Original Article

Evaluation of the behavior and health anxiety levels the patients applying to the periodontology clinic during the COVID-19 pandemic

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Abstract

Background: The aim of this study was to examine the general behavioral status of individuals who applied to a periodontology clinic during the COVID-19 pandemic to evaluate their health anxiety levels and to compare their anxiety score averages in terms of various factors.

Methods: This study was carried out using the face-to-face survey method. Participants were asked to fill out a demographic data form, a survey form asking about pandemic-related behaviors, and the Short Health Anxiety Inventory (SHAI). The effects of factors such as age, gender, marital status, educational status, working in a health institution, and having had COVID-19 disease on health anxiety levels were investigated. The Kolmogorov-Smirnov test, Shapiro-Wilk test, independent samples t test, ANOVA, and Tukey's HSD test were used for statistical analysis ($P < 0.05$).

Results: A total of 400 volunteer participants were included (252 females and 148 males). Anxiety score averages showed a statistically significant difference in terms of gender and education ($P = 0.023$ and $P = 0.001$, respectively). Accordingly, the females' mean SHAI score (17.45 ± 7.053) was found to be higher than the males' (15.69 ± 8.161). The mean SHAI scores of primary school graduates (20.86 ± 6.105) were higher than those of high school (15.95 ± 8.197) and university graduates (16.11 ± 6.367). There was no significant difference in terms of marital status, working in a health institution, and being diagnosed with COVID-19. Also, 48.2% of the participants only used surgical masks.

Conclusion: Most participants declared that their confidence in healthcare workers increased during the epidemic. Females and individuals with low educational status had higher health anxiety in this study.

Keywords: Anxiety, COVID-19, Coronavirus, Pandemics

Introduction

The coronavirus disease 2019 (COVID-19) is caused by the acute respiratory syndrome coronavirus 2 (SARS-CoV-2).[1,2] Because it affects so many people, the World Health Organization (WHO) declared this condition a pandemic.[3] This highly contagious respiratory tract disease, which causes respiratory and physical dysfunction, such as fever, cough, and fatigue,[2] has had a psychologically negative impact on people as well.[4] In a review, the high mortality rate caused by the virus, lack of treatment, anxiety of contracting the virus, and concerns about when the pandemic would end were reported to be responsible for this distress and the resulting serious mental health problems.[5] These mental and psychological health problems include anxiety, stress, depression, anger, insomnia, denial, and horror.[6] However, the psychological impact of COVID-19 has been assessed

as moderate or severe,[4] and the general prevalence of anxiety in society was reported to be 33%.[7] In a review that included a total of 16 studies, it was reported that depression due to COVID-19 was 20% due to depression, 35% due to anxiety and 53% due to stress.[5]

Health anxiety is when an individual does not have a physical disorder, but interprets benign changes in their body as a sign of a serious illness and perceives themselves as seriously ill.[8] The COVID-19 affected the level of health anxiety and could cause psychological exhaustion.[9-11] It has been observed that the grade of health anxiety affects the individual's perceptions of control in the COVID-19 outbreak.[9] It has been reported that the increase in anxiety negatively affects the perception of control.[9]

The Short Health Anxiety Inventory (SHAI; 18 items) was improved by Salkovskis et al[12] as a short form of the Health Anxiety Inventory (HAI; 64 items). The Turkish

version has been confirmed by Aydemir et al.[13] SHAI is used to establish a measurement of health concern that can be used in the medical context. Compared to scales containing items related to the idea that the person is physically ill, this scale has become suitable for use in both healthy and physically sick people. This design reduces the problem of high scores in people who are sick or diagnosed with a serious disease.

The possibility of cross-infection in dental care has been identified as extremely high[14] because the aerosols released during dental treatments enhance the risk.[15] Due to the characteristics of the procedures in the dental practice and the dentist working in the proximity of patients, COVID-19 can easily spread from infected patients to the dental staff and to other patients in case adequate infection control measures are not taken.[16] Particulary in the COVID-19 pandemic, this risk may increase the existing anxiety in patients who go to hospitals or clinics for dental treatment.

Taking all of these aspects into consideration, the present study aimed to investigate the general behavioral status of the patients who applied to the periodontology clinic during the COVID-19 pandemic, and to assess their health anxiety levels and compare the anxiety score averages considering various factors. Unlike online survey studies, this study focused on measuring the SHAI of the participants through face-to-face survey during the ongoing COVID pandemic.

Methods

Study design and participants

The participants were informed of the study's purpose. Informed consent was obtained from the volunteer participants who agreed to participate in the research. The study's data were collected between November 2020 and February 2021.

In this study, we tried to rule out information bias, which had been reported as a limitation of the study in previous virtual survey methods, through face-to-face survey.[17] The survey questions were composed of three parts. Two sections were developed by the authors. The first section consisted of demographic data. Six questions were asked about gender, age, marital status, education level, employment status, and whether or not they were employed in a health institution. In the second section, 14 questions were asked about the method of protection used during the COVID-19 pandemic, takng supplements, psychological support, social isolation, individual score for anxiety, the preferred information channel about the pandemic, the preferred health institution for dental treatment, and exposure to the virus. The third section consisted of the SHAI.

Short Health Anxiety Inventory

The SHAI was developed by selecting 14 of the HAI items that had the highest item-total correlations among a group of hypochondriac patients.[12] The four-item subscale was established to assess the perceived negative results of getting sick. The four-item subscale was not created to measure health anxiety directly. However, it was summed with other items to achieve a total health anxiety score. Thus, a 14-item version of the SHAI (0–42 points) or an 18-item version (0–54 points) can be used to determine health anxiety. In the version consisting of 18 questions used in our study, there are four options for every question. The first 14 questions describe the mental states of individuals. The last 4 questions measure the mental state in case of serious illness. All questions are scored from 0–3, and higher scores indicate greater health concern. The total score of the form can range from 0 to 54. A participant with a score of 19 and higher is defined as highly anxious. The Turkish version of SHAI has been tested for reliability and validity.[13] It has been reported that it can be used in clinical practice and research settings.[13] It has been reported that there are two factors representing the dimensions of hypersensitivity to somatic signs and anxiety about somatic illness. These two factors have been reported to explain 54.5% of the variance in construct validity.[13] The health anxiety scores in our study were calculated considering the validity and reliability parameters mentioned above.

Statistical analysis

In this study, the compatibility of continuous variables with the normal distribution assumption was investigated using the Kolmogorov-Smirnov test, and homogeneity was investigated using the Shapiro-Wilk test. In the comparison of the differences between the means of independent groups, the independent samples t test and ANOVA, one of the parametric analysis tests, were used. Tukey's HSD tests, one of the multiple comparison tests, were used to determine which group caused the difference after ANOVA. A confidence interval of 95% was applied in statistical analysis tests; descriptive statistics and analyses were performed using R version 3.2.3 (2015-12-10, The R Foundation for Statistical Computing) free software computer package, and the results were considered statistically significant for $P < 0.05$.

Results

Four hundred participants, 252 females (63%) and 148 males (37%), were included in the this research. The demographic data are presented in Table 1. Participants in the study included 224 (56%) individuals between the ages of 18 and 29 and 176 (44%) individuals over the age of 30. Among the participants, 211 (52.8%) individuals reported their marital status as single and 189 (47.2%) individuals as married. In terms of educational status, 13 (3.2%) individuals were literate, 29 (7.2%) individuals were graduates of primary school, 36 (9%)

Table 1. Distribution of demographic data of participants

	n	%
Gender		
Female	252	63
Male	148	37
Total	400	100
Age		
18–29	224	56
≥30	176	44
Total	400	100
Marital status		
Single	211	52.8
Married	189	47.2
Total	400	100
Education level		
Literate	13	3.2
Primary school	29	7.2
Secondary school	36	9
High school	129	32.2
University	193	48.2
Total	400	100
Employment status		
Routine work	134	33.5
Worked based on flexible hours	30	7.5
Worked from home	70	17.5
Lost job due to the pandemic	19	4.8
Unemployed since before the pandemic	126	31.5
Decline to answer	21	5.2
Total	400	100
Working in a health institution		
Yes	59	14.8
No	341	85.2
Total	400	100

Table 2. Distribution of data on personal protective equipment used in the pandemic

Personal protective equipment	n	%
Surgical mask	193	48.2
Cloth mask	47	11.8
N95 mask	6	1.5
FFP3 mask	2	0.5
Face shield	0	0
Gloves	0	0
Surgical mask and gloves	72	18
Surgical mask, cloth mask and gloves	11	2.8
Surgical mask and cloth mask	16	4
Cloth mask and gloves	11	2.8
Surgical mask, face shield and gloves	9	2.2
Surgical mask and N95	8	2
Surgical mask, N95 and face shield	9	2.2
Surgical mask, N95 and gloves	1	0.2
Surgical mask and FFP3	3	0.8
Cloth mask and N95	2	0.5
Surgical mask, cloth mask and N95	1	0.2
Surgical mask, cloth mask, N95 and FFP3	1	0.2
Surgical mask, cloth mask, N95, FFP3 and gloves	1	0.2
Cloth mask and FFP3	1	0.2
Surgical mask, cloth mask, face shield and gloves	1	0.2
Surgical mask and face shield	1	0.2
Surgical mask, N95 and gloves	1	0.2
Cloth mask, N95 and FFP3	1	0.2
I do not use protective equipment	2	0.5
Total	400	100

FFP3, Filtering facepiece mask 3.

individuals were graduates of secondary school, 129 (32.2%) individuals were graduates of high school, and 193 (48.2%) individuals were university graduates. It was determined that during the pandemic, 134 (33.5%) individuals continued their routine work. Finally, 59 (14.8%) individuals who participated in the research stated that they were working in a health institution.

Considering protection during the pandemic, 193 (48.2%) individuals reported that they only used surgical masks as a protective method. Data on the protective equipment are given in Table 2.

The data on the answers given to the questions on general behaviors during the pandemic are given in Table 3. Eighty five individuals (21.2%) stated that they took supplements (such as vitamins) to strengthen their immune system during the pandemic. It was determined that the number of those who received psychological

support during the pandemic was 14 (3.5%). The number of those who answered yes to the question "Do you hesitate to come to the faculty of dentistry for treatment?" was 132 (33%), and the number of those who said no was 267 (66.8%). To describe the level of anxiety upon arriving in the dentistry faculty for treatment during the pandemic, 100 (25%) individuals were not worried, 159 (39.8%) individuals were slightly worried, 104 (26%) individuals were moderately worried, and 37 individuals (9.2%) chose 'I am seriously worried'. The number of people who postponed their dental treatments due to the pandemic was determined as 272 (68%). In response to the question 'Which do you believe is safer considering the COVID-19 measures taken for your dental treatment?', 92 individuals (23%) chose private clinics, 284 individuals (71%) chose university hospitals/faculty of dentistry, 23 individuals (5.8%) chose oral and dental health center, and one individual (0.2%) chose community health center. The number of people who declared that their confidence in healthcare professionals increased during the pandemic was 377 (94.2%), the number of people who stated that

Table 3. Evaluation of the behaviors of the participants during the pandemic

	n	%
1. Do you use supplements (such as vitamins) to strengthen their immune system during the pandemic?		
Yes	85	21.2
No	315	78.8
Total	400	100
2. Do you receive psychological support during the pandemic?		
Yes	14	3.5
No	386	96.5
Total	400	100
3. Do you avoid close contacts such as shaking hands or hugging during the pandemic?		
Yes	382	95.5
No	18	4.5
Total	400	100
4. Do you want to quarantined for 14 days upon returning from abroad?		
Yes	372	93
No	27	6.8
Total	399	99.8
Missing System	1	0.2
5. Do you take care to maintain social distance during the pandemic?		
Yes	395	98.8
No	5	1.2
Total	400	100
6. Do you hesitate to come to the faculty of dentistry for treatment?		
Yes	132	33
No	267	66.8
Total	399	99.8
Missing System	1	0.2
7. Describe the level of anxiety upon arriving in the dentistry faculty for treatment during the pandemic.		
Not worried	100	25
Slightly worried	159	39.8
Moderately worried	104	26
Seriously worried	37	9.2
Total	400	100
8. Did you postpone your dental treatments due to the pandemic?		
Yes	272	68
No	128	32
Total	400	100
9. Which do you believe is safer considering for the COVID-19 measures taken for your dental treatment?		
Private clinics	92	23
University hospitals / faculty of dentistry	284	71
Oral and dental health center	23	5.8
Community health center	1	0.2
Total	400	100

Table 3. Continued.

	n	%
10. Did your confidence in healthcare professionals increase during the pandemic?		
Yes	377	94.2
No	23	5.8
Total	400	100
11. Which channel do you use for obtaining information about the pandemic?		
Television	184	46
Radio	1	0.2
Official website of the Ministry of Health	123	30.8
Social media	92	23
Total	400	100
12. Have you been diagnosed with COVID-19?		
Yes	41	10.2
No	359	89.8
Total	400	100
13. Has anyone in your close circle been diagnosed with COVID-19?		
Yes	186	46.5
No	214	53.5
Total	400	100

their confidence did not increase was 23 (5.8%).

The results of the SHAI score averages are shown in Table 4. Accordingly, the mean anxiety scores in terms of gender showed a statistically significant difference ($P=0.023$). It was determined that female participants (17.45 ± 7.053) had higher anxiety than male participants (15.69 ± 8.161). In terms of age group, the mean scores of anxiety did not differ significantly ($P=0.991$). The difference in mean anxiety scores in terms of marital status was not significant ($P=0.111$). In our study, the mean scores of anxiety showed statistically significant difference in the education groups ($P=0.001$). It has been determined that primary school graduates have higher anxiety score averages than high school and university graduates. As a result, the mean scores of anxiety in terms of being a healthcare worker or not did not differ significantly ($P=0.581$). Finally, the anxiety score averages of those who were diagnosed with COVID-19 (15.98 ± 8.217) or those who were not (16.89 ± 7.443) were similar. However, the anxiety averages did not show a statistically significant difference ($P=0.459$).

Discussion

This research aimed to measure the behavioral and health anxiety related to COVID-19 in individuals who referred to the dentistry department for periodontal treatment, by means of a face-to-face questionnaire. The results of this study showed a significant difference in terms of gender and educational status in health anxiety in the COVID-19

Table 4. The results of the SHAI score averages

		n	SHAI score averages Mean ± SD	P
Gender	Female	252	17.45 ± 7.053	0.023*
	Male	148	15.69 ± 8.161	
Age	18–29	224	16.80 ± 7.885	0.991
	≥30	176	16.80 ± 7.051	
Marital status	Single	211	16.23 ± 7.484	0.111
	Married	189	17.43 ± 7.529	
Education level	Literate	13	21,77 ± 7.096	0.001*
	Primary school	29	20.86 ± 6.105 [a]	
	Secondary school	36	18.44 ± 9.932	
	High school	129	15.95 ± 8.197 [b]	
	University	193	16.11 ± 6.367 [b]	
Working in a health institution	Yes	59	17.20 ± 5.705	0.581
	No	341	16.73 ± 7.796	
Diagnosed with COVID-19	Yes	41	15.98 ± 8.217	0.459
	No	359	16.89 ± 7.443	

SHAI: Short Health Anxiety Inventory, SD: Standard deviation.
*P<0.05
[a, b] The difference between groups. There is no significant difference between the same letters.

pandemic.

Due to its highly contagiousness and high mortality rate, COVID-19 was able to cause anxiety, depression, or similar stress reactions in the community. The economic problems it created, the limitations in daily life and social activities, and the uncertainty of the duration of the pandemic could inevitably lead to stress and anxiety in the society and negatively affect mental health. During the COVID-19 pandemic, the risk of anxiety was three times higher in women than in men.[17] In a study conducted among healthcare professionals, a statistically significant difference was found between the anxiety and depression levels of females and males.[11] In this study, the mean anxiety scores in terms of gender showed significant difference (P=0.023). Therefore, the higher anxiety scores in females is consistent with previous studies.[4, 9-11,18] This situation confirms the meta-analysis stating that psychological burden in female individuals is among the common risk factors in the COVID-19 pandemic.[7]

In one study, adults over 40 years old had a 0.40 times higher risk of anxiety than people under 40 years old.[17] In our study, no significant difference was found in terms of total anxiety score between those in the 18–29-age range and individuals over 30 years. This situation may have alleviated the possible anxiety score difference in the ages due to the high incidence of COVID-19 infection at all ages and the high mortality rate.[5] In addition, our age limit of 30 was low and the difference may not have been significant because of this. Similarly, in a study in which 343 individuals participated, no significant difference was

found between age groups (18–49 and over 50 years old) in terms of anxiety.[10]

The level of anxiety of those who were literate was higher in our study. As it is known, individuals with higher education levels have a higher level of knowledge and better attitudes regarding COVID-19.[19] This may be reflected in the control of the person's anxiety level. In our study, it was observed that the mean scores of anxiety showed significant differences in the education groups. It has been determined that primary school graduates have higher anxiety score averages than high school and university graduates.

It has been described that health anxiety scores vary significantly according to marital status, and single participants have higher anxiety than married participants.[11,18] In our study, although the mean anxiety scores in terms of marital status did not differ statistically, it was observed that the SHAI total score was higher in married individuals. This may be related to the increased anxiety due to parenthood, in addition to the individual anxiety of married individuals and the anxiety of other family members about contracting COVID-19.

The prevalence of anxiety among professionals during COVID-19 was recently summarized in a review.[20] In a study evaluating general anxiety disorder, it was shown that 9% of dentists reported severe anxiety.[21] In a study in which 1685 healthcare professionals participated, 31% had mild anxiety and 33% had clinically significant anxiety.[22] In our study, mean scores of anxiety did not differ statistically in terms of being a healthcare worker or not. This study was conducted approximately 9 months after the first COVID-19 case in our country. Therefore, their concerns may have become similar to other individuals as healthcare professionals adapted to the pandemic. However, the SHAI total score of those who declared that they were working in a health institution was found to be higher. This finding indicates that, as documented in the literature, psychological therapies for high-risk populations with significant psychological distress are needed.[7]

The anxiety score average of those who answered yes and those who answered no to the question "Have you been diagnosed with COVID-19?" was similar. On the contrary, health workers who experienced a quarantined period, worked in epidemic departments, or had friends or family members infected with the epidemic experienced much more anxiety, post-traumatic stress, disappointment, fear, and depression than those who did not have such an experience.[23] Similarly, a systematic review evaluated the psychological effects of COVID-19 and reported high levels of distress.[7] In our study, the mean scores of those diagnosed with COVID-19 were found to be lower. This may be due to the initiation of vaccinations against the virus, the belief that those who had the disease would not catch the disease again or that

they would be able to pull through the illness more easily.

The basic principle in protection from the virus is the using personal protective equipment. COVID-19 can spread by both directly and through indirect contact.[24] Among the contributing factors of protection against COVID-19 is taking precautionary measures. Therefore, in our study, the participants were asked about the protective equipment they use in their social lives. The highest rate was the use of surgical mask only. Almost all of the participants declared that they used at least one personal protective equipment. Only 2 participants reported that they did not use any protective equipment. This may indicate that the necessary awareness of methods of protection has reached a desired level.

It has been reported that minimizing the spread of infection is possible with recommendations such as staying at home and keeping away from asymptomatic individuals or infected individuals, avoiding unnecessary travel, avoiding crowded places, and following social distancing guidelines.[24] For this reason, in our study, questions related to these are included. According to our results, the number of the participants who followed the protection guidelines is quite high and in line with the literature, which has reported that the measures against COVID-19 are well-known at the community level.[25]

Vitamin C, which helps reduce the symptoms of lower respiratory tract infections, may help to prevent COVID-19. Furthermore, a review revealed that vitamin D and vitamin E intake may improve resistance to COVID-19.[26] Therefore, vitamin supplements may be effective in combination with some other treatments in a patient diagnosed with COVID-19.[24] The rate of those who did not receive supportive treatment such as vitamins was 78.8% in present study. This high rate shows that the participants are unaware of the information presented in the literature on this topic.

Those working in dental health institutions are always at risk of transmitting this contagious infection, and oral healthcare services can be instrumental in the spread of the disease. A study suggests that patients visiting dental clinics for their dental treatment and dental staffs can be a source of microorganisms that cause infectious disorders.[14] However, those who declared that they did not hesitate to come to the dentistry faculty for treatment in this study account for more than half of the individuals. In addition, the rate of those who reported their anxiety level as 'slightly worried' because they came to dental treatment was 39.8%. This may be due to the fact that a high percentage of participants believe that university hospitals/dental faculties are safer with respect to the measures taken in terms of COVID-19 for dental treatment.

It has been stated that among the protective factors against COVID-19, having adequate medical resources, current and correct health information, and taking necessary precautions are necessary.[4] For this reason, the question of "Which information channel do you use most about the pandemic?" was included in this research. As a result, it was observed that the most followed information channel was television (news and discussion programs). However, in one study, it was determined that the most followed platform for coronavirus was social media, followed by television, friends/family, and printed media.[25] This situation suggests that it is important to learn the preferred channels in order to develop effective and successful awareness campaigns.

A particular benefit of our study is that it measured the effect of the COVID-19 pandemic on health anxiety in individual through face-to-face survey questions. Measuring a anxiety and depression levels with an online questionnaire may lead to bias in the answers.[10,17] In our study, we tried to minimise this.

Strengths and Limitations

This study has some limitations. The results reported here may be affected given the rapid changes in time and infection rates throughout this global crisis. The data presented in this study depend on the honesty and recall ability of the participants. Another limitation of our research is that it is not possible to draw any results about the long-term impact of COVID-19 due to the design of the study. The insufficient number of participants is another limitation. Despite the limitations, the findings reveal important information about the SHAI and perceptions of patients who applied to the periodontology clinic for treatment during the intense COVID-19 pandemic.

Conclusion

It was observed that females had higher anxiety and the effect of working in a health institution was not significant in terms of the average score in this study. In addition, it was observed that the highest SHAI score average among the education groups was in literate individuals. It was concluded that most of the participants used only surgical masks as protective equipment. However, it was observed by the participants that the general society tended to follow the guidelines. Furthermore, it can be emphasized that the pandemic greatly increased the confidence in healthcare professionals. Since the risk of cross infection in dentistry has been defined as quite high, further studies are needed to evaluate the anxiety caused by this risk. Thus, it is necessary to investigate the urgent needs for psychological intervention caused by COVID-19 in the community.

Authors' Contribution

Conceptualization: Dicle Altindal, Filiz Acun Kaya.

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