

Dental Anxiety among Patients Visiting a Dental College in Multan: A Hospital-based Cross-Sectional Study

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ABSTRACT

Objective: To evaluate the correlation between dental anxiety and different demographic factors and to determine level of dental anxiety using Modified Dental Anxiety Scale.

Study Design: Cross-sectional study.

Place and Duration of Study: Combined Military Hospital, Multan Institute of Medical Sciences Dental College, Multan Pakistan, from Sep to Dec 2022.

Methodology: We evaluated the level of dental anxiety using the Modified Dental Anxiety Scale questionnaire. We enrolled a sample size of 290 individuals from Outpatient Department using a non-probability convenience sampling technique after obtaining relevant permission from the Ethics Review Board of our institution.

Results: We found dental anxiety to be influenced by a variety of demographic factors, including gender, age, education and prior dental experiences. As per Modified Dental Anxiety Scale scoring, 112(38.6%) individuals had low levels of anxiety, 103(35.5%) had moderate levels of anxiety while 75(25.86%) had high levels of dental anxiety. The overall Modified Dental Anxiety Scale score was 1.87. Anxiety was most frequent among young patients with males found to have higher dental anxiety than females ($p < 0.0001$). Among the many dental treatment methods, local anesthetic injections were discovered to be associated with the highest level of anxiety. No significant association was found between education and previous dental experience.

Conclusion: Dental anxiety was influenced by multiple demographic factors, including gender, age, education and prior dental experiences.

Keywords: Demography, Dental Anxiety, Modified Dental Anxiety Scale.

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INTRODUCTION

While fear and anxiety often occur simultaneously, fear is a normal emotional response that occurs in response to a particular and immediate danger or threat while anxiety refers to a state of apprehension, nervousness, or uneasiness about a situation with an uncertain outcome, especially if the anxiety is triggered by dental circumstances, in which case, it is referred to as dental fear (DF) or dental anxiety (DA).¹ Dental fear (DF) is a natural emotional response to a particularly dangerous exterior dental stimulus.² This anxiety related to dental procedures is a clinically significant problem that must not be underestimated.³ Several researchers have described a "dynamic vicious cycle" linking dental anxiety to poor oral health.⁴ starting with a variety of factors such as traumatic dental experiences, negative perceptions of dental care, or a lack of knowledge about dental procedures. According to one author, 73% to 79% of

patients experience some level of dental anxiety concerning dental procedures, which, if it led to unsatisfactory treatment, left patients unhappy enough to put off going to the dentist in future.⁵ Dental anxiety scales are used to assess a person's level of anxiety regarding dental procedures with the most common dental anxiety scales being the Dental Anxiety Scale (DAS) and the Modified Dental Anxiety Scale (MDAS). These scales consist of questions related to dental procedures along with the person's feelings of anxiety or fear in relation to them, with these scales frequently used in research and clinical settings to evaluate patients' levels of anxiety and to evaluate the strategies aimed to reduce dental anxiety. Thus, the purpose of our research was to find the relation between dental anxiety and various demographic factors, as well as to access the levels of dental anxiety among the patients visiting our institution.

METHODOLOGY

The cross-sectional study was conducted at CMH (Combined Military Hospital) Multan Institute of Medical Sciences Dental College, Multan Pakistan.

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Before commencing the study, permission was taken from the Ethical Review Committee via letter no. TW/51/CIMS, dated 24 Mar 2023. It was undertaken for a period of three months from September to December 2022. We used non-probability convenience sampling technique to enroll the sample size of 384, as determined by the WHO sample size calculator, based on an anticipated population proportion of anxiety at 50%, with a 95% confidence level and a margin of error of 0.05.⁶ A Cronbach's alpha of 0.72 was found, indicating strong internal consistency.

Inclusion Criteria: Participants from either gender, aged between 25 to 50 years, capable of comprehending the questionnaire and with no associated malignant disorders, were included.

Exclusion Criteria: Participants having mental health conditions, unable to understand the questionnaire, pregnant, undergoing significant periodontal treatment, and having edentulous ridges were excluded.

To assess patients' anxiety levels before dental treatment, a patient-oriented questionnaire was designed which comprised three parts; personal and demographical data, previous dental experience followed by the Modified Dental Anxiety Scale (MDAS) performa which has five items in it which participants answered using a 5-point Likert scale, where total scores can vary from 5 to 25, with 5 indicating no anxiety and 25 indicating extreme anxiety.^{7,8} The standard protocol for informed consent was followed, patients' anonymity was protected, and the data obtained were utilized only for this research. The researcher completed the questionnaire on the spot.

Statistical Package for Social Sciences (SPSS) version 23.0 was used to analyze the collected data. All quantitative data was represented by mean and standard deviation and chi-square test was used to investigate the association between dental anxiety and demographic factors where p -value ≤ 0.05 was considered as statistically significant.

RESULTS

We analysed the results of 290 patients, of which 143(49.3%) men and 147(50.7%) were females. Table-I shows that there was a statistically significant difference in the mean MDAS score in the patient's previous dental visit experience, education, and purpose for the current dental visit. Out of 290 patients, 112(38.62%) exhibited low anxiety,

103(35.52%) had moderate anxiety, and 75(25.86%) showed a high level of anxiety. Patients under the age of 25 were found to have the highest level of anxiety, followed by those between the ages of 25 and 50. Our analysis revealed a statistically significant difference ($p < 0.001$) among the various age groups. Dental anxiety was seen to be significantly higher in males than in females ($p < 0.0001$).

Table-I: MDAS Score for Various Demographic Factors (n=290)

		MDAS Score (Mean±SD)	p-value (≤0.05)
Age Groups (years)	>25	13.17±5.55	0.0888
	25-50	13.42±5.58	
	<50	15.52±5.26	
Gender	Female	13.80±5.45	0.1015
	Male	12.73±5.64	
Education	Uneducated	12.77±5.34	0.0048*
	Matric	14.11±5.63	
	High School	13.72±5.67	
	University	16.25±5.015	
	Post-Graduation	17.45±5.45	
Previous Dental Experience	Good	12.24±5.53	<0.0001*
	Bad	14.50±5.61	
	No past experience	15.60±5.37	
Purpose of Dental Visit	Routine Check-up	11.86±5.49	<0.0001*
	Scaling	17.24±4.76	
	Extraction	11.86±4.53	
	Restoration	15.45±5.04	
	Root Canal Treatment	18.44±5.52	

MDAS: Modified Dental Anxiety Scale *Significant p -value

Analysis of the association between dental anxiety and demographic factors was also performed, and the results are shown in Table-II.

DISCUSSION

Oral health is vital to overall health and well-being yet despite technological advancements, fear of pain and anxiety around dental procedures is still quite common worldwide and is seen as a significant barrier to receiving dental care due to which dental anxiety is one of the most significant problems which needs to be managed in daily clinical practice.^{9,10} In our study, men were found to experience higher levels of dental anxiety compared to women which supports prior research that found higher levels of dental anxiety among males^{2,10-12} which did not corroborate with other studies which claimed that women had a greater level of anxiety.¹³⁻¹⁵ In contrast, some studies have reported no significant differences in anxiety levels between genders.^{16,17} We also found out that patients with a higher educational level suffered less from dental anxiety, most likely due to higher

Table-II: Association of Dental Anxiety with Various Demographic Factors (n=290)

		Not Anxious (n) %	Moderately Anxious (n) %	Extremely Anxious (n) %	p-value (≤0.05)
Age Groups (years)	>25	15(18)	28(34)	38(46)	>0.0001*
	25-50	95(54)	51(29)	28(16)	
	<50	2(5.7)	24(68)	9(25)	
Gender	Female	73(49)	42(28)	32(21)	>0.0001*
	Male	39(27)	61(42)	43(30)	
Education	Uneducated	17(29)	27(47)	13(22)	0.051
	Matric	49(42)	35(30)	30(26)	
	High School	26(35)	21(28)	26(35)	
	University	11(45)	8(33)	5(20)	
	Post-Graduation	9(40)	12(54)	1(4.5)	
Previous Dental Experience	Good	69(37)	67(46)	47(25)	0.768
	Bad	13(36)	15(41)	8(22)	
	No past experience	30(42)	21(29)	20(28)	
Purpose of Dental Visit	Routine Check-up	14(30)	23(50)	9(19)	>0.0001*
	Scaling	44(59)	12(16)	18(24)	
	Extraction	28(29)	46(48)	20(21)	
	Restoration	13(32)	8(20)	19(47)	
	Root Canal Treatment	13(36)	14(38)	9(25)	

*Significant p-value

educated people being more knowledgeable about dental treatments and the significance of oral health, which could help reduce anxiety. This finding is in line with other previously conducted studies.^{2,4} We believe a patient's anxiety and fear may be caused by a lack of oral health education, which may then have a negative impact on their attitudes and compliance. Some authors reported that understanding the attitude and behavior of patients towards dental treatment is best achieved by assessing anxiety prior to beginning dental treatment.^{16,17} We observed that older individuals may experience less dental anxiety than younger individuals possibly due to more experience with dental procedures and experience of these procedures being relatively painless, which could have helped to reduce anxiety.¹¹ The attitude of the dentist also has a significant influence on the development of dental anxiety^{18,19} therefore, those who are anxious and those who have had a negative dental experience in the past are likely to postpone their dental appointments. This tendency was seen in our research population, corroborating with the results reported by another study.²⁰ One researcher developed a questionnaire which described 67 dental stimuli that could potentially cause anxiety with noninvasive stimuli being the least anxiety-generating, while intrusive stimuli, such as surgical operations, were evaluated as the most anxiety-provoking.²¹ According to this study's MDAs score, patients who visited for extractions showed the highest levels of dental anxiety, followed by those who came for dental restoration and scaling. These findings corroborate the

literature, which shows that treatments involving drills and injections are the ones that cause the most dental anxiety²² with negative experiences in the past greatly contributing to this elevated levels of anxiety.^{23,24} Thus, our research has major therapeutic implications since dental fear and anxiety are key factors in clinical practice, and the outcome of therapy is dependent on patient compliance.

LIMITATIONS OF STUDY

As this study was carried out at a single center in Multan, it does not reflect the general population's level of dental anxiety and these findings cannot be applied to the overall population. Secondly, as a cross-sectional self-administered questionnaire study, bias can be encountered when eliciting replies. Additionally, only a few anxiety-provoking stimuli were evaluated in our study due to resource constraints. Further research is needed to address dental anxiety levels in various demographics, particularly qualitative research, which can provide a deeper understanding.

CONCLUSION

We found that males and younger patients had more dental anxiety with local anesthetic injections found to be related to the highest level of anxiety among different dental treatment procedures although no significant association of dental anxiety was found between previous dental experiences and education.

Conflict of Interest: None.

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Authors' Contribution

Following authors have made substantial contributions to the manuscript as under:

AA & DR: Study design, data interpretation, drafting the manuscript, critical review, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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