the early stages of the pandemic in Turkey, it may have caused a temporary decrease in

Table 4. Examination of the knowledge level of patients who admitted to the dentistry faculty about COVID-19 according to their education level

Education level/Knowledge level	Primary School	High School	University	Master's degree	Total	P
8 true	41 (17.4%)	14 (3.9 %)	2 (%0.5)	0	57 (5.8%)	0.000
9 true	47 (19.9%)	48 (13.3%)	11 (3.1%)	0	106 (10.7%)	
10 true	80 (33.9%)	156 (43.3%)	149 (41.4%)	9 (26.5%)	394 (39.8%)	
11 true	54 (22.9%)	114 (31.7%)	122 (33.9%)	14 (41.2%)	304 (30.7%)	
12 true	14 (5.9%)	28 (7.8%)	76 (21.1%)	11 (32.3%)	129 (13.0%)	
Total	236 (23.8%)	360 (36.4%)	360 (36.4%)	34 (3.4%)	990 (100%)	

the swelling rate by suppressing the infection in the following recent period.

The high rates of tooth decay and pain complaints reveal the importance of the public's need to raise awareness about oral and dental health. Especially due to the pandemic, the necessity to allocate more time to procedures such as opening appointment intervals and ventilation of the environment may lead to a decrease in the number of patients cared for during the day and disruptions in accessing dental health services (21). For this reason, increasing the importance and awareness of oral and dental health is also extremely important in terms of preventing the negative consequences of the pandemic in oral health services in the long term.

In our study, in addition to that the most important reason for admission was determined as tooth decay and pain in all age groups, a significant relationship was determined between the reasons for admission and age. Prosthetic treatment was also an important reason for admission in advanced age groups. Only individuals in the 18-30 age group admitted to orthodontic treatment. Considering the whole study group, the need for orthodontic treatment, which constitutes only 3.5% of the reasons for admission, increased to 10.5% in the relevant age group. Despite the fear of COVID-19, it is reported that individuals under orthodontic treatment want to continue their treatment and are worried about the delay of their treatment. This concern may be due to the fact that orthodontic treatments often require a long process and missed appointments further extend the treatment period (22).

WHO recently (on 3 August 2020) recommended postponing non-essential oral health treatments, including routine dental checkups, dental cleaning, preventive treatments and aesthetic dental treatments, until there is a significant decrease in

COVID-19 levels (23). World Dental Federation (FDI) replied to this statement, by stating that oral healthcare is essential for the protection of general health and routine care is essential for the detection, protection and control of oral diseases (24).

In addition, a dental problem does not pose a serious problem at first, but non-urgent problems can turn into an urgent situation over time (18). It is known that there was uncertainty about the measures to be taken during dental treatments and the protocols to be followed at the beginning of the pandemic (25). However, protocols have been determined on this subject and people who participated in our study were treated under the application of measures taken in accordance with the resolutions of Turkey Ministry of Health on this subject.

CONCLUSION

During the normalization period of the COVID-19 pandemic, it was seen that the patients applied to the dental hospital mostly for dental caries, followed by toothache. In our study, although individuals have knowledge about COVID-19, the risk of transmission creates different levels of stress in individuals. We think that informing the public about the precautions taken during dental treatment and what to pay attention to when going to treatment will help to control dental anxiety levels due to COVID-19 and to understand the drawbacks of delaying dental treatment. Avoiding dental treatments causes more dental problems and a huge mess in treatment departments, and the dental health system can become clogged. In addition, it should always be kept in mind that the information obtained about the speed and course of the coronavirus and the pandemic may change, and necessary changes should be applied according to current information.

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