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Murattal therapy for reducing chest pain in patient with STEMI in the intensive care unit

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Abstract
Cardiovascular disease remains the leading cause of death globally, with an estimated 17.9 million fatalities in 2016 alone. In Indonesia, the prevalence of heart disease has been steadily rising, reflecting a significant public health challenge. Acute Coronary Syndrome (ACS), a group of clinical conditions characterized by chest pain due to myocardial damage, includes myocardial infarction (MI) as a critical component. Effective management of these conditions is crucial to prevent sudden death. Patients experiencing an acute heart attack often present with intense chest pain or discomfort, typically radiating to the neck, left shoulder, arm, back, or epigastrium, described as a sensation of tightening, burning, or crushing. The intensity of this pain can range from mild to severe, and inadequate or delayed treatment can lead to fatal outcomes. This article explores the impact of Qur'anic recitation, specifically Surah Ar-Rahman, as a complementary intervention for reducing pain intensity in patients with ST-Elevation Myocardial Infarction (STEMI) admitted to the ICU of Muntilan Regional Hospital in Magelang district. Over a three-day period, nursing care was provided in the ICU, allowing for direct observation of the patients' condition and progress following the intervention. The results demonstrated a significant reduction in pain intensity, from moderate to mild, following regular exposure to the recitation of Surah Ar-Rahman. The findings suggest that incorporating Qur'anic recitation, particularly Surah Ar-Rahman, as a complementary, non-pharmacological therapy could enhance the pain management process in patients suffering from STEMI. This approach offers a promising avenue for holistic patient care, addressing both the physical and spiritual needs of patients. Future research should focus on expanding the use of complementary therapies in clinical settings, further exploring their efficacy and potential integration into standard care protocols.

Keywords: Cardiovascular disease; supportive therapies; STEMI; complementary therapy; nursing care

Introduction
The Qur'an is the word of Allah revealed to the Prophet Muhammad through the angel of Jibril. It was compiled into the Mushaf, and is considered a miracle of the Prophet and an act of worship for those who recite it. Al-Quran Murotal refers to the recitation of the Qur'an by a Qori' (reciter) and is often available as a recording. Murotal Al-Qur'an has several benefits, including reducing anxiety, restoring cellular balance, stabilizing vital signs, alleviating pain, improving brain memory, and reducing insomnia (Riviati & Indra, 2024). Surah Ar-Rahman is the 55th chapter of the Qur'an, comprising 78 verses, and is a Makkiyah Surah. The chapter derives its name from the word "Ar-Rahman" in the first verse, meaning "The Most Gracious." According to a hadith narrated by Baihaqi from Ali bin Abi Talib, Surah Ar-Rahman is also referred to as the bride of the Qur'an. This Surah is renowned for its beautiful and elegant structure, as well as its profound message. The essence of the Surah emphasizes gratitude and the importance of acknowledging the blessings that Allah has bestowed upon us. It is important that the benefit of Qur'an can be delivered to the issues in clinical setting, particularly in reducing pain among patient with cardiovascular disease. Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage (Reynolds & Minic, 2023). It can result from physical stimuli or neural transmission to the brain and is often accompanied by physiological and emotional reactions (Rodríguez-Sánchez et al., 2022).

Behavioral responses to pain may include verbal expressions (groaning, crying, shortness of breath), facial expressions (grimacing, gritting teeth), body movements, and changes in social interactions, such as avoiding conversations and focusing on pain relief activities (de C Williams, 2023). Pain management is categorized into pharmacological and non-pharmacological methods. Pharmacological pain management is the most effective for prolonged and intense pain, typically involving analgesics or sedatives (Alorfi, 2023). Non-pharmacological pain management, however, is valuable for patients who cannot tolerate medication or prefer alternative methods to reduce chronic pain (Tsegaye, Yazew, Gedfew, Yilak, & Yalew, 2023). This approach can be used independently or in conjunction with pharmacological treatments. Techniques include relaxation, guided imagery, distraction, music, Al-

Qur'an recitation, cutaneous stimulation, and herbal remedies. Acute myocardial infarction (AMI) is characterized by sudden, persistent chest pain located beneath the sternum and upper abdomen. This condition arises from a sudden blockage in one of the coronary arteries, leading to myocardial necrosis. The blockage may result from coronary thrombosis or atherosclerosis (Dutta et al., 2012). Heart disease is often caused by the abnormal accumulation of lipids or fatty materials and fibrous tissue within the arterial walls, leading to structural and functional changes that decrease blood flow to the heart (Thiriet, 2019). Myocardial infarction occurs due to insufficient blood supply to the heart, often caused by narrowed coronary arteries, embolism, or thrombus formation (Saleh & Ambrose, 2018). This imbalance between the heart's oxygen supply and demand is central to the pathology of AMI. Diagnostic tests for MI include electrocardiograms, serum enzyme examinations, and other non-specific indicators (Sachdeva et al., 2023).

Management of AMI involves various medications commonly used in critical care settings to treat cardiovascular conditions. These include fibrinolytic therapy, which aims to dissolve thrombi, restore coronary blood flow, and minimize infarct size; anticoagulant therapy, which limits further fibrin formation and helps prevent thromboembolism; and platelet inhibitor therapy, such as aspirin, which reduces the risk of thrombus formation and arterial vasoconstriction (Taggart, Wereski, Mills, & Chapman, 2021). Nursing care for patients with AMI begins with a thorough assessment to identify the patient's cardiac needs and determine priority interventions. Nursing diagnoses for patients with ST-elevation myocardial infarction may include ineffective breathing patterns, decreased cardiac output, acute pain, and activity intolerance. Nursing interventions focus on eliminating chest pain through medical therapy, oxygen administration, vital signs monitoring, and physical rest. Additionally, the application of non-pharmacological therapies, such as listening to holy Qur'an has been shown to effectively reduce anxiety and pain levels (Eid Aburuz, Al-Dweik, & Ahmed, 2023). However, none of studies used that therapy among patient with AMI in intensive care unit in Magelang. Therefore, the study aimed to evaluate the using of holy Qur'an therapy for the patient.

Case Description

The author presents the case of Mr. MK, a 46-year-old male patient diagnosed with Inferior STEMI. The patient arrived at the hospital with the primary complaint of left-sided chest pain radiating to his back. His symptoms began three hours prior to hospital admission, and he reported chest tightness, shortness of breath, nausea, and vomiting. Upon admission, his blood pressure was 140/83 mmHg, respiratory rate 28 breaths per minute, and SpO2 on room air was 90%. This was the patient's first hospitalization, and he declined referral to a better-equipped hospital due to the inconvenience of traveling far from home. Mr. MK works as a trader in a traditional market, has a long history of smoking, enjoys drinking coffee, and occasionally stays up late. Initial treatment in the emergency room included oxygen therapy via a non-rebreather mask (NRM) at 8 L/min due to complaints of shortness of breath and oxygen desaturation. The patient also received aspirin, nitrates, and morphine upon arrival, which was continued during his stay in the ICU. The ECG examination revealed ST-segment elevation in leads II, III, and AVF. Laboratory tests showed an elevated leukocyte count of 12.34 thousand, CK-MB at 140 U/L, and increased liver enzymes (SGOT 127 U/L) along with total cholesterol of 290 U/L.

Based on the assessment, the following nursing diagnoses were established: acute pain related to physiological injury agents and ischemia (D.0077), and decreased cardiac output related to changes in contractility, heart rate, preload, and afterload (D.0008). Nursing interventions focused on reducing chest pain and enhancing the heart's ability to pump blood to meet the body's metabolic needs. The nursing care plan, implemented over three days from May 25th to May 27th, combined pharmacological and non-pharmacological pain management strategies. Pharmacological interventions successfully reduced the patient's pain from a severe to a moderate level, while non-pharmacological methods, including the recitation of Surah Ar-Rahman, helped lower the pain to a mild level. On May 25th, the patient still experienced chest pain at a level 7 and continued to receive pharmacological treatment through a continuous morphine drip. The nurse played Surah Ar-Rahman for 15 minutes, but the patient remained restless, complaining of chest pain, nausea, and insomnia. On May 26th, the patient's chest pain decreased to a level 5, with ongoing continuous morphine therapy at 1 mg/hour. He was able to listen to the recitation of Surah Ar-Rahman for one hour. By May 27th, morphine was discontinued and replaced with MST (morphine sulfate) oral therapy, administered once daily at night. The recitation of Surah Ar-Rahman was played from 9 PM – 10 PM and repeated from 2 AM – 3 AM when the patient woke up. As a result, the patient was able to return to sleep without difficulty, and his chest pain reduced further to a level 3.

Discussion

In the case of Mr. MK, a patient experiencing his first Inferior STEMI attack, immediate reperfusion therapy should be administered, preferably through percutaneous coronary intervention (PCI) or cardiac catheterization, which is most effective if performed within 120 minutes of symptom onset. However, if PCI is unavailable or delayed, fibrinolysis should be initiated. Unfortunately, at Muntilan Regional Hospital, neither PCI nor fibrinolysis could be performed due to the lack of a cardiologist. As a result, the initial treatment for STEMI patients who refuse to be referred to a more equipped facility involves administering anticoagulant therapy, specifically Arixtra 2.5 mg injection for five days, despite the associated risks. In addition to Arixtra therapy, platelet inhibitors such as aspirin and clopidogrel (CPG) are

administered, with close monitoring of vital signs and potential bleeding. This case study with a medical diagnosis of STEMI identifies two nursing diagnoses: acute pain related to physical injury agents (e.g., inflammation, ischemia, neoplasm) (D.0077), and decreased cardiac output related to diminished contractility, heart rate, preload, and afterload (D.0008). According to the International Association for the Study of Pain (IASP), pain is defined as an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage (Raja et al., 2020). Pain complaints are classified under the psychological category and the pain and comfort subcategory. Subjective major symptoms of acute pain include reported pain, while objective signs may include facial grimacing, protective behavior (such as alertness and positions that minimize pain), restlessness, increased pulse rate, and difficulty sleeping (Johnson, Borsheski, & Reeves-Viets, 2013).

For the second nursing diagnosis, decreased cardiac output is defined as the inadequacy of the heart to pump blood sufficient to meet the body's metabolic needs. This diagnosis falls under the physiological category and the circulatory subcategory. Causes of decreased cardiac output include changes in heart rhythm, heart rate, contractility, preload, and afterload (Vincent, 2008). Reducing pain intensity through the intervention of Al-Qur'an murotal recitation helps patients feel more relaxed, potentially stimulating the release of endorphins, which can alleviate pain (Moulaei, Haghdoost, Bahaadinbeigy, & Dinari, 2023). One non-pharmacological approach to pain management involves listening to Qur'anic recitations, or murotals. Murotal refers to a sound recited by a qari (Qur'an reader) and recorded for therapeutic purposes. As a non-pharmacological pain management technique, the slow, rhythmic sound of murotal produces vibrations that stimulate the tympanic membrane, transmitting signals to the organ of Corti in the cochlea. These signals are then converted from the conduction system to the nervous system via the auditory nerve (Nervus VIII) and transmitted to the auditory cortex in the cerebral cortex, eventually reaching the limbic system—the primary target of opiate receptors that regulate homeostasis through the limbic cortex (Kannan et al., 2022). Additionally, a research demonstrated that murotal therapy effectively reduced pain in cancer patients, with pain levels decreasing significantly from severe to mild (Al-Jubouri, Isam, Hussein, & Machuca-Contreras, 2021). Beyond pharmacological and non-pharmacological treatments, the role of nurses in providing holy Qur’an support to STEMI patients is crucial. STEMI patients often experience fear of death, so nurses' encouragement, which aims to strengthen and calm the patient, has a significant impact. Gentle recitation and a calm environment positively affect the patient's psychological state, helping them become calmer and more motivated to recover. Moreover, the presence of close family members also offers vital mental support, as the feeling of being accompanied and protected accelerates the patient's recovery process.

Conclusion

In the case of Mr. MK, who presented with Inferior STEMI, the challenges posed by the lack of PCI and fibrinolysis facilities at Muntilan Regional Hospital emphasized the need for alternative management strategies. Despite the constraints, the administration of anticoagulants and platelet inhibitors, combined with non-pharmacological interventions such as murotal therapy, demonstrated significant benefits. Murotal therapy, in particular, was effective in reducing pain and enhancing patient comfort, showcasing its potential as a valuable adjunct to pharmacological treatments. This case highlights the essential role of integrated care approaches, including psychological support from nursing staff, in improving patient outcomes during acute myocardial infarction. For future research, several areas warrant exploration. Firstly, evaluating the effectiveness of murotal therapy in larger, controlled trials could provide a clearer understanding of its impact on pain reduction and overall patient recovery. Additionally, investigating other non-pharmacological therapies, such as music therapy or guided imagery, might offer further insights into complementary pain management strategies. Research into the long-term effects of combining pharmacological and non-pharmacological treatments could also reveal sustained benefits for patient well-being.

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