

Assessing Fear and Anxiety Related to Dental Instruments and Procedures Among Patients

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Abstract

Background: Dental anxiety is a significant concern, especially in developing countries like Bangladesh, where it can affect patients' willingness to seek dental care. This anxiety often leads to delayed visits, untreated oral diseases, and the worsening of oral health. Despite its impact, limited research has focused on dental anxiety in Bangladesh, particularly anxiety associated with dental instruments and procedures.

Objective: This study aimed to assess the levels of fear and anxiety related to dental instruments and procedures among patients in Bangladesh and to identify the contributing factors influencing their dental care behaviors.

Methods: A cross-sectional study was conducted at Tangail Medical College and Hospital, Bangladesh, from January 2023 to June 2023. A total of 220 patients who had visited the clinic at least twice were recruited. Participants completed a questionnaire assessing their anxiety levels during various dental procedures and instruments. The questionnaire included five questions related to dental anxiety and a second section exploring reasons for avoiding dental care. Data were analyzed using SPSS version 20.0, and statistical significance was determined using the Chi-square test ($p \leq 0.05$).

Results: Of the 220 participants (75 males, 145 females), 72% experienced dental anxiety. The highest levels of anxiety were reported during the administration of local anesthetic injections (76%), followed by tooth drilling (60%). Statistically significant gender differences were observed, with females reporting higher anxiety levels ($p \leq 0.05$). Common reasons for avoiding dental visits included lack of time (35%) and cost (31%).

Conclusion: Dental anxiety is prevalent in Bangladesh, with significant gender differences. Addressing this issue through psychological support and non-pharmacological strategies may improve dental care utilization, particularly among high-risk groups like women.

Keywords: Dental anxiety, fear, dental instruments, dental procedures, Bangladesh.

I. Introduction

Dental anxiety is a significant concern for both patients and dental care providers worldwide, including in Bangladesh. It is characterized by a patient's emotional response to stress associated with dental instruments and procedures [1]. High levels of dental anxiety often lead to negative attitudes towards dental treatment, making successful delivery of care more challenging [1]. In the context of Bangladesh, as in many other countries, dental fear can hinder the utilization of oral health services, increasing the risk of untreated dental diseases and progressive deterioration of oral health, thereby reinforcing existing fears [2].

While extensive research has reported that approximately one in six adults in developed countries suffer from high dental fear [3,4], similar concerns are increasingly being recognized in developing countries like Bangladesh, where limited access to dental services and sociocultural perceptions may further compound anxiety levels. Studies suggested that certain subgroups, such as women and middle-aged adults, may experience even higher rates of dental fear [3]. Dental anxiety often results in delayed or avoided dental visits [3,5-7], frequent cancellations, and greater difficulty in managing patients during treatment [8]. As a result,

anxious individuals tend to have poorer oral health outcomes, presenting with more advanced disease requiring complex and often more distressing interventions [9,10]. The development of a “vicious cycle of dental fear” is a particular concern. In this cycle, fear leads to avoidance of dental care, deterioration of oral health, and the need for more invasive treatments, which in turn exacerbates anxiety [11-13]. Without timely interventions, patients become increasingly trapped in this cycle, adversely affecting both their overall health and quality of life [14].

Despite the public health significance of dental anxiety, structured systems for early identification and management of dentally anxious patients are limited in Bangladesh. Typically, the responsibility of managing such patients falls solely on the treating dental practitioner. Encouragingly, several non-pharmacological strategies can be employed within dental clinics to assist fearful individuals in receiving necessary care. Given the growing recognition of dental anxiety as a barrier to oral health in Bangladesh, the present study aims to assess the extent of fear and anxiety related to dental instruments and procedures among Bangladeshi patients, to inform better management strategies in clinical practice.

II. Methodology

Study Design and Population

This study was conducted as a cross-sectional analytical study at Tangail Medical College and Hospital, Bangladesh, between January 2023 to June 2023. The study aimed to assess fear and anxiety related to dental instruments and procedures among patients. A total of 220 patients who visited the dental clinic for treatment were recruited.

Sampling Technique and Selection Criteria

The study utilized purposive sampling to select participants. The inclusion criteria for the study were as follows: participants of either gender, aged 18 years or older, who had previously visited the dental clinic at least twice, and who were willing to participate in the study. The exclusion criteria included patients with intellectual disabilities, those who refused to participate, and patients with severe cognitive impairments that could hinder their understanding of the questionnaire.

Data Collection and Questionnaire Administration

Demographic data (age, gender) were collected from each participant. The participants were then provided with a questionnaire designed to assess their dental anxiety and fear associated with dental instruments and procedures [15,16].

The questionnaire was divided into two parts:

1. First Part: This section comprised five questions aimed at evaluating the anxiety levels during different dental procedures. The responses were scored from 1 to 5, with 1 representing “not at all anxious” and 5 representing “extremely anxious.” The questions included:

- Q1: Planning a visit to the dental clinic makes you feel anxious?
- Q2: Does waiting at the dental clinic for treatment make you feel anxious?
- Q3: Does the dentist about to drill or drilling your tooth make you feel anxious?
- Q4: Does waiting in the dental chair for scaling and polishing of your teeth make you feel anxious?
- Q5: Does the dentist about to deliver a local anesthetic injection make you feel anxious?

Participants with scores of 11–14 were classified as moderately anxious, and those with scores above 15 were considered highly anxious.

2. Second Part: This section assessed the reasons for avoiding dental visits. Reasons included:

- Treatment not needed
- Cost
- Fear
- Lack of time

Additionally, patients were asked to evaluate their fear of various dental instruments [17].

Statistical Analysis

The data were analyzed using SPSS version 20.0. The Chi-square test was applied to evaluate the statistical significance of the data, with a p-value of ≤ 0.05 considered statistically significant.

III. Result

The study included a total of 220 participants, consisting of 75 males and 145 females. Table 1 presents the percentage of respondents who experienced anxiety across various questionnaire items. Of the 170 respondents, 33% reported feeling anxious when planning a visit to the dental clinic. A higher proportion, 50%, expressed anxiety while waiting for treatment at the dental clinic. Anxiety was most prevalent during dental procedures, with 60% of participants feeling anxious when the dentist was about to drill or during the drilling of

their tooth. A similar level of anxiety (57%) was reported while waiting in the dental chair for scaling and polishing. The highest anxiety levels were observed during the administration of a local anesthetic injection, with 76% of respondents indicating anxiety at this stage.

The modified dental anxiety scoring criteria revealed that men experienced only mild to slight anxiety. In contrast, women exhibited higher levels of anxiety, with a significant number reporting moderate to extreme anxiety. A statistically significant difference in dental anxiety scores was observed between genders ($p \leq 0.05$). (Table 1)

Table 1: Percentage of respondents who felt anxious according to the scores of various questionnaire items

Question	Felt anxious with various scores (N=170)
Planning a visit to dental clinic makes you feel anxious	33%
Does waiting at dental clinic for treatment make you feel anxious?	50%
Does the dentist about to drill or drilling your tooth make you feel anxious?	60%
Does waiting in the dental chair for scaling and polishing of your teeth make you feel anxious?	57%
Does the dentist about to deliver a local anesthetic injection make you feel anxious?	76%

Table 2 presents the percentage of respondents (N=170) who experienced fear and anxiety associated with various dental instruments and procedures. The highest levels of anxiety were reported during tooth extraction, with 88% of patients expressing fear. A significant proportion, 65%, reported anxiety when files and reamers were used during root canal treatments. Anxiety was also commonly experienced with the use of the air-rotar or dental handpiece, with 60% of respondents reporting fear. The impression-taking procedure induced anxiety in 31% of participants, while 23% reported feeling anxious during the use of forceps. A smaller percentage of patients, 22%, reported anxiety related to the dental explorer/probe, and 15% felt anxious during the X-ray procedure/equipment. Anxiety levels were relatively low for the mouth mirror (1%) and the dental chair (4%). (Table 2)

Table 2: Percentage of fear and anxiety associated with various dental instruments and procedures

Dental instrument/procedure	Percentage (N=170)
Dental explorer/probe	22%
Mouth mirror	1%
X-ray procedure/equipment	15%
Forceps	23%
Air-rotar/dental handpiece	60%
Dental chair	4%
Impression taking procedure	31%
Files and reamers	65%
Tooth extraction	88%

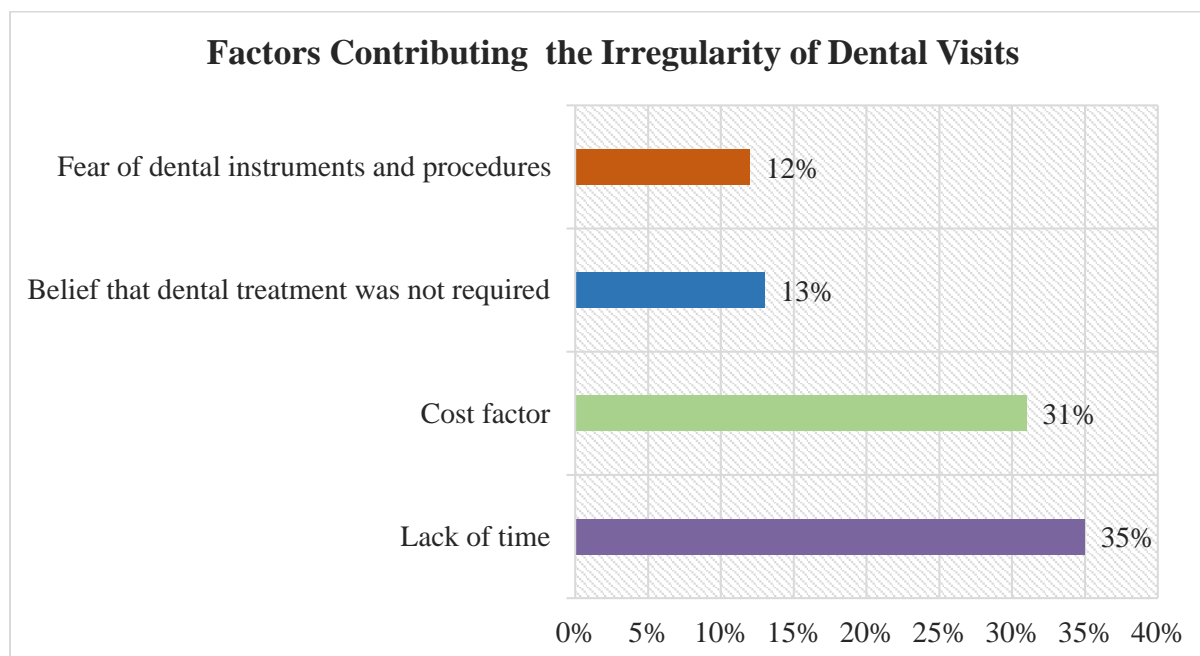


Figure 1: Factor Contributing the Irregularity of Dental Visits

Figure 1 illustrates the factors contributing to irregular dental visits among the study participants. The most commonly reported factor was the lack of time, with 35% of respondents citing this as the primary reason for not visiting the dentist regularly. The second most significant factor was the cost factor, with 31% of participants indicating that the cost of dental care influenced their decision to avoid regular visits. Belief that dental treatment was not required was the reason for 13% of the participants, while fear of dental instruments and procedures was reported by 12% of respondents. (Figure 1)

IV. Discussion

Dental anxiety remains a significant barrier to accessing dental care, particularly in developing countries like Bangladesh, where access to dental services is often limited, and oral health education programs are lacking. This situation is notably different from that in Western countries, where there is a greater emphasis on preventive dental care and education. In developing nations, many individuals only seek dental care when they experience pain, which contributes to the overall anxiety associated with dental visits. This is especially true for children, who may perceive dental visits more negatively based on their experiences, compounded by the limited focus on preventive measures [18].

In this study, dental anxiety was observed in 72% of the participants, with 13% of respondents reporting that fear of dental instruments and procedures was the reason for irregular dental visits. This aligns with previous studies, including Saatchi et al. [15], who found that a significant proportion of individuals reported high levels of dental anxiety, especially during invasive procedures like tooth drilling and injections. In our study, the highest anxiety levels were noted during the administration of local anesthesia (76%) and tooth drilling (60%). These findings are consistent with those of Suhani et al. [17], who observed that the use of certain dental instruments can provoke heightened anxiety, particularly among younger populations.

Various dental instruments elicited different anxiety levels among children, and no correlation was observed between parents' anxiety levels and those of their children. In our study, the anxiety caused by dental procedures was evident in both adults and children, with significant variation based on the perceived invasiveness of the procedure [19]. For instance, 88% of participants expressed fear during tooth extraction, which is consistent with previous reports highlighting the association of dental anxiety with invasive procedures [20]. Additionally, 65% of respondents in our study reported anxiety during the use of files and reamers during root canal treatment, underscoring the role of procedural invasiveness in exacerbating fear.

Dental anxiety is often linked with underlying psychiatric conditions, including mood disorders. In our study, higher levels of anxiety were reported by females, which aligns with existing literature indicating that women are generally more prone to experiencing anxiety [21]. The results from the modified dental anxiety scale also suggested that men experienced only mild to slight anxiety, while women reported higher levels, including moderate to extreme anxiety. This finding supports previous studies that have identified gender as a significant factor in dental anxiety [15]. The relationship between dental anxiety and previous traumatic dental experiences was also evident in this study. Armfield and Heaton [22] emphasized that dental fear is often

exacerbated by negative past experiences, such as painful procedures or unsatisfactory outcomes. Our study found that respondents who had previously undergone invasive procedures, particularly tooth extraction, reported higher levels of anxiety, which is consistent with the idea that dental fear is closely linked to prior painful experiences.

Furthermore, the study by Singh et al. [23] demonstrated the effectiveness of audio distraction aids in managing dental anxiety among pediatric patients. While our study did not explore such interventions, it highlights the importance of developing strategies to manage dental anxiety effectively. As dental anxiety is closely tied to avoidance behaviors, patients who delay seeking treatment often present with more severe dental issues that require more complex and traumatic interventions. This leads to a vicious cycle where fear perpetuates avoidance, which in turn exacerbates dental problems [24]. This cycle can result in increased stress for both patients and dental practitioners.

V. Conclusion

dental anxiety is a prevalent issue that significantly affects the accessibility and effectiveness of dental care, particularly in developing countries like Bangladesh. The findings of this study highlight the need for comprehensive strategies to manage dental anxiety, which could include psychological interventions, behavior management techniques, and the use of technological aids to alleviate fear during dental procedures. Future research should focus on exploring these interventions and developing approaches tailored to different patient demographics, including children and individuals with underlying psychiatric conditions.

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Informed Consent Statement

All patients provided written informed consent after receiving a clear explanation of the study. The confidentiality of participants was strictly maintained, and the risks and benefits were communicated.

Ethical Considerations

Ethical approval was obtained from the Tangail Medical College Hospital, Tangail, Bangladesh IRB.

Conflict of interest

There are no conflicts of interest among the authors.

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