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Emergency Nursing Care for Patients with a Medical Diagnosis of Closed Fracture : Case Study

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ABSTRACT

Background: a fracture is a break in the movable bone network caused by a stronger external force. Several other factors can cause a fracture, including injury, mechanical stress, or bone abnormalities that weaken the bone. Immediate treatment for clients who experience broken bones is one of the problems frequently encountered in the emergency room. **Objective:** this final report aims to analyze the implementation of emergency care and to provide appropriate emergency care for clients with closed fractures in the Emergency Department of Aminah Blitar Hospital, including assessment, surgical diagnosis, intervention, and postoperative evaluation. **Methods:** the method used was a case study with a hemorrhage care approach. Data collection was through interviews, observation, physical examination, and documentation review during clinical practice in the Emergency Department of Aminah Blitar Hospital. The assessment results indicated that the patient experienced musculoskeletal system disorders with primary problems of acute pain, impaired physical mobility, and risk of infection. The hemorrhage interventions provided included pain management, physical mobility support, infection prevention, and collaboration with the medical team. Nursing care was implemented in accordance with emergency priorities, resulting in an improvement in the patient's condition. **Results:** evaluation of nursing outcomes indicated that the treatment objectives were largely achieved. **Conclusion:** this report concludes that appropriate implementation of emergency nursing care for patients with near-fracture fractures can improve comfort and mobility and prevent further complications.

Keywords: Fracture, Nursing care, Emergency, Musculoskeletal system

Background

Fractures are significant health issues affecting the musculoskeletal system. A fracture is defined as a disruption in the structural continuity of bone or cartilage (1). While a fracture may manifest merely as a crack or a cortical disruption, it often results in a complete break characterized by the separation of bone fragments. Although bones possess natural strength and flexibility to withstand stress, their relatively brittle nature makes them susceptible to fracturing. According to the World Health Organization (WHO), fractures are the eighth leading cause of death, and their frequency continues to rise due to a lack of driver vigilance and self-awareness, resulting in accidents (2). This condition can cause pain, joint stiffness, and musculoskeletal impairment, leading patients to report pain and difficulty moving the injured body part or limb. Pain associated with fractures is generally persistent and increases until the bone fragments are immobilized. Muscle spasms that occur in response to the fracture act like a natural splint designed by the body to limit movement between bone fragments. Furthermore, deformity, a clinical sign that appears after a fracture, is characterized by the inability to use the fractured body part normally and the occurrence of abnormal movements (unnatural movements) that are normal under physiological conditions (3). In fracture patients, crepitus is a clinical sign of fracture, characterized by a palpable bone-grabbing sensation during manual examination of the extremity. This phenomenon occurs due to friction between the bone fragments touching each

other. Localized swelling and discoloration of the skin occur as a result of trauma and bleeding following the fracture (4). Other clinical symptoms include increased local temperature, abnormal movement, and loss of function, resulting in the extremity being unable to function properly because normal muscle function depends on the integrity of the bone to which it is attached. Fractures can be classified as traumatic or non-traumatic, both of which lead to a decline in physical function and compromise structural integrity. Traumatic factors can trigger either closed or open fractures, a closed fracture occurs when the bone breaks without piercing the skin, whereas an open fracture occurs when bone fragments penetrate the skin's surface (5). Disruption of bone continuity can restrict limb movement, thereby affecting mobility. Conversely, non-traumatic fractures can result from aging and the weakening of bone structures. Bone strength and density tend to decline with age, rendering bones more brittle and prone to breaking Furthermore, conditions such as osteoporosis caused by a loss of bone mass and flexibility alter bone tissue structure and increase susceptibility to fractures (6).

Fractures are a leading cause of visits to medical facilities for care, including emergency rooms, in almost all institutions for patients with musculoskeletal disorders. Patients with fractures often arrive at the emergency room with an emergency that requires immediate and appropriate care (7). Acute discomfort, decreased physical mobility, impaired skin integrity, risk of infection, and risk of shock are common nursing problems that can quickly compromise patient safety (8). Therefore, the role of nurses in providing emergency nursing care is very important to prevent complications, disability, and even death (9). Several studies have shown that the accuracy of the initial assessment, namely determining problem priority and implementing standard nursing interventions, significantly impacts the clinical outcomes of fracture patients in the Emergency Department. However, emergency nursing practice still faces various obstacles, such as time constraints, high workloads, and the complexity of patient conditions (10). Therefore, the implementation of systematic nursing care based on the standard nursing process is necessary.

Based on these conditions, this study was conducted to improve the quality of emergency nursing services for fracture patients by implementing comprehensive nursing care. This study aims to optimize the role of nurses in managing musculoskeletal emergencies to improve patient safety and quality of life. The research question is: How can the implementation of appropriate emergency nursing care for patients with a medical diagnosis of fracture improve mobility status and prevent further complications in the Emergency Department.

Methods

This study uses a coagulation-based emergency nursing care approach for patients diagnosed with a closed fracture in the Emergency Department (ER) of Aminah Hospital, Blitar. The method used is a case study focusing on the direct application of emergency care. This study began with an assessment involving comprehensive patient data collection through interviews, observation, physical examination, and supporting test results, such as x-rays and laboratory results. The assessment was conducted using the ABCDE approach (Airway, Breathing, Circulation, Disability, Exposure) in accordance with emergency care standards. Following the assessment, the patient's diagnosis was determined based on the assessment results in accordance with the Indonesian Nursing Diagnosis Standards (SDKI), prioritizing musculoskeletal emergencies. Following the diagnosis, the patient planned and implemented care interventions, including pain management, mobilization support, wound care, and collaboration with the medical team. Interventions were structured according to the Indonesian Nursing Intervention Standards (SIKI). After determining the intervention, the final stage is evaluation, which assesses the patient's response to the intervention. Evaluation is conducted based on the Indonesian Nursing Outcome Standards (SLKI). Data analysis is descriptive, comparing the patient's condition before and after the nursing intervention.

Results

Based on the assessment, three women aged 60 and over and one man aged 25 suffered

closed fractures of the upper extremities. All patients experienced severe pain accompanied by limited mobility. Inspection of all three patients revealed signs of inflammation, such as swelling, redness, and increased local temperature around the fracture site. The study revealed that one patient had a traumatic injury that posed a high risk of contamination by microorganisms. All fracture patients were diagnosed with acute pain and impaired physical mobility. After providing nursing care, it is hoped that pain intensity, swelling in the injured area, and mobility will be reduced. The evaluation results indicate that the systematic application of the nursing process can have a positive impact on patient clinical outcomes.

Discussion

Fracture patients brought to the Emergency Department generally experience unbearable pain after trauma, characterized by complaints of pain in the fractured organ and difficulty moving the extremities (11). This condition indicates a disturbance in bone structure and function that can worsen and lead to serious complications, such as bleeding, infection, and tissue damage, if not treated efficiently to prevent worsening of the patient's condition and reduce the risk of disability (12).

For the initial assessment, the client approach is carried out using the ABCDE assessment to identify musculoskeletal emergencies in clients with fractures. Based on the study, three women aged 60 years and over and one man aged 25 years had closed fractures of the upper extremities. It is known that elderly and pre-elderly individuals experience decreased organ function. In some fracture cases, elderly patients experience severe pain. Older adults, both women and men, may have slower metabolisms and, in some cases, slightly different pain perceptions than younger adults, although fracture pain is inherently severe at any age (13). However, several studies have shown that older adults experience significant physiological changes, including a decrease in the number of neurons and changes in nerve receptors, which alter how they perceive and respond to pain. Older adults may experience ongoing pain due to the aging process, which is often persistent. Older adults have a higher pain threshold (less sensitivity to mild pain), but also a lower tolerance for high pain intensity. Indirectly, elderly patients may experience more severe pain due to decreased tolerance to high-intensity stimuli, due to a reduced number of neurons, and changes in nerve receptors due to fractures. In conclusion, there is a biological and physiological predisposition for women, in general, to experience more intense pain than men. Pain may also occur with fracture pain, but the experience of pain is very individual, influenced by many other factors, such as overall health, previous pain experiences, and psychological support (14). Research shows that 100% of fracture patients experience severe pain in the injured area, accompanied by limited movement of the affected extremity. Patients exhibit signs of inflammation such as swelling, redness, and increased local temperature around the fracture site. This occurs due to a break in bone continuity, which causes damage to surrounding tissue, including blood vessels and soft tissue. This condition triggers an inflammatory response characterized by the release of pain mediators and fluid accumulation in the injured area. As a result, patients experience increasing pain, especially with movement To reduce pain, the body reflexively limits movement in the broken area, so the patient experiences immobilization and functional impairment in the extremities (15). Research shows that 25% of patients experience wounds on body parts due to trauma that are at high risk of contamination by microorganisms. This condition increases the possibility of infection, both in skin tissue and bone tissue, such as osteomyelitis, because the skin's main protective layer against germs is weak, allowing bacteria to enter the body. Therefore, proper and aseptic wound care is necessary, including wound cleansing, antiseptic application, and monitoring for signs of infection such as redness, swelling, pain, and discharge. Inadequate treatment can worsen the patient's condition and hinder the healing process of wounds and fractures (11).

From the four cases, diagnoses emerged of acute pain, impaired physical mobility, and risk of infection. In this study, four (100%) fracture patients had a nursing diagnosis of acute pain and impaired physical mobility. Based on the signs and symptoms observed in the field, the patients complained of severe pain in the fracture area, especially during movement. Therefore, the authors established a diagnosis of acute pain and impaired physical mobility, in accordance with the Indonesian Nursing Diagnosis Standards (17). According to the authors, this condition is due to a breakdown in bone continuity,

eliciting an inflammatory response and the release of pain mediators in the surrounding tissue. Furthermore, muscle spasms around the fracture area and pressure on nerve endings exacerbate the pain experienced by the patients. This results in patients experiencing limited mobility, discomfort, and impaired daily activities, characterized by persistent pain, swelling, and decreased function in the fractured body part. In this study, one (25%) fracture patient had a nursing diagnosis of risk of infection. Based on the patient's condition in the field, factors supporting the diagnosis of risk of infection were the presence of open wounds following trauma. The patient was found to have wounds all over his body. This creates an entry point for external microorganisms. This condition occurs due to a disruption in the continuity of the skin and bone tissue, which serve as primary protection against microorganisms. This tissue damage facilitates bacterial entry into the body and can potentially cause infection. Furthermore, the accumulation of blood and necrotic tissue in the wound area can also provide a medium for bacterial growth. This puts the patient at risk of infection, characterized by redness, swelling, pain, increased local temperature, and even discharge of fluid or pus from the wound if not properly treated (18).

Nursing interventions include pain management, mobilization support, and infection prevention by providing appropriate analgesics to reduce pain intensity and increase patient comfort. Pharmacological therapy must be accompanied by regular monitoring of the patient's condition. In this study, regular monitoring of pain levels and the condition of the fracture area was an essential part of nursing care. In addition to pain management, the application of casts and slings plays a role in maintaining bone stability and preventing shifting that can worsen injuries (19). Furthermore, wound care for fractures is crucial to prevent infection. This includes aseptic wound cleansing and monitoring for signs of infection. Patient education regarding activity restrictions and proper mobilization techniques also plays a role in supporting the bone healing process. Collaboration with the medical team in providing pharmacological therapy, such as analgesics and antibiotics, is an important factor in the success of this treatment. It is hoped that this will accelerate the healing process, reduce complications, and improve the patient's quality of life during the recovery period (20).

The results of treatment for fracture patients are expected to reduce pain intensity, reduce swelling in the injured area, and gradually increase mobility. These results demonstrate that the systematic application of the nursing process can have a positive impact on patient clinical outcomes. Other studies also indicate that the quality of nursing care in cases of musculoskeletal injuries is closely related to accelerated healing, prevention of complications, and length of stay in healthcare facilities. This study also demonstrated that nursing care for fracture patients based on nursing standards and processes can improve the quality of nursing care. Appropriate interventions such as pain management, immobilization, and wound care not only provide direct benefits to patients by accelerating the healing process but also contribute to improving nurses' competence in managing musculoskeletal emergencies in the Emergency Room.

Conclusion and Recommendations

Implementation of Emergency Nursing Care Based on the management of four closed fracture cases in the Emergency Department of Aminah Hospital, Blitar, showed that most patients were female (75%), while 25% were male. All patients presented with the same primary complaint, namely pain and difficulty moving, and one patient had wounds. The most dominant nursing diagnosis was acute pain and impaired physical mobility, found in all patients (100%). In addition, ineffective tissue perfusion was identified in one patient (25%). Nursing interventions were tailored to each patient's condition and implemented according to established emergency nursing standards. The evaluation results indicated that all interventions achieved the expected outcomes and contributed to improving patients' conditions.

Emergency nurses must continue to implement evidence-based nursing care in accordance with established standards and protocols. Routine training and competency development programs are recommended to improve nurses' skills in managing musculoskeletal emergencies, particularly fractures. Hospitals must support the availability of adequate facilities and resources to ensure optimal emergency nursing services.

Ethical Consideration and Competing Interest

The patient involved in this case study signed an informed consent form upon registration at Aminah General Hospital in Blitar, and the researcher strictly maintains patient privacy. There were no conflicts of interest during the course of this case study or during the publication of this article.

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