



## The Silent Burden: Prevalence and Psychological Impact of Dental Anxiety Among Students and Professionals in Pakistan

Asma Siddiqui<sup>1</sup>, Samia Siraj<sup>2</sup>, Fatima Nasir<sup>3</sup>, Affan Ahmad<sup>4</sup>, Syeda Arzoo Azeem<sup>5</sup>, Muhammad Tariq Fayyaz<sup>6</sup>

<sup>1</sup>Department of Medical Education, Karachi Medical and Dental College, Karachi Metropolitan University, Karachi, <sup>2</sup>Department of Orthodontics, Karachi Medical and Dental College, Karachi Metropolitan University, Karachi, <sup>3</sup>Department of Endodontics, Karachi Medical and Dental College, Karachi Metropolitan University, Karachi, <sup>4</sup>Department of Sciences of Dental Materials, Karachi Medical and Dental College, Karachi Metropolitan University, Karachi, <sup>5</sup>Department Of Oral and Maxillofacial Surgery, Karachi Medical and Dental College, Karachi Metropolitan University, Karachi, <sup>6</sup>Department of Dentistry, Karachi Medical and Dental College, Karachi Metropolitan University, Karachi, Pakistan.

### ABSTRACT

**Background:** Dental anxiety is a frequent issue that has a huge impact on dental professionals and students who aren't able to provide care as needed. The study aimed to determine the prevalence of dental anxiety in dental students and professionals and assess the contributing factors and management options for dental anxiety.

**Methods:** A cross-sectional study was conducted at Karachi Medical and Dental College for six months from 1<sup>st</sup> March 2025 to 31<sup>st</sup> August 2025. A non-probability purposive sampling technique was employed to recruit the 364 dental professionals and students. The data were collected using a structured questionnaire. Data were analyzed using SPSS v20. Descriptive statistics summarized demographic and response data. Chi-square tests assessed associations between demographics and perceptions of trauma work. Internal consistency was evaluated using

Cronbach's alpha. A p-value < 0.05 was considered statistically significant

**Results:** The study indicated that 231(63.5%) of participants experienced dental anxiety. Pain was the most common contributing factor reported, at 213(58.5%). 293(80.5%) of participants described that they manage anxiety by using effective communication and empathy, whilst only 56(5.4%) of them relied on relaxation techniques. There were differences in anxiety depending on gender, with females reporting higher levels of anxiety (p≤ 0.05).

**Conclusion:** There is a high prevalence of dental anxiety in dental professionals and students. Pain was the main contributing factor to dental anxiety. The most frequently used management technique was effective communication.

**Keywords:** Dental Anxiety, Communication, Fear of Pain.

**\*Corresponding Author:** Asma Siddiqui

**Email:** [drasmaimad@gmail.com](mailto:drasmaimad@gmail.com)

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## INTRODUCTION

Dental anxiety is a widespread and complex phenomenon affecting a significant number of patients globally<sup>1, 2</sup>. It is a substantial barrier to oral healthcare, often resulting in the avoidance of dental visits, poor oral hygiene, and long-term negative impacts on oral health<sup>3, 4</sup>. In countries like Pakistan, where oral health remains an under-addressed public health issue, dental anxiety poses an even greater challenge to effective dental service delivery<sup>5, 6</sup>.

Despite its high prevalence, dental anxiety remains poorly understood, particularly in the Pakistani context, where cultural, social, and systemic factors may uniquely influence both patients' experiences and dental professionals' responses<sup>7</sup>. Effective management of dental anxiety requires a comprehensive understanding of its causes, consequences, and context-specific management strategies<sup>8</sup>. However, existing dental education and training programs in Pakistan may not be adequately preparing future professionals to address these complex issues<sup>7</sup>. This gap in knowledge and training significantly limits the development of effective, culturally appropriate interventions and diminishes the quality of patient care.

Furthermore, while much of the existing literature focuses on patients' experiences, there is limited research exploring the perspectives of dental students and professionals, the very individuals responsible for recognizing and managing dental anxiety in clinical settings<sup>9, 10</sup>. Their understanding, attitudes, and preparedness play a crucial role in ensuring positive patient outcomes, yet this area remains underexplored, particularly in South Asian healthcare systems.

In addition to individual perceptions, systemic factors such as the structure of medical and dental education in Pakistan need thorough evaluation<sup>11, 12</sup>. The current curriculum may not provide adequate emphasis on the psychological aspects of patient care, including anxiety management. This includes curriculum content, teaching methodologies, assessment techniques, and availability of continuing professional development related to dental anxiety<sup>13</sup>. Grasping these elements is crucial for developing educational reform that can improve the readiness of dentists and how professionally they deal with anxious patients.

This research is important as it fills an important gap in dentistry education and practice in Pakistan, because it investigated the experiential and educational aspects of dental anxiety concerning future and current dentals professionals' perspectives, to help inform the creation of cultural appropriate, educationally sound capacity building initiatives aimed at improving the management of dental anxiety. Improving awareness and competence of professionals in this area will hopefully lead to improved patient outcomes, satisfaction, and ultimately improve public oral health. The present study

explored the perspectives and possible experiences of dental students and professionals dealing with dental anxiety, and assessed whether current educational training and experience prepare them to make improvements in dental education and patient care in Pakistan. The study aimed to determine the prevalence of dental anxiety in dental students and professionals, and assess the contributing factors and management options for dental anxiety.

## METHODS

A cross-sectional study was conducted at Karachi Medical and Dental College for six months from 1<sup>st</sup> March, 2025 to 31<sup>st</sup> August 2025. The ethical approval was obtained from the institutional review board (IRB) of Karachi Medical and Dental College, KMU (Approval No: IRB/KMDC/KMU/102/2025, Dated: 24<sup>th</sup> February, 2025). The study population comprised currently enrolled undergraduate dental students (from first year to final year) as well as registered dental professionals practicing in academic, clinical, or hospital-based settings in Pakistan.

The sample size was calculated using OpenEpi (version 3.01), an open-source statistical tool for epidemiologic calculations with a prevalence rate of 6.27% based on prior literature, a confidence level of 95% and a margin of error of 5%. The calculated sample size was 364 participants<sup>14</sup>.

A non-probability purposive sampling technique was employed to recruit participants who were directly involved in dental education and practice. The rationale for using purposive sampling was to ensure that only those with relevant knowledge and experience in the field of dentistry were included, which enhanced the relevance and quality of the responses. Inclusion criteria consisted of undergraduate dental students (currently enrolled in BDS programs) and dental professionals who were actively practicing or involved in teaching. Exclusion criteria included individuals unwilling to participate or those who submitted incomplete questionnaires.

The data collection process involved the distribution of a structured self-administered questionnaire. The questionnaire was designed based on an in-depth review of existing literature and expert consultation to ensure that it adequately addressed the key aspects of dental anxiety, including its causes, impact on patients, and the adequacy of educational and professional training related to its management. The tool included both closed-ended questions using Likert scales and multiple-choice formats, allowing for quantifiable responses<sup>15</sup>.

Before full-scale distribution, a pilot study was carried out with a small number of individuals to assess the clarity, reliability, and validity of the questionnaire. After making minor alterations based on feedback, the final version of the questionnaire was distributed by both methods: an electronic version using Google Forms and a paper version to account for different levels of internet access by

the participant. Each participant was given a cover letter describing the study, its aims, and that their participation was voluntary, and the participation was explained along with the cover letter before filling out the questionnaire, and written informed consent was obtained. The participants were also assured of their confidentiality and that their information would only be used for academic and research so on purposes.

After participation, the data were collected, organized, and entered into SPSS version 20 for statistical analysis. Descriptive statistics such as frequencies, percentages, mean, and standard deviations were calculated to describe the data. To explore specific associations between demographic variables and participants' perceptions or experience of working in trauma, the study included inferential statistics that included the Chi-square test to explore the association. Chronbach's alpha was used to assess the reliability of the questionnaire and to ensure internal consistency of the scales used in the questionnaire. Significant p-values were set at less than 0.05.

All ethical considerations were addressed before the commencement of the study. Approval was obtained from the Institutional Review Board (IRB) of the participating institution. The study adhered strictly to ethical guidelines concerning human subjects' research. Informed consent was obtained from all participants, who were informed of their right to withdraw from the study at any point without any consequences. Confidentiality and anonymity were ensured by not collecting any personal identifiers, and all data were stored securely with restricted access. Additionally, cultural sensitivity was maintained throughout the data collection process to ensure that the language and tone of the questions were respectful and non-intrusive.

## RESULTS

**Table 1: Characteristics of Participants**

Parameters	Frequency	Percentage (%)
<b>Gender</b>		
Female	304	83.5%
Male	60	16.5%
<b>Occupation</b>		
Dental Student	264	72.5%
Dental Professional	96	26.4%
House Officer	3	0.8%
Healthcare Quality Manager	1	0.3%

Contributing Factor		
Fear of pain	213	58.5%
Fear of loss of control	77	21.2%
Previous traumatic experience	32	8.8%
Other	15	4.1%

In this study, a total of 364 participants were included, with a majority being female 83.5% and the rest male 16.5%. The participants had varying occupational backgrounds, with the majority being dental students (72.5%), followed by dental professionals (26.4%). A small portion of participants were house officers (0.8%) and healthcare quality managers 0.3%. The study also explored the factors contributing to dental anxiety, with the fear of pain being the most common cause, affecting 58.5% of the participants. Other contributing factors included fear of loss of control (21.2%), previous traumatic experiences (8.8%), and a variety of other causes (4.1%), such as fear of anesthesia, fear of judgment, and health concerns (**Table 1**).

**Table 2: Experience of Dental Anxiety Based on Gender**

Response	Male (n=60)	Female (n=304)
Yes	37 (61.66%)	194 (63.81%)
No	23 (38.33%)	110 (36.18%)

Regarding the experience of dental anxiety based on gender, the data showed that 61.66% of males and 63.81% of females reported experiencing dental anxiety (**Table 2**).

**Table 3: Distribution of Different Levels of Dental Anxiety Among Male and Female Participants.**

Level of Dental Anxiety	Male (n=60)	Female (n=304)	p-value
Low	29 (48.3%)	90 (29.6%)	<0.05
Mild	15 (25.0%)	92 (30.2%)	
Moderate	15 (25.0%)	100 (32.8%)	
High	1 (1.6%)	18 (5.9%)	
Severe	0 (0.0%)	4 (1.3%)	

The study also assessed the levels of dental anxiety among the participants. The distribution of anxiety levels across genders showed that 48.3% of males reported low anxiety, compared to 29.6% of females. Mild anxiety was experienced by 25% of males and 30.2% of females, while moderate anxiety was observed in 25% of males and 32.8% of females. Only 1.6% of males and 5.9% of females reported high anxiety, with 1.3% of females experiencing severe anxiety. The p-value for the difference in anxiety levels between males and females was found to be  $<0.05$ , indicating a statistically significant difference in the anxiety levels between genders. (Table 3).

**Table 4: Methods Used for the Management of Dental Anxiety**

Management Technique	Frequency	Percentage (%)
Communication and empathy	293	80.5%
Relaxation techniques	56	15.4%
Sedation	10	2.7%
Other	1	0.3%

Various methods were reported by the participants to manage dental anxiety in the present study. The most common approach was communication and empathy, which was used by 80.5% of participants. This highlights the importance of establishing a strong dentist-patient relationship and effective communication in alleviating anxiety. Relaxation techniques were used by 15.4% of participants, while sedation was employed by 2.7%, and only 0.3% reported using other methods for managing dental anxiety. These results underscore the significance of using non-invasive strategies, particularly communication and empathy, in addressing dental anxiety (Table 4).

## DISCUSSION

Dental anxiety is a common issue affecting individuals in various dental settings, including both patients and professionals. In this study, 63.5% of dental students and professionals reported experiencing dental anxiety daily, which emphasizes its widespread nature despite the advancements in dental care. Similar findings have been reported in recent studies, where dental anxiety continues to be a significant barrier to quality dental care. A study conducted found that dental anxiety affected a high percentage of participants, with 60% of the sample experiencing anxiety during dental visits, which aligns closely with our results. This suggests that dental anxiety remains a persistent issue across different cultural and geographical contexts<sup>16</sup>.

The fears of dental anxiety in this study resemble other recent studies. Pain fears were the overwhelming factor, with 58.5% of participants in this study mentioning pain, with the second highest being loss of control, at 21.2%. These results were in line with a study showing fear of pain

was the most prevalent factor of dental anxiety<sup>17, 18</sup>. A recent study reported that the perception of pain is strongly linked to anxiety and that pain perception during dental treatment relates poorly to the anxiety level<sup>7</sup>. This study agrees with these studies, and we found that pain-fear was the main source of anxiety, with dental practitioners and students looking to minimize the pain of dental treatment.

Additionally, the current study found a significant gender difference in the experience of dental anxiety, with 63.81% of females and 61.66% of males reporting anxiety; nevertheless, there was not a statistical difference in the prevalence of anxiety based on gender, however, a significant difference was found in the level of anxiety between the genders where fewer females reported lesser degrees of anxiety, especially in the moderate and severe level of anxiety. Therefore, this finding was further supported by the results of the study published in 2021, indicating that females tend to experience higher levels of dental anxiety than males<sup>19</sup>. This may be explained by psychosocial and hormonal factors, where women tend to have a higher propensity to anxiety, heightened pain sensitivity, and other emotional triggers<sup>20</sup>.

In addition to the contributing factors, the research also investigated the management strategies of dental anxiety. Effective communication and empathy were the most commonly used strategies; 80.5% of the participants claimed to use effective communication and empathy skills to manage their patients' dental anxiety. This finding aligns with the literature that noted the significance of communication skills in decreasing dental anxiety<sup>10, 21, 22</sup>. Here is research that supports the role of communication in building trust and lessening patients' fears; thus, communication is an essential skill in clinical practice. We also noted that relaxation techniques were another common management strategy used in our research (15.4%). Additionally, research reported that relaxation methods can aid in reducing anxiety, stating that relaxing someone with exercises to reduce their fear before and while they are undergoing dental procedures could be useful<sup>23</sup>.

As previously mentioned, although there are these management strategies, the study showed that the majority (about 77.7%) of study participants had never received any formal education regarding dental anxiety management. This lack of formal education regarding dental anxiety management is crucial because it demonstrates the need for improved training and continuing professional development (CPD) for dental professionals regarding the management of dental anxiety. A study noted that inadequate training for dental professionals could worsen the anxiety experienced by patients, as it could make dental practitioners feel unable to manage anxious patients<sup>24</sup>. Further, our study demonstrated that regarding CPD opportunities, about 61% of respondents indicated that lack of availability was the most frequent barrier to engaging in CPD opportunities, followed by time

(20%) and financial (16.8%) barriers. Our research was consistent with a study that also highlighted accessibility and financial barriers as barriers to CPD for dental professionals<sup>25</sup>. Results from this study furthermore underscore the importance of integrating anxiety management strategies into the dental curriculum, specifically regarding communication strategies, relaxation techniques, and sedation. According to the study participants, the topics most relevant for inclusion in future CPD programs were effective communication skills (44%), relaxation techniques (41%), and sedation methods (48%), which reflects a broad consensus on the need for comprehensive anxiety management strategies

### CONCLUSION

Dental professionals and students in Pakistan experience a high level of dental anxiety, and most often cite pain as a reason for the anxiety. Also, it shows that female dental professionals and students show higher levels of anxiety than male dental professionals and students. It also demonstrated that the best tools in managing dental anxiety were effective communication and empathy. However, the study identified a major gap in formal education and training opportunities for dental professionals and students in managing dental anxiety, an area that urgently needs further action. If we want to do a better job of managing dental anxiety, then we need to build training programs into the education and training of dental professionals and also have better access to CPD opportunities. It would also be valuable to address barriers to CPD opportunity, such as access to training programs, time access to training programs, costs of training programs, in equipping dental professionals with the necessary skills to manage dental anxiety

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### CONFLICT OF INTEREST

None

### ETHICAL APPROVAL

The ethical approval was obtained from the institutional review board (IRB) of Karachi Medical and Dental College, KMU (Approval No: IRB/KMDC/KMU/102/2025, Dated: 24th February, 2025).

## AUTHORS' CONTRIBUTION

All authors contributed equally as per ICMJE policy.

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