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DENTAL ANXIETY AND THE IMPACT OF CHILDHOOD DENTAL EXPERIENCES ON TREATMENT AVOIDANCE IN ADULTHOOD: A SYSTEMATIC REVIEW

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ABSTRACT

Introduction: Dental anxiety is a significant health problem that affects the use of dental care worldwide. Negative dental experiences in childhood are considered one of the major etiological factors contributing to the development of anxiety and avoidance behaviors in adulthood.
Aim: The aim of this review was to analyze the influence of childhood dental experiences on the development of dental anxiety and avoidance of dental treatment in adulthood.
Material and methods: A systematic literature search was conducted using PubMed, Scopus, and Google Scholar databases. Publications from January 2000 to February 2026 were included. The search strategy combined keywords related to dental anxiety, childhood experiences, and dental avoidance.
Results: The reviewed studies demonstrated a significant association between negative dental experiences in childhood and increased levels of dental anxiety later in life. Dental anxiety was strongly associated with avoidance of dental visits, leading to deterioration of oral health and the need for more invasive treatments. Cognitive factors such as catastrophic thinking and perceived loss of control were identified as important elements in maintaining the vicious cycle of anxiety and avoidance.
Conclusions: Childhood dental experiences play a significant role in shaping dental anxiety and avoidance behaviors in adulthood. Early preventive care, positive dental experiences, and effective communication strategies may reduce the risk of developing dental anxiety and improve adherence to regular dental visits.

KEYWORDS

Dental Anxiety; Dentophobia; Childhood Experiences; Dental Avoidance; Oral Health; Avoidance Behavior; Vicious Cycle Of Dental Anxiety

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Introduction

Dental caries is currently the most prevalent chronic non-communicable disease worldwide. It is estimated that approximately 2 billion people globally are affected by caries of permanent teeth, while around 510 million children suffer from caries of primary dentition [1]. Although this disease is largely preventable, it remains a significant public health problem in many countries and affects individuals throughout their lives, causing pain, discomfort, difficulties in eating and sleeping, tooth loss, and a reduced quality of life [2].

Among the contributing factors are socioeconomic determinants, such as limited access to dental care, as well as behavioral factors, including high sugar consumption, poor oral hygiene, and lack of regular dental prevention [3,4]. Avoidance of dental treatment is a common phenomenon. Such behaviors, manifested by irregular, problem-driven dental visits, as well as delaying, canceling, and failing to attend scheduled appointments, are estimated to occur in approximately 15–20% of the population [5-7].

One of the main factors responsible for this phenomenon is dental anxiety, with an estimated global prevalence of 15.3% among adults [8]. Risk factors include, among others, gender - higher prevalence among women than men [8,9] - as well as past negative experiences, such as pain during procedures, inadequate communication, or a sense of loss of control, which may lead to the consolidation of anxiety responses [10].

The aim of this review is to analyze the impact of childhood experiences on the avoidance of dental treatment in adulthood, with particular emphasis on the following thematic areas: (1) the influence of childhood dental experiences on the development of anxiety, (2) the relationship between anxiety and avoidance of treatment, (3) the model of the vicious cycle of anxiety and avoidance, and (4) the role of environmental factors and psychological mechanisms.

Materials and Methods

A systematic literature search was conducted in three electronic databases: PubMed, Scopus, and Google Scholar. The search covered publications published between January 2000 and February 2026.

A combination of keywords and logical operators AND and OR was used. The search strategy was adapted to the specific characteristics of each database. In PubMed, MeSH terms were also applied.

The primary search strategy included the following expressions: ("dental anxiety" OR "dental fear" OR "dentophobia" OR "oral health anxiety") AND ("childhood experience" OR "early experience" OR "childhood trauma" OR "early life stress") AND ("dental avoidance" OR "treatment avoidance" OR "avoidance behavior" OR "dental attendance").

Additionally, filters were applied to limit the results to studies conducted on humans, publications in English, and full-text articles.

To identify additional publications, a manual search of the reference lists of selected articles was also performed. Furthermore, selected reports and official materials from international institutions, including the World Health Organization (WHO), as well as statistical data from reliable online sources, were used.

Results

1. Childhood experiences as a factor in the development of anxiety

The majority of the analyzed studies demonstrated a clear correlation between negative dental experiences in childhood and an increased level of dental anxiety later in life. In particular, painful experiences and a sense of loss of control during dental visits were identified as some of the most important etiological factors, as confirmed by the systematic review conducted by Piechal et al. [11].

In a study conducted by Clow et al., it was shown that exposure to invasive dental treatment before the age of eight was associated with nearly a twofold increase in the risk of developing dentophobia during adolescence [12]. These findings highlight the importance of early experiences in shaping attitudes toward dental treatment.

Similar observations have been reported in numerous cross-sectional studies, in which individuals reporting traumatic childhood experiences were more likely to exhibit symptoms of dental anxiety and to avoid routine dental visits [13–16]. Additionally, Surina et al. demonstrated that patients with negative childhood experiences achieved significantly higher scores on the Dental Anxiety Scale (DAS), indicating a higher level of anxiety in this group [16].

At the same time, it should be emphasized that this correlation is not consistent across all individuals. Studies by de Jongh et al. showed that a substantial proportion of patients with high levels of dental anxiety did not report previous traumatic experiences related to dental treatment [22]. These findings suggest that

although childhood experiences constitute an important risk factor, they are not the sole mechanism responsible for the development of anxiety.

This indicates the need to consider additional factors, such as individual predispositions, cognitive mechanisms, and the influence of the social environment, which is consistent with a multidimensional model of the etiology of dental anxiety.

2. The relationship between anxiety and treatment avoidance

Available studies clearly indicate that avoidance of dental treatment is a common phenomenon and is closely associated with the level of dental anxiety. Various forms of avoidance behavior, such as arriving late for appointments, postponing them, or canceling them altogether, are observed in a substantial proportion of patients. It is estimated that this problem affects approximately 15–20% of the population, although these values may vary depending on the study group and methodology used [5–7].

According to the collected data dental anxiety is one of the main factors determining avoidance behavior. In a study conducted by Perić et al., a significant association was found between the level of anxiety and avoidance of dental visits, highlighting that patients with dentophobia often postpone treatment until severe pain occurs [14].

Similar findings were reported by Åstrøm et al., who demonstrated that a high level of anxiety is significantly correlated with irregular use of dental care services. In their study, 14.7% of participants reported canceling a dental appointment due to anxiety, while as many as 30.5% admitted avoiding making an appointment for the same reason [10].

These findings confirm that dental anxiety not only affects patients' subjective experiences but also translates into specific health behaviors, leading to limited use of healthcare services. Consequently, this may result in the deterioration of oral health and an increased need for emergency or intervention-based treatment.

This relationship constitutes a key component of the "vicious cycle of dental anxiety," in which avoidance of dental visits leads to the progression of oral diseases, followed by the need for more invasive treatment, which in turn exacerbates anxiety and reinforces avoidance behavior.

3. The vicious cycle mechanism

The above-described problem of dental treatment avoidance is closely related to a complex, multi-stage mechanism referred to as the "vicious cycle of dental anxiety." Based on the analyzed studies, a model can be proposed to explain the maintenance and progression of this phenomenon over time.

The development of dental anxiety leads to avoidance behaviors, such as postponing dental visits or completely avoiding contact with a dentist. Consequently, deterioration of oral health occurs, including the progression of caries and periodontal diseases. Delayed visits, often sought only in emergency situations, require more advanced and invasive treatment, which confirms patient's initial fears and further exacerbates anxiety [15,17,18] (Figure 1).

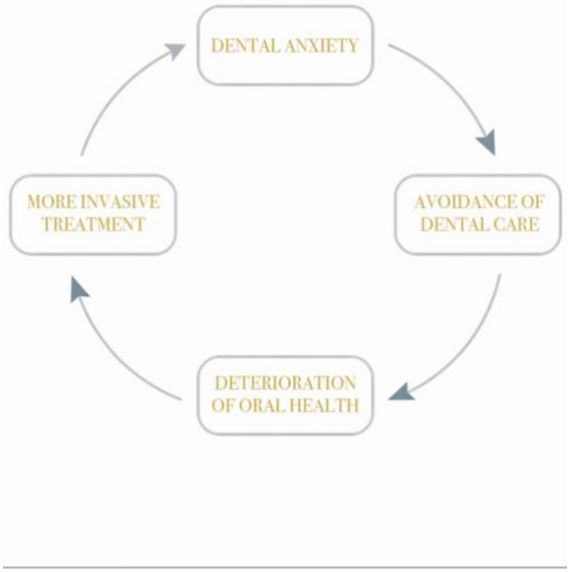

Figure 1. The vicious cycle mechanism

This relationship is supported by numerous clinical and epidemiological studies indicating a significant correlation between the level of dental anxiety and both the frequency of dental visits and oral health status.

In a study conducted by Armfield et al., patients with high levels of dental anxiety had a significantly greater number of missing teeth compared to non-anxious individuals [17]. Similar results were obtained by Schuller et al. and Sohn et al., who demonstrated that higher levels of anxiety are associated with an increased number of carious lesions and tooth extractions [19,20].

These findings clearly indicate that dental anxiety not only influences patients' behavior but also constitutes a significant risk factor for deteriorating oral health. The vicious cycle mechanism leads to the reinforcement of maladaptive behavioral patterns and may have long-term health consequences if not interrupted by appropriate therapeutic interventions.

4. Mechanisms underlying the development of anxiety

The analysis of the available literature indicates that the development and persistence of dental anxiety is multifactorial in nature and involves both behavioral and cognitive mechanisms.

The most commonly described mechanism is classical conditioning, in which stimuli associated with dental treatment (e.g., the sound of the drill, the smell of the dental office, the presence of medical staff) become associated with negative experiences such as pain or discomfort [17]. As a result of this process, even neutral stimuli may trigger an anxiety response.

Social modeling also plays a significant role. Children who observe anxiety in their parents or caregivers, as well as those exposed to negative messages about dental treatment, may internalize these attitudes and develop similar emotional responses [12].

However, contemporary approaches emphasize that dental anxiety cannot be explained solely by behavioral experiences. An increasing number of studies highlight the importance of cognitive factors, such as patients' beliefs, interpretations, and expectations [21].

According to the findings of Carrillo-Diaz et al., cognitive factors—particularly catastrophic thinking, negative beliefs about pain, and a sense of lack of control—are stronger predictors of dental anxiety than past experiences alone [23]. Patients with a tendency toward catastrophizing are more likely to overestimate the risk of pain and negative treatment outcomes, which leads to an intensification of the anxiety response.

Similar conclusions were presented by Armfield, who demonstrated that perceptions related to individual vulnerability and the appraisal of dental situations may account for a substantial proportion of the variance in dental anxiety, exceeding 45%, whereas direct negative experiences explain only a small proportion of the variance [24,25].

These findings suggest that dental anxiety is a complex phenomenon in which the interaction between prior experiences and individual cognitive processes plays a key role. This perspective is consistent with the biopsychosocial model, which takes into account environmental, psychological, and individual factors, as well as differences in stress response.

Discussion

The findings of this systematic review confirm that childhood dental experiences play a significant role in shaping attitudes toward dental treatment in adulthood. The collected data indicate that negative experiences, such as pain or a sense of loss of control, are significantly associated with higher levels of dental anxiety, as demonstrated by both cross-sectional studies and systematic reviews [11–13].

At the same time, it should be emphasized that although childhood experiences constitute an important risk factor, they are not the sole explanation for the development of dental anxiety. Studies by de Jongh et al. have shown that a proportion of patients with high levels of anxiety do not report prior traumatic experiences [22]. This highlights the need to consider a broader, multidimensional model of etiology, also encompassing cognitive factors and individual predispositions.

In this context, cognitive mechanisms such as catastrophic thinking, negative beliefs about treatment, and a sense of lack of control are of particular importance. As demonstrated by Carrillo-Diaz et al., these factors may be stronger predictors of dental anxiety than past experiences alone [23]. Similar conclusions were drawn by Armfield, who indicated that perceptions related to individual vulnerability to threat explain a substantial proportion of the variability in anxiety levels [24,25]. This suggests that the way patients interpret dental situations may be as important as the experiences themselves.

An important finding of this review is also the strong relationship between dental anxiety and treatment avoidance. Studies indicate that patients with high levels of anxiety are more likely to postpone or completely

avoid dental visits, which leads to deterioration of oral health [5–7,14]. This relationship aligns with the concept of the "vicious cycle of dental anxiety," which represents a key mechanism maintaining the problem. The development of anxiety leads to avoidance of treatment, resulting in worsening oral health and the need for more invasive procedures. These experiences confirm the patient's fears and further intensify anxiety, thereby closing a self-perpetuating cycle [15,17,18].

Despite the consistency of the findings, several limitations of the analyzed studies should be considered. Many of them are based on retrospective data, which may introduce recall bias and subjective assessment of childhood experiences. Additionally, cross-sectional studies predominate, limiting the ability to establish clear causal relationships. The heterogeneity of tools used to assess dental anxiety constitutes another limitation, making comparisons between studies more difficult.

Summary of findings

This systematic review indicates that childhood dental experiences have a significant impact on the development of dental anxiety, which in adulthood contributes to the avoidance of dental treatment.

Negative early experiences, in combination with cognitive factors, contribute to the persistence of anxiety and the development of the vicious cycle mechanism, ultimately leading to deterioration of oral health.

From a clinical perspective, the findings highlight the importance of early prevention and appropriate management of dental treatment in children. Creating positive experiences, applying effective communication, and using anxiety-reduction techniques may significantly reduce the risk of developing dentophobia in the future. At the same time, interventions aimed at modifying beliefs and reducing catastrophic thinking may be crucial in the treatment of adult patients.

Conclusions

1. Negative dental experiences in childhood, particularly those associated with pain and a lack of control, significantly increase the risk of developing dental anxiety and should be actively identified during medical history taking.
2. A high level of dental anxiety is associated with significantly more frequent avoidance of dental visits, leading to deterioration of oral health and an increased likelihood of requiring emergency and invasive treatment.
3. Effective disruption of the "vicious cycle of dental anxiety" requires early implementation of anxiety-reduction strategies, such as appropriate patient–clinician communication, gradual exposure to dental procedures, and ensuring a sense of control during treatment.
4. Cognitive factors, including catastrophic thinking and negative beliefs about pain, should be considered in treatment planning, particularly in patients reporting high levels of dental anxiety.
5. Creating positive dental experiences in children, including the use of behavioral techniques and adequate pain control, constitutes a key element in the prevention of dentophobia and in improving patient cooperation in adulthood.

Authors' contribution:
Research concept and design – Martyna Smogór, Maria Torchalska
Data collection and/or compilation – Maria Torchalska, Monika Szerszeń
Data analysis and interpretation – Maria Torchalska, Monika Szerszeń
Writing – Martyna Smogór, Krzysztof Kowalik, Monika Szerszeń
Supervision, project administration - Martyna Smogór, Krzysztof Kowalik

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