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Application of Semi-Fowler's Position to Overcome Ineffective Breathing Pattern in Patients with Pleural Effusion in the Intensive Care Unit (ICU) of RSD Gunung Jati, Cirebon City

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ABSTRACT

Background & Objective: According to the World Health Organization (WHO, 2023), the number of pleural effusion cases worldwide is quite high, ranking third after lung cancer, affecting approximately 10–15 million people with 100,000–250,000 deaths annually. This study aims to apply the semi-Fowler's position intervention to pleural effusion patients with ineffective breathing pattern problems in the Intensive Care Unit (ICU) of RSD Gunung Jati, Cirebon City. **Method:** This research used a case study design. The subject was one client diagnosed with pleural effusion and experiencing an ineffective breathing pattern. Data were collected using anamnesis, physical assessment, direct observation, and medical records. **Result:** The study showed that applying the semi-Fowler's position for three consecutive days reduced dyspnea and decreased respiratory rate from 26x/minute to 23x/minute. **Conclusion:** It was concluded that the semi-Fowler's position can reduce ineffective breathing patterns in pleural effusion patients treated in the ICU of RSD Gunung Jati, Cirebon City.

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Introduction

Pleural effusion is the accumulation of excessive fluid within the double-layered membrane surrounding the lungs. The etiology of pleural effusion varies widely, including both infectious and non-infectious diseases. Infectious causes include tuberculosis, pneumonia, and abscesses, while non-infectious causes include lung carcinoma, pleural carcinoma, kidney failure, pulmonary embolism, and heart failure (Tika, 2020).

The most common symptom of pleural effusion is dyspnea. Chest pain may also occur depending on the amount of accumulated fluid, either pleuritic chest pain or dull pain. Large effusions cause shortness of breath, which affects oxygen supply, resulting in cellular metabolism imbalance. Oxygen therapy is therefore required (Anggarsari et al., 2018).

According to WHO (2018), pleural effusion is a disease manifestation that can be life-threatening. Pleural effusion occurs in 30% of pulmonary TB patients and is a major cause of morbidity due to extrapulmonary TB. Most patients are aged 44–49 years and older, with a higher incidence in men (54.7%) than women (45.3%). In Indonesia, the prevalence of pleural effusion is 2.7% (Rozak et al., 2022).

Globally, WHO (2023) estimates pleural effusion cases rank third after lung cancer, affecting 10–15 million people with 100,000–250,000 deaths annually. In industrialized countries, there are an estimated 320 cases per 100,000 people. The United States reports 1.3 million new cases annually (Rozak et al., 2022).

The most effective position for patients with ineffective breathing patterns is the semi-Fowler's position at a 30–45° angle. For pleural effusion patients, this position reduces dyspnea by increasing oxygen intake and maximizing lung expansion. Untreated pleural effusion may cause complications such as atelectasis, pulmonary fibrosis, empyema, and lung collapse (Simanjuntak Omega, 2019).

In nursing care, nurses play a vital role:

- As care providers, they can implement interventions such as positioning the patient in semi-Fowler's during dyspnea.
- As educators, they provide health education about causes, symptoms, and management of ineffective breathing patterns.
- As managers, they coordinate patient care services.
- As researchers, they contribute to knowledge development regarding ineffective breathing patterns, particularly in pleural effusion patients (Sari et al., 2019).

Ineffective breathing pattern is defined as inspiration or expiration that does not provide adequate ventilation. The semi-Fowler's position helps relieve dyspnea by elevating the patient's head, thereby opening the airway and improving lung expansion (Sari et al., 2019).

Objective

Based on the above, the researcher aimed to provide medical-surgical nursing care for a patient with pleural effusion by implementing the semi-Fowler's position to address ineffective breathing patterns in the ICU of RSD Gunung Jati, Cirebon City.

Method

This study used a case study design, following the nursing care process: assessment, nursing diagnosis, intervention planning, implementation, and evaluation.

The population included pleural effusion patients admitted to the ICU. The study was conducted in January 2025 over three days in the ICU of RSD Gunung Jati, Cirebon City. Data collection techniques included interviews, observations, and documentation. Data analysis was descriptive, with daily documentation to evaluate patient progress.

Results

On January 30, 2025, an assessment was conducted on a patient named Mrs. A, a 61-year-old female, residing in Gebang Kulon, RT.01/RW.01, Gebang District, Cirebon Regency. The patient is unemployed, Muslim, of Javanese ethnicity, Indonesian nationality, with elementary school education as her last formal schooling. She is married and has three children (two sons and one daughter). The patient lives with her husband and youngest child.

Health history assessment: The patient's family reported that she has a history of Diabetes Mellitus and Chronic Kidney Disease on Hemodialysis (CKD on HD). She has undergone hemodialysis treatment twice a week for the past two years. Her current medical history shows that she was admitted to the hospital with complaints of shortness of breath, dizziness, weakness, and loss of consciousness. These symptoms had been felt three days before hospital admission. The patient frequently experiences shortness of breath and loss of appetite.

Physical examination results: The patient appeared weak, with compos mentis consciousness, GCS 15. Vital signs were: Blood Pressure 162/96 mmHg, Temperature 36.5 °C, Pulse 119 bpm, Respiratory Rate 26/min, SpO_2 96%. Body weight decreased from 64 kg (before admission) to 60 kg (after admission). Respiratory system: dyspnea, tachypnea, nasal flaring. Cardiovascular system: normal. Muscle strength: upper extremities 5 (both sides), lower extremities right 4, left 5; muscle tone weak. Edema was present in the right leg. Sleep and rest pattern changed during hospitalization, with the patient sleeping more due to lack of activity and difficulty performing normal daily activities. Digestive system: no abdominal problems, but dry mouth; nutrition slightly impaired due to decreased appetite. Urinary system: indwelling catheter, urine output 300–500 cc per 8-hour shift. Musculoskeletal system: problems in the right lower extremity; patient unable to perform normal activities. Integumentary system: no problems, hygiene clean and neat. Sensory perception: no problems.

Psychological assessment: The patient appeared sad, expressing fear that she might not recover as before. The patient and her family showed sadness and distress seeing her condition. Communication and interaction patterns between the patient and family were good, and they were cooperative during conversations. The family's coping mechanism was good, as the patient was constantly accompanied.

Social assessment: The patient's relationships in her community were good. Socio-cultural factors: she often socialized and gathered with neighbors, living a simple lifestyle. However, the patient and her family lacked knowledge about her illness.

Spiritual assessment: The patient surrendered her current health complaints to Allah SWT, continuously praying for the best. During hospitalization, she did not perform prayers but engaged in dhikr.

Nursing diagnosis based on the assessment:

- Ineffective Breathing Pattern related to Impaired Respiratory Effort (D.0005).

Expected outcomes and nursing care plan for the priority diagnosis:

- Ineffective Breathing Pattern related to Impaired Respiratory Effort (D.0005).
- Goal: After 24 hours of nursing intervention for 3 consecutive days, the patient's breathing pattern improves (L.01004).
- Expected outcomes: improved respiratory rate and decreased use of accessory respiratory muscles.

Nursing interventions:

- Airway management (I.01011).
- Observation: Monitor breathing pattern and adventitious breath sounds.
- Therapeutic: Position the patient in semi-Fowler's and administer oxygen.
- Education: Teach effective coughing technique.
- Collaboration: Administer bronchodilators, expectorants, and mucolytics if needed.

Based on the outcomes and nursing care plan prepared for the ineffective breathing pattern diagnosis, the interventions implemented included:

1. Monitoring breathing pattern.
2. Monitoring adventitious breath sounds.
3. Positioning the patient in semi-Fowler's.
4. Providing oxygen therapy.
5. Teaching effective coughing technique.

These interventions were combined with evidence-based nursing practice through the application of the semi-Fowler's position.

Discussion

The implementation of the semi-Fowler's position by the researcher for three consecutive days with a duration of 30 minutes, repeated for each subject, showed that the patient and family were cooperative in performing the semi-Fowler's position daily. The patient and family understood the technique and method of applying the semi-Fowler's position to be performed whenever the patient experienced shortness of breath. A decrease in respiratory rate was observed: prior to the intervention, the patient's respiratory rate was 26 breaths per minute, and after three consecutive days of applying the semi-Fowler's position, the respiratory rate improved to 23 breaths per minute.

This result is consistent with research by Sari et al. (2022), who in their study on The Effect of Semi-Fowler's Position on Oxygen Saturation in Critical Patients in the Intensive Care Unit at RSUD Dr. Soeradji Tirtinegoro Klaten reported that the application of the semi-Fowler's position in 10 patients for approximately 30 minutes

over three consecutive days, observed at each intervention, improved patient outcomes. Similarly, Windiramadhan et al. (2020), in their Observation of the Use of the Semi-Fowler's Position in Pleural Effusion Patients in the Internal Medicine Ward, Fresia 2, RSUP Dr. Hasan Sadikin Bandung, found that applying the semi-Fowler's position for 30 minutes over three consecutive days in three pleural effusion patients resulted in differences in breathing patterns and oxygen saturation before and after the intervention. Likewise, Anggarsari et al. (2018), in their study on ineffective breathing patterns in pleural effusion patients, reported that applying the semi-Fowler's position for 30 minutes over three consecutive days in two pleural effusion patients led to a decrease in respiratory rate.

From these three journal articles, the researcher concludes that the optimal application of the semi-Fowler's position is for three consecutive days with a duration of 30 minutes each day to reduce dyspnea. If applied for less than three days, dyspnea does not significantly improve.

Based on the above explanation, the researcher concludes that medical-surgical nursing care for Mrs. A with pleural effusion through the intervention of the semi-Fowler's position for ineffective breathing patterns in the ICU of RSD Gunung Jati, Cirebon City, has a significant effect in reducing dyspnea in patients experiencing ineffective breathing patterns.

Conclusion

Based on the case study of Mrs. A with pleural effusion, the assessment revealed both subjective and objective data related to ineffective breathing patterns. The nursing care plan was carried out by applying the semi-Fowler's position, implemented for three consecutive days as an Evidence-Based Nursing (EBN) intervention. The evaluation showed that the ineffective breathing pattern was partially resolved, as indicated by improved respiratory rate and reduced use of accessory muscles.

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