

## Effect of Deep and Murottal Breathing Techniques on Post-Major Surgical Pain

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### ABSTRACT

**Background & Objective:** Fracture is a condition of bone injury that often occurs due to trauma and can cause significant pain after surgery so that it requires proper treatment so as not to interfere with the patient's recovery process. Postoperative fracture pain not only impacts the physical condition but also affects the psychological and comfort aspects of the patient, so a comprehensive pain management approach is required, including nonpharmacological therapies such as deep breath therapy and Qur'anic murottal. **Method:** This study aims to determine the effect of Qur'anic murottal therapy on the reduction of pain scale in postoperative fracture patients. **Result:** This study used a case study design with three adult patients' post-major surgery at one of the regional hospitals, using the Numerical Rating Scale (NRS) instrument to measure pain intensity before and after the intervention of deep breathing therapy and murottal Surat Ar-Rahman for 15 minutes. Results: The results showed a decrease in pain intensity in all respondents, where the pain score before the intervention was in the moderate category (score 4–5) and decreased to the mild category (score 3–4) after being given deep breathing and murottal therapy. **Conclusion:** Deep breathing therapy and murottal Al-Qur'an are effective as a nonpharmacological intervention in reducing pain intensity in postoperative fracture patients and can be used as companion therapy to improve patient comfort and quality of recovery.

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## **Introduction**

Fracture is a condition of partial or complete bone continuity that can occur due to excessive pressure on the bone structure. This condition is a global health problem because it not only causes disorders in the musculoskeletal system, but also impacts surrounding tissues such as blood vessels, nerves, and other soft tissues. The prevalence of fractures globally continues to increase with the number of cases reaching more than 170 million new cases every year based on Global Burden of Disease (GBD 2021) data. This increase is influenced by population growth and increasing life expectancy (Global Burden of Disease (GBD), 2025). Therefore, a promotive approach is needed through health education and injury prevention to reduce the incidence of fractures in the community.

In Indonesia, fracture incidence also shows an increasing trend along with the high number of injuries, especially due to traffic accidents and falls. National data shows that injuries due to falls reached 45,987 cases with 1,775 of them having fractures, while of the 20,829 cases of traffic accidents there were around 1,770 cases of fractures (Handayani et al., 2024). This condition shows that fractures are still a significant health problem at the national level. Fracture management is generally carried out through surgical procedures such as Open Reduction Internal Fixation (ORIF) and Open Reduction External Fixation (OREF) to restore bone structure (Koniyo et al., 2021). Nevertheless, promotive and preventive interventions remain important to reduce the risk of complications and accelerate patient recovery.

One of the main problems that post-fracture surgery patients experience is pain. According to the International Association for the Study of Pain, pain is an unpleasant sensory and emotional experience related to actual and potential tissue damage (IASP, 2020). Pain not only has an impact on physical conditions, but also affects the psychological, social, and spiritual aspects of the patient so that it can reduce the quality of life. Therefore, a comprehensive pain management approach is needed, not only pharmacologically but also nonpharmacologically as part of a promotive effort to improve patient comfort.

Nonpharmacological interventions that are developing today include relaxation techniques, distractions, and spiritual approaches. One of the therapies that is widely researched is the Qur'anic murottal therapy. Research by (Sari et al., 2022) shows that murottal therapy is effective in reducing the intensity of postoperative pain through relaxation mechanisms, a decrease in stress hormones such as cortisol, as well as an increase in beta-endorphins as a natural analgesic. In addition, the study (Rahmawati et al., 2023) also found that administering murottal therapy for 15–30 minutes in postoperative fracture patients can significantly reduce the pain scale on the first day of treatment. This shows that murottal therapy has the potential to be an easy, safe, and holistic approach based on nursing interventions.

Based on this description, this study aims to determine the effect of the intervention of Qur'anic murottal therapy on the reduction of pain scale in postoperative fracture patients. This research is expected to contribute to the

development of promotive-based and spiritual-based nursing interventions to improve the quality of health services, especially in patient pain management.

### **Objective**

The objective of this study was to determine the effect of deep breathing relaxation and Qur'anic murottal therapy on reducing pain intensity in post-fracture surgery patients.

### **Method**

This study uses a case study design that was carried out on October 13-21, 2025 at one of the Regional Hospitals in Central Java. The subjects of this study were 3 adult patients who had undergone major surgery (non-emergence). This study includes inclusion and exclusion criteria, inclusion criteria, namely patients of age with major surgery, full conscious status, willing to be respondents and sign informed consent and who receive pharmacological therapy. Exclusion criteria include patients with hearing loss, decreased consciousness, or severe pain that may interfere with the relaxation process.

The instrument used in the assessment of pain in this study is the Numeric Rating Scale (NRS), which is a numerical scale used to measure pain intensity based on the subjective assessment of patients (Young et al., 2025). NRS is a simple and easy-to-use pain measurement tool and is recommended in modern clinical practice (Martorella et al., 2023). On this scale, patients are asked to choose a number from 0 to 10, where the number 0 indicates no pain and the number 10 indicates very severe pain or the worst pain ever felt (Silverberg, 2021). The NRS instrument has been widely used in clinical practice because it has good validity and reliability in measuring pain intensity in various patient populations. Recent research shows that NRS has a very high measurement consistency, with a reliability value of more than 0.9 so it is considered accurate for repeated pain monitoring (Adha, R., & Komalasari, n.d.).

The research procedure begins with an explanation to the patient about the purpose of the action and a request for approval to take pain measurements. Next, an assessment of the initial pain intensity (pre-test) was carried out using the Numeric Rating Scale (NRS) by asking the patient to mention the numbers 0-10 according to the level of pain felt. The patient is then given a 15-minute intervention in the Qur'anic murottal therapy (Q.S. Ar-Rahman 55:1-78) with the eyes closed and in a calm and comfortable environment. During the intervention, the patient is positioned comfortably and directed to focus on listening to the murottal reading through audio media. After the intervention was completed, the pain intensity measurement (post-test) was carried out again using the Numeric Rating Scale (NRS) with the same procedure as the initial measurement. Each patient's response during the intervention was recorded in an observation sheet. The measurement data were analyzed descriptively by comparing pain scores before and after the intervention to assess changes in pain intensity in patients.

## Results

**TABLE 1.** Distribution of Respondent Characteristics by Age, Gender, Type of Surgical Procedure, Day to, Medical Diagnosis

| No | Patient Code | Age (years) | Gender | Types of Surgical Actions | Day to | Medical Diagnosis |
|----|--------------|-------------|--------|---------------------------|--------|-------------------|
| 1. | R1           | 42          | Male   | ORIF Extremitate Atas     | 2      | Fracture radius   |
| 2. | R2           | 52          | Women  | ORIF Lower Extremity      | 1      | Fracture femur    |
| 3. | R3           | 26          | Male   | ORIF Extremitate Atas     | 2      | Fracture tibia    |

The results of the study based on the characteristics of the respondents showed that the study subjects were in the age range of young adulthood to late adulthood, namely between 26 and 52 years old, which is an age group with good cognitive ability in assessing pain using subjective scales such as NRS (Martorella et al., 2023). The first respondent was 42 years old on the second day of postoperative care, the second respondent was 52 years old on the first postoperative day, and the third respondent was 26 years old on the second postoperative day. Based on gender, two respondents were male and one respondent was female, which showed variations in demographic characteristics in this study (Fillingim et al., 2023). The type of surgical procedure performed on all respondents was ORIF (Open Reduction Internal Fixation) on the upper and lower extremities, which is a major surgical procedure with a fairly high potential for postoperative pain (Kehlet & Joshi, 2022). Respondents underwent surgery on the lower extremities, which are known to have higher levels of pain because they are related to the patient's mobilization function (Wang et al., 2023). The medical diagnoses experienced by the respondents included radius, femur, and tibia fractures, which are long bone injuries requiring surgical intervention as the primary treatment (El-Tallawy et al., 2023). Variations in treatment days indicated that respondents were in the acute postoperative phase, namely the first to the second day, where pain was still felt significantly due to ongoing inflammatory and tissue healing processes (Gan et al., 2022). This condition shows that all respondents were in the appropriate phase to receive pain management interventions both pharmacologically and non-pharmacologically (Chou et al., 2022).

**TABLE 2.** Distribution of Respondent Characteristics by Age, Gender, Type of Surgical Procedure, Day to, Medical Diagnosis

| No | Code Patients | Pre-Test (NRS) | Category | Post-Test (NRS) | Category    |
|----|---------------|----------------|----------|-----------------|-------------|
| 1. | R1            | 5              | Medium   | 3               | Lightweight |
| 2. | R2            | 6              | Medium   | 4               | Lightweight |
| 3. | R3            | 4              | Medium   | 3               | Lightweight |

Based on the measurement results in this study, it was found that the patients' pain intensity before (pre-test) receiving Surah Ar-Rahman murottal therapy was in the moderate category with a score range of 4–5 in all respondents. After the intervention (post-test), the results showed a decrease in pain intensity in all respondents, namely becoming mild in two respondents and remaining moderate in one respondent with a lower score. This decrease indicates a clinically significant

change after the administration of murottal therapy as a non-pharmacological intervention (Chou et al., 2022).

## **Discussion**

The level of pain in postoperative patients is influenced by several factors such as age, gender, surgical location, and tissue healing phase (Gan et al., 2022). The results of this study showed that respondents were in the age range of young adulthood to late adulthood, which may affect pain perception and tolerance (Mogil, 2022). Adult individuals generally have sufficiently good physiological adaptation abilities, enabling them to respond to pain and interventions more optimally (Kehlet, 2022).

Based on gender, respondents were dominated by males compared to females, which showed variations in biological characteristics (Fillingim et al., 2023). Other studies state that women tend to have higher pain sensitivity than men due to hormonal influences (Bartley, E. J., & Fillingim, 2022). This is caused by differences in the pain modulation system influenced by the hormone estrogen in women (Manson, 2023). However, other studies have shown that men may also experience high pain, especially in physical trauma conditions caused by risky activities (Thapa et al., 2022).

In addition to gender, the type of surgical procedure also affects the intensity of pain experienced by patients (Kehlet & Joshi, 2022). All respondents in this study underwent ORIF surgery, which is a major surgical procedure with a high risk of pain due to tissue damage (Hurley et al., 2022). Surgery on the lower extremities tends to cause higher pain than surgery on the upper extremities because it is associated with the patient's mobilization function (Wang et al., 2023).

The postoperative treatment days in this study were on the first to second day, which represents the acute phase of postoperative pain (Kwon et al., 2023). In this phase, inflammatory mediators such as prostaglandins remain elevated, thereby increasing sensitivity to pain (Gan et al., 2022a). Therefore, effective interventions are needed to reduce pain intensity both pharmacologically and non-pharmacologically (El-Tallawy et al., 2023).

The results of this study are in line with previous studies stating that audio-based therapies such as murottal or music are effective in reducing pain intensity through relaxation and distraction mechanisms (Martorella et al., 2023). Murottal therapy can provide a calming effect that helps reduce anxiety and improve patient comfort (Schug & Chandrasena, 2023). This relaxation condition contributes to reducing pain perception so that patients experience decreased pain intensity after the intervention is given (Melzack & Katz, 2022). Surah Ar-Rahman murottal therapy has been proven to be one of the effective non-pharmacological interventions in reducing pain intensity in postoperative patients (Kwon et al., 2024). This intervention can be used as a complementary therapy to improve patient comfort during the recovery period (Nasirmohtaram et al., 2025).

This study has several strengths, including the use of a simple, safe, non-invasive, and easy-to-apply intervention in nursing practice. In addition, murottal therapy is a

non-pharmacological and spiritual-based intervention that supports holistic nursing care. However, this study also has limitations, such as the small number of respondents and the absence of a control group, which limit the generalizability of the findings. Furthermore, the intervention was conducted only during the acute postoperative phase, so the long-term effects of murottal therapy could not be evaluated.

### **Conclusion**

Based on the results of the research and discussion, it can be concluded that post-fracture surgery patients who are the subject of the study experience pain in the acute phase after surgery with an intensity that is still quite disturbing to comfort. After being given the intervention of Qur'an murottal therapy Surat Ar-Rahman, all respondents showed a decrease in pain intensity accompanied by a change in emotional state to be calmer and more relaxed. This shows that murottal therapy not only has an effect on the physical aspect in the form of pain reduction, but also has a positive impact on the psychological and spiritual aspects of the patient. Thus, the purpose of the study to determine the effect of murottal therapy on the reduction of pain scale in postoperative fracture patients can be achieved, where this intervention has been shown to be able to help reduce pain perception holistically. Qur'anic murottal therapy can be one of the alternatives to non-pharmacological nursing interventions that are easy to apply, safe, and have spiritual value that can improve the patient's comfort during the recovery period. The use of this therapy also supports a comprehensive nursing approach by paying attention to bio-psycho-socio-spiritual aspects in health services.

Based on the findings of the study, it is recommended that health workers, especially nurses, can integrate murottal therapy as part of nonpharmacological pain management in postoperative patients, especially in patients with appropriate spiritual backgrounds. Healthcare institutions are expected to facilitate the use of this therapy by providing supportive audio media and a conducive environment for patients. In addition, further research is expected to be conducted with a larger sample count and a stronger research design to strengthen the scientific evidence regarding the effectiveness of murottal therapy in reducing pain as well as developing more innovative spiritual-based nursing interventions.

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