

# Dental anxiety in COVID-19 pandemic

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## Abstract

**Aim:** This study aims to evaluate the attitudes of patients towards periodontal treatments, their anxiety levels, and awareness during the coronavirus pandemic.

**Methodology:** Patients who applied to the periodontology department took the questionnaire. They were asked to answer questions online and anonymously, which includes questions about anxiety, willingness to participate in the treatment, and whether the coronavirus poses an increased risk with periodontal treatments. Descriptive statistics were made with percentages. The chi-square test was used for gender relations, age groups, anxiety levels, and willingness to participate in the treatment.

**Results:** 468 patients (179 males; 289 females) participated in the questionnaire. Of the individuals participating in the study, 38.5% considered themselves calm, 36.5% anxious, and 25% panic. Female anxiety levels were statistically higher than that of men ( $p < 0.05$ ). The study results show that the level of education also contributes to the level of anxiety and that the individuals participating in the study are unwilling to receive periodontal treatment, except for a dental emergency. During the pandemic, the findings show that age and education levels are important factors about the coronavirus transmission by periodontal treatment.

**Conclusion:** The study results show that coronavirus pandemic has an effect on the anxiety level of individuals. However, they also show that the level of anxiety has subsided compared to the previous studies as the patients have gained knowledge about how to live with the pandemic, health authorities have successfully controlled the pandemic and have kept the vaccination studies ongoing. However, it was reported that they were reluctant to receive periodontal treatment and want to delay the treatment. It was stated that it may be a result of the fact that periodontal diseases are relatively painless. In addition, young people use mass media more effectively, which is why they think that periodontal diseases increase the risk of coronavirus more than older individuals.

**Keywords:** COVID-19, dental anxiety, anxiety level, patient attitude

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## Introduction

First COVID-19 case emerged for the first time in humans in Wuhan, the capital of the Hubei province of China in December 2019 and caused a pandemic around the globe (1). No matter how many precautions were

taken by the Following the first case, despite the measures taken by the Chinese authorities, the epidemic got out of control and a pandemic affecting all continents except Antarctica (2). Because the virus was spreading rapidly and causing pneumonia in humans, it was declared a pandemic by the World Health Organization in March 2020 (3). Since the first

day of the epidemic, many infection control methods have been implemented by all health authorities around the world to prevent or reduce the spread of the virus (4). Most of these countries have made virus tests to slow down the spread of SARS-CoV-2 (5), have implemented many strategies such as excessive social isolation for individuals who are COVID-19 positive, local quarantine measures and isolating vulnerable individuals or the ones with health issues from the society (6). Despite all such precautions, according to the data announced by the World Health Organization as of October 16, 2020, the novel coronavirus, COVID-19, infected 39 023 292 people all over the world and caused the death of 1 099 586 people (7). In addition, this virus has tested the health systems of countries and caused economical, social, and educational crisis (8).

In addition to the consequences in relation to health and biology, the continuing spread of the virus in an uncontrolled manner, (9) lack of a drug or vaccine against the virus, and uncertainties about when the pandemic will end have caused the society to be affected in terms of mental health (10).

COVID-19 transmits mainly through respiratory droplets and contact (11). Besides, asymptomatic individuals, patients in the incubation period and coronavirus carriers have an important role in the spread of the virus (12). A recent study evaluating the spread of the coronavirus proved that it is possible to transmit the virus through aerosols (13), because the virus remains viable and contagious for hours in aerosols and days on surfaces (14). Also, droplets from the coronavirus-positive individuals pose the threat of inhalation, especially in closed areas with insufficient ventilation (15). This poses a risk for dentists and patients in confined spaces side-by-side, considering how the virus spreads (16). The asymptomatic and minimally symptomatic people do not receive treatment, which may pose a risk of transmission in dental clinics (17). Droplets and aerosols are produced based on the water used for cooling during dental procedures, which suggests the increased risk of transmission during periodontal procedures (18). The awareness campaigns conducted by the media and health authorities (19), raised awareness of the patients, which caused them to be willing to attend the appointment, depending on their anxiety levels (20). So, little is known about the concerns of patients with periodontal needs about dental appointments due to the pandemic and social isolation. It is clear that delayed appointments are associated with longer

treatment durations and inadequate treatment practices.

In this context, this study aims to evaluate the anxiety levels and concerns of patients with periodontal needs regarding the coronavirus pandemic, as well as the effect of quarantine on periodontal treatments.

## Materials and Methods

This study was approved by the Clinical Research Ethics Committee, the Faculty of Medicine, Kahramanmaraş Sütçü İmam University and made using a questionnaire-based measurement system. The patients included in the study are the individuals who applied to the periodontics clinic of Faculty of Dentistry, Kahramanmaraş Sütçü İmam University. A total of 468 individuals answered the questionnaire questions between September 2020 and October 2020. Inclusion criteria are as follows: being over 18 years old, needing periodontal treatment, and agreeing to participate in the study. The patients who met the inclusion criteria were given the Google Form Questionnaire shown in Table 1 via Whatsapp Messenger (WhatsApp Inc) and asked to answer the questions in the questionnaire.

The personal information of the patients was not identified. Patients were asked to answer questions about personal information (age, gender, city of residence), social isolation, and anxiety. The levels of anxiety and concern regarding the coronavirus pandemic and the possible effect of social isolation and quarantine on periodontal treatment were evaluated as calm, anxious, and panic.

## Statistical analysis

Jamovi (Version 1.0.4) (accessed by <https://www.jamovi.org>) program was used for statistical analysis. In the power analysis, the margin of error was calculated to be  $\alpha = 0.05$  and the reliability level to be 95%. Descriptive statistics were conducted for gender, age range, educational level, working, and anxiety status. Pearson's  $\chi^2$  test was conducted to determine the effects of demographic attributes and approaches of dental treatments on anxiety parameters. Significance was set at  $p \leq 0.05$ .

**Table 1.** Questionnaire applied to periodontology patients

- |                                   |
|-----------------------------------|
| Q1. How old are you?              |
| Q2. Gender: ( ) Male ( ) Female   |
| Q3. What is your education level? |
| ( ) Primary school                |
| ( ) High school                   |
| ( ) University                    |
| ( ) Doctorate                     |

**Q4. Do you work or study? If so, how is your activity?**

- Yes, I am leaving home for work/study
- Yes, but I am working/studying at home
- I do not work/study

**Q5. Considering the general anxiety level, how are you feeling about the quarantine and the coronavirus pandemic?**

- Calm
- Anxious
- Panic

**Q6. Do you go to the dentist for routine check-ups during the pandemic period, except for emergency?**

- Yes
- No

**Q7. What are you worried about while having dental treatment?**

- The risk of contaminating myself and my family
- I think dental clinics represent a high risk
- I don't need urgent dental treatment
- I am not worried

**Q8. Do you have any concerns about continuing dental treatments during the COVID-19 pandemic?**

- I'm worried I'm thinking of delaying treatment
- I'm afraid that my effort will be lost (money, time) or my oral health will deteriorate
- I'm not afraid

**Q9. What do you think dental clinics should be careful about during the COVID-19 pandemic?**

- Disposable lab coat
- Disposable surgical mask
- Disposable medical head cap
- Use of face shield in addition to the surgical mask
- Avoid crossing other patients at reception
- PPE for patients
- Alcohol gel at reception

**Q10. Do you think dental treatments increase the risk of coronavirus?**

- Yes, I think
- No, I don't think
- I don't know

## Results

For this study, 600 participants were given a questionnaire form, and 468 individuals answered the questionnaire with a 78% participation rate. Descriptive statistics are given in table 2. Of the 468 participants, 179 were men (38.2%), 289 (61.8%) were women (Q1). The participants were subdivided into 18-24, 24-32, 32-50, and 50-72 by age, and the distribution of the groups was calculated to be 92 (19.7%), 99 (21.2%), 230 (49.1%) and 47 (10%), respectively (Q2). The participants were evaluated in terms of education level, showing that 36 (7.7%) had primary education, 59 (12.6%) high school, 289 (61.8%) university, and 84 (17.9%) doctorate (Q3). 55.3% of the participants were active employees, 7.1% home-office employees and 37.6% unemployed individuals (Q4). 55.3% of the participants were active employees, 7.1% home-office employees and 37.6% unemployed individuals (Q4). Analysis of the anxiety

levels of the individuals participating in the study showed that 38.5% came out to be calm, 36.5% anxious, and 25% panic (Q5). Participants were examined in terms of anxiety status. It was observed that male patients were calmer, female patients were more doubtful and panicky, which was found to be statistically significant ( $p < 0.001$ ). Participants were asked "What are you worried about while having dental treatment?" 30% stated that they were worried about the risk of contaminating themselves and their families, 26% that it was high risk, 15% that they were not concerned, and 29% stated that they did not need urgent dental treatment (Figure 1). As for their concerns about continuing dental treatments during the COVID-19 pandemic, 22.65% of individuals stated that they fear the loss of their efforts (money and time) and deterioration of oral health, 43.80% stated that they worried and wanted to delaying the treatment, and 33% stated that they were not afraid. Besides, 16.20% stated that patients should wear disposable lab

coat during the COVID-19 pandemic, 16.15% that they should wear disposable surgical masks, 19.66% that they should avoid crossing other patients at reception, 16.82% stated that patients should use PPE, 15.64% that they should use alcohol gel disinfectants at reception, 15.53% that patients should wear a face shield in addition to the surgical mask.

When examined in terms of age groups (Table 3), there was no significant difference between anxiety levels (calm, anxious, and panic) and age ( $p>0.001$ ). However there was a significant difference between education level and anxiety levels ( $p<0.001$ ). Accordingly, it was observed that primary school

graduates were calm, and doctorate graduates were more anxious and panic. Besides, there was no correlation between the active work status of the individuals and anxiety levels ( $p>0.001$ ).

In Table 4, there was no difference between them in terms of the severity of the anxiety of the individuals during the pandemic period, except for emergency dental treatments, and routine dental check-ups ( $p>0.001$ ). In addition, it was observed that their anxiety levels were similarly independent of the fact that dental treatments increased the risk for getting COVID-19 ( $p>0.001$ ).

**Table 2.** Distribution of the participants (n = 468) by gender, age range, education level and current employment status

Demographic features	Factors	n	%
Gender	Male	179	38.2
	Female	289	61.8
Age	18-24	92	19.7
	24-32	99	21.2
	32-50	230	49.1
	50-72	47	10.0
Education level	Primary education	36	7.7
	High school	59	12.6
	University	289	61.8
	Doctorate	84	17.9
Employment status	Active employee	259	55.3
	Home-office employee	33	7.1
Anxiety level	Inoperative	176	37.6
	Calm	180	38.5
	Anxious	171	36.5
	Panic	117	25.0

**Table 3.** The relationship between the general anxiety states of the participants (n=468) and their gender, age range, education level and current employment status (Chi-square test)

Demographic features	Factors	Calm	Anxious	Panic	p-value
Gender	Male	98 (54.7 %)	60 (33.5 %)	21 (11.7 %)	< 0.001*
	Female	82 (28.4 %)	111 (38.4 %)	96 (33.2 %)	
Age	18-24	34 (37.0 %)	37 (40.2 %)	21 (22.8 %)	0.169
	24-32	30 (30.3 %)	43 (43.4 %)	26 (26.3 %)	
	32-50	91 (39.6 %)	77 (33.5 %)	62 (27.0 %)	
	50-72	25 (53.2 %)	14 (29.8 %)	8 (17.0 %)	

Education level	Primary education	22 (61.1%)	7 (19.4%)	7 (19.4%)	0.004*
	High school	21 (35.6%)	24 (40.7%)	14 (23.7%)	
	University	118 (40.8%)	104 (36.0%)	67 (23.2%)	
	Doctorate	19 (22.6%)	36 (42.9%)	29 (34.5%)	
Employment Status	Active employee	111 (42.9%)	86 (33.2%)	62 (23.9%)	0.075
	Home-office employee	7 (21.2%)	18 (54.5%)	8 (24.2%)	
	Inoperative	62 (35.2%)	67 (38.1%)	47 (26.7%)	

**Table 4.** The general demographic characteristics of the study participants and the relationship between their anxiety conditions and their approach to dental treatment (Chi-square test)

Factors	Do you go to the dentist for periodontal treatment during the pandemic period, except for emergency?		p-value	Do you think dental treatments increase the risk of coronavirus?			p-value	
	Yes	No		Yes	No	I don't know		
Gender	Male	40 (13.4%)	249 (86.6%)	0.895	64 (35.8%)	36 (20.1%)	79 (44.1%)	0.435
	Female	24 (13.8%)	155 (86.2%)		116 (40.1%)	46 (15.9%)	127 (43.9%)	
Age	18-24	11 (12.0%)	81 (88.0%)	0.594	46 (50.0%)	16 (17.4%)	30 (32.6%)	0.004*
	24-32	16 (16.2%)	83 (83.8%)		44 (44.4%)	15 (15.2%)	40 (40.4%)	
	32-50	33 (14.3%)	197 (85.7%)		82 (35.7%)	43 (18.7%)	105 (45.7%)	
	50-72	4 (8.5%)	43 (91.5%)		8 (17.0%)	8 (17.0%)	31 (66.0%)	
Education level	Primary education	5 (13.9%)	31 (86.1%)	0.237	5 (13.9%)	5 (13.9%)	26 (72.2%)	< .001*
	High school	4 (6.8%)	55 (93.2%)		9 (15.3%)	6 (10.2%)	44 (74.6%)	
	University	46 (15.9%)	243 (84.1%)		113 (39.1%)	59 (20.4%)	117 (40.5%)	
	Doctorate	9 (10.7%)	75 (89.3%)		53 (63.1%)	12 (14.3%)	19 (22.6%)	
Anxiety level	Calm	32 (50.0%)	148 (36.6%)	0.072	60 (33.3%)	38 (46.3%)	82 (39.8%)	0.274
	Anxious	16 (25.0%)	155 (38.4%)		70 (38.9%)	29 (35.4%)	72 (35.0%)	
	Panic	16 (25.0%)	101 (25.0%)		50 (27.8%)	15 (18.3%)	52 (25.2%)	

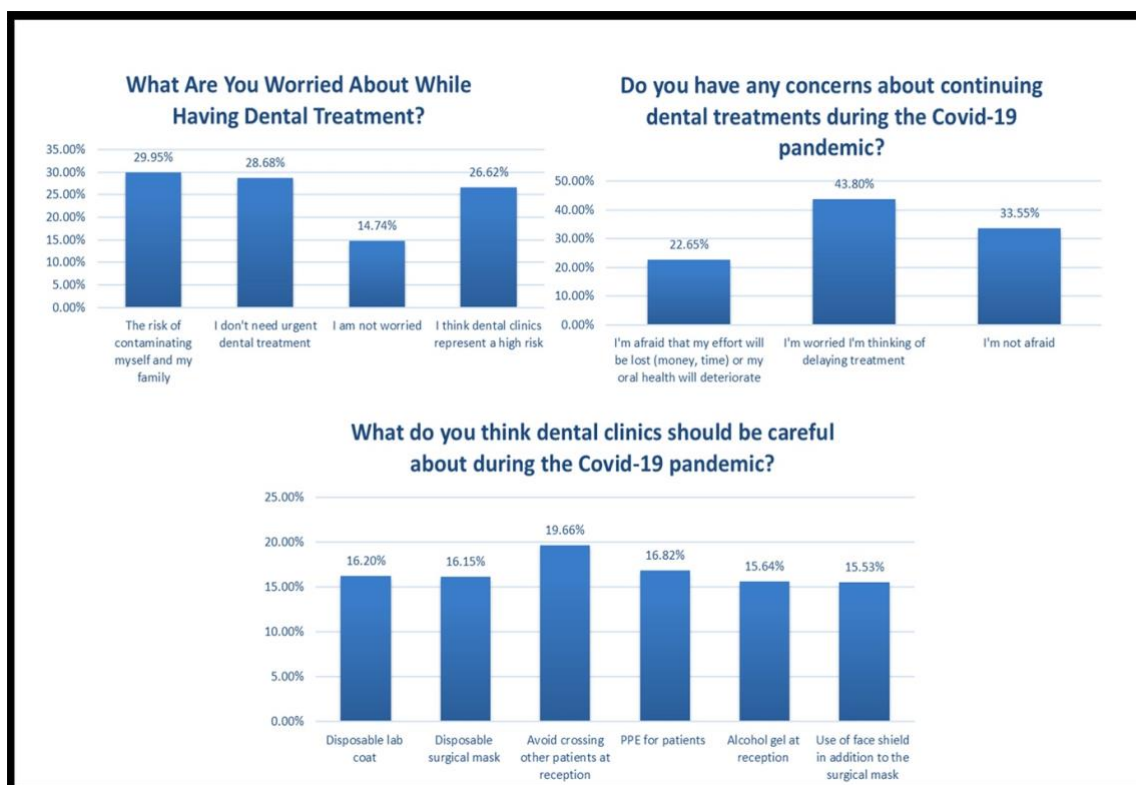


Figure 1. Questionnaire applied to periodontology patients

## Discussion

This questionnaire was first applied after 6 months when the first COVID-19 case was detected in Turkey. During this period, health authorities and the government took a series of measures such as social isolation, quarantine, the obligation to wear a mask outside the home, and an awareness campaign from TV and social media to prevent the spread of coronavirus. Despite all these measures, coronavirus continued to spread rapidly in the community and COVID-19 positive cases were over 400 thousand in the first week of November in Turkey and it caused more than ten thousand deaths. Having initially had a great impact particularly in Italy and Spain, the coronavirus pandemic had then affected the lives of many people in America, and the whole world, which received widespread electronic and digital media coverage. Besides, factors such as lack of knowledge about the virus, the spread rate, mortality rate, complications, and about which individuals are affected the most, caused fear and anxiety in the society against the unknown. To top it off, quarantine measures contributed to the depressive and psychological effects of this situation (20). Also, it is a well-known fact that media can raise anxiety levels (21). Therefore, the main aim of this study is to measure the anxiety levels of individuals with periodontal disease regarding the COVID-19 pandemic and to evaluate their concerns,

attitudes, and expectations regarding dental treatments during the pandemic period. The clinical importance of such studies is to understand the patient better during dental procedures, to provide a more efficient working environment while guiding treatments in communities whose lives are restricted by the pandemic, and to strengthen the trust and communication between the patient and the dentist by increasing the awareness of the dentist in such difficult conditions (22).

It was observed that female participants in the study were more panic than male participants. This is a significant difference, which is consistent with the results of studies conducted in Brazil and China (20,23). Besides, although male and female patients were reluctant to participate in the treatment, no significant difference was reported between them about the results of this study. The reluctance of the patients in the study to participate in periodontal treatment can be seen as a result of the activities conducted to raise awareness about the coronavirus pandemic (19). In addition, considering the mode of transmission of the coronavirus, it is obvious why patients want to delaying periodontal treatment, where ultrasonic devices are used, causing more aerosols production. Also, patients who already neglect periodontal treatment due to the slow progression of periodontal diseases usually causing little pain may very well insist on postponing the treatments in extraordinary situations such as pandemics (15). In addition, there was no difference

between men and women in terms of the concerns about the increased risk of coronavirus transmission by periodontal treatment.

There was no significant difference between the age groups and the anxiety levels of the individuals, which is consistent with the study results measuring the anxiety levels of orthodontic patients in Brazil (4). However, individuals above 32 years of age were calmer and individuals below 32 years of age were more anxious. This is probably because the young individuals are active users of mass media (16). This is supported by the fact that 53.2% of individuals above 50 years of age stated that they are calm. As for the participation in dental treatments other than periodontal treatment, it was reported that elderly groups were more reluctant than the other age groups, which is a significant difference. It is interesting why individuals above 50 years of age are reluctant to continue periodontal treatment despite their low anxiety levels. This is either because COVID-19 affects older people more or their vision of periodontal treatment is a factor. In this context, there is a significant difference by age groups in terms of how they see the fact that periodontal diseases increase the risk of coronavirus transmission. It is a striking fact that young individuals think that the risk of coronavirus transmission increases during periodontal treatments and older age groups are usually not aware of it. This information supports the idea that there is reluctance of individuals above 50 years of age to participate in treatment may be related to the awareness about periodontal treatment (24).

There was a significant difference between the education level and the anxiety level of the individual. It was found out that primary school graduates were calm, high school and university graduates were calm-anxious, and doctorate graduates tend to be doubtful. As the education levels increase, it is easier to access digital and electronic media. Consequently, the level of awareness increases, and eventually the anxiety levels are affected (10). The study results show that the education level does not affect the desire to participate in periodontal treatment other than emergency dental treatment. It is also obvious that the education level is an important factor in periodontal treatments' effect on the increased risk of coronavirus transmission, with a statistically significant difference. In other words, the study findings reveal that as the level of education increases, the level of awareness on this issue increases. The employment status of the individuals in the study did not affect the anxiety levels.

It was reported that there was no difference between the anxiety levels of the participants and their willingness to participate in periodontal treatment other than emergency treatment. In addition, it was observed that the increased risk of coronavirus transmission due to periodontal treatment had no effect on the anxiety levels of the individuals. However, it should be emphasized that this study was conducted 6 months after the first coronavirus cases in Turkey. Since then, health authorities and the government took the necessary measures the

government, vaccine studies have been put on the fast track, positive cases are curable, it was proven that people with chronic conditions and the elderly were more susceptible to the virus, and methods to cope with the pandemic were developed. These measures instilled confidence in societies, reduced anxiety levels, and even caused artificial relief. These factors may play a role in the low panic level of the patients in the study.

When the reasons why the patients included in the study were reluctant to participate in periodontal treatment were examined, 30% of the patients stated that they were worried about contaminating themselves and their families, and 26% stated that dental clinics were at high risk for COVID-19. Considering the mode of transmission of the coronavirus and the facts about dental practices, the findings seem reasonable and are consistent with the results of the previous study (25). In addition, 44% of patients stated that they were worried about treatments and wanted to delay treatment (Fig. 1). Apparently, although the patients included in the study are calm and go on with their lives, they are still wary of dental procedures. Considering the patients' expectation to prevent coronavirus transmission by dental treatment, it seems that almost every measure is equally important. It is more important for patients not to meet other patients in clinical settings.

Periodontologists and dental staff must be attentive to communicate effectively with patients, build mutual trust, and provide treatment remotely, when possible. In extraordinary situations where both the physician and the patient are at serious risks, such as a pandemic, the importance of teledentistry should be emphasized. In situations such as periodontal treatment where the patient's motivation and compliance play an important role, the teleperiodontics becomes even more important. Periodontists should feel free to integrate this argument into their treatment in the near future (26).

The limitation of this study is the fact that it is cross-sectional and makes use of self-reported questionnaires. However, as far as we know, findings of the individuals with periodontal disease have not yet been reported in the literature and are highly recommended due to the characteristics of the current situation.

## Conclusions

When the results of this study have been carefully examined, it was observed that the patients gained further knowledge over time, which had a positive effect on anxiety levels. When the results of this study have been carefully examined, it was observed that the patients gained further knowledge over time, which had a positive effect on anxiety levels. This study proved the effects of age and working status of an individual on anxiety levels. The vast majority of patients (approximately 86%) were reluctant to participate in periodontal treatment other than emergency dental treatment. However, it was not

associated with age, gender, education level, and anxiety level. It was observed that age and education levels caused a significant difference in their perception of the fact that periodontal treatment increases the risk of coronavirus transmission.

**Ethical Approval:** Ethics committee approval was received for this study from Kahramanmaraş Sütçü İmam University Ethics Committee in accordance with the World Medical Association Declaration of Helsinki, with the approval number: 2020/17.

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