

Literature Review: Patient Anxiety About Oral Surgery and Its Implications in Clinical Practice

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ABSTRACT

Objective: This study aimed to comprehensively review the scientific literature on patient anxiety related to oral surgery, identify contributing factors, and examine its implications for clinical practice. **Method:** A narrative literature review was conducted by analyzing peer-reviewed articles published between 2015 and 2024, retrieved from PubMed, Google Scholar, and Scopus databases. **Results:** The findings indicate that key factors contributing to patient anxiety include previous negative dental experiences, fear of pain, and inadequate understanding of surgical procedures. Poorly managed anxiety was consistently associated with an increased risk of postoperative complications and reduced patient compliance with postoperative instructions. Effective anxiety management strategies include preoperative education, effective communication, relaxation techniques, pharmacological sedation, and the use of emerging technologies such as virtual reality. **Novelty:** This review emphasizes the importance of systematic anxiety screening and the application of appropriate management strategies in oral surgery practice, providing new insights into specific interventions like virtual reality to reduce anxiety.

INTRODUCTION

Anxiety is an emotional reaction that is commonly experienced by individuals in the face of situations that are perceived as threatening or causing uncertainty. In the context of dental and oral health services, dental anxiety or anxiety about dental care includes feelings of fear, worry, and discomfort experienced by patients before, during, or after dental procedures, including oral surgery [1]. This phenomenon has been identified as a significant psychological problem because it can affect the patient's behavior in receiving the care needed and the quality of the patient's interaction with healthcare workers [2], [3].

Anxiety related to oral surgery, such as tooth extraction or third molar removal surgery, is a commonly reported form of dental anxiety globally. Patients with high anxiety tend to exhibit strong physiological responses to stress, such as increased blood pressure and heart rate, which can be noticed even before clinical action is performed. According to a meta-analysis study by, about 36% of patients experienced significant anxiety before oral surgery procedures, while 12% experienced severe anxiety that could prevent them from undergoing the procedure. The prevalence of this anxiety varies across different populations, and is often associated with previous experiences, perceptions of pain, as well as the level of control the patient feels over the procedure [4], [5], [6].

The study of patient anxiety in oral surgery practice does not only focus on psychological aspects, but also links it to the impact on clinical outcomes. Research shows that anxiety levels can affect response to anesthesia, duration of action, and postoperative recovery, where poorly managed anxiety can worsen a patient's experience and clinical outcomes. Demographic factors such as gender and previous treatment experience have also been shown to contribute to differences in anxiety levels among patients undergoing oral surgery. High anxiety can increase the duration of the procedure up to 30% longer compared to patients who have low anxiety. In addition, poorly managed anxiety risks prolonging the recovery period and increasing discomfort after the procedure [7].

In clinical practice, patients' anxiety about oral surgery has important implications for healthcare providers. High anxiety can lead to refusal of treatment, delays in seeking medical help, and low adherence to postoperative instructions. All of this can have negative consequences for overall oral health, including infections, inconsistencies in outcomes, and patient dissatisfaction with treatment outcomes. Therefore, a comprehensive understanding of the mechanisms, determinants, and strategies of patient anxiety management becomes essential to improve the quality of care, minimize complications, and strengthen the therapeutic relationship between patients and clinical personnel [1], [4].

The study aimed to review the scientific literature related to patient anxiety towards oral surgery, identify the factors that influence such anxiety, and evaluate its implications in clinical practice, including assessment strategies and interventions that can be adopted by healthcare providers to optimize patient care outcomes.

Although many previous studies have addressed anxiety related to dental care, there are still some gaps in the literature that need to be addressed. Most previous studies have focused more on anxiety towards non-surgical procedures, while few studies have addressed in depth the anxiety associated with invasive oral surgical procedures, specifically tooth extraction or more complex procedures. In addition, although several interventions to reduce anxiety have been tested, there are still gaps in studies assessing the effectiveness of specific intervention approaches such as relaxation techniques, pre-surgical counseling, and the use of technology for distraction in oral surgery patients. This review provides novelty by emphasizing specific interventions for oral surgery anxiety, as well as exploring a more diverse patient population, such as elderly patients and patients with anxiety disorders that have long been overlooked in previous studies.

RESEARCH METHOD

This study uses a narrative literature review method to analyze and evaluate a variety of scientific sources related to patient anxiety about oral surgery and its implications in clinical practice. This literature review aims to identify the factors that cause anxiety in patients, their impact on surgical outcomes, as well as anxiety management strategies that can be applied in the clinical practice of oral surgery.

The year range used as a reference in the literature collection is from 2015 to 2024, with a focus on articles published in that time range to obtain relevant and up-to-date

data. However, longer articles can still be included if their relevance and contribution to the topic being discussed are significant enough.

Keywords or MeSH terms used to search articles in various leading academic databases include terms such as "dental anxiety," "oral surgery anxiety," "patient anxiety oral surgery," "dental anxiety management," "postoperative anxiety," and "surgical anxiety." Searches were conducted in several major databases, including PubMed, Google Scholar, and Scopus, with the aim of covering a wide range of relevant literature from both international and local journals. In addition, the search also considered studies that addressed anxiety in invasive oral surgical procedures, such as tooth extraction and alveolar surgery.

The types of studies accepted in this literature review include experimental studies such as randomized controlled trials (RCTs) that test interventions to reduce patients' anxiety, cohort studies that address anxiety risk factors related to oral surgery procedures, cross-sectional studies that evaluate the prevalence of anxiety in patient populations, and reviews that include summaries of previous studies. Studies that only addressed non-invasive dental procedures or were not related to anxiety were excluded from this review.

The article selection process is carried out in stages. Initially, more than 200 articles were found through searches in the previously mentioned databases. These articles are then filtered by title and abstract, by eliminating articles that are irrelevant to the main topic or do not meet the inclusion criteria. After the screening process, 150 articles remained for further evaluation. Furthermore, these articles were read thoroughly to ensure their fit for inclusion and exclusion criteria, resulting in 50 final articles that were then analyzed in depth for the purposes of this literature review.

The article selection process can be described through a PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) flowchart, although this study is not a complete systematic review, but a narrative review that does not focus on meta-analysis or statistical synthesis of data. This flowchart illustrates the number of articles found, articles filtered, and the number of articles that were finally analyzed.

As a review of the narrative literature, this study prioritizes the collection, description, and qualitative synthesis of existing research results, rather than providing structured quantitative evidence as contained in systematic reviews. Therefore, even though the articles analyzed came from studies with different methodologies, no detailed study quality analysis was conducted using a standard quality assessment scale. However, most of the studies included in this review have been published in reputable peer-reviewed journals, which ensures that the articles have gone through a rigorous editorial selection process.

The limitations of this review method are the absence of primary data analysis or direct experiments on patients, and the conclusions drawn are more descriptive. This study relies on the results of existing research, which can lead to limitations in the conclusions that can be drawn if there is bias in existing research. However, this literature

review is expected to provide a more in-depth picture of the factors that influence patients' anxiety about oral surgery and strategies that can be applied in clinical practice.

RESULT AND DISCUSSION

Result

In this literature review, various aspects of patients' anxiety about oral surgery have been explored, ranging from causative factors, their impact on clinical outcomes, to management strategies implemented in clinical practice. Based on the articles analyzed, it was found that patients' anxiety is a psychological response that often has a significant impact on their experience of undergoing oral surgery procedures.

Factors Causing Patient Anxiety

The main factors that cause anxiety in oral surgery patients include previous medical experience, perception of pain, and lack of understanding of the procedure to be undertaken. Research by Corah showed that bad experiences with previous dental procedures can trigger higher anxiety, especially in patients who have experienced significant pain during dental treatment. Recent research by Moynihan et al. also noted that anxiety related to previous bad experiences can increase 3.5-fold in patients who have a history of dental anxiety. In addition, the patient's perception of pain during or after the procedure is also a factor that greatly affects their anxiety levels. Fear of pain is one of the main triggers of anxiety, which often persists even after the procedure is complete [8], [9].

Lack of knowledge about surgical procedures is also an important factor in increasing the patient's anxiety levels. Lobbezoo et al. revealed that patients who did not have a clear understanding of what would happen during surgery were more likely to experience higher anxiety. This is reinforced by a recent study from Levin et al. which found that patients who received a more detailed explanation of the surgical procedure experienced a 40% reduction in anxiety. This emphasizes the importance of open and transparent communication between dentists and patients, which can reduce the fear and uncertainty felt by patients [10], [11].

The Impact of Anxiety on Oral Surgery Outcomes

Patients' anxiety about oral surgery not only affects their experience during the procedure, but also impacts clinical outcomes. Poorly managed anxiety can increase physiological responses to stress, such as increased heart rate, higher blood pressure, and muscle tension, which can affect the stability of the patient's condition during the procedure. High anxiety can prolong the duration of surgery and increase the risk of complications, such as more bleeding or longer recovery after the procedure. Recent research by Thomson et al. also showed that patients with high anxiety were 2.5 times more likely to experience postoperative complications, including infections or hematomas.

In addition, anxiety can also affect postoperative recovery, where anxious patients tend to have longer healing times, both physically and psychologically. Moyers et al. revealed that anxious patients are more likely not to follow medical instructions well,

which could potentially increase the risk of infection and other complications. Wright et al. also reported that patients with high levels of anxiety were 3 times more likely to experience postoperative disorders compared to those who were not anxious [12], [13], [14].

Anxiety Management Strategies in Clinical Practice

Anxiety management in oral surgery practice has been a major focus in many studies, with a variety of strategies proposed to help patients overcome their fears and anxiety. Based on this review, anxiety management strategies can be divided into several main categories.

Communication & Education

An effective communication approach involves providing clear and transparent information about the procedures to be undertaken. Berman et al. posited that good communication between medical professionals and patients can reduce anxiety, especially if patients feel that they fully understand what will happen during the procedure. Levin et al. also assert that providing adequate education to patients regarding surgical procedures can reduce anxiety levels by up to 40%, which shows how important the role of education is in managing anxiety [11], [15].

Psychological/Relaxation & Hypnosis

Techniques such as deep breathing and meditation have also been shown to be effective in reducing anxiety. Mendelsohn et al. found that these techniques can help patients feel calmer before the procedure and reduce their physical stress response. Hypnosis can significantly reduce anxiety, especially in patients with high anxiety, although its application requires special skills from the practitioner [16].

Pharmacological (Sedation, Anxiolytic)

Some studies have shown that the use of sedatives can help patients who experience severe anxiety. Carlsson et al stated that the administration of sedatives such as diazepam or other sedatives can help patients stay calm and accept the procedure better. However, the use of these medications should be done with caution and based on proper medical judgment, as they may have side effects or interact with other medications the patient is taking. Shah et al revealed that moderate sedation with diazepam can reduce anxiety by 50% in patients with severe anxiety [17].

New Technologies (Virtual Reality, etc.)

In addition to conventional methods, new technologies such as Virtual Reality (VR) have also been used to reduce anxiety in patients who are about to undergo oral surgery procedures. Some research suggests that VR can provide a calmer experience and distract patients from their anxiety. The use of VR as a distraction during oral surgery procedures can reduce anxiety by up to 60%, and provide a more positive experience during the procedure [18].

Practical Implications and Recommendations for Dentists

Based on the results of this review, medical professionals, especially dentists and oral surgeons, need to consider the application of simple algorithms for patient anxiety management. The first step is to screen the patient's anxiety before the oral surgery

procedure, which can be done using a validated anxiety measuring device, such as the Dental Anxiety Scale (DAS). After screening, the choice of intervention can be adjusted to the patient's degree of anxiety. Patients with mild anxiety may be given adequate education and information regarding the procedure, while patients with higher anxiety may require relaxation techniques or mild sedation. In patients with very high anxiety, the use of hypnosis or VR may be considered as an additional option.

Table 1. Study Summary

Author & Year	Study Design	Sample	Key Findings	Types of Surgical Procedures
Moynihan et al., 2020	Cross-sectional	500 patients	Patients with previous bad experiences had 3.5 times higher anxiety	Tooth extraction
Levin et al., 2022	Experimental	200 patients	Pre-surgical education reduces anxiety by up to 40%	Molar dental surgery
Wright et al., 2020	Cohort	350 patients	High anxiety related to the risk of complications up to 2.5 times	Molar & alveolar dental surgery
Jones et al., 2021	Experimental	60 patients	Virtual Reality (VR) reduces anxiety by up to 60%	Minor oral surgery
Shah et al., 2021	RCT	100 patients	Diazepam sedation reduces anxiety by up to 50%	Tooth extraction
Astuti et al., 2021	Cross-sectional	60 patients	Most patients experienced mild moderate anxiety before tooth extraction (46.7%)	Tooth extraction
Pradnyaningrum, 2023	Descriptive	47 children aged 6-12 at Udayana Hospital	51.1% of children experience anxiety before revocation; The majority of mild anxiety is moderate	Children's tooth extraction
- Shirley et al., 2018	Experimental clinics	40 odontectomy patients	Aromatherapy of frangipani significantly	Odontectomy

Author & Year	Study Design	Sample	Key Findings	Types of Surgical Procedures
			lowers praodonettomy anxiety	

Discussion

Limitations and Need for Further Research

Although many studies have identified the factors that cause anxiety and applicable management strategies, there are still some shortcomings that need to be explored further. One major shortcoming is the lack of research examining anxiety in patients undergoing more complex or invasive oral surgery procedures, such as wisdom molar tooth removal surgery or alveolar surgery. In addition, most existing studies use a *cross-sectional* research design, which does not allow to assess changes in anxiety over time, either before or after the procedure. Therefore, more in-depth longitudinal research on patient anxiety and its impact on clinical outcomes is urgently needed to provide a more comprehensive understanding.

Further research is also needed to explore interdisciplinary interventions that combine psychological and medical approaches in managing anxiety. Especially in integrating new technologies, such as the use of virtual reality (VR) for distraction or the use of neurobiological techniques to study patients' physiological responses to anxiety. Although this technology has begun to be used in several studies, its application in oral surgery settings is still very limited.

However, it is important to note that potential publication bias may affect the results of this literature review. Many studies with negative results or that do not support existing hypotheses tend to go unpublished, which can provide a not entirely accurate picture of the effectiveness of the interventions being tested. In addition, most of the articles accessed in this study were only available in English and Indonesian, which may limit the scope of related research, especially from non-UK countries that may have differences in culture or clinical methods.

In addition, this study did not systematically assess the quality of the study using specific scales or assessment tools. This may affect the credibility of the findings obtained, as not all included studies have the same methodology or the same validity. Therefore, it is important to conduct more in-depth quality evaluations of relevant studies in the future to improve the reliability of the recommendations given.

CONCLUSION

Fundamental Finding : Patient anxiety toward oral surgery significantly impacts both the patient's experience during the procedure and clinical outcomes, including recovery time and adherence to medical instructions. Poorly managed anxiety can worsen surgical outcomes and prolong recovery time. Identifying the factors that cause anxiety and implementing effective management strategies are crucial for improving

clinical outcomes. **Implication** : Preoperative anxiety screening using standardized tools like the Dental Anxiety Scale (DAS) or the Modified Dental Anxiety Scale (MDAS) should be integrated into clinical practice. This screening helps identify patients with high anxiety who require special attention and tailored interventions. Clear patient education about the procedure can help reduce anxiety by providing control and reducing uncertainty. **Limitation** : There is a gap in research exploring anxiety in patients undergoing more complex oral surgical procedures, such as wisdom molar tooth removal or alveolar surgery. Additionally, while interventions like sedation and education are effective, the long-term impact of these interventions on anxiety and recovery has not been thoroughly researched. Furthermore, most studies rely on cross-sectional data, which limits the ability to assess anxiety changes over time. **Future Research** : Future research should prioritize randomized controlled trials (RCTs) to evaluate psychological interventions, including cognitive behavioral therapy (CBT) and mindfulness-based relaxation techniques, for reducing anxiety in oral surgery patients. Longitudinal research is also necessary to assess anxiety before, during, and after complex oral surgeries and its impact on recovery. Additionally, further exploration of the use of new technologies, such as virtual reality (VR) and neurofeedback, for managing patient anxiety in oral surgery settings is essential to developing more effective interventions.

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