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Original Research

Application of Nursing Care for Patients With Chronic Obstructive Pulmonary Disease in Pulmonary Ward

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ABSTRACT

Background: *Chronic Obstructive Pulmonary Disease (COPD) is a progressive respiratory disorder characterized by persistent airflow limitation that causes impaired ventilation and oxygenation. Patients with COPD frequently experience dyspnea, productive cough, sputum retention, fatigue, and decreased activity tolerance that require comprehensive nursing management. Appropriate nursing interventions are important to maintain airway patency, improve respiratory status, and prevent respiratory complications among hospitalized patients.*

Objective: *This study aimed to describe the application of nursing care for patients with Chronic Obstructive Pulmonary Disease in the Pulmonary Ward of Mohammad Natsir Regional Hospital, Solok City.*

Results: *The patient experienced shortness of breath, productive cough, difficulty expelling sputum, fatigue, and limited physical activity. Nursing diagnoses identified included ineffective airway clearance, ineffective breathing pattern, and activity intolerance. Nursing interventions implemented consisted of oxygen therapy, airway management, effective coughing exercises, chest physiotherapy, breathing exercises, semi-Fowler positioning, gradual mobilization, and energy conservation techniques. Evaluation findings demonstrated reduced dyspnea, improved respiratory rate, decreased sputum production, and better tolerance to physical activity after the interventions were implemented.*

Conclusion: *The application of comprehensive nursing care contributed positively to respiratory improvement and patient comfort among COPD patients. Continuous respiratory monitoring, evidence-based nursing interventions, and individualized nursing care are important to optimize patient outcomes and prevent respiratory complications.*

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INTRODUCTION

Chronic Obstructive Pulmonary Disease (COPD) is a chronic respiratory disorder characterized by persistent airflow limitation caused by abnormalities in the airways and alveoli, generally resulting from long-term exposure to harmful particles or gases. COPD

includes chronic bronchitis and emphysema, both of which contribute to progressive respiratory impairment and reduced pulmonary function. The inflammatory process occurring in COPD causes narrowing of the airways, destruction of alveolar structures, mucus hypersecretion, and impaired gas exchange (Global Initiative for Chronic Obstructive Lung Disease [GOLD], 2024).

COPD remains a major global health problem because it contributes significantly to morbidity, mortality, hospitalization, and decreased quality of life. The World Health Organization reported that COPD is one of the leading causes of death worldwide and is strongly associated with smoking behavior, air pollution, and occupational exposure. Patients with COPD commonly experience dyspnea, chronic productive cough, wheezing, fatigue, reduced exercise tolerance, and recurrent respiratory infections.

In Indonesia, COPD prevalence continues to increase because of high smoking rates and environmental exposure. Smoking remains the dominant risk factor for COPD development. The patient in this study had a history of smoking since adolescence and consumed one to two cigarette packs daily before stopping in February 2025. Long-term smoking exposure contributes to chronic airway inflammation and progressive respiratory deterioration.

COPD patients frequently require hospitalization because of exacerbation episodes characterized by worsening dyspnea, excessive sputum production, and impaired oxygenation. Hospitalized patients often experience ineffective airway clearance, ineffective breathing patterns, and activity intolerance that require comprehensive nursing management. Nurses play an important role in respiratory monitoring, airway management, oxygen therapy support, breathing exercises, and patient education to improve pulmonary function and prevent complications.

Previous studies primarily emphasized pharmacological management and medical interventions for COPD patients, including bronchodilator therapy, oxygen administration, and pulmonary rehabilitation (Vogelmeier et al., 2023). However, evidence specifically discussing comprehensive nursing care implementation in Indonesian pulmonary wards remains limited. Evidence-based nursing interventions such as effective coughing exercises, chest physiotherapy, breathing exercises, positioning, and energy conservation strategies have been reported to improve respiratory status and activity tolerance among respiratory patients (Potter et al., 2023; Hinkle & Cheever, 2022).

The novelty of this study lies in its comprehensive clinical description of nursing care implementation in COPD patients based on direct patient responses, Indonesian nursing standards, and evidence-based respiratory interventions. This study also strengthens the role of nurses in providing holistic respiratory care for hospitalized COPD patients. Therefore, this study aimed to describe the application of nursing care for patients with Chronic Obstructive Pulmonary Disease in the Pulmonary Ward of Mohammad Natsir Regional Hospital, Solok City.

MATERIALS AND METHOD

This study employed a descriptive case study design involving one patient diagnosed with Chronic Obstructive Pulmonary Disease hospitalized in the Pulmonary Ward of Mohammad Natsir Regional Hospital, Solok City. The patient was selected based on inclusion criteria consisting of willingness to participate, stable consciousness level, ability to communicate effectively, and cooperative behavior during nursing care implementation. Data collection was conducted from March 22 to March 26, 2025, through interviews, direct observation, physical examination, measurement of vital signs, and documentation review. Respiratory assessment focused on dyspnea level, sputum characteristics, respiratory rate, breath sounds, oxygen saturation, fatigue level, and activity tolerance.

Nursing diagnoses were determined based on the Indonesian Nursing Diagnosis Standards (SDKI), while interventions referred to the Indonesian Nursing Intervention Standards (SIKI) and Nursing Outcome Standards (SLKI). Nursing interventions implemented included respiratory monitoring, oxygen therapy, airway management, chest physiotherapy, effective coughing exercises, breathing exercises, semi-Fowler positioning, gradual mobilization, environmental modification, and energy conservation techniques. Data analysis was conducted descriptively by comparing clinical findings with nursing theories, evidence-based literature, and previous respiratory nursing studies. Ethical principles including informed consent, confidentiality, anonymity, and respect for patient autonomy were maintained throughout the study process.

RESULTS

The patient, a 40-year-old female, was admitted to the pulmonary ward through the emergency department with complaints of shortness of breath, productive cough, difficulty expelling sputum, fatigue, and dyspnea during activities. The patient also had a previous history of asthma and COPD hospitalization. Long-term smoking behavior was identified as a major risk factor contributing to respiratory impairment. Physical examination revealed tachypnea, wheezing, sputum retention, use of accessory respiratory muscles, and reduced oxygen saturation. The patient appeared weak and experienced limited activity tolerance. Respiratory assessment findings indicated impaired airway clearance and increased respiratory workload.

Based on the nursing assessment, three priority nursing diagnoses were identified, namely ineffective airway clearance related to airway hypersecretion, ineffective breathing pattern related to respiratory muscle weakness, and activity intolerance related to imbalance between oxygen supply and demand.

Nursing interventions focused on improving airway patency, reducing respiratory distress, and increasing activity tolerance. Nurses monitored respiratory status and breath sounds regularly, assessed sputum characteristics, administered oxygen therapy through nasal cannula, performed chest physiotherapy, encouraged warm fluid intake, and taught effective coughing techniques. Semi-Fowler positioning and breathing exercises were also implemented to optimize lung expansion and improve ventilation. Interventions for activity intolerance included fatigue monitoring, gradual mobilization, environmental modification, adequate rest periods, and energy conservation techniques. Nurses assisted the patient during physical activity to minimize excessive respiratory workload and maintain patient safety.

Evaluation findings demonstrated significant clinical improvement after nursing interventions were implemented. The patient reported reduced dyspnea, decreased sputum production, and improved comfort during breathing. Respiratory rate improved gradually, wheezing decreased, and the patient was able to perform effective coughing techniques independently. The patient also demonstrated better tolerance to physical activity and reduced fatigue during daily activities.

DISCUSSION

This study demonstrated that comprehensive nursing care improved respiratory status and activity tolerance in a patient with Chronic Obstructive Pulmonary Disease. The patient initially experienced dyspnea, productive cough, sputum retention, fatigue, and impaired physical activity, which are common manifestations of COPD exacerbation. COPD causes persistent airflow limitation due to airway inflammation, mucus hypersecretion, and alveolar damage, resulting in impaired ventilation and oxygen exchange (GOLD, 2024).

The primary nursing diagnosis identified in this study was ineffective airway clearance related to excessive sputum production. The patient experienced productive cough

with difficulty expelling sputum accompanied by wheezing and respiratory discomfort. These findings are consistent with previous studies explaining that airway hypersecretion and mucus retention commonly occur in COPD patients and contribute to worsening respiratory status (Hinkle & Cheever, 2022).

Nursing interventions such as effective coughing exercises, airway monitoring, warm fluid intake, chest physiotherapy, and semi-Fowler positioning contributed positively to secretion mobilization and airway patency. Effective coughing techniques help improve sputum removal and reduce airway obstruction. Semi-Fowler positioning also optimizes diaphragmatic movement and lung expansion, thereby improving oxygenation. These findings support Potter et al. (2023), who reported that respiratory nursing interventions significantly improve ventilation and reduce dyspnea in pulmonary patients.

Another important finding in this study was the improvement of breathing patterns following oxygen therapy and respiratory management. Before intervention, the patient demonstrated tachypnea, use of accessory respiratory muscles, and decreased oxygen saturation. Oxygen therapy through nasal cannula improved oxygen supply and reduced respiratory workload. Similar findings were reported by Vogelmeier et al. (2023), who stated that oxygen therapy and supportive respiratory interventions are essential in COPD exacerbation management to prevent hypoxemia and respiratory failure.

The patient also experienced activity intolerance related to imbalance between oxygen supply and demand. Respiratory disorders increase energy expenditure during breathing activities, resulting in fatigue and decreased endurance. Nursing interventions including gradual mobilization, fatigue monitoring, environmental modification, and energy conservation techniques improved patient tolerance during daily activities. These findings support Orem's self-care theory, which emphasizes the importance of supportive nursing systems in helping patients maintain functional independence during illness (Alligood, 2022).

This study highlights the importance of holistic nursing care in COPD management. Nursing care not only focuses on respiratory stabilization but also addresses patient comfort, fatigue reduction, adaptation, and psychosocial support during hospitalization. Continuous respiratory assessment conducted by nurses also enables early identification of respiratory deterioration and timely intervention.

Compared with previous studies focusing mainly on pharmacological therapy, this study demonstrated that evidence-based nursing interventions contribute significantly to respiratory recovery and patient comfort. The findings strengthen the role of nurses in providing comprehensive respiratory care in pulmonary wards. Despite positive outcomes, this study had limitations because it involved only one patient and a short observation period. Therefore, the findings cannot be generalized broadly. Future studies involving larger sample sizes and longer follow-up periods are recommended to strengthen evidence regarding effective nursing interventions for COPD patients.

CONCLUSION

The application of nursing care for patients with Chronic Obstructive Pulmonary Disease in the pulmonary ward contributed positively to respiratory improvement, airway clearance, and activity tolerance. Evidence-based nursing interventions including oxygen therapy, effective coughing exercises, airway management, chest physiotherapy, breathing exercises, positioning, and energy conservation effectively reduced dyspnea and improved patient comfort. Continuous respiratory monitoring and individualized nursing care are essential to optimize patient outcomes and prevent respiratory complications among COPD patients.

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