

ASSESSMENT OF DENTAL ANXIETY IN PATIENTS VISITING A TEACHING HOSPITAL IN ISLAMABAD

¹SABA MASOUD, ²SHEZE HAROON QAZI, ³RUBINA MUMTAZ

ABSTRACT

Dental anxiety contributes to poor oral health seeking behaviors. Dentally anxious patients seek help only in agonizing pain. Such a visit is often invasive and arduous resulting in stressful chair side patient-dentist interactions. This study was carried out to evaluate the levels of dental anxiety of patients frequenting a tertiary care dental hospital of Islamabad. The purpose of this activity was to evaluate baseline statistics for improvement of patient management and development of better psychotherapeutic treatment strategies for dentally anxious members of this community by implementing anxiety reduction protocol etc. A sample size of 367 was calculated by considering 5% margin of error, 95 % confidence interval and population frame of 18000 (annual turnover of the patients), using Rao soft sample size calculator. Tool used was the Urdu version of Modified Dental Anxiety Scale, in outpatient clinics of a dental teaching hospital. Analysis was done using SPSS, chi-square test was used to see the association. The mean dental anxiety score was 13.13 ± 4.938 , with highest scores in questions asking about anxiety before local anesthesia injection and tooth drilling (3.28 ± 1.5 and 3.01 ± 1.4) respectively. Previous dental visits, gender, age, level of education, marital and employment status has no significant link with dental anxiety. So, it was concluded that patients visiting the hospital were moderately anxious about their dental visit.

Key words: dental anxiety, teaching hospital, oral health, Islamabad

This article may be cited as: Masoud S, Qazi SH, Mumtaz R. Assessment of dental anxiety in patients visiting a teaching hospital in Islamabad. Pak Oral Dent J 2022; 42(1):39-43.

INTRODUCTION

Dental anxiety is a significant factor contributing to poor oral health seeking behavior. The term dental anxiety is used to describe a patient's fear, anxiety or stress in response to the dental setting and not necessarily a specific procedure.¹ When a dentally anxious patient does make it to the dental chair, their anxiety not only increases pain perception but also reduces cooperation and exaggerates the memory of it which reinforces the fear thus fueling avoidance of future visits^{2,3}

The prevalence of dental fear and dental anxiety in children and adolescents ranges from 5% to 33%, subject to the country where the assessment was done.⁴ Dental anxiety can be induced by multiple factors including

endogenous elements, such as traits of personality and cognitive skills as well as exogenous factors, such as past adverse experiences and the information an individual gathers from others sources, such as media friends or relatives.⁵

Most research on prevalence of dental anxiety in Pakistan has been done on medical and dental students and they reveal high levels of dental anxiety by this educated group.⁶⁻⁹ Research on patients coming to teaching dental hospitals in Lahore, Karachi, Rawalpindi and Peshawar, indicated moderate prevalence with Modified Dental Anxiety mean scores of 10.43, 12.46, 13.46 and 12.89 respectively.¹⁰⁻¹³

There are several validated tools used to quantify dental anxiety. The most commonly used are Corah's Dental Anxiety Scale (CDAS), its modified version - Modified Dental Anxiety Scale (MDAS) and the Dental Fear Survey (DFS).¹⁴⁻¹⁶

The objective of present study was carried out to evaluate the levels of dental anxiety of patients visiting a teaching hospital in the peri urban locality of Islamabad using the Modified Dental Anxiety Scale (MDAS). This hospital is the only establishment offering subsidized / free dental treatment to the residents. The purpose of this activity was to evaluate baseline statistics for

¹ **Corresponding Author:** Dr Saba Masoud, Assistant Professor, Department of Community Dentistry, Islamabad Medical & Dental College, Islamabad. Email: saba.masoud@hotmail.com Mobile # 0331 5857619

² Dr Sheze Haroon Qazi, Associate Professor, Department of Community Dentistry, Islamabad Medical & Dental College, Islamabad. Email: sheza.haroon@iideas.edu.pk Mobile # 0302 8566691

³ Dr Rubina Mumtaz, Professor, HOD Department of Community Dentistry, Rawal Institute of Health Sciences, Islamabad. Email: rmumtaz@post.harvard.edu Mobile # 0334 5132910

Received for Publication: Nov 10, 2021

Revised: Jan 30, 2021

Approved: Feb 3, 2022

improvement of patient management and development of better treatment strategies for dentally anxious members of this community

METHODOLOGY

A cross sectional survey was conducted on adult patients (18 years plus) visiting a dental teaching hospital in Islamabad to check the levels of dental anxiety and its association with various variables.

The annual turnover of patients coming to the outpatient department of the hospital was approximately 18000. Hence a sample size of 367 was calculated by considering 5% margin of error, 95% confidence interval and population frame of 18000. Raosoft sample size calculator was used.

The data collection tool was the Modified Dental Anxiety Scale questionnaire on dental anxiety with the section one consisting of questions on demographic variables like age, gender, marital status, working status, educational level and past dental visits. Section 2 had five questions with options on a Likert scale with score range of ‘not anxious (score 1)’, ‘slightly anxious (score 2)’, ‘fairly anxious (score 3)’, ‘very anxious (score 4)’ and ‘extremely anxious (score 5)’. Total score was the sum of all five questions in section 2, thereby giving a range of 5-25. Based on the total scores, categories are labeled with score ranges of “Not anxious (5)”, “Mild anxiety (6-10)”, “Moderate anxiety (11-14)”, “High anxiety (15-18)”, “Extreme anxiety/dental phobia (19-25)”.¹⁸ MDAS questions were translated into Urdu language by subject specialists for reducing bias. To ensure that the translation captured the true version of the English MDAS, a draft was initially piloted on 19 patients, modifications and revisions were made with a resultant Cronbach alpha value of 0.94 obtained.

The Modified Dental Anxiety Scale with its Urdu translation was added to the log books of second year dental students in 2015 and included in the curriculum for the practical quota of the subject of Community Dentistry. For the present study, after approval from Institutional Review Board, data was retrieved from the students log books (2017-2019), because after 2019, COVID affected the patient flow. Data of patients aged 18 and above were included in the study whereas, incompletely filled forms were excluded. The data was then entered in SPSS (Statistical Package of social sciences) and analyzed over a period of four months (June-September 2021).

RESULTS

Analysis was carried out on randomly selected sample of 367. The sample had 242 (66%) females and 125 (34%) males. The ages ranged between 18-83 years giving a mean age of 35 years± 13.83 years with

a median and mode of 34 and 18 years respectively. Most of our adult patients were married 254 (69%) with 113 (31%) single/divorced/widowed. A majority 256 (70%) had had a previous dental experience while for 111 (30%) patients; this was their first visit to a dentist. In terms of education level 26% were illiterate, 10% had 5 years of primary education till grade 5, 34% had secondary schooling till grade 10 and 30% with university education. More than half of the study subjects were either unemployed or students 252 (69%) while only 115 (31%) were employed.

The mean dental anxiety score was 13.13 ± 4.938 out of 25, with minimum and maximum scores of 5 and 25 respectively. The highest scores were obtained on the question about anxiety before a local anesthesia (3.28 ± 1.50 out of 5) followed by anxiety before tooth drilling (3.01 ± 1.40 out of 5). The lowest score for dental anxiety was for the question about anxiety before scaling (2.05± 1.15). Descriptive distribution of percent anxiety levels and mean score for each MDAS question is summarized in figure 1 and table 1 respectively.

Overall, as a group high anxiety was expressed by 80 (22%) patients while 60 (16%) were extremely anxious / phobic. Percentage of study population lying in each dental anxiety category is summarized in figure 2.

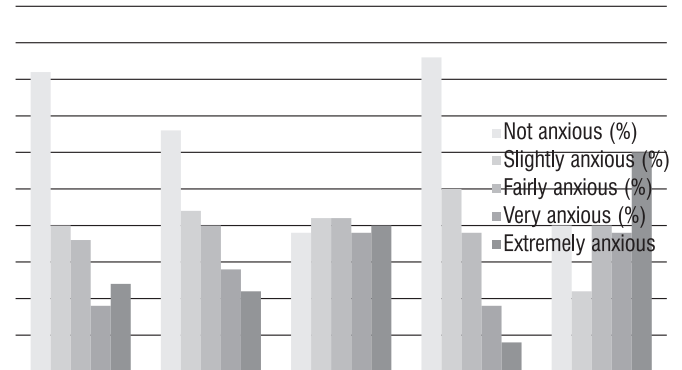


Fig 1: Percent distribution of anxiety levels as per MDAS question

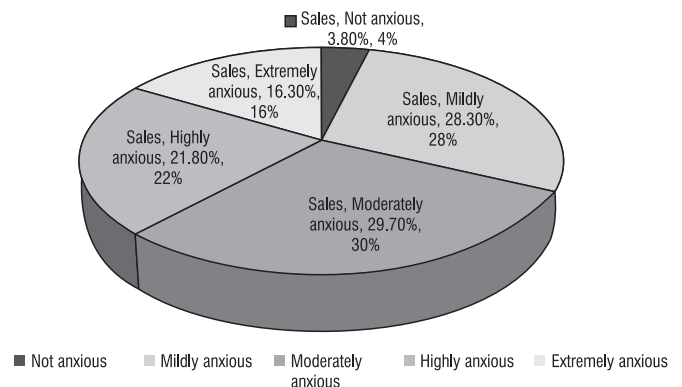


Fig 1: Percent population lying in each dental anxiety category

TABLE1: MEAN SCORES OF MODIFIED DENTAL ANXIETY SCALE QUESTIONS

S. No	Question	Mean	Standard Deviation
1	Feeling about Rx tomorrow	2.31	± 1.39
2	Feeling while waiting in waiting room	2.49	± 1.37
3	Feeling just before tooth drill	3.01	±1.40
4	Feeling just before scaling	2.05	±1.15
5	Just before local Anesthesia	3.28	±1.50

TABLE 2: CORRELATION OF DIFFERENT FACTORS WITH ANXIETY LEVEL CATEGORIES

Characteristics		Anxiety Level Categories						Chi-square value	p-value
		No n (%)	Mild n (%)	Mod-erate n (%)	High n (%)	Ex-treme n (%)	Total (% of N 367)		
Age	18-40	8 (3)	75 (29)	75 (29)	58 (22)	44 (17)	260 (71)	1.859	0.762
	41 & above	6 (6)	29 (27)	34 (32)	22 (21)	16 (15)	107 (29)		
Gender	Males	7 (6)	39 (31)	35 (28)	29 (23)	15 (12)	125 (34)	4.273	0.370
	Females	8 (3)	64 (26)	74 (31)	51 (21)	45 (19)	242 (66)		
Marital Status	Unmar-ried	2 (2)	36 (32)	30 (26)	28 (25)	17 (15)	113 (31)	6.993	0.537
	Married	13 (5)	67 (26)	79 (31)	52 (21)	43 (17)	254 (69)		
Working status	Non-working/student	9 (4)	67 (27)	76 (30)	51 (20)	49 (19)	252 (69)	6.819	0.146
	Working	6 (5)	36 (31)	33 (29)	29 (25)	11 (10)	115 (31)		
Education level	Not edu-cated	6 (6)	22 (23)	28 (29)	19 (19)	22 (23)	97 (26)	16.939	0.152
	Primary	0 (0)	13 (36)	7 (20)	8 (22)	8 (22)	36 (10)		
	Metric	7 (6)	33 (27)	39 (32)	24 (19)	20 (16)	123 (34)		
	Graduation & above	2 (2)	35 (31.5)	35 (31.5)	29 (26)	10 (9)	111 (30)		
Past den-tal visit	No dental history	4 (3)	38 (34)	24 (22)	24 (22)	21 (19)	111 (30)	6.391	0.172
	Dental history	11 (4)	65 (26)	85 (33)	56 (22)	39 (15)	256 (70)		

The anxiety levels show a decreasing trend as age increases. However, age and dental anxiety were not significantly linked ($p= 0.762$). Although high dental anxiety was predominated by males (23%) as compared to females (21%), extreme dental anxiety/dental phobia was dominated by females (19%) as compared to males (12%), but overall gender too was not statistically significant($p=0.370$). Considering marital status, extreme dental anxiety/phobia was predominated by married (17%) as compared to unmarried (15%). Again, statistically this was not a significant association ($p=0.537$).

Educational level showed no particular trend with levels of dental anxiety ($p= 0.152$). Similarly, patients currently employed or those who were unemployed & were students also didn't show any particular trend with levels of dental anxiety and the association was also not found to be significant ($p= 0.146$). Those who had previous history of dental visits showed less anxiety as compared to those who were having their first visit, but again the association was not proved to be statistically significant ($p=0.172$).

Summary of factors correlated with anxiety level categories is provided in table 2.

DISCUSSION

The present study showed the prevalence of mild, moderate and high dental anxiety at 28%, 30% and 22% respectively. Only 4% of the study group had low anxiety suggesting that despite technological advancements made in modern dentistry, anxiety associated with dental treatment was widespread in the study groups. The study sample had predominantly female patients reaffirming the fact that men are more likely to ignore their oral health and have poorer oral hygiene habits. Hence they visit dentists less frequently while women exhibit better oral health behaviors.¹⁷ Regarding their education level almost 26% of the study group was illiterate but remarkably level of anxiety was not affected by the levels of education showing similar trend. A finding similar to other studies showing dental fear and anxiety were not affected by education level.¹⁸ Although in this study age and anxiety levels were not significantly ($p=0.762$) linked but they showed a decreasing trend with increasing age. In previous reports which are in compatible with our results, age was strongly associated with dental anxiety and younger subjects were more anxious than older ones.¹⁹ Although females showed a higher degree of extreme level of anxiety than males but no significant association was found between gender and anxiety. Although the findings of the present study are similar to a 2019 Indian study by Piano RP et al who concluded that gender, age and type of procedure did not influence anxiety.²⁰ However, it does not resonate with a Saudi study where female patients were found to be more anxious.²¹ This result may be attributed to cultural differences.

The MDAS questions on chair side procedures of feeling before a local anesthetic injection and drilling of the tooth were found to contribute most to high and extreme anxiety. This is concurrent to a study led by Singh R et al that identified one of the most fear-provoking stimuli was the dental drill.²² Similarly, Crawford S et al quantified that a significant number of patients cancelled their appointments simply because they were afraid of the injection.²³ Another factor influencing the levels of anxiety was past dental history which showed a significant association a finding that is again another reiterating theme in many studies.²⁴ However, a point to be highlighted is that in the present study, our question was limited to a history of previous dental visit and did not extract whether the previous experience was negative or not. A Saudi study concluded that patients with previous unpleasant dental experience were associated with increased MDAS score.²⁵

It is well known that dental anxiety can be prompted by provider-related, environment-related or personal

factors.²⁶ For better patient management it is essential to assess levels and triggers of anxiety. The dental practitioner can then aim to reduce the environmental and practitioners related factors. Dentally anxious patients will avoid visiting a dentist unless in severe pain. Such a visit is often invasive and if the dentist is unaware of the patient's anxiety, the encounter can be stressful. Dentists in teaching hospitals are often hard pressed for time with long waiting lines of patients. Since using the MDAS questionnaire pre-treatment does not escalate anxiety, it is recommended that screening of patients should become a part of the chair side protocols in the diagnostic clinic and entered into patient record file.²⁷ This will forewarn the treating dentist to strategize the chair side manner and time duration, thus encouraging further visits. Research has shown that regular atraumatic dental visits lessen dental fear.²⁸ The dental personnel of the hospital should have regular trainings on psycho-therapeutic strategies for handling anxious patients.

CONCLUSION

Patients were found to be moderately anxious about their dental visit. The anxiety levels showed a decreasing trend as age increased. High dental anxiety was noticed in males and extreme dental anxiety was more married individuals. Educational level and employment status showed no particular trend dental anxiety levels. However, none of these factors showed any significant association with dental anxiety. As, anxiety not only increases pain perception but also reduces cooperation which ultimately leads to avoidance of future visits. Awareness of patients' dental anxiety level and the utilization of anxiety reducing protocol during treatment may encourage routine care.

ACKNOWLEDGEMENTS

We are thankful to our 2nd year BDS students who helped us collect the data

REFERENCES

- 1 Eitner S, Wichmann M, Paulsen A, Holst S. Dental anxiety--an epidemiological study on its clinical correlation and effects on oral health. *J Oral Rehabil.* 2006;33(8):588-93. DOI:10.1111/j.1365-2842.2005.01589.x
- 2 Loggia ML, Schweinhardt P, Villemure C, Bushnell MC. Effects of psychological state on pain perception in the dental environment. *J Can Dent Assoc.* 2008;74(7):651-6
- 3 Al Absi M, Rokke PD. Can anxiety help us tolerate pain? *Pain.* 1991;46(1):43-51
- 4 Gatchel RJ. The prevalence of dental fear and avoidance: Expanded adult and recent adolescent surveys. *J Am Dent Assoc.* 1989;118:591-93.
- 5 Beaton L, Freeman R, Humphris G. Why are people afraid of the dentist? Observations and explanations. *Med Princ Pract.* 2014;23:295-301.
- 6 Attaullah, Ayyaz Ali Khan. Prevalence of Dental Anxiety among

- University students in Islamabad, Pakistan. *JKCD* 2011, 1 (2): 71-77
- 7 Shaikh, Masood & Kamal, Anila. Over dental anxiety problems among university students: Perspective from Pakistan. *Journal of the College of Physicians and Surgeons--Pakistan : JCPSP*. 2011; 21: 237-38
 - 8 Zarah S, Majeed MM, Imtiaz A. Dental Anxiety among the Students of Public Sector Medical Universities of Karachi. *J Dent Oro Surg* 2016; 1(2): 111. Doi: <http://dx.doi.org/10.19104/jdos.2016.111>
 - 9 Farooq, Imran & Ali, Saqib. A cross sectional study of gender differences in dental anxiety prevailing in the students of a Pakistani dental college. *The Saudi Journal for Dental Research*. 2014; 6: 10.1016/j.sjdr.2014.06.002.
 - 10 Fatima Z, Rashid A, Abdullah F, Rasheed B. Dental fear; the prevalence of dental fear and anxiety in patients coming to Department of Dentistry at Lahore General Hospital, Pakistan. *Professional Med J* 2018; 25(6):959965. DOI:10.29309/TPMJ/18.4503
 - 11 Syed S, Bilal S, Dawani N, Rizvi K. Dental anxiety among adult patients and its correlation with self-assessed dental status and treatment needs. *J Pak Med Assoc* 2013; 63: 614-18
 - 12 Malik AR, Bokhari SAH, Suhail AM, Imran MF, Hamza SA. Dental Anxiety Among Patients Attending A Periodontal Clinic: A Cross Sectional Analysis. *J Pak Dent Assoc* 2014; 23(3):112-16
 - 13 Siddique Yousaf. Dental anxiety among patients visiting dental educational institutes in Peshawar – a cross – sectional study. Abstract presented at 24th International Conference on Dentistry & Oral Care. April 17-18, 2017 Dubai, UAE. Conference-series LLC Ltd. Available at <https://dentistry.conferenceseries.com/abstract/2017/dental-anxiety-among-patients-visiting-dental-educational-institutes-in-peshawar-a-cross-sectional-study> accessed on 16th December 2019
 - 14 Corah NL. Development of a dental anxiety scale. *J Dent Res*. 1969;48(4):596.
 - 15 Humphris GM, Morrison T, Lindsay SJ. The Modified Dental Anxiety Scale: validation and United Kingdom norms. *Community Dent Health*. 1995;12(3):143–50
 - 16 Kleinknecht RA, Klepac RK, Alexander LD. Origins and characteristics of fear of dentistry. *J Am Dent Assoc*. 1973;86(4):842–48.
 - 17 Lipsky, Martin S., et al. “Men and Oral Health: A Review of Sex and Gender Differences.” *American Journal of Men’s Health*, May 2021, doi:10.1177/15579883211016361.
 - 18 Saatchi M, Abtahi M, Mohammadi G, Mirdamadi M, Binandeh ES. The prevalence of dental anxiety and fear in patients referred to Isfahan Dental School, Iran. *Dent Res J (Isfahan)*. 2015;12(3):248-53.
 - 19 Do Nascimento DL, da Silva Araújo AC, Gusmão ES, Cimões R. Anxiety and fear of dental treatment among users of public health services. *Oral Health Prev Dent*. 2011;9:329–37.
 - 20 Piano RP, Vieira WA, Sousa-Silva J, Paranhos LR, Rigo L. Evaluation of anxiety levels and their characteristics in dental care: Cross-sectional study. *Indian J Dent Res*. 2019 Mar-Apr;30(2):300-304. doi: 10.4103/ijdr.IJDR_325_18.
 - 21 Fayad MI, Elbieh A, Baig MN, Alruwaili SA. Prevalence of Dental Anxiety among Dental Patients in Saudi Arabia. *J Int Soc Prev Community Dent*. 2017;7(2):100-104. doi:10.4103/jispcd.JISPCD_19_17
 - 22 Singh R, Shah D, Tirpude V, Fernandes G. Dental Fear Assessment among patients: A survey of a group of Indian Dental Patients. *EJPMR*, 2018,5(3), 309-13
 - 23 Crawford S, Niessen L, Wong S, Dowling E. Quantification of patient fears regarding dental injections and patient perceptions of a local noninjectable anesthetic gel. *Compend Contin Educ Dent*. 2005;26(2 Suppl 1):11-14
 - 24 Berg MT., Veerkampa S., Hoogstraten J. The etiology of childhood dental fear: the role of dental and conditioning experiences. *Journal of Anxiety Disorders*. 2002; 16,(3):321-
 - 25 Fayad MI, Elbieh A, Baig MN, Alruwaili SA. Prevalence of Dental Anxiety among Dental Patients in Saudi Arabia. *J Int Soc Prev Community Dent*. 2017;7(2):100-104. doi:10.4103/jispcd.JISPCD_19_17
 - 26 Minja I, Kahabuka K. Dental Anxiety and its Consequences to Oral Health Care Attendance and Delivery. *Anxiety Disord Child to Adulthood*, IntechOpen, London, UK, 2019.
 - 27 Humphris G, Hull P. Do dental anxiety questionnaires raise anxiety in dentally anxious adult patients? A two-wave panel study. *Prim Dent Care*. 2007;14(1):7–11
 - 28 Crego A, Carrillo-Diaz M, Armfield M, Romero M. From public mental health to community oral health: The Impact of Dental Anxiety and Fear on Dental Status. *Front Public Health*. 2014; 2: 16. doi: 10.3389/fpubh.2014.00016

CONTRIBUTIONS BY AUTHORS

- | | |
|-----------------------------|--|
| 1 Saba Masoud: | Data analysis and interpretation, drafting |
| 2 Sheze Haroon Qazi: | Drafting, critical revision |
| 3 Rubina Mumtaz: | Conception of idea, drafting. |