Research Article

Nursing Care for Septic Shock Patients Using Indonesian Nursing Standards: A Case Reports

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Abstract

Aims: This case report aimed to identify gaps in applying the Nursing Standard Guidelines of the Indonesian Association in critical care, specifically focusing on patients with septic shock.

Methods: This study used a case report with a nursing care approach that includes an assessment to evaluation. Nursing care was provided to a patient who was experiencing septic shock, was on a ventilator, and had experienced organ failure.

Results: A 63-year-old man on mechanical ventilator was diagnosed with septic shock caused by community-acquired pneumonia. The nursing diagnoses for this case included impaired spontaneous ventilation related to respiratory muscle weakness, ineffective airway clearance related to the accumulation of secretions, peripheral tissue perfusion disorders related to changes in fluid regulation, and risk of infection. The study identified inappropriate nursing diagnoses, such as 'impaired spontaneous ventilation for patients on mechanical ventilation.

Conclusion: This study concludes that there are still several gaps in diagnosing and managing clinical conditions in critical cases. The nursing problem of impaired spontaneous ventilation should not have been identified as the patient was already on a ventilator. Additionally, there was no actual diagnosis for impaired organ perfusion or infection. This case report recommends further developing the Nursing Standard Guidelines of the Indonesian Nursing Association to optimize coverage of critical care. Recommendations include revising the Indonesian Nursing Diagnosis Standards to align with critical care needs. This enhancement will help nurses and clinicians in critical care not experience confusion when applying the current guidelines.

Keywords:
Critical Care, Mechanical Ventilation, Nursing Guidelines, Nursing Case Study, Septic Shock

INTRODUCTION

An intensive care unit (ICU) has high work risks for nurses and potential job dissatisfaction (1). In addition, the ICU environment is designed to care for patients in critical conditions (2). This necessitates various care strategies to provide holistic and individualized nursing care. Therefore, to ensure the quality of nursing services in the ICU, practitioners must focus on the capabilities of the practitioners, particularly nurses, in executing the nursing care process(3,4).

Implementing the nursing process is complex and influenced by many factors.

Several studies have reported that influencing factors include nurses' sociodemographics (5,6), patient-related factors (7,8), knowledge and attitudes of nurses (5,7), and organizational factors (5,9,10). Identifying these factors can be a benchmark for designing appropriate actions to enhance client safety and improve resource utilization (5,11).

Implementing standard nursing care processes is crucial. Clear and measurable guidelines can enhance service quality and promote evidence-based nursing practices (12,13). One of the standards set by nursing professional organizations in Indonesia is the standard of nursing care in the form of Indonesian Nursing Diagnosis Standards (14), Indonesian Nursing Outcome Standards, and Indonesian Nursing Intervention Standards (15).

Issues within the Nursing Standard Guidelines of the Indonesian Association (NSGIA) regarding the lack of coverage in the critical care area highlight the urgent need for updates and adjustments in nursing practice (16). Previous studies have indicated that nursing care instruments for critical patients, according to the NSGIA, have yet to be developed (16). This absence affects the availability of guidelines for ventilator use and hampers the optimal resolution of issues for patients requiring ventilator support.

Despite established nursing standards in Indonesia, their application in critical care settings remains challenging, particularly in the management of patients with septic shock and mechanical ventilation (2,16,17). Critical care often demands rapid, precise and well-coordinated treatment to minimize the risk of complications and death (2,18). Therefore, aligning standard guidelines for diagnosis and nursing intervention in Indonesia with the critical care environment is crucial to ensure that every patient receives the best care according to their clinical needs. This alignment will also enhance safety and improve the quality of nursing practice in Indonesia.

METHODS

This study utilized a case report design with a specific focus on a nursing care approach to investigate the management of a patient experiencing septic shock in the Intensive Care Unit (ICU). The sample comprised a single patient whose comprehensive medical history and treatment progression were meticulously analyzed to draw insights into nursing practices (19).

Study Design

The case report format allowed for an in-depth exploration of a singular case, highlighting the nuances of nursing care and its impact on patient outcomes in critical situations such as septic shock.

Sample

The study focused on one patient diagnosed with septic shock, a condition characterized by severe systemic infection leading to organ dysfunction. This choice enabled the researchers to conduct a thorough examination of the clinical course and nursing interventions tailored to the patient's unique needs.

Instrument

The primary instrument for data collection was the patient's medical records. This included clinical documentation, nursing assessments, treatment protocols, laboratory results, and interdisciplinary notes. These records provided a rich source of information for evaluating the quality of nursing care provided.

Data Collection

Data collection involved a systematic review of the medical records to analyze the patient's illness trajectory. Researchers documented key events, nursing interventions, and the adherence of these interventions to established nursing standards. This process included examining the consistency of documentation practices in relation to the care delivered, focusing on areas such as vital sign monitoring, medication administration, and response to complications.

Data Analysis

The analysis was qualitative, emphasizing the alignment between nursing standards and the actual documentation in the patient's records. The researchers identified patterns and discrepancies in the documentation, assessing how effectively nursing care adhered to established guidelines and protocols for managing septic shock. This analysis aimed to highlight best practices and areas for potential improvement in nursing care.

The study maintained strict adherence to ethical principles, in accordance with the Regulations of the Minister of Health of the Republic of Indonesia Number 24 of 2022 regarding medical records. Researchers ensured that no adverse actions were taken during the study. Informed consent was obtained from the patient's family, guaranteeing that all ethical standards were upheld. The authors were committed to maintaining the patient's anonymity throughout the research process, ensuring that confidential information was protected and not disclosed. Additionally, they sought approval prior to publication, further emphasizing their dedication to ethical research practices and the safeguarding of patient data.

RESULTS

Case Presentation

Patient Assessment

A 63-year-old man living with his family was admitted to the Medical Intensive Care Unit (MICU) with a diagnosis of Sepsis et cause Community-Acquired Pneumonia (CAP) characterized by the presence of probable pulmonary aspergillosis. The patient underwent treatment in the MICU for 14 days.

Based on the assessment on March 3 2024, the patient appeared to be seriously ill with decreased consciousness. He had an endotracheal tube (ETT) and was on a ventilator in SIMV PC mode. Despite being on a ventilator with a 100% oxygen fraction, the patient still showed signs of shortness of breath. The presence of crackles in both lung fields, intercostal retractions, and metabolic alkalosis evidenced this. A chest X-ray examination revealed right pneumonia, right pleural effusion, left pleural thickening, and cardiomegaly.

The results of the assessment of the vital signs showed blood pressure was 70/50 mmHg, mean arterial pressure of 56 mmHg, heart rate of 160 beats per minute, a respiration rate of 26 breaths per minute, an axillary temperature of 38.5^0C, an oxygen saturation of 97%. Laboratory examinations revealed increased serum urea and creatinine, low haemoglobin, and low hematocrit, indicating decreased kidney function. This was also characterized by a negative fluid balance of 1.468 cc with a urine output of 3.070 cc over 24 hours. Additionally, increased leukocytes and Candida tropicalis and Pseudomonas aerugnosa bacteria were identified as the leading causes of sepsis during the patient's treatment in the MICU.

Nursing Diagnoses

Based on assessment results, the nursing diagnoses were (a) Impaired spontaneous ventilation related to respiratory muscle weakness, (b) Ineffective airway clearance related to the accumulation of secretions, (c) Peripheral tissue perfusion disorders associated with changes in fluid regulation, and (d) Risk of Infection.

There were several concerns in making a patient diagnosis in this case report. Some nursing diagnoses, such as "impaired spontaneous ventilation," are inappropriate for the patient's condition. Because the patient was on mechanical ventilation, a more appropriate diagnosis would have been 'Risk of Ventilation-Associated Complications. In addition, an inappropriate diagnosis is "Risk of infection", the patient has sepsis and is already infected so it is more appropriate "Actual Infection or Infection". Furthermore, the suggestion for future guidelines is to highlight the need for

updated guidelines to reflect the specific challenges of ICU care, such as managing MODS (Multiple Organ Dysfunction Syndrome).

Nursing interventions

Nursing interventions for diagnosing impaired spontaneous ventilation include closely monitoring respiratory status (15). Arterial blood gas analysis was routinely performed to assess the patient's oxygenation and acid-base status (15). Additionally, mechanical ventilator settings were adjusted to meet the patient's needs, and necessary changes were evaluated regularly to ensure optimal ventilation and oxygenation (15,17). To address the diagnosis of ineffective airway clearance related to the accumulation of secretions, suctioning was performed routinely and as needed to clear the airway. Administration of mucolytic drugs, such as N-Acetylcysteine (15,20), and nebulization were used to help thin secretions.

In diagnosing peripheral tissue perfusion disorders associated with changes in fluid regulation, vital signs and hemodynamic parameters were closely monitored to detect decreased perfusion (15,21). Fluid input and output assessments were conducted accurately to monitor fluid balance and intravenous fluids were administered to address fluid deficits and improve tissue perfusion (15,22). Laboratory results, such as serum urea and creatinine, were monitored to evaluate kidney function and response to fluid therapy. In addition, to address the diagnosis of infection risk, all invasive procedures were performed using an aseptic technique to prevent infection (15). Signs of infection, such as increased body temperature, changes in the colour of secretions, and culture results, were monitored periodically. Antibiotics (ampicillin) were administered based on culture and sensitivity results and the doctor's instructions (15).

While being treated in the MICU, the patient received 14 pharmacological therapies, including Omeprazole, Paracetamol, N-acetylcysteine (NAC), Nebulization every 4 hours, Digoxin, Dexamethasone, Cotrimoxazole, Ampicillin sulbactam, Voriconazole, Dobutamine, KSR, and Callos.

Table 1.
Summary of Nursing Diagnoses, Interventions, and Outcomes

No.	Diagnosis	Intervention	Outcome
1.	Impaired spontaneous ventilation related to respiratory muscle weakness	Mechanical ventilator settings Closely monitoring respiratory status Arterial blood gas analysis	Normal AGD Respiratory status improved Normal oxygen levels
2.	Ineffective airway clearance related to the accumulation of secretions	Suctioning Administration of mucolytic drugs Nebulization	Patent airway
3.	Peripheral tissue perfusion disorders related to changes in fluid regulation	Monitor vital signs and hemodynamic parameters Fluid input and output assessments IV Fluids	Vital signs and hemodynamics are stable MAP improved Normal Laboratory Values (creatinine and urea)
4.	Risk of Infection	Administration of antibiotics Monitor for signs of infection Monitor vital signs and hemodynamic parameters	Normal temperature Normal laboratory values (leukocytes) No signs of infection

DISCUSSION

This case report aims to identify gaps in using the Nursing Standard Guidelines of the Indonesian Nursing Association, especially the Indonesian Nursing Diagnosis Standards (INDS), in the critical care of patients with septic shock. However, the discussion focuses on applying the four nursing diagnoses in this case report. The problem highlighted is the mismatch between the patient's condition and available diagnoses. Based on observations, three diagnoses were highlighted: (a) impaired spontaneous ventilation related to respiratory muscle weakness, (b) peripheral tissue perfusion disorders associated with changes in fluid regulation, and (c) risk of infection. These diagnoses are available in the Indonesian Nursing Diagnosis Standards and NANDA International's Nursing Diagnoses guides (14,23).

In this case report, the diagnosis of impaired spontaneous ventilation was considered less appropriate for the patient's condition. According to the INDS, impaired spontaneous ventilation refers to a decrease in energy reserves, which results in an individual being unable to breathe adequately (14). However, in this study, the patient had an ETT installed and was on a mechanical ventilator in SIMV mode, meaning the patient's physiological breathing was regulated and assisted by mechanical ventilation. Therefore, this diagnosis should not have been made, as the patient's ventilation problems were managed with mechanical ventilation.

In this case report, the patient showed signs of shock due to sepsis, leading to the nursing diagnosis of ineffective peripheral tissue perfusion. However, this diagnosis is too minor, involving Multiple Organ Dysfunction Syndrome (MODS). In this study, the patient had experienced MODS due to sepsis and other conditions, resulting in a continuous reduction in tissue perfusion. The patient's decreased consciousness indicates reduced perfusion to the brain. Then, increased serum urea and creatinine levels and a diagnosis of acute kidney injury (AKI) indicated decreased perfusion to the kidneys. The diagnosis lists in the Indonesian Nursing Diagnosis Standards and NANDA only present actual diagnoses related to peripheral perfusion. In this case, the patient's condition had progressed beyond peripheral perfusion issues to organ perfusion failure, leading to organ death.

The available diagnoses related to organ perfusion are only risks, such as (D.0017) Risk of Ineffective Cerebral Perfusion, (D.0016) Risk of Ineffective Renal Perfusion, (D.0015) Risk of Ineffective Peripheral Perfusion, (D. 0014) Risk of Ineffective Myocardial Perfusion, and (D.0013) Risk of Ineffective Gastrointestinal Perfusion (14). It can be concluded that both the diagnosis lists in the SDKI and NANDA still do not cover the problems experienced by critical patients, especially those with septic shock and MODS.

The patient's condition in this case report already presented signs and symptoms of shock; both NANDA and INDS include a diagnosis of Risk of shock. However, in this case, the diagnosis is no longer a risk but an actual occurrence. When examining the interventions and outcomes, it is clear that the support provided can address shock effectively. In fact, Indonesian Nursing Intervention Standards include interventions under the nomenclature of septic shock management, but the actual INDS nursing diagnosis for shock is not available (14,15).

Another nursing diagnosis that needs attention in this case report is the Risk of infection. In this case report, the patient with septic shock had indications of another infection. Since sepsis patients already exhibit infection, they are no longer at risk but are experiencing an actual infection. Therefore, the nomenclature or type of diagnosis "Risk of Infection" should be developed into "Infection or Actual Infection" to allow ICU nurses to enforce it accurately.

Patients with sepsis are susceptible to many complications that have a high mortality rate (24). Thus, early detection, close monitoring and preventing these complications are essential. In addition, accurate nursing diagnosis in patients with septic shock is crucial to determine effective interventions and improve patient outcomes (25). Previous research states that the Surviving Sepsis Campaign emphasizes the importance of early detection and aggressive treatment in patients with septic shock to reduce mortality (24). These guidelines suggest that nursing interventions should stabilise overall tissue perfusion, consistent with nursing diagnoses such as impaired peripheral tissue perfusion (24,25).

Previous studies have emphasized that in the management of patients with septic shock, the implementation of a correct diagnosis of organ dysfunction is essential (26). For example, a nursing diagnosis of "ineffective peripheral tissue perfusion" that focuses too much on peripheral perfusion without considering other organs' perfusion disorders can limit treatment effectiveness (25). This is consistent with findings in case reports suggesting that the management of MODS requires greater attention to the perfusion of affected vital organs, such as the kidneys and brain, which should be reflected in more specific nursing diagnoses. However, in critical care environments, the process needs to be aligned with the specific needs of that environment (18). The lack of coverage of the Indonesian Nursing Diagnosis and Intervention Standards for critical care environments may result in nonstandardized practice variations and suboptimal patient outcomes.

Nursing Implications
The discovery of existing gaps in determining nursing diagnoses highlights the need to unified perceptions among ICU nurses regarding identifying nursing diagnoses in the intensive care area. Consistency in the perception of critical nurses is crucial since a nursing diagnosis differs from a medical diagnosis. A nursing diagnosis focuses on a patient's response to a health condition or life process, whereas a medical diagnosis focuses on identifying a disease or pathological condition.

This case report also illustrates the importance of continuous development regarding nursing care guidelines in critical environments. In preparing and producing guidelines, it is highly recommended that collaboration be carried out between educational institutions, clinicians, and professional organizations. This collaboration should involve a series of stages of clinical trials and content testing on various clinical scenarios to ensure that the guidelines are tested and reliable. The Guidelines should be developed based on scientific principles and tailored to different settings' clinical conditions and needs, particularly with critical and intensive specificity. Professional organizations should provide opportunities for continuous nursing education development. Moreover, collaborative efforts are essential to fostering harmonious communication, resulting in the best guidance and policies for all parties.

Study Limitation
The findings are limited to a single case, and further research involving multiple cases is needed to validate the recommendations.

CONCLUSION
This case report concludes that there are still some gaps in determining nursing diagnoses in critically ill patients such as septic shock. This discrepancy can be seen from the mismatch between the diagnosis and the patient's clinical condition in critical cases. This study recommends collaborative efforts between educational institutions and nursing organizations to develop ICU-specific guidelines that align with international best practices. These guidelines should be easy to use, practical, applicable and developed according to established rules, through a series of clinical and academic trials to ensure they are

collectively accepted and accountable. Applying the nursing process can provide comprehensive and accurate guidance for nurse practitioners in handling patients who require critical care. This will ultimately improve safety and quality of service in nursing practice in Indonesia.

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CONFLICT OF INTEREST

The authors declare that this study contains no actual or potential conflicts of interest.

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