

Original Article

THE INFLUENCE OF GENDER, FAMILY DENTAL HISTORY, AND PREVIOUS DENTAL TREATMENT EXPERIENCE ON DENTAL ANXIETY LEVELS IN UNDERGRADUATE STUDENTS OF KPK, PAKISTAN: A CORRELATIONAL STUDY

Muhammad Anas¹, Muhammad Usman Sultan¹, Syed Muhammad Awais², Faisal Alam¹, Sana Ahmad³

¹Final Year BDS Students, Bacha Khan College of Dentistry, Mardan

²Department of Science of Dental Materials, Bacha Khan College of Dentistry, Mardan

³Department of Oral Pathology, Bacha Khan College of Dentistry, Mardan

ABSTRACT

Objectives: To assess the prevalence and associated factors of dental anxiety among adults undergraduate students attending dental clinics for dental treatment.

Materials and Methods: A cross-sectional study was conducted among 214 adult undergraduate students attending dental outpatient clinics. Data were collected using a validated questionnaire, including the Modified Dental Anxiety Scale (MDAS). Sociodemographic characteristics, previous dental experiences, and specific anxiety triggers were recorded. Data were analyzed using SPSS version 22. Chi-square test was applied, and $p < 0.05$ was considered statistically significant.

Results: Of the 214 participants, 58.9% were males and 41.1% were females, with a mean age of 22.02 ± 7.2 years. The overall prevalence of dental anxiety was 59.3%, of which 18.2% reported severe anxiety. Dental injections (41.6%) and tooth extraction (32.7%) were the most anxiety-inducing procedures. Females reported significantly higher anxiety levels compared to males ($p = 0.016$). Previous negative dental experiences were strongly associated with higher MDAS scores ($p < 0.01$).

Conclusion: Dental anxiety was highly prevalent in this population, particularly among females and patients with prior negative experiences. Dentists should incorporate effective communication and anxiety management strategies to improve patient compliance and oral health outcomes.

Key words: Dental anxiety, Modified Dental Anxiety Scale, adult patients, prevalence

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INTRODUCTION

Dental anxiety is a common psychological condition characterized by fear or stress associated

with dental procedures. It can adversely affect oral health-seeking behavior, leading to avoidance of dental treatment, deterioration of oral health, and increased treatment complexity¹.

Globally, the prevalence of dental anxiety ranges between 10% and 30%, with higher rates reported in females and younger adults^{2,3}. Anxiety may arise from fear of injections, tooth extraction, drilling, or previous traumatic dental experiences⁴. In addition

Correspondence:

Muhammad Anas

Final Year BDS Student

Bacha Khan College of Dentistry, Mardan

Email: anas.khan.jadon137@gmail.com

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to psychological distress, dental anxiety may also cause physiological effects such as tachycardia and hypertension during treatment⁵.

Various strategies, including behavioral therapy, pharmacological sedation, hypnosis, and acupuncture, have been employed to manage dental anxiety⁶⁻⁹. However, limited data exist from the Pakistani population regarding the magnitude and determinants of this issue.

The objective of this study was to evaluate the prevalence of dental anxiety among adult undergraduate students attending dental clinics for dental treatment and to identify associated demographic and clinical factors.

MATERIALS AND METHODS

A descriptive cross-sectional study was conducted among adult patients attending the dental outpatient clinics between September, 2023 and June, 2024. Ethical approval was obtained from the institutional review board of Bacha Khan Medical College, Mardan (497/BKMC). The minimum required sample size was calculated to be 200, based on prevalence rates from earlier studies, with a 5% margin of error and a 95% confidence interval. A total of 214 patients were enrolled using non-probability consecutive sampling. Undergraduate students of aged 18 years and above were included in the study who visited the outpatient clinic. Informed consent were taken from all the included patients. Patients diagnosed with psychiatric disorders or those undergoing emergency dental procedures were excluded.

Data were collected using a structured questionnaire comprising three sections: Sociodemographic Information: Age, gender, educational attainment, and occupation. Dental History: Previous dental visits and any history of negative dental experiences. Modified Dental Anxiety Scale (MDAS): A validated five-item instrument scored on a Likert scale (range: 5–25). Scores ≥ 19 were indicative of severe dental anxiety. Data analysis was performed using SPSS version 22. Descriptive statistics were used to summarize the data: frequencies and percentages for categorical variables, and mean \pm standard deviation for continuous variables. The Chi-square test was applied to evaluate associations between dental anxiety levels and independent variables. A

p-value of equal or less than 0.05 was considered statistically significant.

RESULT

A total of 214 patients participated, with a mean age of 22.02 ± 7.2 years. Of them, 126 (58.9%) were males and 88 (41.1%) were females. Table 1 presents the association between Dental Anxiety Scale (DAS) scores and gender, past dental treatment history, and family dental history. Female students (16.68 ± 4.61) reported significantly higher dental anxiety compared to male students (15.06 ± 4.90 ; $p = 0.016$). Students with no previous dental treatment experience (16.64 ± 4.61) demonstrated significantly higher anxiety than those with prior dental treatment (15.27 ± 4.89 ; $p = 0.046$). On the other hand, family dental history did not show a statistically significant association with DAS scores, as students with and without such history reported comparable anxiety levels (15.38 ± 4.90 vs. 16.31 ± 4.60 ; $p = 0.172$).

Overall, 127 patients (59.3%) reported some degree of dental anxiety, of which 39 (18.2%) had severe anxiety. Table 2 provides the item-wise analysis of DAS scores according to gender, past dental treatment history, and family dental history. Female students consistently reported higher anxiety than males, with statistically significant differences observed for the items “about to have a tooth drilled” ($p = 0.018$) and “about to receive a local anesthetic injection” ($p = 0.001$).

Students with no previous dental treatment experience demonstrated significantly higher anxiety regarding “going to the dentist tomorrow” (3.17 ± 1.39 vs. 2.61 ± 1.33 ; $p = 0.040$). However, no other items showed significant associations with past dental history.

Family dental history was not significantly related to anxiety levels for any item, indicating limited influence of familial exposure on specific dental anxiety triggers.

When individuals are asked about their feelings toward dental treatment, their anxiety levels vary across different categories. A considerable proportion of participants report being very anxious and fairly anxious, showing that moderate to high levels of dental fear are common. Another noticeable group identifies as extremely anxious, reflecting severe fear associated with dental visits. On the

other hand, fewer participants fall into the slightly anxious and no anxious categories, indicating that only a small percentage of people experience little to no concern about undergoing dental procedures. This distribution emphasizes that dental anxiety is widespread, with most patients experiencing it at varying intensities.

When patients are about to receive a local anesthesia injection in the gums, most of them report significant levels of anxiety. The majority fall into the categories of very anxious and extremely anxious, reflecting a heightened fear commonly associated with dental needles. A moderate proportion of patients describe themselves as fairly anxious, while a smaller group indicates being slightly anxious. Only a limited number of individuals report no anxiety,

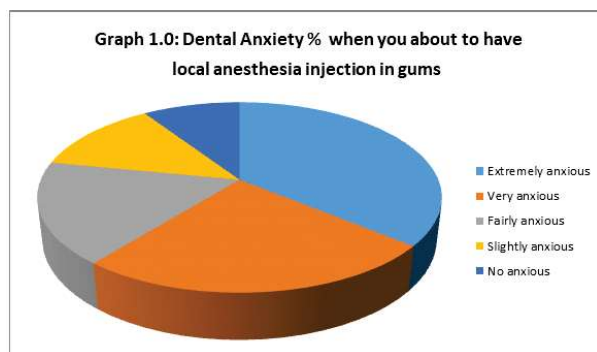


Fig 1: Dental Anxiety % when about to have local anesthesia injection in gums

showing that calmness in this situation is relatively uncommon. This pattern highlights that dental injections are one of the primary triggers of patient anxiety in dental practice.

DISCUSSION

This study revealed that nearly six out of ten adults attending dental clinics experienced dental anxiety, with one in five reporting severe anxiety. These findings are consistent with previous studies from Saudi Arabia and Lebanon, where high prevalence rates have been reported^{10,11}.

Females were significantly more anxious than males, which aligns with other studies suggesting gender-related differences in perception of pain and anxiety¹²⁻¹⁴. Negative dental experiences were also a

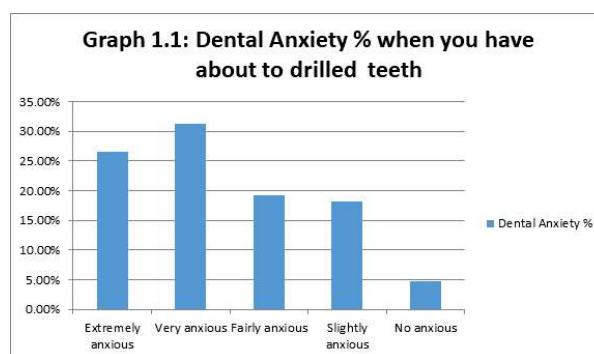


Fig 2: Dental Anxiety % When About to Receive Local Anesthesia Injection in Gums

Table 1: Association of Dental Anxiety Scale (DAS) scores with gender, past dental treatment history, and family dental history

Feature	Frequency n (%)	DAS score (Mean ± SD)	Significance (p value)
Gender	Male: 126 (58.9%)	Male: 15.06 ± 4.90	0.016*
	Female: 88 (41.1%)	Female: 16.68 ± 4.61	
Past dental treatment history	Yes: 142 (66.4%)	Yes: 15.27 ± 4.89	0.046*
	No: 72 (33.6%)	No: 16.64 ± 4.61	
Family dental history	Yes: 133 (62.2%)	Yes: 15.38 ± 4.90	0.172
	No: 81 (37.9%)	No: 16.31 ± 4.60	

Table 2: Item-wise statistical analysis of Dental Anxiety Scale (DAS) scores

Questionnaire Item	Gender (Mean ± SD)	p-value	Past Dental History (Mean ± SD)	p-value	Family Dental History (Mean ± SD)	p-value
	Male	Female		Yes	No	
Going to dentist tomorrow	2.68 ± 1.34	2.95 ± 1.39	0.154	2.61 ± 1.33	3.17 ± 1.39	0.040
Sitting in dentist's waiting room	2.77 ± 1.34	2.92 ± 1.33	0.415	2.79 ± 1.35	2.92 ± 1.41	0.510
About to have tooth drilled	3.41 ± 1.20	3.81 ± 1.16	0.018	3.49 ± 1.21	3.75 ± 1.16	0.128
About to have teeth scaled/polished	2.84 ± 1.32	2.94 ± 1.36	0.548	2.85 ± 1.36	2.94 ± 1.29	0.634
About to receive local anesthetic injection	3.37 ± 1.31	4.09 ± 1.23	0.001	3.54 ± 1.32	3.90 ± 1.32	0.060

strong predictor of anxiety, consistent with findings from systematic reviews^{15,16}.

Injections and tooth extractions were identified as the most anxiety-inducing procedures. Similar patterns have been observed globally, where invasive procedures elicit more fear compared to preventive or restorative treatments⁹⁻¹².

The implications of these findings are critical: patients with high dental anxiety are more likely to avoid treatment, resulting in advanced dental diseases. Incorporating behavioral interventions, effective communication, and minimally invasive dentistry may help reduce anxiety and improve oral health outcomes.

CONCLUSION

Dental anxiety was prevalent among adults attending dental clinics, with higher rates in females and those with previous negative experiences. Dental injections and extractions were the most anxiety-inducing procedures. Dentists should adopt patient-centered strategies to reduce anxiety and encourage regular dental attendance.

LIMITATIONS

The study provides valuable insight into the prevalence and determinants of dental anxiety in a local population. However, limitations include the use of non-probability sampling and self-reported data, which may introduce response bias. Further multicenter studies with larger, randomized samples are recommended.

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CONFLICT OF INTEREST
Authors declare no conflict of interest.
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AUTHORS' CONTRIBUTION

The following authors have made substantial contributions to the manuscript as under:

Conception or Design: MA, MUS, SMA, FA, SA

Acquisition, Analysis or Interpretation of Data: MA, MUS, SMA, FA, SA

Manuscript Writing & Approval: MA, MUS, SMA, FA, SA

All the 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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