

Evaluation of the dental anxiety levels of patients applying to the faculty of dentistry during the COVID-19 pandemic

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Abstract

Aim: The purpose of this study is to determine the levels of dental anxiety in patients who applied to the Necmettin Erbakan University Faculty of Dentistry during the COVID-19 outbreak and to evaluate the relationships of their anxiety levels to age, gender, education level, and the frequency of visits to dentists.

Methodology: There were 320 participants, including 163 females (50.9%) and 157 males (49.1%), aged from 18 to 65 years or older, who had applied to the Necmettin Erbakan University Faculty of Dentistry. The Corah Dental Anxiety Scale (CDAS) was used to determine the levels of dental anxiety (non-anxiety, little anxiety, anxiety, over anxiety, and excessive anxiety) and the anxiety groups (low or high). Descriptive statistics were presented in percentages. Data were analyzed using t-test and one-way ANOVA and chi-square tests, at a significance level of $p = 0.05$.

Results: Among the participants, 38.1% were at the non-anxiety level, 44.1% had very little anxiety, 10.9% had anxiety, 5% had over anxiety, and 1.9% had excessive anxiety. With regard to the anxiety groups, 82.5% were in the low anxiety group, and 17.5% were in the high anxiety group. Age, education level, and frequency of visiting the dentist were not found to have any effects on dental anxiety ($p > 0.05$). However, the effect of gender with regard to dental anxiety was significant ($p < 0.05$), as females had higher dental anxiety levels than males.

Conclusion: While the effect of gender was found to be important in terms of dental anxiety, age, educational status, and the frequency of visiting the dentist did not have significant effects on dental anxiety. Females had higher dental anxiety scores and levels than males.

Keywords: dental anxiety, COVID-19, age, gender, education, dental visit

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Introduction

The COVID-19 outbreak was first observed in Wuhan, China, and later became a major public health problem not only for China but also for other countries

around the world (1). The World Health Organization (WHO) declared COVID-19 a pandemic on March 11, 2020 (2). This highly contagious new virus, called severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), is usually asymptomatic, but it is a potentially lethal virus (3). Airborne particles and direct physical contact are the main routes of transmission of SARS-

CoV-2. Airborne contamination results from droplets released through exhalation, coughing, or sneezing (3). Infection through direct contact is caused by the contact of contaminated surfaces with the eyes, nose, or oral mucosa (4). SARS-CoV-2 has an incubation period of two weeks, and clinical signs of COVID-19 include mainly cough, fever, and shortness of breath (5). In Turkey, the first COVID-19 cases that were detected were officially identified on March 10, 2020. According to data from the WHO, after this date the number of cases increased daily (6).

Although the two terms, fear and anxiety, are sometimes used interchangeably in dentistry, they are two different phenomena. Fear is a subjective emotion, a reaction to a known threat, while anxiety is a more general form of fear that occurs in any situation where the integrity of the individual is threatened (7, 8). While the source of danger is directly present in fear, there is no such situation in anxiety (9). The responses of individuals to stresses associated with dental treatments may include physiological, behavioral, motor, or unknown changes. These responses lead individuals to oppose or avoid the situation that arises (10). Even with the current technological applications in dentistry, dental practices still cause patients to experience both fear and anxiety. Indeed, dental anxiety is ranked fourth among common fears and ninth among intense fears (11).

Dental anxiety is a state of intense anxiety that has not been fully explained and which develops as a result of fear and delusions regarding dental treatment (12). Previous dental experience is one of the most important factors affecting dental anxiety. Factors that cause such experiences include dental treatments being associated with perceptions of increased pain and negative situations (13). Specific procedures such as those involving aerator sounds, root canal treatments, tooth extractions, or injections can trigger fear or anxiety. The emergence of dental anxiety is also associated with age, gender, educational competence, and socio-economic status (14-17).

The purpose of this study is to determine the levels of dental anxiety in patients who applied to the Necmettin Erbakan University Faculty of Dentistry during the COVID-19 outbreak and to evaluate the relationship of anxiety levels to age, gender, education level, and the frequency of visits to the dentist. The null hypothesis of this study was that there would be no difference in the anxiety levels and groups regarding age, gender, education level, and the frequency of visiting the dentist.

Materials and Methods

A total of 320 individuals participated in this study, including 163 females (50.9%) and 157 males

(49.1%), aged from 18 to 65 years or older, who applied to the Necmettin Erbakan University Faculty of Dentistry. After being given a brief introduction to information about the purpose of the study, the individuals were asked to answer the questionnaire that had been prepared without any influence from others. The standard deviation was based on that obtained from a previous study (18) in which 255 participants were found to be appropriate subjects to conduct the study at power 0.90, confidence interval 0.95, and $p = 0.05$. For our study, the questionnaire was collected from 320 individuals this number was chosen because it was thought that there would be patients who did not fill the questionnaire out completely. However, the number of people who answered the questionnaire fully was 320, and the participation rate was calculated as 100%.

The study protocol was approved by the Ethics Committee of the Necmettin Erbakan University, Faculty of Dentistry (Protocol No: 2020/06). Informed consent was obtained from all patients after the purpose of the study had been explained to them.

The patients completed the Corah Dental Anxiety Scale (CDAS) questionnaire, which was created by Norman Corah and is a widely used and well-known assessment method in the literature because of its clarity, shortness, and accessibility. Information on age, gender, educational status, and the frequency of going to the dentist was added to the Turkish questionnaire form of the CDAS. The patients were grouped according to their ages as follows: "18 to 35 years old," "36 to 50 years old," and "51 years and over." There were also three groups according to their education levels: "primary education and less," "high school education," and "university education." Another three groups were based on the following responses regarding the frequency with which they visited the dentist: "I have never visited," "when I have complaints," and "regularly every six months." (19).

The scale that was used includes four questions, with five answer options for each question (Table 1). The anxiety level was calculated by giving 1, 2, 3, 4, and 5 points to the answer options a, b, c, d, and e, respectively. The scores obtained from this test vary between a minimum of 4 and a maximum of 20 points. The total dental anxiety score was obtained by adding the scores of the four questions and then dividing the individuals into two groups as low anxiety (4-11 points) and high anxiety (12-20 points). The low anxiety group included two subgroups (4-7 points: non anxiety and 8-11 points: very little anxiety), the high anxiety group had three subgroups (12-14 points: anxiety, 15-16 points: over anxiety, and 17 points: excessive anxiety). Other studies that have been conducted in Turkey using this scale were reported to be valid and reliable (20). The dental anxiety cut-off value for CDAS was accepted as 12, as is explained in the study conducted by Seydaoğlu et al. (20).

Table 1. Questionnaire form

Age	() 18-35 () 36-50 () 51 and higher
Gender	() Female () Male
Educational Status	() Primary school or less () High School () University
How often you do you go to the dentist?	() I have never been () When I have a complaint () Every 6 months regularly
How would you feel if you had to go to the dentist tomorrow?	(a) I look forward to going to the dentist tomorrow as a very enjoyable experience. (b) I don't care (c) I feel a little uneasy (d) I'm afraid that it will be painful and unpleasant (e) Everything the dentist will do scare me
How would you feel while waiting in the dentist's office?	(a) I feel comfortable (b) I feel a little uneasy (c) I feel quite nervous (d) I feel very anxious (e) I am so worried and I sweat excessively or feel bad as if I have a physical illness
You sit in the dentist's chair and the dentist will start working on your teeth with a high-speed rotary tool. How would you feel?	(a) I feel comfortable (b) I feel a little uneasy (c) I feel quite nervous (d) I feel very anxious (e) I am so worried and I sweat excessively or feel bad as if I have a physical illness
You sit on the chair to clean your teeth, while you wait, the dentist takes out the tool that scrapes the tartar. How would you feel?	(a) I feel comfortable (b) I feel a little uneasy (c) I feel quite nervous (d) I feel very anxious (e) I am so worried and I sweat excessively or feel bad as if I have a physical illness () I feel very anxious () I am so worried and I sweat excessively or feel bad as if I have a physical illness.

Statistical analysis

SPSS software version 22 (IBM SPSS Inc., Armonk, NY, USA) was used to evaluate the data that were obtained. Descriptive statistics of the data were made in percentages, and comparisons between the groups were evaluated by t-test and one-way ANOVA test. The chi-square test was used to analyze whether the

anxiety levels and groups were associated with age, gender, education level, and the frequency of going to the dentist ($\alpha = 0.05$).

Results

The basic demographic characteristics of the participants are shown in Table 2, and the basic

descriptive findings regarding anxiety levels and groups are shown in Table 3. The results indicate that 38.1% of the participants were at the level of non-anxiety, 44.1% had very little anxiety, 10.9% had anxiety, 5% had over

anxiety, and 1.9% had excessive anxiety. With regard to the anxiety groups, 82.5% of the participants were in the low anxiety group, and 17.5% were in the high anxiety group.

Table 2. Basic demographics

		n	%
Age range	18-35	102	31.9
	36-50	81	25.3
	51 and higher	137	42.8
Gender	Female	163	50.9
	Male	157	49.1
Education Status	Primary School or less	139	43.4
	High School	69	21.6
	University	112	35.0
Frequency of Visits to the Dentist	None	17	5.3
	When I Have a Complaint	269	84.1
	Every 6 months regularly	34	10.6

Table 3. Basic descriptive findings regarding anxiety levels and groups

		n	%
Anxiety Level	None	122	38.1
	Little anxiety	141	44.1
	Anxiety	35	10.9
	Over Anxiety	16	5.0
	Excessive Anxiety	6	1.9
	Total	320	100.0
Anxiety Group	Low	264	82.5
	High	56	17.5

The mean anxiety score of the participants was calculated to be 8.58 ± 3.31 . An independent sample t-test was used to compare the anxiety scores of the participants according to their genders. The anxiety scores of the females (9.43 ± 3.46) were higher than those of the males (7.70 ± 2.91), and the difference between them is significant ($p < 0.05$). The one-way ANOVA test was applied to compare the anxiety scores of the participants according to their age groups and education levels, and the frequencies of their visits to dentists. While there was no statistically significant difference in anxiety scores for the age groups ($p = 0.191$) and educational statuses ($p = 0.651$), the

difference in how frequently they went to the dentist was significant ($p < 0.05$). Also, although the lowest mean anxiety score belonged to the participants who went to dentists regularly every six months, the highest mean anxiety score belonged to those who visited dentists only when they had complaints.

The chi-square test was used to compare the participants' age groups, genders, and educational statuses, and the frequencies of their visits to dentists, according to their anxiety levels (non-anxiety, little anxiety, anxiety, over anxiety, and excessive anxiety) and groups (low and high). Based on the results obtained, there is no statistically significant difference

between the age groups in terms of the distributions of the anxiety levels and anxiety groups ($p > 0.05$). However, there is a statistically significant difference between the males and females in terms of the distributions of anxiety levels and anxiety groups ($p < 0.05$). The proportion of those who have non-anxiety is higher in males than in females, while the rates of having over anxiety and excessive anxiety are higher in females than in males. In addition, females were more likely to be in the high anxiety group than males.

There was no statistically significant difference between educational situations in terms of the distributions of anxiety levels and groups ($p > 0.05$). In addition, there was no statistically significant difference between the age groups in terms of the distributions of anxiety levels and groups ($p > 0.05$).

Discussion

Since the publication of the first impressions of epidemiological data on the COVID-19 outbreak (21, 22), it has been recommended to carry out studies on how this global event may affect mental health (23). The effect of age, gender, educational status, and the frequency of going to dentistry on dental anxiety of patients who applied to Necmettin Erbakan University, Faculty of Dentistry during the Covid-19 pandemic period were evaluated in this study. Significant differences were found for the gender. However, there was no difference for the age, education level, and the frequency of dental visits for the anxiety levels and groups. Therefore, the null hypothesis was partially rejected.

Since different measurement methods and different groups of individuals were used in studies conducted to determine the prevalence of dental fear and anxiety in societies, a precise prevalence could not be obtained. However, various studies have reported that it varies between 21.3% -23.5% in the Turkish population (24,25) and between 2.5% and 20% in other populations (26,27). The prevalence of dental anxiety was found to be 17.8% in this study, when the limit value total score was accepted as 12 and above for CDAS in determining the high level of dental anxiety. The result obtained is lower than the prevalence (24%) reported in the study of Magat (19). This may be due to differences in the number of participants and proportional differences in the age ranges.

While some studies reported a negative relationship between age and dental anxiety (14, 19), some studies reported a positive relationship (25, 28). However, Oktay et al. (29) and Doğaner et al. (30) did not find a statistically significant relationship between age groups and dental anxiety. Similarly, there is no significant relationship between three different age groups and dental anxiety in this study. The differences among the aforementioned studies may be due to variances in the number of participants and demographic differences.

Dental fear and anxiety are also associated with gender. It has been reported that women have more dental fear and anxiety than men (19, 31, 32). In

addition, it was determined that girls in adolescence term show more fear reactions than boys (33). Similarly, women had a higher rate of dental anxiety compared to men in this study. In a recent report that examined the dental anxiety levels during the Covid-19 pandemic period, it was reported that women avoided dental treatments more than men and had higher anxiety levels during the pandemic period (34). Another study found that different parts of the brain were effective in the responses of men and women with dental anxiety to provocative tests (35). Studies reported that the women have higher dental anxiety levels than men concluded that the obtained results can be occurred as a result of the women have a lower tolerance to pain stimuli compared to men. Another factor may also be that men avoid expressing their concerns (30).

In accordance with the previous studies (19, 36), the results obtained from this study showed that education levels had no effect on dental anxiety. On the contrary, Humphris et al. reported that individuals with higher education levels experience less anxiety during dental procedures (15). Socio-cultural and geographical differences in the studies may cause different results to be obtained.

Considering whether the frequency of going to the dentist makes a difference in the level of dental anxiety, there was no difference between the individuals who regularly went to the dentist and did not in this study. Similar results were also reported by Magat (19). However, considering the mean anxiety scores, the difference among the frequency of going to the dentist in participants was significant. The anxiety score was lower who went to the dentist regularly every six months than the participants who applied to the dentist when they had complaints. It can be concluded that the anxiety score had an impact on visiting the dentist.

In a study examining the effect of quarantine practices caused by COVID-19 on dental appointments and patient anxiety levels, it was reported that orthodontic patients who continue their current treatments are more willing to continue treatment during the pandemic. While 38.3% of the patients stated that they would go to their appointments during the pandemic period if an appointment was made, 44.2% of them stated that they would apply to the dentist only in case of an emergency (34).

The results obtained from this study are similar to the previous study (19) that measured the dental anxiety levels of patients who came to Necmettin Erbakan University Faculty of Dentistry before the Covid-19 pandemic. In a recent study by Olivieri et al. it was reported that dental anxiety and fear were at a similar level with the studies before the pandemic. During the pandemic period, the fact that patients who applied to the dentist for treatment already came with the expectation of treatment and put their current anxieties into the background may have ensured that their dental anxiety levels were in harmony with the pre-pandemic results (37).

Conclusions

Based on the results of this study, 61.9% of the participants showed some level of dental anxiety during the pandemic period. Age, education level, and frequency of going to the dentist were not found to have any effects on dental anxiety. However, gender does have an effect on dental anxiety, with the incidence of dental anxiety in females found to be higher than among males.

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