# DENTAL ANXIETY: ETIOLOGY, CONSEQUENCES, ASSESSMENT, AND MANAGEMENT

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**Abstract:** Dental anxiety is a common problem in dental practice that may adversely affect patients' behaviour, dental care utilization, and the maintenance of good oral health. The aim of this narrative review is to summarize the current scientific evidence on dental anxiety, dental fear, and dental phobia. It discusses the main distinctions among these concepts, the factors associated with their development, and their consequences for oral health and quality of life.
Special attention is paid to the role of previous negative dental experiences, fear of pain, individual psychological characteristics, and social factors in the development of dental anxiety. The review also examines the impact of dental anxiety on dental care utilization, its association with the avoidance of dental treatment, and its effect on quality of life. In addition, it presents the principal contemporary approaches to the assessment and management of dental anxiety, emphasizing the importance of its early recognition and the implementation of an individualized patient-centred approach. Such an approach may improve patient cooperation during treatment and contribute to the more effective delivery of dental care.
**Keywords:** dental anxiety, dental fear, dental phobia, oral health, quality of life, dental anxiety management.

## 1. INTRODUCTION

Dental anxiety, dental fear, and dental phobia are significant and widespread problems in dental practice that may manifest with varying degrees of severity, ranging from moderate apprehension before an upcoming dental procedure to intense fear accompanied by pronounced avoidance behaviour (Piechal et al., 2026). Despite advances in modern dentistry and improvements in pain and anxiety control, these conditions continue to represent a substantial barrier to the timely seeking and utilization of dental care.
Dental anxiety is characterized by feelings of apprehension, tension, or fear associated with an upcoming dental visit or the anticipation of dental treatment. In some patients, fear may be severe and difficult to control, leading to the avoidance or prolonged postponement of necessary dental care (Deogade & Suresan, 2016; Muneer et al., 2022; Locker & Liddell, 1992; Sindhu et al., 2020).
Evidence indicates that dental anxiety and dental fear affect approximately 15.3% of the adult population worldwide (Silveira et al., 2021). According to Kumal et al. (2025), a higher prevalence is observed among younger adults and women, who are more likely to experience anxiety and fear associated with dental visits and dental treatment (Kumal et al., 2025).
Dental anxiety is of considerable importance for oral health because it may influence patients' behaviour in seeking and utilizing dental care. Fear and anxiety associated with dental treatment may result in the postponement or avoidance of routine dental check-ups and necessary dental care (Winkler et al., 2023). Consequently, a self-perpetuating cycle may develop in which the avoidance or postponement of dental treatment contributes to the deterioration of oral health and the progression of existing oral diseases. This, in turn, may necessitate more complex and invasive dental procedures, which can further intensify fear and anxiety associated with subsequent dental treatment (Chauca-Bajaña et al., 2025). Furthermore, dental anxiety may adversely affect the quality of life of patients undergoing dental treatment (Darmadi et al., 2025).
The aim of this narrative review is to summarize and synthesize the current scientific evidence on dental anxiety, dental fear, and dental phobia by examining the characteristics and distinctions among these concepts, the principal etiological and risk factors associated with their development, as well as their characteristic clinical and behavioural manifestations. Particular attention is given to the impact of dental anxiety on patients' behaviour, dental care utilization, oral health, and quality of life, as well as to the principal contemporary approaches to its recognition, assessment, and management in dental practice.

## 2. DENTAL ANXIETY, DENTAL FEAR, AND DENTAL PHOBIA

Although the terms *dental anxiety*, *dental fear*, and *dental phobia* are often used interchangeably, they describe distinct, albeit closely related, conditions (Armfield & Heaton, 2013). Dental anxiety is defined as an emotional state characterized by feelings of apprehension and tension that arise in anticipation of an object, event, or situation perceived as threatening, in which the specific source of the perceived threat is not always clearly identifiable (Armfield & Heaton, 2013; Appukuttan, 2016). In contrast, dental fear is the immediate emotional response to a specific and identifiable stimulus or situation associated with dental treatment (Stein Duker, 2022; Stan, 2025). Such stimuli may include pain, the administration of local anaesthesia, the sound and vibrations of

dental instruments, or the performance of a particular dental procedure (Appukuttan, 2016). In clinical practice, dental anxiety and dental fear are closely related, as patients who experience anxiety before dental treatment frequently also exhibit a fear response during actual exposure to the dental environment. Both conditions may be accompanied by physiological, cognitive, emotional, and behavioural manifestations, although their presentation and severity vary among individuals (Appukuttan, 2016).

Unlike dental anxiety and dental fear, dental phobia is a specific phobia and a more severe clinical condition characterized by intense, persistent, and difficult-to-control fear of dental treatment that results in pronounced avoidance of dental visits despite the need for treatment (American Psychiatric Association, 2022; Piechal et al., 2026). Such avoidance behaviour may substantially impair a patient's daily functioning, cause significant emotional distress, and hinder the timely seeking and receipt of necessary dental care (American Psychiatric Association, 2022; Avramova, 2022). In patients with dental phobia, fear is often so intense that even the thought of an upcoming dental appointment may trigger severe anxiety and, in some cases, a panic reaction. Prolonged avoidance of dental care may lead not only to deterioration of oral health but also to adverse effects on quality of life, social functioning, and overall health status (Avramova, 2022).

Although dental anxiety and dental fear are relatively common and may vary in severity, ranging from mild to pronounced manifestations, only a small proportion of patients meet the diagnostic criteria for dental phobia (Armfield & Heaton, 2013).

Distinguishing between dental anxiety, dental fear, and dental phobia is important for selecting appropriate behavioural and treatment strategies in dental practice.

## 3. ETIOLOGY AND FACTORS ASSOCIATED WITH THE DEVELOPMENT OF DENTAL ANXIETY

Dental anxiety does not have a single identifiable cause. It may develop through different mechanisms and is generally the result of the interaction of multiple factors. These include previous negative dental experiences, observation of anxious behaviour in others, exposure to negative information about dental procedures, and individual psychological predisposition (Beaton et al., 2014; Piechal et al., 2026; Carter et al., 2014). The relative contribution of each of these factors varies among individuals, which explains the wide variation in the severity of dental anxiety.

The factor most frequently associated with the development of dental anxiety is a previous negative experience during dental treatment (Birkas et al., 2026; Nermo et al., 2021; Locker et al., 1996). Patients who have experienced painful or unpleasant dental procedures are more likely to exhibit higher levels of dental anxiety during subsequent dental visits (Zsido et al., 2025).

Negative experiences during previous dental treatment often lead to the expectation of future pain, which further intensifies anxiety before subsequent dental visits. Consequently, fear of pain is regarded as one of the principal factors involved in the development and maintenance of dental anxiety (McNeil et al., 2018).

Fear may be associated both with the anticipation of pain during the dental procedure itself and with specific procedures, such as the administration of local anaesthesia, the use of needles, tooth extractions, endodontic treatment, and other invasive interventions (van Wijk & Hoogstraten, 2009; Wong et al., 2022; Alghofaily & Alsalleeh, 2022).

However, pain perception is highly individual and is influenced not only by the type of dental procedure but also by the individual's pain threshold, previous experiences, level of anxiety, and psychological and biological characteristics. As a result, the same dental procedure may be perceived as highly painful by one patient but only minimally unpleasant by another (Fillingim, 2017; McNeil et al., 2018).

In addition to fear of pain, the development of dental anxiety is influenced by individual psychological characteristics. Patients with higher levels of general anxiety are more likely to develop dental anxiety. General anxiety is considered one of the factors that may increase susceptibility to perceiving dental treatment as a threatening experience and intensify the anxiety response during dental visits (Carter et al., 2014; Fallea et al., 2025).

The development of dental anxiety may also be influenced by the social environment. Observing anxious behaviour in parents, other family members, or close acquaintances, as well as exposure to negative information about dental treatment, may contribute to the development of dental anxiety even before an individual has had a personal negative dental experience. Fear may be acquired through observational learning or through negative accounts of dental treatment (Piechal et al., 2026; Zsido et al., 2025). Dental anxiety is influenced not only by psychological and social factors but also by a range of sociodemographic characteristics. The factors most frequently discussed in the literature include age, sex, educational level, and socioeconomic status (Murad et al., 2020; Goh et al., 2020).

Age is one of the most extensively studied sociodemographic factors associated with dental anxiety. Dental anxiety may develop as early as childhood, and first impressions and experiences during dental visits play a significant role in its development (Piechal et al., 2026; Klingberg & Broberg, 2007).

Initial dental visits may be accompanied by increased anxiety, particularly among children with no previous dental experience. The unfamiliar clinical environment, novel visual, auditory, and sensory stimuli, together

with the lack of prior experience, are considered factors that may contribute to the development of dental anxiety (Ritchie & Buchanan, 2021; Sun et al., 2024). If these first dental visits are associated with pain, fear, or other negative experiences, the risk of developing dental anxiety increases (Klingberg & Broberg, 2007; Appukuttan, 2016).

Sex is another factor associated with dental anxiety. Available evidence indicates that dental anxiety is more prevalent among girls and women than among boys and men, and this pattern has been observed across different age groups (Murad et al., 2020; Silveira et al., 2021). However, the reasons for these differences have not yet been fully elucidated (Appukuttan, 2016).

Educational level has also been considered a factor that may be associated with dental anxiety. Some original studies have reported that individuals with lower educational attainment exhibit higher levels of dental anxiety (Schuurs et al., 1985; Bermúdez-Bejarano et al., 2024).

However, other studies have found no statistically significant association between educational level and dental anxiety, suggesting that the role of this factor remains inconclusive (Goh et al., 2020).

Socioeconomic status also influences dental anxiety through its impact on access to dental care and patterns of dental care utilization. Socioeconomic factors may limit access to dental services, with individuals of lower income and lower educational attainment more frequently reporting barriers to the use of dental care (Nenov & Bonev, 2024). As a result, some patients seek dental care only when symptoms arise or treatment becomes necessary, rather than attending regular preventive dental visits, which represents a significant challenge for dental practice (Currie et al., 2021). The postponement or avoidance of dental visits is associated with poorer oral health and the need for more extensive dental treatment (Armfield et al., 2007).

## 4. CONSEQUENCES OF DENTAL ANXIETY

Dental anxiety has a significant impact on patients' dental care–seeking behaviour. Evidence from systematic reviews indicates that patients with higher levels of dental anxiety are more likely to avoid or postpone dental visits, which is associated with poorer oral health and a lower quality of life (Appukuttan, 2016; Silveira et al., 2021).

Dental anxiety is also associated with poorer oral health-related quality of life. McGrath and Bedi found that individuals with high levels of dental anxiety were nearly twice as likely to be among those with the poorest oral health-related quality of life (McGrath & Bedi, 2004). The systematic review by Su et al. demonstrated that the psychosocial impact on oral health-related quality of life was most pronounced among patients with dental anxiety (Su et al., 2021). Evidence from the more recent systematic review by Ab Malek et al. further confirmed the association between dental anxiety, less frequent utilization of dental services, and poorer oral health-related quality of life (Ab Malek et al., 2024).

These findings indicate that dental anxiety is associated not only with the avoidance of dental treatment but also with a lower oral health-related quality of life.

## 5. ASSESSMENT AND MANAGEMENT OF DENTAL ANXIETY

Early recognition of dental anxiety is essential for selecting an appropriate treatment approach and preventing the avoidance of dental visits. Dental anxiety is assessed using validated psychometric questionnaires that facilitate the identification of patients with elevated levels of anxiety and support the planning of an individualized treatment approach. Among adults, the most commonly used instruments are Corah's Dental Anxiety Scale (DAS) and the Modified Dental Anxiety Scale (MDAS), while the Index of Dental Anxiety and Fear (IDAF-4C+) has gained increasing acceptance in recent years. In children, the Children's Fear Survey Schedule–Dental Subscale (CFSS-DS) is the instrument most frequently used (Ajmera et al., 2026). Unlike the traditional instruments, the IDAF-4C+ provides a more comprehensive assessment by evaluating the emotional, cognitive, behavioural, and physiological dimensions of dental anxiety, as well as dental phobia and specific fear-provoking stimuli (Armfield, 2010). The analysis by Ajmera et al. indicates that the use of the IDAF-4C+ has been steadily increasing in contemporary research (Ajmera et al., 2026).

The management of dental anxiety should be tailored to the severity of anxiety and the individual characteristics of each patient (Armfield & Heaton, 2013; Appukuttan, 2016; Hoffmann et al., 2022). Effective communication between the patient and the dentist, the establishment of trust, and the provision of clear information about the planned treatment are of fundamental importance (Armfield & Heaton, 2013; Avramova, 2022). The use of behavioural techniques, gradual acclimatization to the dental environment, and allowing patients to signal when they need the procedure to be interrupted may help reduce anxiety and facilitate the delivery of dental treatment (Armfield et al., 2013; Fallea et al., 2025). For patients with more severe anxiety, cognitive behavioural therapy may be considered and, when necessary, pharmacological approaches such as sedation or general anaesthesia may be used (Hoffmann et al., 2022; Lu et al., 2023).

## 6. CONCLUSION

Dental anxiety is a common problem in dental practice with a multifactorial etiology that has a substantial impact on patients' behaviour, dental care utilization, and oral health. Distinguishing between dental anxiety, dental fear, and dental phobia is important for selecting an appropriate patient-centred approach and planning treatment.

Higher levels of dental anxiety are associated with more frequent avoidance or postponement of dental treatment, deterioration of oral health, and poorer quality of life. Therefore, its early recognition through the use of validated assessment instruments, together with the implementation of an individualized patient-centred approach, is essential for the successful delivery of dental treatment.

Effective management of dental anxiety is based on good communication, the establishment of trust, and the use of appropriate behavioural and, when necessary, pharmacological interventions. A thorough understanding of the causes, manifestations, and consequences of dental anxiety enables dentists to select the most appropriate approach for each patient, improve patient cooperation during treatment, and contribute to better treatment outcomes and higher-quality dental care.

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