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Emergency Nursing Care for Patients with Acute Myocardial Infarction (AMI) with Acute Pain Nursing Problems

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ABSTRACT

Background & Objective: Acute myocardial infarction (AMI) is one of the clinical manifestations of cardiovascular disease, which remains the leading cause of death worldwide. AMI, better known as a heart attack, occurs due to a blockage in blood flow to the heart muscle, causing the death of myocardial cells (cardiomyocytes). One of the most common clinical manifestations found in patients with AMI is chest pain. This study aims to analyze the results of nursing care for acute pain problems in patients with Acute Myocardial Infarction at Dr. Harjono Regional General Hospital, Ponorogo Regency. **Method:** The type of research used is descriptive qualitative in the form of a case study with a documentation study approach. The subjects in this study were patients with acute pain nursing problems who were treated in the emergency room and ICVCU. Data collection was conducted through interviews, observations, and documentation studies. Nursing care was provided for three days, from May 10 to 12, 2025. **Result:** The results of the study showed that patients experienced acute pain related to physiological injury agents. **Conclusion:** After nursing intervention for 3 x 24 hours, the nursing problems were partially resolved, as evidenced by the achievement of five out of five outcome criteria, namely reduction in pain, grimacing, moaning, restlessness, and pain avoidance behavior.

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Introduction

Cardiovascular disease remains the leading cause of death worldwide, with acute myocardial infarction (AMI) or heart attack being one of the most deadly manifestations. AMI occurs due to disruption of blood flow to the heart muscle, usually due to sudden blockage of the coronary arteries. This condition causes heart

tissue death (necrosis) due to lack of oxygen, and if not treated immediately, can lead to heart failure and death.

The typical symptoms of AMI are chest pain that radiates to the left arm, neck, jaw, or back, accompanied by cold sweats, nausea, and shortness of breath. Unlike typical angina, this pain lasts longer and does not go away with nitroglycerin. In Indonesia, approximately 270,000 cases of AMI occur each year, with the highest prevalence in people over 60 years of age. Data from Dr. Harjono Ponorogo Regional General Hospital in 2024 recorded 169 cases of AMI, with 63 patients treated in the ICCU.

Pathophysiologically, AMI is triggered by the rupture of atherosclerotic plaque, which causes thrombus formation. This triggers blood vessel spasms, inflammation, and blood flow blockages. The imbalance between the supply and demand of oxygen to the heart triggers anaerobic metabolism and chest pain.

Risk factors are divided into two categories: modifiable factors such as smoking, hypertension, obesity, and unhealthy lifestyle; and non-modifiable factors such as age, male gender, and family history. Therefore, prevention and public education are crucial to reduce the incidence of AMI.

Objective

Acute AMI management aims to reduce pain and limit heart muscle damage. Pharmacological interventions such as morphine, nitrates, and beta blockers are used to increase blood flow and oxygen to the heart. In addition, non-pharmacological approaches such as deep breathing relaxation and spiritual therapy, including listening to recitations from the Qur'an, have been proven effective in reducing pain and anxiety in patients.

From a faith perspective, true healing is believed to come from Allah SWT. His words in QS. Yunus verse 57 state that the Qur'an is a healer and mercy for believers. Therefore, a holistic approach that combines medical and spiritual aspects is key in treating patients with AMI.

Given its urgency and complexity, the author is interested in presenting a case study of emergency nursing care for IMA patients, with a focus on acute pain as the primary priority in treatment.

Method

In this study, the researcher chose descriptive research, which aims to describe or explain important events that occur in the present. Descriptive research consists of a study research design. A case study is a study that explores a nursing problem with detailed limitations, has in-depth data collection, and includes various sources of information. Data collection techniques include observation, interviews, and documentation studies.

Results

Assessment of emergency nursing care for IMA patients with acute pain problems conducted on May 10, 2025, in the Emergency Room of Dr. Harjono Ponorogo Regional General Hospital. Emergency nursing care began with assessment, data analysis, diagnosis formulation, intervention, implementation, and evaluation of the results of the actions with the following data.

TABLE 1. Respondent Characteristics

Name	: Mr. S
Age	: 48 years old
Registration Number	: 250xxxxxx
Religion	: Islam
Address	: Lembeyan, Magetan
Education	: High school
Occupation	: Farmer
Date of Admission to Hospital	: May 10, 2025
Medical Diagnosis	: Inferior STEMI

An assessment was conducted on patient Mr. S, a 48-year-old male, with a medical diagnosis of inferior STEMI (ST Elevation Myocardial Infarction). The assessment was conducted thoroughly, starting from primary and secondary surveys to supporting examinations.

TABLE 2. Primary Survey Results

AIRWAY	
Parameters	Description
Obstruction	No obstruction
BREATHING	
Parameters	Description
Breathing pattern	Normal
Breathing frequency	Regular
Breathing sounds	Vesicular
Dyspnea	During activity
SpO2	98% with nasal cannula 3 lpm
CIRCULATION	
Parameters	Description
Blood pressure	137/91 mmHg
Temperature	36.8°C
Pulse	110x/minute
Extremities	Warm to the touch
Epistaxis	No
Edema	None
Chest pain	Present on the left side
CRT	< 3 seconds
DISABILITY	
Parameters	Description
GCS	456
Pupillary reflexes	Normal
Neurosensory/musculoskeletal	Normal
EXPOSURE	
Parameters	Description
Tissue damage	-
Fractures/crepitus	-
Dislocations/luxations	-
Burns	-
Edema	-

The primary survey revealed an unobstructed airway, normal vesicular breathing, and stable circulation with a blood pressure of 137/91 mmHg and a pulse

of 110 beats per minute. Other vital signs showed oxygen saturation of 98% with a nasal cannula and a body temperature of 36.8°C.

Secondary survey showed that the patient was moaning in pain, with a GCS of 15 and sudden chest pain since early morning. The pain was described as crushing and burning, radiating to the back and neck. The patient was also known to be an active smoker and had a history of diabetes mellitus and stroke.

Laboratory tests showed hyperglycemia (blood glucose 209 mg/dL), high triglycerides and LDL, and an ECG showed ST elevation, indicating myocardial infarction. In addition, complete blood count results were within normal limits except for elevated cholesterol and glucose levels.

Based on the subjective and objective assessment results, it was concluded that the patient's main problem was acute pain. The cause of the pain was suspected to be myocardial ischemia due to coronary artery blockage. The nursing diagnosis established was: "Acute pain related to a physiological injury agent (ischemia), as evidenced by a pain score of 8, restlessness, grimacing, and moaning."

TABLE 3. Nursing Care Plan

No.	Nursing Diagnosis	Goals and Outcome Criteria	Primary Interventions
1.	Acute pain due to physiological injury agent (ischemia). (D.0077)	Objective: After nursing intervention for 3x24 hours, the pain level decreased with the following outcome criteria: 1. Pain complaints decreased 2. Frowning decreased 3. Moaning decreased 4. Difficulty sleeping decreased 5. Pulse rate was within normal limits	**Pain Management** **A. <u>Observasi</u>** 1. Identify the location, characteristics, duration, frequency, quality, and intensity of pain 2. Identify the pain scale 3. Identify factors that exacerbate and alleviate pain **B. <u>Therapeutic</u>** 4. Provide non-pharmacological techniques to reduce pain (e.g., TENS, hypnosis, acupressure, music therapy, massage therapy, aromatherapy, guided imagery techniques, hot/cold compresses, play therapy) 5. Control environmental factors that exacerbate pain (e.g., room temperature, lighting, noise) 6. Facilitate rest and sleep **C. <u>Education</u>** 7. Explain pain relief strategies 8. Teach non-pharmacological techniques to reduce pain **D. <u>Collaboration</u>** 9. Collaborate on analgesic administration, *if necessary*

The nursing care plan aims to reduce pain levels within 3x24 hours. Outcome criteria include a reduction in pain complaints, no more grimacing, the patient being able to sleep soundly, and normalization of pulse rate. Interventions provided consist of observation, education, non-pharmacological techniques, and collaboration in

administering analgesics such as aspirin. Non-pharmacological techniques used include deep breathing therapy, murottal therapy, and environmental control such as lighting, temperature, and visitors. Education is provided to increase the patient's knowledge about how to manage pain independently.

Implementation includes administering analgesics, murottal therapy, deep breathing therapy, and transferring the patient to the ICVCU room. The patient showed positive progress: pain levels decreased from 8 to 5, then 3, and finally 1. The environment was kept quiet to support the patient's rest. The final evaluation showed that the pain had been resolved, and all interventions could be stopped.

During the treatment period, the patient responded well to the combination of pharmacological and non-pharmacological therapies. Progress notes indicate that on the third day, the patient no longer felt significant pain. This signifies the success of the interventions carried out by the nursing team.

Nursing care for patients with acute pain due to STEMI must be comprehensive and prompt. A multidisciplinary approach and appropriate pain management have been proven effective in reducing pain intensity and accelerating recovery. Recommendations for nursing practice include the importance of continuous monitoring, patient education on pain management, and the integration of non-pharmacological techniques as part of care. The nursing care provided to Mr. S is an example of the application of nursing theory in structured, scientific, and patient-centered practice focused on patient safety and comfort.

Discussion

Assessment

In the Primary Survey assessment, there was no obstruction in the client's airway. According to (Yuvindanati, 2021), IMA clients usually do not have airway problems because they are admitted with pain in the chest area, and the pain is usually prolonged and continuous. Based on facts and theory, the author concludes that no abnormalities were found in the airway. The client's complaint was only chest pain, while the airway showed no obstruction or other issues. According to previous researchers (Patients & Krittanawong, 2023), in the breathing section of cardiac patients, there is an oxygen saturation level not exceeding 96%, use of accessory breathing muscles, shortness of breath, chest retraction, irregular breathing rhythm, orthopnea, and tachypnea. Palpation of lung expansion. Auscultation revealed additional breathing sounds such as wheezing, which was caused by the fact that when blood is no longer pumped, the blood supply to the systemic oxygen system becomes inadequate, causing symptoms of fatigue.

Circulation assessment shows blood pressure: 137/91, temperature 36.8, pulse 110x/min, extremities feel warm, no nosebleeds, no edema, chest pain on the left side, and CRT <3 seconds. According to (Yuvindanati, 2021), an increased pulse rate ranging from 100-112 beats per minute, a rapid, fluttering rhythm, systolic blood pressure ≥ 140 mmHg or diastolic blood pressure ≥ 90 mmHg, and edema indicating impaired blood flow causing symptoms of hypervolemia and cold sweats were observed. In the disability assessment, GCS was 456, pupil reflexes were normal, and neurosensory/musculoskeletal functions were also normal. According to (FITRI, 2024), clients with coronary heart disease usually arrive with full consciousness or compos mentis, anisocoric pupil reactions, positive light reflexes, and full muscle strength.

In the secondary survey assessment, the main complaint was chest pain. This is consistent with the theory according to (Jamal et al., 2022), which states that the main complaint in IMA clients is chest pain on the left side. In this case, the author believes that there is consistency between the facts and the theory presented because clients with heart failure experience chest pain.

In the current medical history, it was found that on May 10, 2025, at 1:30 AM, the client suddenly complained of a burning sensation and pain in the left side of his chest. Then, the client's wife came to the emergency room of Dr. Harjono General Hospital at 3:00 AM. From the PQRST assessment, the client stated that the chest pain appeared suddenly upon waking up. The client described the pain as "pressing and burning," felt in the left chest, radiating to the back, and spreading to the back of the neck. The client rated the pain as 8 out of 10 and admitted that the pain worsened during activities. According to Puspitasari et al. (2024) in the management of IMA clients, the nature of chest pain is as follows: Provoking Incident: Pain after activity that does not subside with rest or after administration of nitroglycerin. Quality of Pain: How the pain is felt or described by the client. The nature of the pain can be described as pressing, squeezing, or crushing. Region Radiation, Relief The location of the pain is in the substernal area or above the pericardium. The pain can spread to the chest area. Pain and inability to move the shoulders and arms may occur. Severity (Scale) of Pain: The client is asked to use a scale of 0-4 or 0-10 (visual analogue scale VAS) and assess the severity of the pain felt. Usually, when angina occurs, the pain scale ranges from 3-4 (scale 0-4) or 7-9 (scale 0-10). Time: Nature of onset. Usually, pain symptoms arise suddenly. The duration of chest pain is generally complained of as lasting more than 15 minutes.

In the assessment of past medical history, the client has a history of active smoking, diabetes mellitus (DM), and stroke. The client also underwent treatment at Dr. Harjono Regional General Hospital in 2021. According to (Jamal et al., 2022), there is a history of previous myocardial infarction and risk factors including hypertension, diabetes mellitus, dyslipidemia, smoking, stress, and a family history of coronary heart disease. The author believes that based on these facts and theories, the client's condition indeed reflects a high risk of myocardial infarction.

In the supporting examination, the ECG examination concluded STEMI (ST elevation myocardial infarction). According to (Puspitasari et al., 2024), the presence of high and symmetrical T waves is an early phase of ECG changes. There is also ST segment elevation. In the author's opinion, based on these facts and theories, ECG examination is crucial in establishing an initial diagnosis of Acute Myocardial Infarction, particularly STEMI. Clinical chemistry laboratory tests showed high blood glucose levels, namely 209 mg/dL, which indicates hyperglycemia. According to (Jamal et al., 2022), there was a history of previous myocardial infarction and risk factors including hypertension, diabetes mellitus, dyslipidemia, smoking, stress, and a family history of coronary heart disease. In the author's opinion, based on these facts and theories, the high blood glucose level in the client indicates a significant risk factor for acute myocardial infarction.

In nursing management, the client was given 3 lpm of oxygen through a nasal cannula, a urinary catheter was inserted, and fluid therapy was administered in the form of 500 cc PZ infusion at 20 Tpm for fluid replacement, 40 mg Pantoprazole injection/iv to treat stomach and esophagus problems, Fundafrinux injection 0.3 cc/IV for blood thinning, and Fibron injection 1 vial/IV for treating myocardial

infarction. The client was also advised to refrain from activities and rest completely in bed. According to Ningrum (2019), nursing care for cardiac clients involves administering oxygen therapy regardless of whether the client's blood oxygen levels are normal or abnormal. The author believes that based on these facts and theories, the nursing management of clients with acute myocardial infarction has been carried out appropriately. The administration of oxygen, complete bed rest, and appropriate fluid and drug therapy are crucial to stabilize the client's condition and prevent more serious complications. Oxygen administration remains necessary even if saturation levels are not yet too low, as ischemic heart tissue still requires optimal oxygen supply. Complete bed rest also helps reduce the workload on the heart. Based on all these findings, the researcher concludes that there is no discrepancy between the obtained data and existing theory.

Nursing Diagnosis

In this case, the nursing diagnosis is acute pain associated with physiological injury caused by the process of IMA disease. With the support of minor and major signs and symptoms in this case, the client complained of left chest pain radiating to the back of the head, appearing grimacing, moaning, restless, and adopting a protective posture. Minor signs and symptoms include increased vital signs: N: 110 beats per minute, RR: 22 breaths per minute. (SDKI DPP PPNI Task Force Team, 2018) mentions major subjective symptoms and signs, namely complaining of pain, and objective symptoms and signs, including grimacing, protective behavior (e.g., alertness, pain-avoidance position), restlessness, increased pulse rate, and difficulty sleeping. There are three things that can cause acute pain, namely physiological injury agents (e.g., inflammation, ischemia, neoplasms), chemical injury agents (e.g., burns, irritant chemicals), and physical injury agents (e.g., abscesses, amputations, burns, cuts, heavy lifting, surgical procedures, trauma, excessive physical exercise).

The author believes that based on these facts and theories, the nursing diagnosis of acute pain in the client is related to physiological injury agents caused by the acute myocardial infarction (AMI) disease process. Complaints of left chest pain radiating to the back of the head, accompanied by subjective signs such as grimacing, moaning, restlessness, and a protective posture, indicate a clear and significant pain response.

Nursing Interventions

Based on the results of the nursing diagnosis, which indicate interventions for acute pain nursing problems related to physiological injury agents. The main intervention in this case is pain management. Pain management interventions consist of 9 points, namely OTEK, which includes observation covering the identification of the location, characteristics, duration, frequency, quality, and intensity of the pain felt by the client. In collaboration with the medical team, the administration of analgesics should be considered and given when necessary to control pain optimally. (Tim Pokja SIKI DPP PPNI, 2018) states that the primary intervention for acute pain is pain management (1.08238), which involves identifying and managing sensory or emotional experiences related to tissue or functional damage with sudden or gradual onset and mild to severe constant intensity. Additionally, the recommended intervention is Deep Breathing Relaxation Technique.

According to Sofiah & Roswah (2022), this technique helps increase comfort, divert attention from pain, and relax muscles tense due to stress and pain. And

Murrotal Al-Qur'an Therapy This therapy uses recitations from the Qur'an, such as Surah Ar-Rahman, which are played for the client for approximately 16 minutes. Puspitasari et al. (2024) state that the vibrations of the Murrotal sound can reduce pain stimulation, increase natural endorphin levels in the body, and calm the central nervous system. The researchers argue that there is no gap between theory and action planning. The intervention provided in this case is consistent with the theory because it aligns with what was planned.

Implementation

Based on data from the pain management intervention (SIKI DPP PPNI Working Group, 2018) carried out from May 10, 2025 to May 12, 2025 to reduce pain in this case, therapeutic non-pharmacological techniques were used to reduce pain (deep breathing relaxation therapy and murrotal). Explaining pain relief strategies, teaching deep breathing relaxation therapy to reduce pain. Pharmacological therapy involved the administration of analgesics, specifically Aspirin 300 mg orally. According to the Journal of Pharmaceutical and Sciences, Aspirin is a medication used to relieve pain, fever, and inflammation. According to the researcher, in this case, the plan was carried out as previously planned. However, there was a slight change due to the client's condition.

Evaluation

Based on the evaluation results, this case had 5 outcome criteria, and all 5 outcome criteria were met. According to research conducted (Anggrahin & Kuswanto, 2023), evaluation for patients with acute myocardial infarction (AMI) using pain management and analgesic administration can help clients withstand the onset of pain during an attack. According to (Sofiah & Roswah, 2022), endorphins are neurotransmitters that inhibit the transmission of pain stimuli, thereby reducing the sensation of pain. The reduction in pain intensity is influenced by the shift in the respondent's focus from the pain experienced to the implementation of deep breathing relaxation techniques, which increases oxygen supply to the tissues and allows the brain to relax.

According to researchers (Puspitasari et al., 2024), listening to the recitation of the Qur'an makes clients more relaxed. It is this relaxed brain that stimulates the body to produce endorphins to inhibit the transmission of pain impulses to the brain and reduce the sensation of pain, ultimately reducing the intensity of pain experienced by respondents. According to the researchers, the pain management intervention implemented was quite effective. Clients appeared to feel more comfortable after receiving analgesic injections. Additionally, the provision of non-pharmacological therapy in the form of deep breathing techniques and Quran recitation also had a calming effect. Clients reported that their pain decreased after undergoing the intervention.

Conclusion

Based on the research conducted by the researcher, the following conclusions can be drawn:

1. In this case study, the main complaint was pain in the left chest that radiated to the neck and back of the head. The patient had been experiencing the pain for three days prior to the assessment.

2. Based on the data obtained, the nursing diagnosis established was acute pain related to physiological injury agents (hyperglycemia), as evidenced by subjective data, namely the client complaining of chest pain that appeared suddenly upon waking up, feeling like pressure and burning in the left chest, radiating to the back and neck, with a pain intensity of 5 out of 10, which worsened during activity, accompanied by objective data in the form of restlessness, moaning, grimacing, protective posture, pulse rate of 110 beats per minute, a respiratory rate of 22 breaths per minute, blood pressure of 137/97 mmHg, SpO_2 of 98%, hyperglycemia of 209 mg/dL, and an EKG showing STEMI.
3. The nursing interventions performed in this case focused on pain management, using deep breathing relaxation and murottal therapy as non-pharmacological therapies.
4. Nursing implementation was carried out based on nine action plans, with the main focus on pain management for patients with Acute Myocardial Infarction (AMI).
5. The evaluation results showed that the acute pain nursing problem was resolved, with all five previously established outcome criteria achieved.

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