

PAINLESS DENTISTRY THROUGH QUR'ANIC RECITATION: A SYSTEMATIC REVIEW

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ABSTRACT

Introduction: Dental anxiety significantly affects patient comfort, pain perception, and clinical outcomes during dental treatment. Anxiety activates the sympathetic nervous system, lowers pain tolerance, and may increase avoidance behavior, resulting in prolonged treatment time and reduced treatment success. Therefore, painless dentistry has evolved as a patient-centered approach that aims not only to minimize pain through pharmacological techniques but also to reduce anxiety using evidence-based non-pharmacological interventions. Qur'anic recitation, which is a recording of the holy verses of the Al-Qur'an read by a qari (Qur'an reader) with a slow, tartil, and harmonious tempo in accordance with the rules of tajwid, is believed to have calming psychological and physiological effects. **Aim:** This systematic review examines the effectiveness of Qur'anic recitation in reducing dental anxiety as one of the supporting interventions in painless dentistry. **Methods:** A systematic search (2011–2025) was conducted using the keywords “Qur'an recitation”, “dental anxiety”, “painless dentistry”, and “spiritual intervention”. Fifty of the 161 studies that were found satisfied the inclusion requirements and were examined for patient satisfaction, physiological effects, and anxiety reduction. **Results:** Most studies showed significant anxiety reduction following Qur'anic recitation, often accompanied by decreased heart rate and blood pressure. The intervention performed comparably or better than music and other relaxation therapies. Patient satisfaction improved due to its spiritual and cultural relevance. Limitations included small sample sizes and heterogeneous methodologies. **Conclusion:** Qur'anic recitation is a promising, non-pharmacological adjunct for anxiety management in painless dentistry. Further large-scale randomized trials with standardized protocols are required to validate its effectiveness and clinical integration.

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INTRODUCTION

Dental anxiety is a global challenge that adversely affects treatment success, patient behavior, and the overall quality of the clinical

experience. Approximately 36% of patients experience moderate to severe anxiety before undergoing dental procedures, making it one of the most common psychological barriers to dental care. Anxiety may increase pain perception, prolong treatment duration, reduce patient compliance with treatment plans, and ultimately compromise the effectiveness of dental interventions.¹

Dental anxiety is recognized as one of the primary determinants of pain perception during dental procedures. Fear-induced activation of the sympathetic nervous system results in increased heart rate, elevated blood pressure, muscle tension, and a reduced pain threshold. Consequently, patients tend to perceive relatively mild nociceptive stimuli as more intense pain. This bidirectional relationship between anxiety and pain has become the theoretical foundation of painless dentistry, a patient-centered approach that aims not only to control pain but also to improve psychological comfort throughout dental treatment.²

Painless dentistry emphasizes patient comfort, safety, and effective pain control through both pharmacological and non-pharmacological approaches. While local anesthesia, sedation, and analgesics remain the cornerstone of pharmacological pain management, increasing attention has been directed toward complementary non-pharmacological interventions that reduce anxiety before and during dental procedures. One promising approach is spiritual therapy through listening to Qur'anic recitation (*Murottal Al-Qur'an*), which has been reported to suppress

sympathetic nervous system activity, promote relaxation, and enhance emotional well-being.^{2,3}

Qur'anic recitation refers to recorded verses of the Holy Qur'an recited by a *qari* using a slow, rhythmic, and harmonious style in accordance with the rules of *tajwid*.⁴ Beyond its religious significance, Qur'anic recitation has been increasingly investigated as a complementary therapeutic intervention capable of producing measurable psychological and physiological effects.

Previous studies have demonstrated that listening to Qur'anic recitation induces relaxation responses characterized by reductions in heart rate, blood pressure, and anxiety scores before invasive medical and dental procedures.^{5,6} These physiological responses are associated with decreased sympathetic activity and enhanced parasympathetic activation, which collectively contribute to improved emotional regulation and reduced stress. Consequently, Qur'anic recitation has considerable potential to be incorporated into painless dentistry as a holistic intervention that is culturally appropriate and spiritually meaningful for Muslim patients.

In clinical dental practice, this intervention may be implemented before or during anxiety-provoking procedures, including local anesthetic administration, tooth extraction, periodontal scaling, root canal treatment, minor oral surgery, and restorative procedures involving rotary instruments. Reducing anxiety during these procedures is expected to improve pain tolerance, facilitate patient cooperation, reduce procedural stress, and ultimately enhance treatment outcomes.

The effectiveness of anxiety-reduction interventions has commonly been evaluated using validated assessment instruments such as the Modified Dental Anxiety Scale (MDAS), Corah's Dental Anxiety Scale (DAS), and the State-Trait Anxiety Inventory (STAI). Pain perception has generally been assessed using the Visual Analog Scale (VAS) or the Numeric Rating Scale (NRS). The use of standardized and validated instruments enables objective comparisons across studies and strengthens the reliability of evidence regarding the effectiveness of non-pharmacological interventions.

Although numerous studies have investigated the anxiolytic effects of Qur'anic recitation in various medical settings, including preoperative care, intensive care units, oncology, and cardiovascular medicine, evidence regarding its application in dentistry remains scattered and has not been comprehensively synthesized. Furthermore, previous reviews have primarily focused on anxiety reduction without specifically examining its relationship with pain perception, physiological responses, patient satisfaction, and their collective contribution to the concept of painless dentistry.⁶

Therefore, this systematic review synthesizes the current empirical evidence regarding the effectiveness of Qur'anic recitation in reducing anxiety during dental treatment while evaluating its psychological, physiological, pain-related, and patient satisfaction outcomes. This study attempts to elucidate the possible function of Qur'anic recitation as an evidence-based supplemental intervention within painless dentistry and to identify current research gaps

that should be addressed in future clinical trials by combining evidence from various clinical contexts.

METHODS

This study was conducted as a systematic review in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines. The PRISMA framework was adopted to ensure transparency, reproducibility, and methodological rigor throughout the literature identification, selection, and synthesis processes. The review followed the four phases of the PRISMA flow diagram: identification, screening, eligibility, and inclusion. The complete study selection process is illustrated in Figure 1.

The primary objective of this review was to evaluate the effectiveness of Qur'anic recitation (*Murottal Al-Qur'an*) in reducing anxiety, improving physiological responses (including blood pressure and heart rate), reducing pain perception, and enhancing patient satisfaction in healthcare settings, particularly in dentistry.

A comprehensive literature search was conducted using four electronic databases: PubMed, Scopus, ScienceDirect, and Google Scholar. The search strategy employed combinations of English and Indonesian keywords, including "Qur'an recitation," "dental anxiety," "painless dentistry," "spiritual therapy," "pain management," "pain perception," "dental pain," "murottal," and "Islamic therapy." The search included studies published between 2011

and 2025 to ensure the inclusion of the most relevant and up-to-date evidence.

The initial search identified 161 records, comprising 46 records from PubMed, 38 from Scopus, 32 from ScienceDirect, and 45 from Google Scholar. After removing 31 duplicate records, 130 articles remained for title and abstract screening. During the screening stage, 63 articles were excluded because they were not relevant to the review topic based on their titles and abstracts. Consequently, 67 reports were sought for retrieval. Of these, four full-text articles could not be retrieved because the complete texts were unavailable. Therefore, 63 full-text articles were assessed for eligibility.

The inclusion criteria were: (1) randomized controlled trials (RCTs) or quasi-experimental studies investigating the effects of Qur'anic recitation on anxiety; (2) studies involving human participants, including dental patients, preoperative patients, and other clinical populations; (3) studies reporting at least one primary outcome related to anxiety level, physiological parameters (e.g., blood pressure and heart rate), pain perception, or patient satisfaction; and (4) articles published in English or Indonesian between 2011 and 2025.

The exclusion criteria were established to ensure methodological quality. Studies were excluded if they: (1) were literature reviews, narrative reviews, systematic reviews, or meta-analyses; (2) were conference proceedings or incomplete full-text publications; (3) did not evaluate Qur'anic recitation (*murottal*) as the primary intervention; (4) did not report relevant

outcomes related to anxiety, physiological responses, pain perception, or patient satisfaction; or (5) evaluated self-recitation of the Qur'an rather than listening to recorded Qur'anic recitation.

The study selection process was independently conducted by two reviewers, and any disagreements were resolved through discussion until consensus was achieved.

Among the 63 full-text articles assessed for eligibility, 24 studies were excluded for the following reasons: 12 literature or narrative reviews, 4 systematic reviews or meta-analyses, 3 conference proceedings or incomplete full-text articles, 2 studies that did not use Qur'anic recitation as the primary intervention, 2 studies that did not report relevant anxiety, physiological, or patient satisfaction outcomes, and 1 study involving self-recitation rather than listening to recorded Qur'anic recitation.

Ultimately, 39 studies fulfilled all eligibility criteria and were included in the qualitative synthesis, while 17 of these studies provided sufficiently homogeneous quantitative data to be included in the quantitative synthesis (meta-analysis).

Data extraction was performed using a standardized data extraction form. Information extracted from each study included the first author, publication year, study design, participant characteristics, sample size, intervention protocol, duration of Qur'anic recitation, anxiety assessment instruments, physiological outcomes, pain-related outcomes, patient satisfaction, and the methodological strengths and limitations of each study.

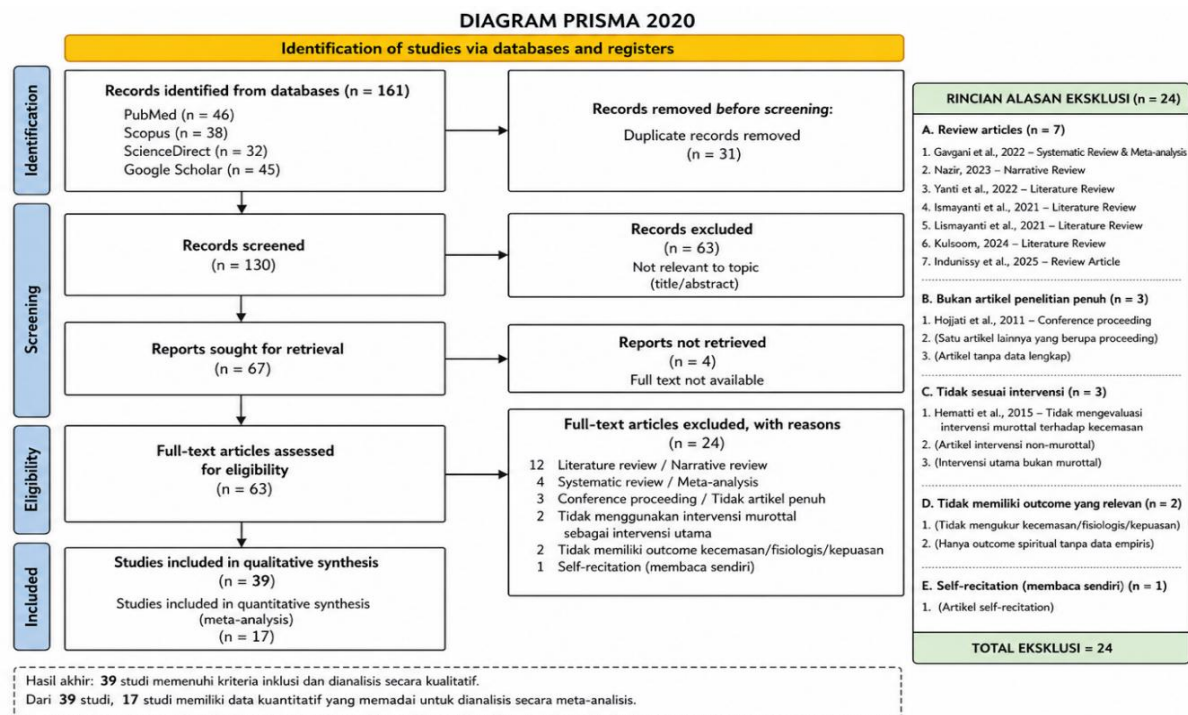


Figure 1. PRISMA flow diagram of study selection

The extracted data were summarized in tabular form and synthesized using a narrative thematic approach. The included studies were categorized according to five major themes: (1) anxiety reduction, (2) physiological responses, (3) pain perception, (4) patient satisfaction, and (5) the clinical implications of Qur'anic recitation within the concept of painless dentistry. Narrative synthesis was selected because of the considerable heterogeneity in study designs, participant characteristics, intervention protocols, outcome measures, and assessment instruments across the included studies. Where sufficient homogeneous quantitative data were available (n = 17 studies), the findings were also synthesized quantitatively through meta-analysis.

DISCUSSION

Following the literature selection process based on the PRISMA 2020 guidelines, only

studies meeting all predefined inclusion criteria were included in the qualitative synthesis. Literature reviews, systematic reviews, meta-analyses, narrative reviews, conference proceedings, and studies that did not evaluate Qur'anic recitation (murottal) as the primary intervention were excluded from the final analysis. The characteristics of the included studies are summarized in Table 1.

The majority of the included studies employed randomized controlled trial (RCT) and quasi-experimental designs, while several studies used cohort, case study, and qualitative approaches. The study populations included dental patients, preoperative patients, cardiovascular patients, oncology patients, hemodialysis patients, intensive care unit (ICU) patients, and individuals undergoing various medical procedures. Overall, the evidence consistently demonstrated that listening to Qur'anic recitation was associated with reduced

anxiety levels, accompanied in several studies by favorable physiological responses and improved patient comfort and satisfaction.¹⁻¹⁹

1. Psychological Effects of Qur'anic Recitation

The included studies consistently demonstrated that listening to Qur'anic recitation exerts a significant anxiolytic effect across

diverse clinical populations, including dental patients, preoperative patients, cardiovascular patients, and individuals undergoing invasive medical procedures.¹⁻⁷ Significant reductions in anxiety were reported in both randomized controlled trials and quasi-experimental studies, indicating consistent effectiveness across different research designs.

Table 1. Characteristics of studies included in the systematic review (n = 39)

Ref.	Author (Year)	Study Design	Population	n	Outcome(s)	Main Findings
1	Yanti & Shanti (2020)	Quasi-experimental	Surgical patients	32	Anxiety	Anxiety significantly decreased. ¹
2	Alattar & Hamzah (2024)	RCT	Dental patients	30	Anxiety	Significant reduction in dental anxiety after Qur'anic recitation. ²
3	Ajorpaz et al. (2011)	RCT	Abdominal surgery patients	90	Anxiety, BP, HR	Anxiety, blood pressure, and heart rate decreased significantly. ³
4	Azhar et al. (2016)	Quasi-experimental	Surgical patients	38	Anxiety, Pulse rate	Significant reductions in anxiety and pulse rate. ⁵
5	Hojjati et al. (2011)	RCT	Preoperative patients	60	Anxiety	Qur'anic recitation significantly reduced preoperative anxiety. ⁶
6	Apriyono (2023)	Quasi-experimental	Preoperative patients	30	Anxiety	Qur'anic recitation was superior to classical music. ⁷
7	Irfan et al. (2019)	Clinical trial	Healthy volunteers	22	EEG, BP	Increased alpha-wave activity and reduced blood pressure. ⁸
8	Faheim et al. (2022)	Quasi-experimental	Pediatric oncology patients	100	Anxiety, Pain	Anxiety and pain decreased significantly. ¹¹
9	Wahyuningsih et al. (2023)	Quasi-experimental	Cardiovascular patients	90	Anxiety, Comfort	Anxiety decreased and patient comfort improve ¹²
10	Asrul (2023)	Case study	Surgical patients	NR	Anxiety, HR	Anxiety and heart rate decreased after a 10-minute intervention. ¹⁵
11	Erlena et al. (2024)	Cohort	Preoperative patients	30	Anxiety	Anxiety decreased significantly. ¹⁸
12	Maharani & Mustofa (2024)	Case study	ICU patients	2	Hemodynamic response	Improved hemodynamic parameters. ¹⁹
13	Erpina & Mochartini	Quasi-experimental	Clinical patients	45	Anxiety	Significant reduction in anxiety. ²⁰
14	Rusdi et al. (2024)	Quasi-experimental	Healthy adults	8	Emotional response	Improved emotional regulation after intervention. ²¹
15	AbuRuz et al. (2023)	RCT	CABG patients	132	Pain	Reduced postoperative pain and ICU stay. ²²
16	Rohadi & Maliya (2025)	Pre-post study	Surgical patients	5	Anxiety	Anxiety decreased following intervention. ²³
17	Hastuti et al. (2025)	Quasi-experimental	HCU patients	15	Anxiety	Significant reduction in anxiety. ²⁴

18	Suzana et al. (2025)	Quasi-experimental	Cesarean section patients	16	Anxiety	Anxiety scores decreased significantly. ²⁵
19	Lastaro et al. (2023)	Pre-experimental	Cesarean section patients	39	Anxiety	Significant reduction in anxiety. ²⁶
20	Islamiaty et al. (2023)	Two-group pretest–posttest	Cesarean section patients	60	Anxiety	Anxiety significantly decreased compared with baseline. ²⁷
21	Iryani et al. (2023)	Quasi-experimental	Clinical patients	NR	Anxiety, Pain	Reduced anxiety and pain perception. ²⁸
22	Syamdamriati (2023)	Pre-experimental	Surgical patients	20	Anxiety	Significant reduction in anxiety. ²⁹
23	Penerapan Terapi Murottal Al-Qur'an (2023)	Case study	Surgical patients	NR	Anxiety	Combined intervention effectively reduced anxiety. ³⁰
24	Gunawan & Mariyam (2022)	Case study	Cataract patients	2	Hemodynamic response	Improved hemodynamic stability. ³¹
25	Kaslinda (2024)	Quasi-experimental	Surgical patients	34	Anxiety, Vital signs	Anxiety decreased and vital signs stabilized. ³²
26	Faridah (2015)	Pre-experimental	Laparotomy patients	32	Anxiety	Significant anxiolytic effect. ³³
27	Herlina et al. (2023)	Quasi-experimental	Women in labor	30	Anxiety	Reduced maternal anxiety during labor. ³⁴
28	Saputro et al. (2024)	Quasi-experimental	Preoperative patients	32	Anxiety	Anxiety decreased significantly after intervention. ³⁵
29	Purnomo et al. (2024)	Pre-experimental	Cesarean section patients	37	Anxiety	Significant reduction in anxiety scores. ³⁶
30	Wisuda et al. (2024)	Quasi-experimental	Coronary heart disease patients	110	Anxiety, Depression	Anxiety and depression were significantly reduced. ³⁷
31	Mohamed et al. (2022)	Quasi-experimental	Women in labor	200	Anxiety, Pain	Reduced anxiety and labor pain. ³⁸
32	Hudiyawati et al. (2022)	Pre-experimental	PCI patients	30	Anxiety	Significant reduction in anxiety. ³⁹
33	Taha et al. (2023)	Quasi-experimental	Hemodialysis patients	30	Anxiety	Qur'anic recitation effectively reduced anxiety. ⁴⁰
34	Al-Jubouri et al. (2021)	Experimental	Chemotherapy patients	238	Anxiety	Significant anxiolytic effect. ⁴¹
35	Rustam et al. (2017)	Quasi-experimental	ICU patients	10	Comfort	Patient comfort improved after intervention. ⁴²
36	Amelia et al. (2022)	Quasi-experimental	Hypertensive patients	66	Anxiety	Significant reduction in anxiety. ⁴³
37	Nasiri et al. (2016)	RCT	CABG patients	80	Anxiety	Postoperative anxiety decreased significantly. ⁴⁴
38	Hosseini et al. (2013)	RCT	CABG patients	70	Anxiety	Spiritual intervention reduced anxiety. ⁴⁵
39	A et al. (2020)	RCT	Perioperative patients	63	Anxiety, Satisfaction	Improved anxiety and patient satisfaction. ⁴⁶

Comparative studies further suggested that Qur'anic recitation provides anxiety reduction comparable to or greater than that achieved with classical music or other relaxation interventions among Muslim patients.^{3,6,7} This benefit appears

to arise not only from the rhythmic and harmonious acoustic characteristics of Qur'anic recitation but also from its spiritual dimension, which promotes trust in God (*tawakkul*), emotional acceptance, and inner peace during

stressful medical procedures.⁴ In the context of painless dentistry, these psychological benefits may reduce fear associated with local anesthesia, rotary instruments, and tooth extraction, thereby improving patient cooperation throughout dental treatment.^{1,2}

These findings are also consistent with the Islamic concept described in Surah Ar-Ra'd (13:28), which states that remembrance of Allah brings tranquility to the heart. Although this religious text does not constitute empirical scientific evidence, it provides a relevant theoretical framework for understanding the psychological mechanisms underlying the observed clinical effects.

2. Physiological Effects and Autonomic Responses

Beyond psychological benefits, several studies reported favorable physiological changes following exposure to Qur'anic recitation. The most frequently evaluated parameters included blood pressure, heart rate, electroencephalographic (EEG) activity, and hemodynamic stability.^{5,8,9}

EEG studies demonstrated increased alpha-wave activity during Qur'anic recitation, reflecting a relaxed mental state^{8,9} Furthermore, systematic evidence indicates that listening to, reciting, or memorizing the Qur'an is associated with reduced stress responses through modulation of the autonomic nervous system.¹⁰ Decreased sympathetic nervous system activity accompanied by enhanced parasympathetic activation contributes to reductions in heart rate and blood pressure while improving

hemodynamic stability before medical procedures.^{5,12,14,16}

Nevertheless, the magnitude of physiological responses varied among studies. These variations are likely attributable to differences in participant characteristics, clinical settings, duration of the intervention, selected Qur'anic chapters (*surahs*), methods of audio delivery, and outcome measurement instruments.

3. Patient Satisfaction and Clinical Experience

Several studies reported that Qur'anic recitation not only reduced anxiety but also enhanced patient comfort and overall satisfaction with healthcare services.^{11,12,14} Patients described feeling calmer, emotionally supported, and better prepared for medical procedures when Qur'anic recitation was incorporated into their care.

Among pediatric oncology patients, Qur'anic recitation was also associated with increased parental satisfaction regarding the quality of care received.¹¹ These findings suggest that the benefits of Qur'anic recitation extend beyond anxiety reduction by improving the overall healthcare experience for both patients and their families. Such outcomes support the principles of patient-centered care, in which psychological, cultural, and spiritual needs are integrated into clinical practice.

These findings are consistent with the concept of painless dentistry, which emphasizes that successful dental care is determined not only by effective pain control but also by the patient's psychological readiness, emotional comfort, and overall treatment experience. Educational interventions regarding painless dentistry have been shown to improve public understanding that

modern dental care combines pharmacological and non-pharmacological approaches to minimize fear, anxiety, and pain while creating a safe and comfortable treatment environment. Consequently, patients become more confident in seeking dental care, demonstrate greater cooperation during treatment, and are more likely to attend regular dental visits.⁴⁷

From a patient-centered perspective, incorporating Qur'anic recitation into dental practice may therefore provide benefits beyond physiological relaxation. The intervention addresses patients' spiritual and emotional needs, strengthens trust in healthcare providers, enhances communication, and contributes to a more positive perception of dental treatment. These factors are essential for improving patient satisfaction and promoting long-term adherence to preventive oral healthcare within the framework of painless dentistry.⁴⁷

4. Comparison with Other Non-Pharmacological Interventions

Several studies compared Qur'anic recitation with classical music, nature sounds, and other relaxation interventions.^{3,6,7,12} Although all interventions demonstrated beneficial effects on anxiety reduction, Qur'anic recitation appeared to provide additional advantages among Muslim patients because it combines auditory relaxation with spiritual engagement.

Unlike conventional relaxation techniques, Qur'anic recitation simultaneously addresses emotional, cognitive, and spiritual dimensions, thereby promoting a more comprehensive relaxation response.¹⁰ Asrul

reported that approximately ten minutes of Qur'anic recitation was sufficient to produce a significant reduction in preoperative anxiety.^{15,16} These findings are consistent with the concept of painless dentistry, which emphasizes that patient comfort should not only be achieved through pharmacological pain control but also through comprehensive management of fear, anxiety, and psychological well-being. Painless dentistry is a patient-centered approach involving dentists, patients, and family members to create a safe, comfortable, and supportive treatment environment. The approach integrates pharmacological and non-pharmacological strategies to minimize pain, fear, and anxiety while improving the overall dental experience.

Consequently, reducing anxiety before treatment may improve patient cooperation, increase treatment acceptance, and encourage regular dental attendance, ultimately contributing to better oral health outcomes.⁴⁷ these findings suggest that Qur'anic recitation may serve as a safe, inexpensive, culturally appropriate, and easily implemented complementary intervention within the painless dentistry approach. Its integration into dental practice may be particularly beneficial for Muslim patients by addressing anxiety reduction, enhancing spiritual well-being, and supporting patient-centered dental care.^{10,12,48}

CONCLUSION

This systematic review suggests that Qur'anic recitation (murottal) is a promising non-pharmacological intervention for reducing anxiety among patients undergoing dental and other medical procedures. Across the included

primary studies, Qur'anic recitation was consistently associated with improvements in psychological outcomes and, in several studies, with favorable physiological responses such as reduced heart rate, lower blood pressure, and improved hemodynamic stability. In addition, several studies reported enhanced patient comfort and satisfaction, particularly among Muslim patients who perceived the intervention as culturally and spiritually meaningful.

Despite these encouraging findings, the available evidence should be interpreted with caution because of methodological heterogeneity across studies, including variations in study design, sample size, patient populations, outcome measures, duration of intervention, and the specific Qur'anic chapters recited. These differences limit direct comparison between studies and preclude firm conclusions regarding the optimal intervention protocol.

From a clinical perspective, Qur'anic recitation may serve as a safe, inexpensive, and culturally appropriate complementary strategy within the painless dentistry approach, particularly during the preoperative period or before anxiety-provoking dental procedures. Future well-designed multicenter randomized controlled trials with standardized intervention protocols and validated outcome measures are needed to establish its clinical effectiveness, determine the optimal duration and recitation protocol, and clarify the underlying neurophysiological mechanisms.

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