



## Original Research

### Application of Nursing Care for Pleural Effusion Patients in Pulmonary Ward

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**ABSTRACT Background:** Pleural effusion is a respiratory disorder characterized by abnormal fluid accumulation in the pleural cavity that may impair pulmonary expansion and gas exchange. Patients with pleural effusion commonly experience dyspnea, productive cough, decreased oxygenation, fatigue, and impaired activity tolerance. Appropriate nursing care is essential to improve respiratory function, maintain airway patency, and enhance patient comfort during hospitalization.

**Objective:** This study aimed to describe the application of nursing care for pleural effusion patients in a pulmonary ward.

**Methods:** This study used a descriptive case study design involving one patient diagnosed with pleural effusion in the Pulmonary Ward of Mohammad Natsir Regional Hospital, Solok City. Data were collected through interviews, observation, physical examination, and documentation review from April 2 to April 5, 2025. Data analysis was performed by comparing clinical findings with nursing theories, Indonesian nursing standards, and recent evidence-based literature.

**Results:** The patient experienced shortness of breath, productive cough, weakness, and limited physical activity. Nursing assessment identified three primary nursing diagnoses, namely ineffective airway clearance, ineffective breathing pattern, and activity intolerance. Nursing interventions included airway management, oxygen therapy, effective coughing exercises, breathing pattern management, positioning, and energy conservation techniques. Evaluation results demonstrated improvement in respiratory status, reduction of dyspnea, decreased sputum accumulation, and better activity tolerance after the interventions were implemented.

**Conclusion:** The application of comprehensive nursing care contributed positively to respiratory improvement and patient comfort in pleural effusion management. Early assessment, evidence-based respiratory interventions, and continuous nursing monitoring are important to optimize patient outcomes and prevent complications.

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## INTRODUCTION

Pleural effusion is a pathological condition characterized by excessive fluid accumulation within the pleural cavity due to imbalance between pleural fluid production and absorption. The condition commonly develops secondary to pulmonary tuberculosis, pneumonia, malignancy, heart failure, kidney disease, and inflammatory disorders (Light, 2022). Pleural effusion remains an important respiratory health problem because the presence of fluid in the pleural space compresses the lungs and interferes with pulmonary expansion, leading to impaired ventilation and oxygenation. The global incidence of pleural remains high

contributes significantly to respiratory morbidity and hospitalization rates. According to Porcel and Light (2023), approximately 1.5 million pleural effusion cases are diagnosed annually in the United States alone. In developing countries, infectious diseases such as tuberculosis remain dominant causes of pleural effusion. The World Health Organization reported that pulmonary tuberculosis continues to contribute substantially to pleural complications in Asian countries, including Indonesia (World Health Organization, 2023).

In Indonesia, pleural effusion frequently occurs among patients with pulmonary infection and chronic respiratory diseases. The increasing prevalence of pulmonary disorders contributes to higher hospitalization rates related to respiratory complications. Hospital data from Mohammad Natsir Regional Hospital in Solok City showed that pleural effusion remained one of the common respiratory cases treated in the pulmonary ward during 2024. Clinical manifestations observed in pleural effusion patients generally include dyspnea, chest discomfort, productive cough, fatigue, reduced oxygen saturation, and decreased tolerance to physical activity.

Pleural effusion not only affects physiological respiratory function but also influences patients' psychological condition and quality of life. Patients frequently experience anxiety and discomfort due to breathing difficulties and prolonged hospitalization. Therefore, comprehensive nursing care plays an essential role in supporting physical recovery, maintaining airway patency, reducing respiratory distress, and improving patient adaptation during treatment.

Previous studies mostly emphasized medical and diagnostic management of pleural effusion, including thoracentesis, chest tube insertion, radiological examination, and pharmacological therapy (Bintcliffe et al., 2022). However, studies specifically discussing evidence-based nursing care implementation for pleural effusion patients remain limited, particularly in Indonesian clinical practice settings. Nursing management is essential because nurses provide continuous monitoring, respiratory assessment, airway management, oxygen therapy support, and patient education throughout hospitalization.

Several studies demonstrated that respiratory nursing interventions effectively improve pulmonary function and reduce respiratory discomfort among patients with pulmonary disorders. Potter et al. (2023) explained that airway clearance techniques, breathing exercises, and patient positioning contribute significantly to improved ventilation and oxygenation. Similarly, Hinkle and Cheever (2022) stated that individualized nursing interventions are important to minimize respiratory workload and prevent further pulmonary complications.

The novelty of this study lies in the detailed clinical description of nursing care application in a pleural effusion patient based on direct patient responses, evidence-based interventions, and nursing standards. This study provides practical insight regarding comprehensive nursing management in pulmonary wards and strengthens the role of nurses in respiratory care. Therefore, this study aimed to describe the application of nursing care for pleural effusion patients in a pulmonary ward.

This study employed a descriptive case study design involving one patient diagnosed with pleural effusion who was hospitalized in the Pulmonary Ward of Mohammad Natsir Regional Hospital, Solok City, Indonesia. The case study approach enabled researchers to explore patient conditions comprehensively and evaluate the effectiveness of nursing interventions during the treatment period. The patient was selected based on inclusion criteria consisting of confirmed pleural effusion diagnosis, stable consciousness level, ability to communicate effectively, and willingness to participate in the study.

Data collection was conducted from April 2 to April 5, 2025, using interviews, direct observation, physical examination, and medical record review. Respiratory assessment included respiratory rate, oxygen saturation, breath sounds, sputum characteristics, dyspnea level, and activity tolerance. The nursing process approach was implemented systematically

through assessment, nursing diagnosis formulation, intervention planning, implementation, and evaluation. Nursing diagnoses were determined based on the Indonesian Nursing Diagnosis Standards (SDKI).

The nursing interventions implemented included respiratory status monitoring, airway management, oxygen therapy administration, effective coughing exercises, semi-Fowler positioning, breathing pattern management, energy conservation techniques, environmental modification to improve comfort, and patient education regarding respiratory care. All interventions were adjusted according to patient responses and clinical conditions during hospitalization.

Data analysis was conducted descriptively by comparing clinical findings with nursing theories, evidence-based literature, Indonesian Nursing Intervention Standards (SIKI), and previous research related to pleural effusion management. Ethical principles including informed consent, confidentiality, anonymity, beneficence, and respect for patient autonomy were applied throughout the study. Permission to conduct the study was obtained from Mohammad Natsir Regional Hospital.

## RESULTS

The patient was admitted to the pulmonary ward with complaints of shortness of breath, productive cough, weakness, and chest discomfort. The patient reported difficulty performing daily activities because of fatigue and dyspnea. Physical examination revealed tachypnea, use of accessory respiratory muscles, decreased breath sounds in the lower lung field, and sputum retention. Vital signs assessment showed increased respiratory rate and reduced oxygen saturation before oxygen therapy was administered. The patient appeared weak and required assistance during mobilization. Based on the assessment findings, three priority nursing diagnoses were identified, namely ineffective airway clearance related to excessive sputum production, ineffective breathing pattern related to impaired lung expansion, and activity intolerance related to imbalance between oxygen supply and demand.

Nursing interventions focused on maintaining airway patency, improving respiratory effectiveness, and increasing functional tolerance. Nurses monitored respiratory status regularly, assessed sputum characteristics, positioned the patient in semi-Fowler position, taught effective coughing techniques, encouraged breathing exercises, and collaborated in oxygen therapy administration. Additional interventions included environmental modification to improve comfort, gradual mobilization, monitoring fatigue levels, and implementation of energy conservation strategies.

Evaluation after three days of nursing care demonstrated positive clinical improvement. The patient reported reduced shortness of breath and improved comfort during breathing. Sputum production decreased, respiratory rate gradually normalized, and oxygen saturation improved after the interventions were implemented. The patient also demonstrated better tolerance to physical activity and reduced fatigue during daily activities. Overall nursing outcomes indicated positive responses toward respiratory nursing management.

**Table 1. Nursing Diagnoses, Interventions, and Outcomes**

<b>Nursing Diagnosis</b>	<b>Clinical Findings</b>	<b>Nursing Interventions</b>	<b>Outcomes</b>
Ineffective airway clearance	Productive cough, sputum retention	Airway management, coughing exercise, positioning	Reduced sputum accumulation
Ineffective breathing pattern	Dyspnea, tachypnea	Oxygen therapy, breathing management	Improved respiratory status
Activity intolerance	Weakness, fatigue	Energy conservation, gradual mobilization	Increased activity tolerance

## DISCUSSION

This study demonstrated that the application of comprehensive nursing care improved respiratory condition and activity tolerance in a patient with pleural effusion. The patient initially presented with productive cough, dyspnea, weakness, and impaired activity tolerance, which are common manifestations of pleural fluid accumulation. Pleural effusion interferes with pulmonary expansion because excessive fluid compresses lung tissue and limits alveolar ventilation. Consequently, patients experience impaired oxygen exchange and increased respiratory workload (Light, 2022). The respiratory symptoms identified in this study are consistent with findings reported by Porcel and Light (2023), who explained that dyspnea and reduced breath sounds are the most frequent clinical manifestations of pleural effusion.

The primary nursing diagnosis identified in this study was ineffective airway clearance. Excessive sputum production and impaired secretion removal contributed to airway obstruction and respiratory discomfort. Nursing interventions such as effective coughing exercises, airway monitoring, and positioning were implemented to facilitate secretion clearance. The improvement observed after airway management supports previous evidence regarding the effectiveness of respiratory nursing interventions. Potter et al. (2023) reported that coughing exercises and airway clearance techniques significantly improve airway patency and reduce respiratory distress among pulmonary patients. Similarly, Hinkle and Cheever (2022) emphasized that positioning interventions such as semi-Fowler position help optimize lung expansion and improve ventilation.

Another important finding in this study was the improvement of breathing patterns after oxygen therapy and respiratory monitoring were implemented. Patients with pleural effusion commonly develop tachypnea and dyspnea because fluid accumulation reduces lung compliance and oxygenation efficiency. Oxygen therapy helps maintain tissue oxygen supply and reduce respiratory workload. This finding aligns with Bintcliffe et al. (2022), who stated that supportive respiratory management plays a critical role in preventing worsening hypoxemia and respiratory failure in pleural effusion patients. Continuous monitoring conducted by nurses also enabled early identification of respiratory deterioration and ensured timely intervention.

The patient also experienced activity intolerance related to weakness and oxygen imbalance. Respiratory disorders frequently reduce patient endurance and functional capacity due to increased energy expenditure during breathing. Nurses implemented gradual mobilization and energy conservation strategies to minimize fatigue. The improvement in activity tolerance observed in this study supports Orem's self-care theory, which explains that supportive nursing systems help patients maintain independence and adapt to physical limitations during illness (Alligood, 2022). Nurses play an important role in assisting patients to perform activities safely while preventing excessive fatigue.

Compared with previous studies that focused primarily on medical interventions, this study highlights the importance of holistic nursing care in pleural effusion management. Nursing care does not only address physiological respiratory problems but also supports patient comfort, adaptation, and recovery during hospitalization. This study also demonstrated the importance of integrating evidence-based nursing interventions with direct clinical assessment. Nurses must continuously evaluate respiratory status, identify patient responses, and modify interventions according to patient needs. Such individualized nursing care may improve patient outcomes and reduce hospitalization complications.

Despite positive findings, this study had several limitations. The study involved only one patient and was conducted within a limited observation period. Therefore, the findings cannot be generalized to all pleural effusion patients. Future studies involving larger sample sizes and more diverse clinical settings are recommended to strengthen evidence regarding effective nursing interventions for respiratory disorders.

## CONCLUSION

The application of nursing care for pleural effusion patients in a pulmonary ward contributed positively to respiratory improvement, airway clearance, and activity tolerance. Evidence-based nursing interventions including airway management, oxygen therapy, breathing exercises, positioning, and energy conservation effectively reduced dyspnea and improved patient comfort. Comprehensive nursing assessment and continuous respiratory monitoring are essential to optimize patient outcomes and prevent complications among pleural effusion patients. Nurses should strengthen evidence-based respiratory nursing practice to improve the quality of pulmonary care services.

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