Dental Anxiety and Fear: Relationship with Oral Health Behavior in a Turkish Population

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The aim of this study was to assess fear and anxiety in dental patients. Five hundred patients were evaluated using the Modified Dental Anxiety Scale and the Dental Fear Scale, along with a questionnaire. Oral health status was assessed using the Decayed, Missing, and Filled Teeth (DMFT)/Decayed, Missing, and Filled Surfaces (DMFS) index. Statistic al analysis was performed ($P < .05$). Sex significantly affected dental anxiety ($P < .05$), and sex, marital status, having children, and time elapsed since last visit to clinician affected dental fear ($P < .05$). DMFT/DMFS scores were not related to dental anxiety or fear ($P > .05$). Female sex alone was a significant predictor of dental anxiety; female sex, adulthood, marriage, having children, and time passed since last visit to a clinician are significant predictors of fear. *Int J Prosthodont 2014;27:50–53. doi: 10.11607/ijp.3708*

Dental anxiety and fear of pain remain globally widespread and are considered major barriers to dental treatment. Dental anxiety and fear among Turkish patients[1–3] have not been assessed in a large patient population. The aim of this study was to evaluate the relationship of a variety of patient factors with dental anxiety and fear.

Materials and Methods

The study was undertaken with 500 patients in Baskent University, Faculty of Dentistry, Ankara, Turkey. The study protocol was approved by the Research and Ethics Committee of Baskent University (no: D-KA07/06).

A questionnaire gathering information on sex, education, occupation, marital status, having children, income levels, and smoking habits was administered. Questions regarding whether the respondents have ever been to a clinician, age of first visit, time elapsed since last visit, reason for last visit, time intervals of visits, and tooth brushing habits were asked.

The Modified Dental Anxiety Scale (MDAS)[4] consists of five questions with five alternate scores ranging from "nonanxious" to "extremely anxious" in ascending order from 1 to 5. An MDAS score of ≥ 16 is considered dentally anxious.[4] The reliability and validity of the MDAS has already been demonstrated for the Turkish population.[1]

The Dental Fear Scale (DFS) consists of three sections: the first focuses on avoidance of dentistry, the second on psychologic arousal during dental treatment, and the third on the level of fear elicited by various components of dentistry, with scores varying from 1 to 5 (1 = no fear and 5 = terrified). Patients scoring ≥ 3 to a stimulus were considered afraid.[2] A cutoff DFS total score of ≥ 55 was determined.[3] Reliability and validity of the Turkish version of the DFS have been demonstrated.[3]

Decayed, Missing, and Filled Teeth (DMFT)/Decayed, Missing, and Filled Surfaces (DMFS) scores were also calculated.

The Mann-Whitney *U* test, Kruskal-Wallis test, Pearson chi-square test, and Spearman rho correlation coefficient were used for statistical analysis at a significance level of .05.

Results

Sociodemographic characteristics are demonstrated in Table 1. Mean age of the study population was 32.97 ± 13.11 years (range, 13 to 71 years). DMFT/DMFS scores were 8.01 ± 5.64 and 21.51 ± 22.68, respectively. The MDAS score of the study population was 10.30 ± 4.48. Of the total subjects, 13.4% were anxious, with a mean MDAS score of 18.91 ± 2.53. The DFS score was 39.44 ± 14.64, and, of the subjects, 15% had dental fear, with a mean DFS

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Table 1 Sociodemographic Characteristics and Comparisons Related to Dental Anxiety

Sociodemographic characteristic		n (%)	Dental anxiety (MDAS ≥ 16)*	*P*
Sex	Female	315 (63.0)	53 (16.8)	**.003**
	Male	185 (37.0)	14 (7.6)	
Education level	Elementary school	20 (4.0)	2 (10.0)	.225
	Secondary school	157 (31.7)	27 (17.2)	
	College or university	272 (54.8)	35 (12.9)	
	Graduate/postgraduate	47 (9.5)	3 (6.4)	
Occupation	Professional	231 (46.8)	33 (14.3)	.652
	Unemployed	193 (39.1)	27 (14.0)	
	Retired	70 (14.2)	7 (10.0)	
Income level	Low	53 (11.0)	8 (15.1)	.990
	Middle	409 (84.7)	56 (13.7)	
	High	21 (4.3)	3 (14.3)	
Marital status	Married	235 (47.3)	36 (15.3)	.238
	Single	238 (47.9)	26 (10.9)	
	Divorced/widowed	24 (4.8)	5 (20.8)	
Having children	Yes	217 (43.4)	32 (14.7)	.396
	No	280 (56.3)	35 (12.5)	
Smoking habits	No, never smoked	286 (57.4)	35 (12.2)	.403
	Yes, still a smoker	130 (26.1)	22 (16.9)	
	Smoked in the past	82 (16.5)	10 (12.1)	

Bold number indicates statistical significance ($P < .05$).
*n (%) for each subgroup that had dental anxiety.

Table 2 Self-assessed Questions Related to Visits to the Clinician and Tooth Brushing Habits in Relation to Dental Anxiety

Question	Response	n (%)	Dental anxiety (MDAS ≥ 16)*	*P*
Have you ever visited a clinician?	Yes	475 (95.0)	64 (13.5)	> .999
	No	25 (5.0)	3 (12.0)	
How frequently do you visit a clinician?	Occasionally	168 (33.6)	18 (10.7)	.314
	When there is a complaint	292 (58.4)	45 (15.4)	
	Regularly	33 (6.6)	4 (12.1)	
When was the last time you visited a clinician?	≤ 1 y	312 (62.4)	38 (12.1)	.186
	2 to 3 y	159 (31.8)	24 (15.0)	
	> 3 y	18 (3.6)	3 (16.6)	
What was the reason for your last visit to a clinician?	Examination/control	64 (13.2)	8 (12.5)	.168
	Pain	119 (24.5)	21 (17.6)	
	Restorative procedures	169 (34.8)	23 (13.6)	
	Surgical procedures	61 (12.6)	12 (19.7)	
	Orthodontics	30 (6.2)	1 (3.3)	
	Periodontics	42 (8.7)	2 (4.8)	
Do you brush your teeth?	Yes	477 (95.6)	64 (13.4)	> .999
	No	22 (4.4)	3 (13.6)	
How often do you brush your teeth?	> 3 times a day	17 (3.4)	2 (11.8)	.727
	2 to 3 times a day	231 (46.2)	32 (13.9)	
	Once a day	217 (43.4)	26 (12.0)	
	Every other day	5 (1.0)	1 (20.0)	
	Once a week	9 (1.8)	2 (22.2)	
	Occasionally	16 (3.2)	4 (25)	
	Never	5 (1.0)	0 (0)	

*n (%) for each subgroup that had dental anxiety.

score of 66.73 ± 8.94. A statistically significant positive correlation was seen between MDAS and DFS ($P < .001$).

Women had statistically higher MDAS scores ($P < .05$) (Table 1). Self-assessed factors were not related to dental anxiety ($P > .05$) (Table 2).

Table 3 Sociodemographic Characteristics and Comparisons Related to Dental Fear

Sociodemographic characteristic			Avoidance of dentistry		Psychologic arousal		Fear elicited by various components	
		n (%)	n (%)	*P*	n (%)	*P*	n (%)	*P*
Sex	Female	315 (63.0)	13 (4.1)	.506	47 (14.9)	**.027**	58 (18.4)	**.025**
	Male	185 (37.0)	10 (5.4)		15 (8.1)		20 (10.8)	
Education level	Elementary school	20 (4.0)	1 (5.0)	.997	3 (15.0)	.254	2 (10.0)	.726
	Secondary school	157 (31.7)	7 (4.5)		25 (15.9)		28 (17.8)	
	College or university	272 (54.8)	13 (4.8)		30 (11)		41 (15.0)	
	Graduate/postgraduate	47 (9.5)	2 (4.3)		4 (8.5)		7 (14.8)	
Occupation	Professional	231 (46.8)	11 (4.8)	.170	32 (13.9)	.637	37 (16.0)	.953
	Unemployed	193 (39.1)	6 (3.1)		21 (10.9)		31 (16.0)	
	Retired	70 (14.2)	6 (8.6)		9 (12.9)		10 (14.2)	
Income level	Low	53 (11.0)	3 (5.7)	.599	10 (18.9)	.533	10 (18.8)	.850
	Middle	409 (84.7)	18 (4.4)		48 (11.7)		63 (15.4)	
	High	21 (4.3)	2 (9.5)		4 (19.0)		5 (23.8)	
Marital status	Married	235 (47.3)	15 (6.4)	.196	38 (16.1)	**.004**	37 (15.7)	.760
	Single	238 (47.9)	7 (2.9)		18 (7.6)		36 (15.1)	
	Divorced/widowed	24 (4.8)	1 (4.2)		6 (25.0)		5 (20.8)	
Having children	Yes	217 (43.4)	12 (5.5)	.387	35 (16.1)	**.04**	31 (14.2)	.527
	No	280 (56.3)	11 (3.9)		27 (9.6)		47 (16.7)	
Smoking habits	No, never smoked	286 (57.4)	11 (3.8)	.352	29 (10.1)	.055	42 (14.6)	.793
	Yes, still a smoker	130 (26.1)	9 (6.9)		24 (18.4)		22 (16.9)	
	Smoked in the past	82 (16.5)	3 (3.7)		9 (10.9)		14 (17.0)	

Bold number indicates statistical significance ($P < .05$).

Dental fear was associated with sex, marital status, and having children ($P > .05$). Women were more likely to be fearful ($P < .05$). Marriage and having children appeared to increase dental fear related to psychologic arousal ($P < .05$) (Table 3).

There was no significant difference between dental fear and self-assessed factors except for time elapsed since patient's last visit ($P > .05$). While patients who visited a clinician ≤ 1 year prior revealed a decrease in fear related to avoidance of dentistry, patients who visited a clinician > 2 to 3 years ago showed an increase in fear related to both avoidance of dentistry and various components of dentistry ($P < .05$) (Table 4). DMFT/DMFS scores were not related to dental fear and anxiety ($P > .05$).

Discussion

The MDAS and DFS scores of the present study were comparable with previous studies.[1,3] Apart from cultural differences, unrecognized difficulties in dental health delivery system and delayed age of first dental visit may have contributed to the prevalence of anxiety in Turkey.

Previous studies,[2,3] along with the present study, reported that women are more anxious and fearful. Sex differences in dental fear might be due to different responses toward pain and control.

Avoidance of dentistry appeared to be lower in patients who had visited a clinician within ≤ 1 year. According to Armfield et al,[5] fearful patients were more likely to have a delayed visiting pattern, with a higher percentage of last visiting a clinician at intervals ≥ 2 years. Patients who avoid dental visits could also be identified as anxious/fearful before treatment begins. Many people delay dental visits due to issues of cost, perceived time restraints, or lack of interest.[5] In the present study, marriage and having children increased dental fear related to psychologic arousal. The increase in dental fear among parents and married couples could depend on workload and responsibility.

Conclusion

The results of this study are not necessarily representative of all dentally fearful patients. The results relate to a special care setting, and generalizations should be made with caution.

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Table 4 Self-assessed Questions Related to Visits to the Clinician and Tooth Brushing Habits in Relation to Dental Fear

Self-assessed questions	Response	n (%)	Avoidance of dentistry n (%)	*P*	Psychologic arousal n (%)	*P*	Fear elicited by various components n (%)	*P*
Have you ever visited a clinician?	Yes	475 (95.0)	22 (4.6)	1	60 (12.6)	.756	75 (15.8)	.782
	No	25 (5.0)	1 (4.0)		2 (8.0)		3 (12.0)	
How frequently do you visit a clinician?	Occasionally	168 (33.6)	4 (2.3)	.273	15 (8.9)	.085	25 (14.9)	.242
	When there is a complaint	292 (58.4)	16 (5.4)		44 (15.0)		51 (17.4)	
	Regularly	33 (6.6)	3 (9.0)		3 (9.0)		2 (6.0)	
When was the last time you visited a clinician?	≤ 1 y	312 (62.4)	9 (2.9)	**.01**	35 (11.2)	.165	42 (13.5)	**.043**
	2 to 3 y	159 (31.8)	14 (8.8)		24 (15.0)		34 (21.4)	
	> 3 y	18 (3.6)	0 (0)		2 (11.1)		1 (5.5)	
What was the reason for your last visit to a clinician?	Examination/control	64 (13.2)	1 (1.5)	.077	6 (9.3)	.465	9 (14.0)	.702
	Pain	119 (24.5)	9 (7.5)		16 (13.4)		24 (20.1)	
	Restorative procedures	169 (34.8)	6 (3.5)		25 (14.7)		26 (15.4)	
	Surgical procedures	61 (12.6)	5 (8.1)		10 (16.3)		11 (18.0)	
	Orthodontics	30 (6.2)	0 (0)		1 (3.3)		4 (13.3)	
	Periodontics	42 (8.7)	2 (4.7)		4 (9.5)		4 (9.5)	
Do you brush your teeth?	Yes	477 (95.6)	21 (4.4)	1	59 (12.3)	.746	75 (15.7)	> .999
	No	22 (4.4)	2 (9.0)		3 (13.6)		3 (13.6)	
How often do you brush your teeth?	> 3 times a day	17 (3.4)	2 (11.8)	.892	3 (17.6)	.785	3 (17.6)	.893
	2 to 3 times a day	231 (46.2)	5 (2.1)		15 (6.5)		11 (4.8)	
	Once a day	217 (43.4)	8 (3.6)		29 (13.4)		32 (14.7)	
	Every other day	5 (1.0)	3 (60.0)		3 (60.0)		4 (80.0)	
	Once a week	9 (1.8)	3 (33.3)		8 (88.9)		7 (77.8)	
	Occasionally	16 (3.2)	1 (6.3)		1 (6.2)		2 (12.5)	
	Never	5 (1.0)	1 (20.0)		3 (60.0)		3 (60.0)	

Bold number indicates statistical significance ($P < .05$).

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Literature Abstract

Association of bone mineral density with periodontal status in postmenopausal women

The study aimed at investigating the correlation of body bone mineral density (BMD) obtained by dual energy x-ray absorptiometry with periodontal parameters in early postmenopausal Indian women. Subjects had at least eight posterior teeth and had had menopause for at least 2 years. Excluded from the study were current and previous smokers; those with any systemic risk factor of periodontal disease; those on anti-inflammatory, immunosuppressive, or cytotoxic drugs for at least 1 year prior to the evaluation; those receiving medical treatment for osteoporosis; those who had periodontal surgery or were receiving periodontal treatment. The 78 dentate postmenopausal female patients (46 to 54 years old), composed of 31 osteoporotic, 25 osteopenic, and 22 healthy patients. BMD was negatively and significantly correlated with pocket depth, clinical attachment loss, and alveolar crestal height. Number of teeth lost due to periodontitis was not significantly correlated with BMD. Attachment loss, pocket depth, and alveolar crestal height were significantly different between osteoporotic and osteopenic patients; between osteoporotic and healthy patients, but not significantly different between osteopenic and healthy patients. The sample size of the study was relatively small. Despite this limitation, the authors concluded bone mineral density is an important risk indicator for periodontitis in postmenopausal women

Singh A, Sharma RK, Siwach RM, Tewari S, Narula SC. *J Investig Clin Dent* 2013;4:1–8. **References:** 63. **Reprints:** Dr A. Singh, Department of Periodontics and Oral Implantology, Postgraduate Institute of Dental Science, Rohtak, Haryana, India. **Email:** anuradhagdcr@gmail.com —*John Chai, Evanston, Illinois, USA*.