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Literature Review

Impact of dental anxiety on quality of life in patients undergoing endodontic and restorative care

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ABSTRACT

Background: *Dental anxiety is a common psychological condition that affects individuals undergoing conservative dental procedures such as root canal therapy and restorative treatments. It influences not only a patient's decision to seek care but also their perception of treatment outcomes and overall quality of life related to oral health.* ***Purpose:*** *This literature review aims to evaluate the relationship between dental anxiety and oral health, particularly its impact on the quality of life of patients undergoing endodontic and restorative dental treatments.* ***Reviews:*** *Dental anxiety is closely associated with increased pain perception, reduced cooperation, and decreased trust in dental professionals. Patients with high anxiety often experience greater discomfort and dissatisfaction, reflected in difficulties eating, speaking, and socializing. Studies consistently show that anxiety can impair treatment experiences and outcomes, while proper management leads to improved oral health and well-being. Effective strategies such as clear communication, empathetic interaction, and adequate pre-treatment preparation are proven to reduce fear and enhance patient satisfaction.****Conclusion:*** *Dental anxiety has a significant effect on many aspects of a patient's well-being before, during, and after conservative dental procedures. By adopting a caring and personalized approach, dental professionals can help alleviate anxiety and support improved treatment experiences and outcomes.*

Keywords: *Dental anxiety; quality of life; oral health care; endodontic; restorative.*

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INTRODUCTION

Dental anxiety, defined as the emotional discomfort and fear associated with dental procedures, affects a significant portion of the adult population worldwide. Patients experiencing high levels of dental anxiety often avoid or delay treatment, which may lead to worsening dental conditions and the necessity for more complex interventions, ultimately compromising oral health-related quality of life (OHRQoL). Conservative dental treatments, particularly root canal therapy and restorative procedures, commonly trigger anxiety due to their perceived invasiveness and historical association with pain. Studies show that patients awaiting endodontic treatment frequently anticipate intense pain and harbour mistrust toward dental interventions.[1] In clinical observations, higher dental anxiety was positively correlated with elevated expected pain levels, while actual pain experienced during procedures was often lower than anticipated after proper pre-treatment education.[2]

The impact of dental anxiety extends beyond pain perception. Systematic reviews have confirmed that anxiety serves as a mediator between pain anticipation and subjective avoidance behaviour, reinforcing a vicious cycle that may delay necessary conservative care.[3] his avoidance leads directly to compromised oral function, diminished psychosocial well-being, and reduced quality of life, confirming the need to examine anxiety as a determinant of patient-centred outcomes. Evidence suggests that conservative treatments, when delivered successfully, can significantly improve OHRQoL by relieving pain, restoring oral function, and reducing the psychological burden.[4]

Non-surgical restorative procedures for deep carious lesions have demonstrated marked reductions in pain and state anxiety, leading to improved mood and functional comfort, especially in patients with neurotic personality traits.[5] Longitudinal studies further support that both root canal therapy and restorative care result in measurable improvements in patient-reported satisfaction and oral health–related quality of life.[6,7]

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Quantitative and exploratory studies also illustrate complex interactions between dental anxiety, sociodemographic variables, and OHRQoL domains. A cross-sectional investigation among periodontitis patients, though not focused on conservative care, showed that dental anxiety was significantly associated with lower quality of life, mediating discomfort and functional limitations.[8] Despite increasing interest in patient-centred outcomes, there remains a gap in a comprehensive synthesis of evidence specifically addressing the association between dental anxiety and quality of life in the context of endodontic and restorative treatments. A few systematic reviews focused broadly on OHRQoL improvements post-root canal therapy but did not disaggregate data on anxiety as a predictor or mediator.[9]

This systematic review was conducted to critically examine the available literature on the impact of dental anxiety on the quality of life of patients undergoing endodontic and restorative care, providing comprehensive insights for improving patient-centred clinical practices and outcomes in conservative dentistry.

METHODS

This literature review was conducted to explore the relationship between dental anxiety and oral health-related quality of life (OHRQoL) in patients undergoing endodontic and restorative care. Articles published between January 2020 and May 2025 were identified through Google Scholar and PubMed using the keywords "dental anxiety," "quality of life," "oral health care," "endodontic," and "restorative." Boolean operators (AND/OR) were applied to refine the search. Inclusion criteria comprised studies written in English, published in peer-reviewed journals, and involving adult patients receiving endodontic or restorative treatments, including cross-sectional, cohort, and review designs. Exclusion criteria included case reports, conference abstracts, editorials, and studies unrelated to conservative dental procedures. The screening process involved evaluating titles, abstracts, and full texts to determine eligibility. Relevant data were extracted, including study design, participant characteristics, type of dental procedure, anxiety assessment tools, and reported OHRQoL outcomes. The findings were analyzed qualitatively to identify recurring trends, correlations, and clinical implications regarding the impact of dental anxiety on patients' experiences and quality of life in conservative dentistry.

RESULTS

Prevalence and Risk Factors of Dental Anxiety

Dental anxiety is a common psychological condition that affects a substantial number of adults across the world. Research shows that approximately 15 per cent of adults experience dental anxiety, with around 12 per cent reporting moderate levels and about 3 per cent showing signs of severe anxiety. These numbers vary across countries and populations, influenced by cultural norms, socioeconomic factors, and access to dental care. In some settings, prevalence rates may be as low as 4 per cent, while in others, particularly among certain vulnerable groups, the rates can exceed 50 per cent.[8] A 2022 study conducted in Pakistan revealed that dental anxiety tends to be higher among women, younger individuals, those with lower educational backgrounds, and people from lower-income households. These findings are consistent with earlier studies suggesting that women are more likely than men to report fear and anxiety related to dental treatment.[10] Anxiety levels also tend to decrease with age, possibly due to increased exposure and coping strategies that develop over time.[11]

One of the most consistent predictors of dental anxiety is a traumatic experience in a dental setting. Painful or negative experiences during dental visits in childhood or adolescence can lead to a deep-rooted fear of dental procedures in adulthood. A study from the United Kingdom confirmed that patients who had painful or frightening dental experiences in the past were more likely to develop anxiety that carried into future treatments.[10] Researchers have also explored the link between dental anxiety and general mental health. A recent model developed by Stein Duker and colleagues showed that individuals with high dental anxiety often experience greater psychological distress in general. They tend to be more socially withdrawn, more sensitive to external stimuli, and more likely to have negative healthcare experiences overall.[12] Personality traits, such as high levels of neuroticism and low self-confidence, have also been associated with elevated dental anxiety. A study conducted in Germany found that individuals who scored high on measures of emotional instability and loneliness were more likely to report anxiety when undergoing dental procedures.[13]

Although many studies focus on anxiety in general populations or among children, some recent investigations have begun to examine anxiety in adults undergoing restorative and endodontic procedures. In a 2024 observational study involving patients scheduled for root canal treatment, researchers found that about one-third of the participants reported low anxiety, while nearly half reported mild anxiety. A smaller percentage reported moderate to high levels of anxiety before the procedure, indicating that conservative treatments are often linked with moderate to high emotional distress. Understanding the prevalence and predictors of dental anxiety is essential for improving clinical practice, especially in conservative dentistry, where procedures like root canal therapy and tooth restorations are standard. These treatments often require close cooperation between the dentist and patient, which can be disrupted if anxiety is not identified and addressed early. Early screening for anxiety and the use of supportive communication strategies may help reduce treatment avoidance, improve patient satisfaction, and ultimately enhance the success of conservative dental care.[14]

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Dental Anxiety and Its Effect on Quality of Life in Conservative Dentistry

Dental anxiety has a profound impact on a patient's experience during endodontic and restorative treatments, shaping how pain is perceived and how patients behave during the procedure. A 2023 systematic review found a strong positive association between pre-operative anxiety and reported pain during root canal treatment, with anxious patients often expecting much higher levels of discomfort than those with low anxiety.[15] This anticipation of pain can itself drive elevated anxiety, creating a feedback loop that heightens both psychological distress and physiological responses. One prospective observational study conducted in Spain observed that patients who reported higher levels of anxiety before treatment were more likely to delay or avoid necessary dental visits. These patients also tended to overestimate the level of pain they might experience.[3] One prospective observational study conducted in Spain observed that patients who reported higher levels of anxiety before treatment were more likely to delay or avoid necessary dental visits. These patients also tended to overestimate the level of pain they might experience.[14]

Overestimation of pain increases tension and decreases the ability to cooperate during treatment. This pattern was confirmed by research showing that patients with greater dental anxiety often exhibit reduced trust in dental professionals, lower adherence to instructions, and greater difficulty remaining still or calm during treatment sessions. Beyond emotional responses, anxiety influences physiologic stress signals. Although not always recorded in clinical settings, higher anxiety has been associated with elevated heart rate and blood pressure in patients approaching endodontic care.[14] Studies identify pain anticipation as a key mediator between anxiety and avoidance behaviour. Patients who expect severe pain are more likely to develop avoidance attitudes toward future dental care, even when they eventually receive treatment.[3]

Impact of Anxiety on Quality of Life

Dental anxiety has a well-documented and consistent negative impact on various aspects of oral health-related quality of life. Patients who experience high anxiety report more physical discomfort, emotional strain, and limitations in everyday function such as eating, speaking, and social engagement. A classic study found moderate correlations between dental anxiety scores and lower quality of life, with higher anxiety levels linked to poorer domain scores in physical pain, psychological discomfort, functional limitation, and social disability.[16] Fifteen dental problems, such as untreated caries, may lead to feeding difficulties, pain during chewing, and disrupted sleep, all of which can negatively impact a child's overall health and quality of life.[17] Poor oral hygiene and high prevalence of untreated caries, particularly among underserved populations, have been linked to diminished well-being and limited daily functioning, highlighting the importance of sustained education and preventive care.[18]

Recent research supports this correlation. A cross-sectional study involving patients with periodontitis showed that dental anxiety and quality of life are positively correlated before and after treatment, indicating that reducing anxiety contributes to better perceived quality of life.[19] Similarly, a study from Saudi Arabia highlighted the interplay among general anxiety, dental anxiety, neglect of oral health, and related quality of life, suggesting that anxiety leads to avoidance behaviours and poorer oral hygiene practices, further degrading life quality.[16]

Patients undergoing conservative dental care, such as restorative or root canal procedures, often perceive greater pain and discomfort if their anxiety is not addressed. This heightened perception not only influences immediate experiences but also diminishes satisfaction with treatment and overall well-being. Research also shows that the expectation of pain alone can be sufficient to lower a patient's subjective quality of life, reflecting their emotional state before treatment begins.[20] Nineteen interventions that alleviate dental anxiety, such as clear communication, behavioural support, or pre-treatment guidance, have been linked to measurable improvements in quality of life. In particular, successful dental treatments paired with effective anxiety management often lead to reduced discomfort, enhanced confidence in follow-up care, and improved quality of life scores across multiple domains.[16]

Differential Impact on Endodontic and Restorative Treatments

Dental anxiety exerts different effects depending on whether the patient is undergoing root canal therapy or a restorative procedure.[21] Comparative research shows that anxiety levels and psychological stress are generally higher for patients awaiting endodontic treatment than those undergoing routine restorative procedures or dental cleanings.[22] A recent review found that root canal therapy consistently induces more anxiety than non-invasive or standard restorative care.[23] Patients anticipating root canal treatment often expect greater pain and higher levels of discomfort than those facing simple restorations. This anxiety translates into elevated physiological stress responses, increased heart rate, blood pressure, and muscle tension, even before treatment begins.[14]

Longitudinal assessment revealed that 94 per cent of patients reported improvements in oral health and related quality of life after successful endodontic therapy, despite high initial anxiety.[24] In a 2023 cross-sectional study among restorative dental patients in Turkey, higher anxiety scores were associated with more postponed appointments and initial avoidance of care, but this anxiety had a limited measurable effect on clinical oral health indices like DMFT or gingival status[25]

Improvement of Quality of Life After Conservative Dental Treatment

Conservative dental procedures, such as root canal therapy and restorative care, often lead to measurable improvements in patients' oral health-related quality of life.

One prospective study conducted in Saudi Arabia found that patient satisfaction and quality of life significantly improved after root canal treatment, regardless of whether treatment was performed by students, postgraduate trainees, or specialists. The study demonstrated that successful endodontic care leads to reduced discomfort and a better perceived health status in a short follow-up period.[26]

Similarly, a long-term follow-up study reported that more than 90% of patients experienced improved quality of life after non-surgical root canal treatment, as measured using validated instruments such as the Oral Health Impact Profile-14 (OHI-14). These benefits were sustained for up to twelve months post-treatment, demonstrating both immediate and durable improvements in patient well-being.[26] Comparative investigations have revealed that restoration protocols whether simple fillings or more complex restorative approaches- also positively impact quality of life when anxiety is managed effectively. One study showed that both single-session and re-treatment root canal protocols produce better OHIP-14 scores by six months, although manual versus rotary techniques showed slight differences.[27] Apart from endodontic care, restorative interventions like dental prostheses significantly enhance overall well-being. A cohort study evaluating adults who received dental prostheses found decreased OHIP-5 scores post-treatment, indicating greater comfort, improved function, and enhanced self-esteem following the restoration of missing teeth.[28]

Successful conservative dental treatments, such as restorations and root canal therapy, not only resolve physical symptoms but also significantly contribute to the psychological and social dimensions of patients' well-being, reinforcing the central role of oral health in overall quality of life.[29]

DISCUSSION

Dental anxiety remains prevalent in adult populations worldwide, with roughly 15–20% of individuals reporting moderate to high anxiety levels. Female gender, younger age, lower education, and prior negative experiences strongly predicted elevated anxiety levels. These risk factors closely mirror populations more likely to postpone or avoid necessary conservative dental treatments.[30] Dental anxiety amplifies pain perception regardless of the actual procedural stimuli. Patients anticipating a root canal often expect worse pain than they ultimately experience. Similarly, higher anxiety correlates with poor procedural cooperation, increased physiological stress (e.g., elevated heart rate and blood pressure), and diminished trust in providers. These barriers also appeared in restorative procedures, although less pronounced than in endodontic cases. [14] Our review distinctly shows that endodontic treatments, compared to restorations, evoke greater psychological stress and anxiety among patients. Wiley-reviewed data indicate that root canal therapy is consistently perceived as more anxiety-inducing than routine restorative care.[31]

Dental anxiety significantly undermines multiple dimensions of oral health-related quality of life, including functional limitations, psychological discomfort, social interaction, and self-esteem. Anxiety-affected patients frequently report difficulty eating, speaking, or engaging socially due to fear and avoidance of dental care. Even before treatment, patients with high anxiety may experience lowered baseline quality-of-life scores due to emotional distress and poor oral hygiene.[30]

Despite initial anxiety, conservative dental treatments often lead to significant, long-term improvements in quality of life. A Saudi cohort found that nearly 95% of patients undergoing root canal treatment reported satisfaction and positive changes in their quality of life at follow-up. Both routine restorative and endodontic interventions lead to sustained patient well-being when delivered effectively.[6] The evidence underscores that clear provider-patient communication, behavioural support, and anxiety screening can dramatically affect outcomes. Patients informed about steps, sensations, and timelines experience more confidence and less fear. When anxiety is proactively addressed, whether through pre-treatment education, cognitive restructuring, or supportive behaviour, quality of life gains are also stronger.[16]

Clinical implications drawn from the literature strongly emphasise the importance of early recognition and individualised care for anxious patients undergoing non-surgical dental treatments. The use of screening tools such as the Modified Dental Anxiety Scale (MDAS) or the Corah Dental Anxiety Scale at the initial visit can help identify individuals who may require special attention and support. Once anxiety is detected, a personalized communication approach becomes essential. Providing clear explanations about each step of the procedure, discussing pain control strategies, and establishing agreed-upon signals to pause the treatment if needed can build a sense of trust between the patient and clinician. In addition to communication, incorporating simple anxiety-reducing techniques, such as relaxation exercises, distraction methods, or cognitive reframing, can significantly enhance the treatment experience and patient satisfaction.[16]

In conclusion, dental anxiety is a major psychological factor that influences not only patients' willingness to seek dental care but also their overall experience before, during, and after treatment. It affects multiple dimensions of oral health-related quality of life, including physical discomfort, emotional distress, and social functioning. Although anxiety tends to be more pronounced in endodontic procedures than in restorative care, both are significantly shaped by the patient's emotional state. Evidence shows that successful conservative dental treatments can lead to substantial improvements in quality of life, particularly when anxiety is addressed early through effective communication, supportive behaviour, and empathetic, patient-centred care. Therefore, integrating anxiety management strategies into routine clinical practice is essential to improve treatment outcomes, strengthen patient trust and adherence, and enhance overall satisfaction with conservative dental care.

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