Original Article

Evaluation of the Effect of Dental Anxiety on the Quality of Life of the Patients

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Abstract

Background: Oral health-related quality of life is a concept that reveals how problems occurring in the social, physical, psychological, and orofacial areas affect the well-being of the person.

Objectives: In this study was aimed to determine the relationship between dental anxiety and oral health-related quality of life of patients.

Methods: In a descriptive study, a quantitative research approach was used. We reached 258 patients who came to the Endodontics and Prosthodontics clinic. Data were obtained by using the "dental anxiety (M-DAS) and quality of life (OHIP-14) scale together withthe demographic questionnaire.

Results: The mean score the patients got from M-DAS was 11.68 ± 4.41; the average score of OHIP-14 was determined as 16.72 ± 10.89. It was determined that there is a strong negative correlation between total M-DAS and total OHIP-14 scores. The patients stated that they most frequently experiencedproblems in terms of physiological limitation in OHIP-14 questions.

Conclusions: The quality of life associated with oral health decreases for individuals with high levels of dental anxiety. In order to increase the quality of life-related to oral health, it is necessary to reduce the level of anxiety about the teeth and improve oral health at regular dental visits

Keywords: Dental Anxiety, Endodontics and Prosthodontics, Oral health-related qualityof life, Oral health effect profile, OHIP-14, M-DAS

Introduction

Dental anxiety is a psychological and physiological variation of the non-pathological fear response to a dentist's appointment or treatment (Abdul et al.,2015). There are many factors contributing to the development of dental anxiety in a person. These factors include: Direct, Indirect, and Personallyrelated causes (Eli et al.,1997). Direct causes: Refer to anxiety stemming from a previous traumatic dental experience. It couldsevere pain in previous visits or untrusted behaviors from the dentist.Indirect causes: As the name may imply, stem from hearing about unpleasant dental experiences from individuals social circles like friends and family. Personality related causes: Triggered by the person's own psychological state. Or simply theability of a persons to handle and cope with their own stressors.

The concept of quality of life refers to a person's satisfaction with his/her own life. Overtime, this term started to be associated with people's health as well (Cummins,2005) and by the time the quality of life developed to include the oral health.Is a multidimensional construct that includes a subjective assessment of the individual's oral health, functional well-being, emotional well-being, expectations and satisfaction with care, andsense of self (Santos, et al.,2013). To put in simpler terms, it

refers to the effects of an individuals' oral health on his/her psychological state and social life.Dental anxiety is associated with what is known as the vicious cycles in which anxiety encourages people to avoid dental treatments leading to the deterioration of dental health which feeds into social embarrassment and leads to more and more anxiety reflecting on poorer qualityof life (Armfield,1995). So, regulating dental anxiety could be an effective way to regulate the quality of life onthe patients. If we could really understand why the patients are anxious and if we could communicate with them properly and focus on their social and emotional experience, we could have safer and moreeffective encounters.

This study stemmed from the idea of achieving patient beneficence during a dental visit by understanding and defining the causes and outcomes of dental anxiety on the quality of life of the patients. Hypothesizing that there is a significant correlation between the demographics of the patients, their dental anxiety, and their oral health related quality of life. Concluding a negative correlation between dental anxiety and oral health related quality of life, which signals worse quality of life associated with higher levels of anxiety. Knowing the prevalence of dental anxiety and its effects on the patients could inspire dentists to incorporate new techniques to control the patient's anxiety during the dental treatment in order to increase the overall beneficence and oral health related quality of life of the patients.

Methods

Design: This cross-sectional study were made between July and December 2019, Turkey's in the central Anatolian region.

Sampling and participants: The study include 258 participants who accepted to fill the survey at Oral, Dental and Jaw Health Education, Practice And Research Center In endodontics and prosthodontics clinics. The sample based on six factors: gender, age, educational status, marital status, reason of dentalvisit, frequency of dental visits. For the sake of the study we distributed two surveys: the M-DAS and the OHIP-14.

Data collection instruments: The M-DAS stands for Modified Dental Anxiety Scale, which specifically questions dental anxiety (Humphris et al.,1995). The scale consists of five questions with the first four questions evaluating general dental anxiety and the fifth asking specifically about anxiety of dental injections. Each one of the five questions has five answer choices ranging from 1 "I don't worry at all" to 5 "I am extremely worried." The total score ranges from 5-25, each number indicates a specific level of anxiety (Akarslan & Erten, 2009).

The second scale was Oral health impact profile-14 or OHIP-14. The scale assesses the impact oforal health on the quality of life. The number 14 represents the number of questions in this specific version of the survey, which was derived from the original 49 question OHIP (Slade,1997).

The scale is divided into 7 dimensions which are functional limitations, physical pain, mental distress, physical disability, social inadequacy, mental inadequacy and handicap. Each two questions cover a specific area. Each question has five answers, range from 0-4 with 0 representing never and 4 is always. The score could range between 0 and 56 with higher scoresrepresenting higher impact of the oral health on the quality of life (Başol et al.,2014; Mumcu et al.,2006).

Ethics: Ethics committee approval for the study was obtained from Non-Interventional Ethics Committee. (No: 25403353-050.99-E.15003 /2019-19 Date:04/02/2019)

Data collection: Prior to the data collection process, the nurses were informed on the aim of the study. Data collection tools were handed out to the nurses in the sample. The data was collected via the paper-and-pencil technique. Data collection was carried out within the working hours of the nurses (between 8 a.m. and 4 p.m.). It took about 15 minutes to complete all the data forms.

Data collection: Before the data collection process, the patients were informed about the purpose of the study. Data collection tools were distributed to the patients in the sample. The data were collected using the paper-pencil technique. Data collection was carried out during the hours when patients came for treatment (8:00-16:00). It took approximately 15 minutes to fill out all the data forms.

Data analysis: The data on this study based on the frequency distribution of the seven demographic factors (gender, age, educational status, marital status, reason of dental visit, frequency of dental visits, and the frequency of tooth brushing). The measurements of the M-DAS and OHIP-14 scales were evaluated through observing themean and the

standard deviation taking into consideration the demographic frequency. Each scale was evaluated individually at first and then the correlation between the two scales were evaluated. T-test, one-way ANOVA, chronbach alpha, Kolmogorov–Smirnov and Shapiro–Wilk, LSD multiple comparison tests, and Pearson's Correlation Analysis were used to evaluate the statistical significance of the collected data. All data was analyzed using the SPSS 22.0 statisticsprogram.

Results

The social demographic characteristics of 256 participants in the study are evaluated at first, in order to find the relationship between the dental anxiety and oral health related quality of life. The most represented age group was 28-37 followed by a close presence of 18-27 and 38-47 groups with the majority of 134 (52%) were male and 124 (48%) were female. In terms of marital status, married participants' overrepresented singles in this surveys by 64% to 35% respectively. The results showed that 55% of the participants have a college degree and around 30% are high school graduates.As can be seen in table 4.5 the reason for the dental visit showedthat 76% of the patients came to the clinic due to various types of oral health related issues while only 22% came in for a regular checkup. Also, the frequency of dental visits showed that about 33% of patients visited their doctor within six months, while 26% for one year and 23% for two years ago. Last but not least, there reliability of both scales where calculated in this study, the numbers of Cronbach Alpha values for each scales in the ranking were M-DAS= 0.83 and OHİP-14= 0.91 which is considered the threshold of high reliability. (Table 1). The average of M-DAS score was 11.67 representing a moderate dental anxiety in the study sample. The numbers in table 4.8 represent the average answer for all participants and the standard deviation. the highest dental anxiety recorded was for question 5 "How would you feel if you were going to have a local anesthetic injection in your gums on the upper back tooth?" And the least on the scale was the first question "How would you feel if you were sitting in the waiting room (waiting for treatment)?" This answer trends indicate that people get most anxiouswhen they encounter needles or complicated treatments why simple encounters don't represent a threat for most people. (Table 2)

Table 1 Frequency and percentage of the demographic variables

Demographic Variables		
Age	**(N)**	**(%)**
18-27	53	20.5
28-37	104	40.3
38-47	47	18.2
48-57	34	13.2
58 and above	20	7.8
Gender		
Female	124	48.1
Male	134	51.9
Marital Status		
Single	91	35.3
Married	167	64.7
Educational status		
Primary school	18	7.0
High school	76	29.5
University	142	55.0
Master degree	22	8.5
Reason of dental visit		
Gingival problem	24	9.3
Dental problem	142	55.0

Prosthodontic problem	32	12.4
Control	58	22.5
Frequency of dental visit		
6 months ago	86	33.3
A year ago	69	26.7
2 years ago	60	23.3
5 years ago	38	14.7
Never	4	1,6

Table 2 Arithmetic Average (x) and Standard Deviation (DF) Values of the M-DAS.

	M-DAS	(x)	(SD)
1	How would you feel if you went to your dentist fortreatment tomorrow?	2.12	1.05
2	How would you feel if you were sitting in the waitingroom (waiting for treatment)?	2.17	1.11
3	How would you feel if you were going to have teeth?	2.43	1.15
4	How would you feel if you were to scale and polishyour teeth?	2.16	1.08
5	How would you feel if you were going to have a localanesthetic injection in your gums on the upper back tooth?	2.79	1.27

The other scale used in study sample was OHIP-14 with average of 16.72. As can be seen in table 3 the highest on the scale is 1.17 for the third question “Have you had painful aching inyour mouth?” and the questions 10 and 14 about embarrassment of teeth and handicap due tooral health issues tied as the lowest score. These numbers point that the participants suffered most of physical pain while the domains of handicap and psychological limitations where theleast affected by poor oral health. (Table 3) The gender-related breakdown of the OHIP-14 and M-DAS scores. Sex differences did not prove to have a significant effect on the different dimension of OHIP-14 scale. The gender did not correlate with better or worse oral health related quality of life. While for dental anxiety, females scored higher levels of anxiety on the M-DAS in comparison to males. (t=4.25 df=256 p=0.00). No statistically significant change was observed on this course of either scales for different agegroups. Educational status on the other hand showed some effect on four of the seven OHIP-14 dimensions which are (functional limitation, physical pain, psychological disability and limitation) higher score were associated with people with master degrees. Reflecting more effectof the oral health on the quality of life in these dimensions in people with higher education. However, physical limitation, social limitation, handicap, and M-DAS didn't show any statistically significant difference in this scores based on the education status of the individuals. (Table 4). The study also showed that people who came for a dental visit for control scored, on average, thehighest on all OHIP-14 dimensions. While no significant difference was observed on the M-DASscale. (Table 5). Our research shows the correlation of personal oral hygiene and dental care on the dental anxiety and oral health related quality of life. It turned out that statistically significant effect for tooth brushing reflected on OHIP-14 and M-DAS scales. The participants who brushed their teeth once a day scored highest on OHIP-14 while those who brush twice daily scored the highest on M-DAS. ($p \leq 0.00$). We also evaluated the correlation of the frequency of dental visits on dental anxiety andoral health related quality of life. The results showed that patients who have not visit the dentistin the past five years scored the highest average score in functional limitation while for the rest of the dimensions people who never visited a dentist took the lead. No statistically significant difference for the M-DAS scale but a higher trend of anxiety was noticed in people who never visited the dentist. ($p \leq 0.00$) Lastly, we performed a Pearson correlation test on both scales and found a negative correlation, reflecting lower oral health related quality of life associated with higher levels ofdental anxiety. (Table 6).

Table 3 Arithmetic Average (x) and Standard Deviation (DF) Values of the of the OHİP-14

	OHIP-14	(x)	(SD)
1	Have you had trouble pronouncing any words because of problems with your teeth or mouth?	1.20	1.20
2	Have you felt that your sense of taste has worsened because of problems with your teeth or mouth?	1.30	1.15
3	Have you had painful aching in your mouth?	1.71	1.17
4	Have you found it uncomfortable to eat any foods because of problems with your teeth or mouth?	1.46	1.08
5	Have you been self-conscious because of your teeth or mouth?	1.03	1.07
6	Have you felt tense because of problems with your teeth or mouth?	1.31	1.19
7	Has been your diet been unsatisfactory because of problems with your teeth of mouth?	1.05	1.03
8	Have you had to interrupt meals because of problems with your teeth or mouth?	1.25	1.09
9	Have you found it difficult to relax because of problems with your teeth or mouth?	1.28	1.12
10	Have you been a bit embarrassed because of problems with your teeth or mouth?	0.94	1.05
11	Have you been a bit irritable with other people because of problems with your teeth or mouth?	1.05	1.13
12	Have you had difficulty doing your usual jobs because of problems with your teeth or mouth?	1.06	1.11
13	Have you felt that life in general was less satisfying because of problems with your teeth or mouth?	1.08	1.10
14	Have you been totally unable to function because of problems with your teeth or mouth?	0.94	1.16

Table 4 The Difference Between educational status Variable in both M-DAS and OHIP-14 scales.

Dimensions	Educational status	(N)	(x±SD)	F	P	Difference
Functional limit	**1**-Primary school	18	1.50±0.97	3.00	**0.03***	**4>1 4>2 4>3**
	2-High school	76	1.38±1.06			
	3-University	142	1.24±1.06			
	4-Master degree	22	0.68±0.69			
Physical pain	**1**-Primary school	18	1.77±0.64	3.92	**0.00***	**4>1 4>2 4>3**
	2-High school	76	1.74±1.05			
	3-University	142	1.57±0.93			
	4-Master degree	22	0.97±0.90			
Psychological Discomfort	**1**-Primary school	18	1.47±1.15	3.03	**0.03***	**4>1 4>2 4<3**
	2-High school	76	1.30±0.96			
	3-University	142	1.13±0.85			
	4-Master degree	22	0.72±0.71			
Physical Disability	**1**-Primary school	18	1.38±0.79	1.99	0.11	
	2-High school	76	1.32±1.01			
	3-University	142	1.07±0.88			
	4-Master degree	22	0.93±0.95			
Psychological Disability	**1**-Primary school	18	1.33±0.82	4.27	**0.00***	**4>1 4>2 4>3**
	2-High school	76	1.38±1.02			
	3-University	142	0.99±0.90			
	4-Master degree	22	0.77±0.64			
Social Handicap	**1**-Primary school	18	1.41±0.91	1.73	0.16	
	2-High school	76	1.14±1.02			
	3-University	142	1.01±1.02			
	4-Master degree	22	0.75±0.85			
Handicap	**1**-Primary school	18	1.11±1.03	1.73	0.16	
	2-High school	76	1.21±1.11			
	3-University	142	0.93±0.93			
	4-Master degree	22	0.79±1.03			
Total avarage of M-DAS	**1**-Primary school	18	2.23±0.98	0.83	0.47	
	2-High school	76	2.28±0.77			
	3-University	142	2.40±0.91			
	4-Master degree	22	2.13±0.97			

Table 5 Evaluation of the Difference Between the reason of dental visit variable, M-DAS and OHIP-14

Dimensions	Reason of dental visit	(N)	(x±SD)	(F)	(p)	Difference
Fonksiyonel Limit	**1**-Gingival problem	24	1.35±1.09	4.06	**0.00**	**4>1**
	2-Dental problem	142	1.26±1.07			**4>2**
	3-Prosthodontic problem	32	1.78±0.92			**4>3**
	4-Control	58	0.88±0.91			**2>1**
						2>3
Fiziksel Ağrı	**1**-Gingival problem	24	1.81±1.04	5.82	**0.00**	**4>1**
	2-Dental problem	142	1.58±0.93			**4>2**
	3-Prosthodontic problem	32	2.10±0.81			**4>3**
	4-Control	58	2.10±0.93			**2>1**
						2<3
Psikolojik Rahatsızlık	**1**-Gingival problem	24	1.70±0.87	5.68	**0.00**	**4>1**
	2-Dental problem	142	1.10±0.92			**4>2**
	3-Prosthodonticproblem	32	1.56±0.73			**4>3**
	4-Control	58	0.88±0.85			**2>1**
						2>3
Fiziksel Yetersizlik	**1**-Gingival problem	24	1.45±1.03	5.95	**0.00**	**4>1**
	2-Dental problem	142	1.14±0.95			**4>2**
	3-Prosthodontic problem	32	1.68±0.70			**4>3**
	4-Control	58	0.79±0.77			**1>2**
						3>2
Psikolojik Yetersizlik	**1**-Gingival problem	24	1.39±0.94	5.99	**0.00**	**4>1**
	2-Dental problem	142	1.07±0.91			**4>2**
	3-Prosthodonticproblem	32	1.70±1.02			**4>3**
	4-Control	58	0.79±0.76			**2>1**
						2>3
Sosyal Yetersizlik	**1**-Gingival problem	24	1.41±1.08	2.58	**0.03**	**4>1**
	2-Dental problem	142	1.06±1.04			**4>2**
	3-Prosthodonticproblem	32	1.31±0.95			**4>3**
	4-Control	58	0.76±0.85			**1>3**
						3>2
Handikap	**1**-Gingival problem	24	1.43±0.97	2.63	**0.03**	**4>1**
	2-Dental problem	142	1.02±1.05			**4>2**
	3-Prosthodontic problem	32	1.21±1.05			**4>3**
	4-Control	58	0.72±0.81			**2>1**
						3>2
M-DAS Toplam Ortalama	**1**-Gingival problem	24	2.40±0.95	1.40	0.23	
	2-Dental problem	142	2.25±0.84			
	3-Prosthodontic problem	32	2.46±0.78			
	4-Control	58	2.38±0.99			

Table 6 Pearson Correlation Analysis Results to Determine the Relationship Between M-DAS Scale Scores and OHIP-14 Scale Scores

Variable	*N*	*r*	*p*
M-DAS Scale	258	-.228**	0.000
OHIP-14 Scale			

Discussion

With the great technical enlargement in the field of modern dental science, so far, the problem ofanxiety over visiting the dentist and performing dental treatments is still widespread until today (Freeman, 1999). Dental anxiety is one of the most concerning problems. It impacts a large number of individuals from different social groups of all ages. Dental anxiety negatively affects the oral health of many people since it prevents many of them from visiting their dentists. Also, the prolongation of skipping the dentists' visits, leads to poor communication and cooperation between both doctors and patients (Kamel,2019). Therefore, in order to increase oral health care, dentists must evaluate their patients' anxiety before doing any dental treatments by using appropriate and helpful technical methods to reduce dental anxiety and relieve pain during the treatment. In addition, doctors must keep monitoring the patient's physical signs and facial expressions during dental treatment and after performing dental anesthesia (Freeman, 1999).[11] These measures followed by dentists to help anxious dental patients reduce their anxiety under two important ethical obligations: promoting beneficence which is defined as duty to promote the patient's welfare and supporting apatient's autonomy. The ADA Principles of Ethics and Code of Professional Conduct (American Dental Association, 2005).[13] There are several measures used to assess the level of dental fear and anxiety such as CDAS, MDAS, Weiner's Fear Questionnaire, and short Dental Anxiety Index DAI, DFS, State-Trait Anxiety Inventory (Freeman, 1999).[11] Although multiple scales are developed and being used, none of them can serve as a gold standard since each has its own limitations. Nevertheless, there are two types of measures that are frequently used in most research studies by dentists are the MDAS and the CDAS (Freeman, 1999; Kamel, 2019). These measures are simple and easy to use to assess the level of dental anxiety in patients. Although both scales are very similar, the former has an additional question from the latter. Thatthe MDAS puts into consideration the effects of dental injections on the level of anxiety. In this study, we used the MDAS scale as a relatively high credibility scale in many of the previous studies in Turkey, England, Saudi Arabia, and Ireland. By studying 258 questionnaires that patients participated in the dental clinic's Department of Fixed Prosthodontics and Endodontic. The results have shown that MDAS has a high-reliability rate. Accordingto the Cronbach Alpha Analysis, the scores of this test were 0,83 which implies high reliability. From analyzing the results of the arithmetic mean in the MDAS questionnaire, we find that the highest percentage of dental anxiety was in the fifth question "If you were to have a local anesthetic injection in your mouth, how would you feel?". Indicating that dental anesthesia is oneof the most common causes of anxiety among many dental patients. Another study was done in Istanbul university by Dulgar et al. to evaluate patients' anxiety and pain experience to dental injection found that even when changing the injection technique the level of anxiety in dental patients does not change significantly (Dulger et al., 2007). *Further s*uggesting that mouth injections are one main source of dental anxiety (Donate-Bartfield et al., 2010). Fear of anesthesia is a major obstacle between dental patients and their oral well-being. It can trigger individuals to delay their visit to the dentist until their oral hygiene deteriorates significantly. Anesthetic needles and drills were the main fear stimulus among adults of Saudian population (Dulger et al.,2007). The pain felt by patients during anesthesia is due to the needle insertion and the infiltration of anesthetic substances from the needle to the tissue, which discomforts many patients and triggers anxiety. To minimize this pain, doctors can use topical anesthetic agents before dental-injection because numbing caused by this a nesthetic reduces the pain of the needle insertion into the soft tissue and thus can lessen the degree of anxiety. Anothersolution recommended by Lipp et el. to minimize this anxiety and pain in the dental clinic by explaining enough information about dental injection to the patients (Lipp et al., 1991). In the latter method, the dentist relies on building a good relationship and good communication with his/her patient instead of using pharmacological methods such as sedation and general anesthesia. Trust between dentists and their patients enhances the patients' confidence during the treatment, which reflects on the overall treatment experience. According to the ADA code of ethics, the dentist's duty is to promote the well-being of the patient (ADA, 2018).[17] This requires the dentiststo manage their patients' anxiety since the results will probably have a positive effect on the patient's long term overall health and provide the most possible beneficence (ADA, 2018; Taani,2011). Among the 258 participants, 51.9% were males and 48.1% were females with the majorityof the respondents of 27 to 38 age group. The total arithmetic mean for the MDAS was 11.68 with an SD=4.41, which indicates that most of the participants have moderate dental anxiety. A similar observation was also stated in a

previous study in Turkey published in 2014 at the University of Baskent, where the total MDAS was (Freeman, 1999; Lipp et al.,1991). Another study about dental anxiety among ethnic Tamilian adults in South India found that between 1.148 participants the total mean of MDAS were 10.4 (Appukuttan et al.,2015). It was observed that the total mean in this study was fewer than the score of Dou et el. research total MDAS 14.17 (Dou et al.,2018). This variation between scores can be due to a few reasons including poor oral hygiene, cultural difference, ignorance of regular dentist visit, and the effects of painful past experience at a dentist's. Those people could negatively affect other people's opinions about a dentist's visit.We also assessed the incidence of dental anxiety between genders; the analysis of results showed that female participants were generally more anxious than males. Ozlek et al. studies' associated the higher anxiety levels in females to the fact that females, in general, are more susceptible to stress and social phobia in comparison to males (Ozlek et al.,2019). Other studies have shown that women are twice more likely to have an anxiety disorder compared to men (Altemus et al.,2014; Jalnapurkar et al.,2018). This can be due to hormonal differences between females and males, which make women more susceptible to higher levels of stress and anxiety. Meaning that the reproductive hormones in females, mainly estrogen and progesterone, play an important role in predisposition to anxiety (Jalnapurkar et al.,2018). Another theory suggests that women tend to confess or discuss their fears and pain more readily and openly. In contrast, men prefer to not share their stress with others and thus they have a higher threshold tolerance for pain (Appukuttan et al.,2015; Nair et al.,2009). No significant statistical difference in anxiety levels in different age groups was observed. But, by looking at each score of MDAS individually, we can find a pattern that suggests higher dental anxiety levels in younger participants (18-27= 2.61, 28-37=2.34). With increasing age, the level of anxiety decreases (38-47=2.20, 58 and up = 2.12). The statistical dimension of the study could be affected by the unequal samples of different age groups i.e the most frequent age group was 28-37 (104) compared to (53 participants) 18-27. Many studies in Turkey and outside showed that dental anxiety and age factor are related to each other (Saatchi et al.,2015; Do Nascimento et al.,2011). Numerous studies have presented that the reasons for decreasing anxiety and fear with increasingage are due to many factors like cerebral deterioration, extinction or habituation, and adaptive resignation toward the inevitable elder individuals exposure to disease and treatment are much more than younger (Saatchi et al.,2015). In previous reports which are compatible with our results, some researchers reported that age was strongly associated with dental anxiety and younger subjects were more anxious than older ones (Humphris et al.,1995; Do Nascimento et al.,2011; Stabholz & Peretz, 1999). However, other studies have observed similar results to our study (Kanegane et al.,2009; Erten et al.,2006). In their report, Kanegane et al. explained their finding with the small number of patients over 50 years of age (Slade,1997). Furthermore, the majority of subjects in the studies conducted by Arslan et al. and Erten et al. were young (Erten et al.,2006). For the present survey, the youngest age of patients was 18 with the average age being 32.5 ± 11. This, therefore, may be a reasonable explanation why anxiety levels for the age groups showed no difference.

We also assessed the role of relationships in dental anxiety. Our findings showed no significant difference in the levels of anxiety between single and married participants (p=0.26). Other studies that assessed the role of marital status reported various results. A study by Egbor etal. in 2014 showed that single participants had higher M-DAS mean than married participants. Egbor et al. explained that family/ partner has a major impact in supporting patients and making them adapt to their health conditions (Egbor & Akpata, 2014). On the other hand, one study's analysis observed totallydifferent results, the anxiety rate among married/in a relationship participants was higher than single individuals. This is because espoused people have more responsibilities so the stress level becomes much more than singles (Yüzügüllü et al.,2014). The observed variation in the level of dental anxiety between married and single couples suggest that other factors could affect the dental anxiety in patients such as the lifestyle, responsibilities, and the environment they belong to.

Educational level was also thought to affect dental anxiety (Saatchi et al.,2015). Many studies observed that the majority of patients who had secondary and post-secondary education scored extremely low at the anxiety scale (DAS<9). They suggest that people with higher education tend to regularly visittheir dentists, which could be the major player in reduced anxiety (Saatchi et al., 2015; Lawrence et al., 2008). Additionally, people with higher education can gather information about the issues and processes of dental treatment which makes them more aware about the

procedures and more trusting towards their dentists. However, our study has demonstrated that patients with their different educational backgroundsdid not report any significant difference in anxiety levels. Our sample was majorly composed of people with secondary or post-secondary education and fewer people from uneducated backgrounds.

Additionally, our study assessed the association between dental anxiety and oral hygiene habits by using tooth brushing as an indicator. We found that dentally anxious patients tend to brush their teeth twice a day. Therefore, there is a link between dental anxiety and brushing habits (p=0.01). We suggest that correlation between better dental care and dental anxiety couldexist because dentally anxious people try to avoid visiting their dentists. Thus, they try to take care of their oral hygiene to prevent issues that would force them to visit a dentist. One outcome of dental anxiety is avoiding dental treatment in an attempt to avoid the extreme anxiety and fear associated with it. Ofter, dentally anxious patients tend to not seek treatment unless in cases of emergency (i.e when they experience severe pain or dental abscess) (Armfield, 2010). Thus, it is quite common that patients lose teeth that could be otherwise saved in routine dental check up and treatment. But because of delayed checks, they can no longer be restored. Many studies aimed to investigate the association between dental anxiety and oral health. One research reported that dental anxiety positively correlated with poorer dental health (Armfield et al.,2007).[34] Another study observed that people with higher levels of dental anxiety tended to report missing teeth and/or decayed teeth (Armfield et al.,2009). Health problems and disease are highly related to the quality of life of affected individuals. Health does not only mean the absence of disease, other aspects including the qualityof life (QOL) also have an impact on the person's well-being. QOL has been developed to include the effects of dentistry and oral health on patients. Many researches have been done to study oral health and its relationship with the quality of life(OHRQOL).

Several different scales have been used to study the OHRQOL, the most important scales are the Oral health Impact profile (OHIP-14) and Oral Health Related Quality of life United Kingdom (OHRQoL-UK) (Bennadi & Reddy,2013).

In this Study we used OHIP-14 since it is considered a highly reliable scale to evaluate individuals' feelings and to determine the type of oral problems in seven dimensions (Functional limitation, Physical pain, Psychological discomfort, Physical limitation, Psychological limitation,social limitation, Handicap) (Silveira et al.,2019).

We found that the Turkish version of the OHIP-14 is a highly reliable instrument since the results of Cronbach alpha test were 0.91, this result is similar to many indian studies by deshpande et el and Slade GD (Deshpande & Nawathe, 2015 ; Slade,1997). The mean for each question in this scale was analyzed to determine the most prevalent problems that dental patients faced. We found that most patientshave a feeling of embarrassment and their oral problems prevent them from performing daily activities (mean for both questions were equal to 4.05). A considerable number of patients in our study reported feeling anxious about dental injections and avoided dental care, which can lead them to experience pain as well as social embarrassment.

A study done by Agrawal et el reported that the mean score of OHIP-14 between Nepalianpopulations were 12.19. In our study, we found that the mean rank scores of OHIP-14 were 53.27, which indicates high negative effects of poor oral health on the quality of life. The results are much higher than the previously mentioned study. Meaning that the oral health status of the the Nepalian population is more aware of their oral health. Another reason could be that ourstudy is limited to dental clinics patients where Agrawal et al. study includes a representative sample of the Nepalian population. OHIP-14 might be perceived differently by different people and can vary depending on the severity of the oral problems (Agrawal et al.,2017).

It has been found that there is no significant differences between OHRQoL and sex based differences. The gender differences in quality of life cannot be clarified only by measuring oral health status. Other factors come into play when considering the quality of life between genders like mental health, work status, and societal roles of males and females.

A reported study in New Zealand had shown that females have a more severe impact of oral disease on their QOL compared to male. It should be noted that this study followed different strategies like repeating the assessment over time, which contributed to their findings (Lawrence, 2008). Also it was observed that single participants have experienced effects of oral health on QoL in many dimensions (Functional limits FL, Physical Pain PP, Psychological DiscomfortPD, Physical Limitation PL, Social Limitation SL, and Handicap H.). Many of these problems may be

associated with their marital status. Teixeira et al. explained that married individuals have more self-confidence, and suggested that mate presence emphasizes the importance of healthy lifestyles and enhances positive behaviors (Teixeira et al., 2015). Another study showed that changes inmarital status especially from married to single could increase the prevalence of developing diseases (Wu et al., 2003).

We also looked at the effects of age on the OHRQoL. The results showed no significant differences in OHIP-14 quality of life related to age differences. Our surveys indicated a generally poor oral health-related quality of life amongst different groups. Most participants reported poor oral health, which, in term, causes them pain, limited functioned as well as embarrassment. This observation demonstrates that oral disease or poor oral hygiene affects all age groups almost equally, the only variation is the aspect of life affected between could be dueto the wide range of variance between age groups in our sample.Most studies performed, to date, assess the OHRQoL in the elderly population. A study published in 2015 demonstrated that participants with poor oral hygiene have a higher degree of oral disease, which has a significant effect on their quality of life (Santucci & Attard,2015). Another study reported thatolder people have a good self-awareness and can evaluate their oral health status in a positive manner. This study also took into consideration the effects of disease comorbidity on oral health since some illnesses can be associated with oral disease like dry mouth. The diseases related withoral health have shown to be associated with oral embarrassment and influence the QoL (Saintrain et al.,2016). We also assessed the effects of education on OHIP-14 results. The poorer quality of life was observed in the respondents with a post-secondary education. We attribute this to the fact that people from higher educational groups usually interact with people who are from a higher level of the hierarchy of socioeconomic status and educational status.

Thus, they are affected by the lifestyles of the interaction group. When experiencing an oral disease people with higher educational level could be embarrassed of their oral health, which affects their QoL who are more susceptible to FL, PP, PD, and PL.

More educated individuals have greater pressure and stressful life. Even if they have goodoral health, any little pain may exceed their pain tolerance which influences their quality of life highlighting that the acceptance of pain between different educational individuals and cultural groups may differ and thus the quality of life related of oral problems in higher educational group may have different variances in many regions (Peacock & Patel,2008).

A research by Oyapero et al; Husain et al found that the degree of education and income rate is related to higher oral health-related quality of life in different socioeconomic status (Oyapero et al.,2015; Husain & Tatengkeng,2017). This study suggested that the less educated individuals may have a superior risk of having a poororal health. But have the least effect on their quality of life.

We found that tooth-brushing was related to low OHRQoL. The respondents' mouth care attitudes differed between brushing once or twice per day. We found that the OHIP-14 dimensions of handicap and social limitation were the biggest driver of low OHRQoL even though patients are brushing their teeth twice a day. Many other studies reached similar results.

We account this observation to the fact that our survey was a self-assessment and that patients' outcomes from the OHRQoL term can differ from the dentist viewpoint. Meaning that patients who take good care of their oral health tend to underestimate the quality of their care andits effects on their oral health. Our observation may be related to dental anxiety since dentally anxious patients tend to take care of their oral health to avoid doctor's visits. Their self-assessment might underestimate their actual oral health status.

The study showed that the number of visits to the dental clinic and how regular thesecheckups are are significantly associated with oral health related quality of life. The patients whose dental visits are infrequent or only at emergencies have poor OHRQoL. A reported study in 2006 also showed that the low OHRQoL are associated with inappropriate dental visit (Ng S K & Leung,2006). Theparticipants in our study have moderate dental anxiety, which leads them to avoid dental visits and seek the treatment only if they have severe pain. The lack of professional dental care negatively affects the patients' oral health as well as their quality of life.

In accordance with the present study a negative relation between both scales were observed. OHIP-14 has been associated with M-DAS, thus the higher the percentage of dentalanxiety, the lower the oral health and quality of life. Many previous research found that high degree of dental anxiety had significant negative effects on the OHRQoL (Levin et al.,2018; Boman et al.,2012).

The results of this study provide an auxiliary proof to the relation between both scales. The individuals' with higher DA tends to avoid visiting the dentist even they have suffered from FL,PP, SD, PL, SL, and H . Averting dental visit due of DA termed by Berggren in 1984 as a vicious cycle; which is a negative series of feeling manifest as dental anxiety and confusing oral health with continuously avoiding dental care (Berggren,1984). After a period of time the oral health of DA patients became more poorer, thus the feeling of embarrassment and shame may exacerbated. This model was supported by an Australian study found that 39% of patients with moderate tohigh dental fear DF are included in this theory in comparison with 1% who do not have dental fear 38 (Armfield et al.,20007).

This study performed on an adult participants, found that low OHRQoL, irregular dental care, female gender, level of education, and teeth brushing all predicted moderate DA . Also thisstudy gives further support to the associations between moderate DA, avoidance of dental care, and health-related outcomes (Armfield et al.,20007).

Conclusion: Oral Health-Related Quality of Life has many applications in the fields of medicine, dentistry, and medical researches. Linking the relationship between oral health and quality of life enablesdoctors and scientific research workers to measure individuals' needs for treatment and the effectiveness of the health care provided to them. The results of this study enhance the understanding of the relationship between dental anxietyand oral health in general, and it has been proven to practicing dentists, and scientific researchworkers that oral health cannot be improved or increased by treating the teeth only, but rather, consideration should be given for knowing other factors that helped and caused a declineIndividuals' oral health and treatment.

Research on oral health and quality of life has a major role in increasing the community's awareness of oral health and eliminating the oral health disparities that exist between individuals.

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