



The Effect of Combined Qur'anic Murottal and Dhikr Therapy on Postoperative Pain in Patients Undergoing Coronary Artery Surgery

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Received:

4 May 2026

Revised:

12 May 2026

Accepted:

9 June 2026

Keywords:

Complementary
therapy, coronary heart
disease, dhikr, murottal,
postoperative pain

DOI:

[http://dx.doi.
org/10.32419/jppni.
v11i2.901](http://dx.doi.org/10.32419/jppni.v11i2.901)

ABSTRACT

Objective

To analyze the quality of nursing services and its relationship with outpatient satisfaction at the Community Health Center (Puskesmas).

Methods

This study employed a descriptive-correlative design with a cross-sectional approach. Data were collected using a quota sampling technique. The sample consisted of 96 outpatients at the general clinic of Puskesmas X, Pekalongan City. The research instruments included a nursing service quality questionnaire and a patient satisfaction questionnaire. Data were analyzed using the Chi-Square test.

Results

The findings indicated that 55.21% of respondents perceived the quality of nursing services as good, and 54.17% reported being satisfied with the services. The analysis yielded a p-value of 0.001 ($p < 0.05$), signifying a significant correlation between the quality of nursing services and outpatient satisfaction. Respondents who received nursing care were 9.9 times more likely to be satisfied with the nursing care provided at community health center outpatient clinics.

Conclusion

There is a significant relationship between the quality of nursing services and outpatient satisfaction at the public health center.

Consequently, policies and rigorous monitoring-evaluation of the implementation of standard operating procedures (SOPs) for nursing care are essential.



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Background

Coronary artery disease (CAD) remains the leading cause of mortality worldwide and continues to impose a substantial burden on global healthcare systems (Virani *et al.*, 2020; Martin, Blaha, & Blankstein, 2024). CAD develops as a consequence of progressive atherosclerotic narrowing of the coronary arteries, leading to impaired myocardial perfusion and frequently requiring surgical revascularization procedures such as coronary artery bypass grafting (CABG) or valve surgery (American Heart Association, 2023; Martin, Blaha, & Blankstein, 2024). According to the World Health Organization Global Health Estimates 2019, cardiovascular diseases accounted for approximately 17.9 million deaths annually, representing nearly 32% of all global deaths, with CAD contributing substantially to this burden (World Health Organization, 2021). A considerable proportion of these deaths are associated with postoperative complications and inadequate recovery management, emphasizing the importance of optimizing postoperative care strategies to reduce morbidity and mortality among cardiac surgery patients.

In Indonesia, the burden of CAD continues to increase alongside lifestyle transitions and the growing prevalence of non-communicable disease risk factors. According to the Indonesian Health Survey (Survei Kesehatan Indonesia/SKI) 2023 issued by the Ministry of Health of the Republic of Indonesia, the prevalence of physician-diagnosed heart disease reached 1.9% of the national population, with higher incidence observed among adults and older populations (Ministry of Health Republic of Indonesia, 2023). These findings indicate that CAD remains a major public health concern requiring comprehensive healthcare strategies, including optimal postoperative cardiac nursing management.

The Special Capital Region of Jakarta represents one of the areas with a high cardiovascular disease burden. Based on the Jakarta Provincial Health Profile 2024, cardiovascular diseases rank among the three leading causes of mortality within healthcare facilities in the province (Jakarta Provincial Health Office, 2024). In 2023, more than 58,000 patient visits related to cardiac disease were recorded in referral healthcare facilities across Jakarta. In addition, hypertension prevalence among adults reached approximately 34.1%, contributing substantially to the increasing demand for cardiovascular interventions, including CABG and heart valve surgery.

Patients undergoing cardiac surgery almost universally experience postoperative pain with varying degrees of severity. Uncontrolled postoperative pain may trigger physiological stress responses characterized by sympathetic nervous system activation, increased heart rate, elevated blood pressure, and increased myocardial oxygen demand. These responses may compromise hemodynamic stability and delay recovery. Furthermore, postoperative pain is associated with sleep disturbance, anxiety, delayed early mobilization, and prolonged hospitalization (Gan *et al.*, 2014; Louw, Diener, & Fernández-de-las-Peñas, 2019).

Pharmacological approaches remain the primary strategy for postoperative pain management. However, opioid and non-opioid analgesics may produce adverse effects such as excessive sedation, respiratory depression, nausea, vomiting, and potential drug dependence (Chou *et al.*, 2016; Kehlet, Jensen, & Woolf, 2018). Consequently, modern nursing practice increasingly incorporates non-

pharmacological interventions as complementary therapies that are safe, feasible, cost-effective, and supportive of holistic patient care.

Spiritual-based interventions have received increasing attention in nursing practice, particularly among patients with chronic illnesses and postoperative conditions, because spiritual care has been associated with improved psychological adaptation, emotional well-being, and quality of life (Puchalski *et al.*, 2019; Koenig, 2020). Exposure to Qur'anic murottal recitation has been reported to induce relaxation responses through auditory stimulation that influences the limbic system, reduces stress hormone secretion, and promotes endorphin release involved in pain modulation (Al-Qudah, Al-Gamal, & AbuRuz, 2020; Subakti, Mustofa, & Vranada, 2023). Meanwhile, dhikr practice provides psychological tranquility through repetitive spiritual recitation that supports emotional regulation and autonomic nervous system balance (Abdel-Khalek & Lester, 2017; Hidayat *et al.*, 2024).

Previous studies have demonstrated the benefits of murottal therapy and dhikr individually in reducing pain and anxiety among postoperative and chronic disease patients (Subakti, Mustofa, & Vranada, 2023; Hidayat *et al.*, 2024). However, evidence regarding the combined application of these interventions among postoperative coronary artery disease patients remains limited. Combining auditory stimulation with spiritual engagement may provide synergistic benefits in reducing pain perception while enhancing emotional comfort during recovery. This research gap forms the rationale for conducting the present study. Therefore, this study aimed to develop a complementary nursing intervention that is culturally sensitive, economically feasible, easy to implement, and supportive of holistic nursing care for postoperative cardiac patients. The objective of this study was to analyze the effect of combined Qur'anic murottal therapy and dhikr on pain intensity among patients with postoperative coronary artery disease.

Methods

This study employed a quantitative pre-experimental design using a one-group pretest–posttest approach to evaluate changes in pain intensity before and after the combined Qur'anic murottal and dhikr intervention. Data collection was conducted from September to October 2025 in the cardiac surgery ward of a tertiary referral hospital in Indonesia. The study population consisted of patients diagnosed with coronary artery disease who underwent cardiac surgery during the postoperative period. Sample size calculation was performed using the Lemeshow formula for paired comparison tests (Lemeshow *et al.*, 1990). The minimum required sample size was 13 participants. However, to improve statistical power and accommodate clinical variability among postoperative cardiac patients, the sample size was increased to 18 participants. Considering a potential dropout rate of 10%, the final sample consisted of 20 respondents.

Participants were selected using purposive sampling based on predefined inclusion and exclusion criteria. The inclusion criteria were as follows: postoperative cardiac surgery patients, Muslim patients, aged ≥ 18 years, fully conscious (Glasgow Coma Scale score = 15), experiencing mild to moderate pain (Numeric Rating Scale [NRS] score 1–6), able to communicate verbally, willing to participate, and able to provide written informed consent. The exclusion criteria included hearing impairment, severe hemodynamic instability, postoperative delirium or agitation, and continuous high-dose sedation.

Pain intensity was assessed using the Numeric Rating Scale (NRS), a single-item numerical pain assessment instrument introduced by Downie *et al.* (1978) and widely recommended in clinical pain evaluation. The scale ranges from 0 to 10, where 0 indicates no pain, 1–3 mild pain, 4–6 moderate pain, and 7–10 severe pain. The Indonesian version of the NRS has demonstrated good psychometric properties in postoperative adult patients, with a validity coefficient of $r > 0.80$ and reliability coefficient (Cronbach's alpha) of 0.90 (Hawker *et al.*, 2011; Williamson & Hoggart,

2005). Previous studies in Indonesia have also reported that the Indonesian version of the NRS is valid and reliable for measuring pain intensity among postoperative patients (Hawker *et al.*, 2011; Williamson & Hoggart, 2005; Rachmah, Nuraeni, & Emaliyawati, 2022).

Data collection was conducted from postoperative day 1 to postoperative day 5. The intervention was administered once daily between 08:00 and 10:00 AM to maintain physiological consistency and minimize environmental variation. All intervention procedures were conducted directly by the principal researcher, who had received prior training regarding the intervention protocol to ensure procedural consistency and reduce measurement bias. Each intervention session followed standardized procedures consisting of: (1) pretest pain assessment using the NRS, (2) positioning the patient in a semi-Fowler position to improve comfort and respiratory stability, (3) minimizing environmental noise and distractions, (4) administration of Qur'anic murottal therapy using Surah Ar-Rahman for 15 minutes, (5) guided dhikr for 5 minutes, and (6) immediate posttest pain assessment following completion of the intervention. The audio intervention was delivered using a smartphone provided by the researcher through disposable medical-grade headphones at a comfortable sound intensity of approximately 40–60 dB, adjusted according to each participant's tolerance level.

All participants continued receiving standard postoperative analgesic therapy according to hospital clinical protocols, including intravenous paracetamol for all respondents (100%), intravenous ketorolac for 16 respondents (80%), and opioid analgesics administered on a pro re nata (PRN) basis for 9 respondents (45%) using fentanyl or morphine according to clinical indications and physician assessment of breakthrough pain. No changes in analgesic regimens occurred during the intervention period. To minimize pharmacological bias, the intervention was consistently administered approximately two hours after routine analgesic administration, when the peak pharmacological effects were considered relatively stable (Chou *et al.*, 2016; Kehlet, Jensen, & Woolf, 2003; Gan *et al.*, 2014). In addition, no supplementary analgesics were administered during the intervention sessions. This approach was intended to ensure that changes in pain intensity more accurately reflected the effects of the spiritual–auditory intervention rather than pharmacological therapy alone.

Data were analyzed using statistical software. Univariate analysis was conducted to describe respondent characteristics and pain intensity data. Normally distributed numerical variables were presented as mean $\pm$ standard deviation, whereas non-normally distributed numerical variables were presented as median with minimum and maximum values. Data normality was evaluated using the Shapiro–Wilk test. Because pain intensity data were measured on an ordinal scale and were not normally distributed, bivariate analysis was performed using the Wilcoxon Signed Rank Test with a significance level set at $p < 0.05$. Ethical approval for this study was obtained from the Health Research Ethics Committee of the institution (Approval No. 006/KIEP/RSJJ/IX/2025). All participants received a detailed explanation regarding the study procedures, signed written informed consent forms, and were assured of confidentiality and their right to withdraw from the study at any time without affecting their medical treatment.

Results

A total of 20 postoperative patients with coronary artery disease participated in this study. The majority of respondents were female (70%), with a mean age of 56.1 ± 7.8 years. All participants remained hemodynamically stable throughout the study period. Pain intensity measured using the NRS showed a reduction following the intervention. Prior to the intervention, most respondents experienced moderate pain, whereas after the intervention there was a noticeable shift toward mild pain or no pain categories.

Table 1. Distribution of Respondent Characteristics and Changes in Pain Intensity (n=20)

Variable	Category	n	%
Sex	Male	6	30.00
	Female	14	70.00
Age Group*	40–50 years	5	25.00
	51–60 years	9	45.00
	>60 years	6	30.00
Type of Surgery	Coronary artery bypass graft (CABG)	12	60.00
	Valve surgery	5	25.00
	Others	3	15.00
Analgesic Therapy	Intravenous paracetamol	20	100.00
	Intravenous ketorolac	16	80.00
	Opioid PRN (fentanyl/morphine)	9	45.00
Pain Intensity Before Intervention**	Mild pain	6	30.00
	Moderate pain	14	70.00
Pain Intensity After Intervention**	No pain–mild pain	13	65.00
	Moderate pain	7	35.00

Notes:

- *) Age was categorized based on cardiovascular epidemiological risk and adult developmental stages: 40–50 years (early middle adulthood), 51–60 years (high-risk middle adulthood), and >60 years (older adults). Cardiovascular risk increases substantially after the age of 50 years and is accompanied by age-related physiological changes affecting recovery responses.
- **) Pain intensity categories were based on the NRS: 0 = no pain, 1–3 = mild pain, 4–6 = moderate pain, and 7–10 = severe pain. The “no pain–mild pain” category in the posttest results indicates that several participants experienced complete pain relief (NRS = 0) while others reported mild pain (NRS = 1–3) after the intervention.

Based on Table 1, most respondents were female (14 patients; 70.00%), and the largest age group was 51–60 years (9 patients; 45.00%). The most frequently performed surgical procedure was coronary artery bypass graft (CABG), accounting for 12 cases (60.00%). All respondents received intravenous paracetamol as baseline analgesic therapy. In addition, 16 respondents (80.00%) received intravenous ketorolac, while 9 respondents (45.00%) received opioid analgesics, including fentanyl or morphine, administered on a pro re nata (PRN) basis according to clinical indications and physician assessment. The analgesic regimen remained unchanged throughout the intervention period. Before the intervention, most respondents experienced moderate pain (14 patients; 70.00%). After receiving the combined Qur'anic murottal and dhikr intervention, the proportion of respondents categorized as having no pain to mild pain increased to 13 patients (65.00%).

Table 2. Changes in Pain Intensity Before and After Intervention

Variable	Pretest Median (Min–Max)	Posttest Median (Min–Max)	p-Value*
Pain Score (NRS)	4.00 (2–6)	3.00 (0–5)	0.001

*Wilcoxon Signed Rank Test

As shown in Table 2, the median pain score before the intervention was 4.00 (range 2–6), indicating moderate pain. Following the intervention, the median pain score decreased to 3.00 (range 0–5), indicating mild pain. The Wilcoxon Signed Rank Test demonstrated a statistically significant difference between pretest and posttest pain scores ($p = 0.001$). These findings suggest that the combined Qur'anic murottal and dhikr intervention significantly reduced postoperative pain among patients with coronary artery disease undergoing cardiac surgery.

Discussion

The findings of this study demonstrated a significant reduction in pain intensity among postoperative coronary artery disease patients after receiving a combination of Qur'anic murottal therapy and dhikr. The decrease in pain scores suggests that spiritual–auditory interventions may support postoperative pain management during the early recovery phase. This finding is in line with the study by Subakti, Mustofa, and Vranada (2023), which reported that Qur'anic murottal therapy reduced pain intensity among postoperative patients undergoing abdominal and orthopedic surgical procedures. The authors suggested that rhythmic auditory stimulation combined with spiritual meaning may promote relaxation and cognitive distraction, thereby influencing pain perception. Auditory stimulation may also affect the limbic system, reduce stress responses, and improve emotional calmness, contributing to lower perceived pain intensity. Similarly, Alvinda, Rejo, and Iswahyuni (2024) found that Qur'anic murottal exposure significantly decreased postoperative pain intensity among patients undergoing cesarean section surgery. The intervention was associated with psychological relaxation, emotional stabilization, and parasympathetic nervous system activation, which may enhance physiological relaxation and reduce pain perception. These findings support the potential role of murottal therapy as a non-pharmacological strategy for pain modulation.

From a spiritual perspective, dhikr has also shown therapeutic benefits in postoperative care. Hidayat *et al.* (2024) reported that the combination of dhikr and prayer therapy reduced pain intensity and stabilized vital signs among patients undergoing abdominal and general surgical procedures. Dhikr may help improve spiritual focus, decrease anxiety, and regulate autonomic nervous system balance, thereby contributing to pain reduction. In addition, Rachmah, Nuraeni, and Emaliyawati (2022) demonstrated that dhikr and murottal interventions improved postoperative hemodynamic stability, suggesting an interaction between psychological calmness and physiological responses to pain.

The findings of the present study indicate that the combination of murottal and dhikr may provide synergistic effects in postoperative pain reduction. This mechanism can be explained through the Gate Control Theory proposed by Melzack and Wall (1965), which states that non-nociceptive stimuli, including soothing auditory stimulation, may inhibit pain transmission at the spinal cord level. Furthermore, the Neuromatrix Theory introduced by Melzack (1999) explains that pain perception is influenced by sensory, emotional, cognitive, and experiential components. Therefore, spiritual–auditory interventions may affect both emotional and cognitive dimensions of pain perception, leading to a more holistic analgesic response.

The present findings also support the study conducted by Tuljannah *et al.* (2025), which reported significant pain reduction and improved comfort among postoperative patients receiving murottal therapy. However, the current study expands previous findings by integrating dhikr as an additional spiritual component, reflecting a broader biopsychosocial–spiritual approach to postoperative pain management.

An important consideration in interpreting these findings is the pharmacological therapy received by all respondents. All participants continued to receive standard postoperative analgesic therapy according to hospital protocols, including intravenous paracetamol, ketorolac, and opioid analgesics administered based on clinical indications. Analgesic medications act by suppressing

nociceptive pathways and reducing inflammatory responses within the central nervous system. To minimize pharmacological bias, the intervention was administered approximately two hours after routine analgesic administration, when peak drug effects had begun to stabilize. Therefore, the reduction in pain intensity observed in this study may not be solely attributable to pharmacological therapy but may also reflect the complementary contribution of the murottal and dhikr intervention. This finding supports the integration of non-pharmacological nursing interventions alongside standard medical therapy in postoperative pain management.

In this current study, several limitations should be acknowledged. First, the study used a one-group pretest–posttest design without a control group, limiting the ability to fully eliminate external influences such as natural postoperative recovery and pharmacological analgesic effects. Second, the relatively small sample size and single-center setting may limit the generalizability of the findings. Third, pain assessment relied on the NRS, which is subjective and influenced by individual perception, emotional condition, and spiritual experience. In addition, this study did not include objective physiological indicators such as cortisol levels or heart rate variability that could strengthen the biological explanation of the intervention effects. The observation period was also limited to the early postoperative phase; therefore, long-term effects of the intervention remain unclear. Future studies are recommended to use randomized controlled trial designs with larger sample sizes, stricter pharmacological control, and objective physiological biomarkers to strengthen evidence regarding the effectiveness of combined murottal and dhikr therapy. Nevertheless, the findings of this study suggest that spiritual–auditory interventions may serve as culturally sensitive and spiritually integrated complementary nursing therapies for postoperative cardiac pain management.

Conclusion

The findings of this study demonstrate that the combination of Qur'anic murottal therapy and dhikr effectively reduces pain intensity among patients undergoing postoperative cardiac surgery patients. A statistically significant decrease in pain scores was observed following the intervention, indicating a positive effect of spiritual–auditory therapy on patients' pain perception. These findings reinforce the understanding that pain is a multidimensional experience influenced not only by physiological mechanisms but also by psychological and spiritual factors. Therefore, holistic nursing approaches are essential in postoperative pain management. The combined murottal and dhikr intervention may serve as a safe, feasible, and culturally sensitive complementary non-pharmacological therapy aligned with patients' spiritual values. This intervention has strong potential to be integrated into multimodal postoperative cardiac nursing care. Nevertheless, further studies using stronger experimental designs and larger sample sizes are required to strengthen the existing scientific evidence.

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