

Analysis of Nursing Care for Respiratory System Disorder: Pulmonary Tuberculosis through the Administration of Orthopnea Position Intervention

Trisa Oktaviani¹, Tantri Puspita²

^{1,2}Nursing profession Program, Karsa Husada Garut Institute of Health Sciences, West Java, Indonesia

Abstract: Pulmonary tuberculosis is an infectious disease caused by *Mycobacterium tuberculosis* and remains a significant health problem in Indonesia. One of the symptoms frequently experienced by patients is dyspnea, which can lead to an ineffective breathing pattern. The purpose of this case study is to analyze nursing care for a pulmonary tuberculosis patient with an ineffective breathing pattern through the implementation of the orthopnea position. The method used was descriptive analytic with a case study approach involving one pulmonary tuberculosis patient. The selected subject was a patient who met the clinical manifestation criteria of an ineffective breathing pattern. The assessment results showed that the patient complained of shortness of breath starting two days prior to hospital admission. The patient appeared dyspneic with a respiratory rate of 29 breaths per minute, nasal flaring, use of accessory muscles, and adventitious breath sounds (rhonchi). The nursing intervention provided was the implementation of the orthopnea position for three days. The evaluation results demonstrated a decrease in complaints of shortness of breath, reduced use of accessory muscles, and an improvement in respiratory rate from 29 breaths per minute to 21 breaths per minute. The analysis of nursing care indicates that the implementation of the orthopnea position is effective in helping to reduce dyspnea and improve the respiratory status of pulmonary tuberculosis patients.

Keywords: Dyspnea, orthopneic position, pulmonary tuberculosis

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Corresponding Author: Trisa Oktaviani

Author Name*: Trisa Oktaviani

Email*: trisaoktaviani1110@gmail.com

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Phone*: +6285351366766

Introduction

Pulmonary tuberculosis (TB) remains a significant global health problem. The World Health Organization (WHO) in 2021 explained that TB is a disease caused by infection with the bacterium *Mycobacterium tuberculosis*. This disease is directly contagious and generally attacks the respiratory system but can spread to various other organs (Pardosi et al., 2024). Based on the WHO 2023 report, an estimated 10.6 million people were diagnosed with pulmonary tuberculosis in 2022, an

increase of about 600,000 cases compared to 2021 (No & Putri, 2024). In Indonesia, there are an estimated 969,000 cases of pulmonary tuberculosis, with an incidence reaching 354 per 100,000 population (Ni et al., 2024). In West Java Province, the number of patients diagnosed with pulmonary tuberculosis in 2023 reached 203,226 people, an increase of 114.8% compared to 2022 (Dinas Kesehatan Kabupaten Garut, 2024).

One of the main symptoms in pulmonary tuberculosis patients is dyspnea or shortness of breath.

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Dyspnea arises at an advanced stage when inflammatory infiltration reaches half of the lung and causes an increase in respiratory rate. This creates a nursing problem of ineffective breathing pattern (Taufik & Aini, 2022). The impact of an ineffective breathing pattern causes hyperventilation which then reduces oxygen supply to the lungs. The role of nurses is crucial in providing comprehensive nursing care, including non-pharmacological therapies such as positioning. The orthopnea position is a position where the patient sits on the bed with the body slightly leaning forward over a table supported by two pillows. This position can reduce shortness of breath because it helps improve lung function (Wulandari & Sudiarti, 2024; Praninta & Mahdalena, 2023). The purpose of this case study is to analyze nursing care for pulmonary tuberculosis patients with ineffective breathing patterns through the application of the orthopnea position in the Sapphire Ward of Dr. Slamet Garut Regional General Hospital.

Method

This study used a descriptive-analytic method with a case study approach on one pulmonary tuberculosis patient. The selected subject was a patient who met the clinical manifestation criteria of an ineffective breathing pattern, such as dyspnea, use of accessory muscles, prolonged expiratory phase, and abnormal breathing patterns (tachypnea). Patients with acute respiratory failure, pulmonary edema, or chest trauma requiring mechanical ventilation were excluded. Nursing care was provided for three days, covering the stages of assessment, diagnosis, intervention, implementation, and evaluation. The main intervention provided was the application of the orthopnea position. Data was collected through interviews, observation, and physical examination. This case study obtained approval from the patient and family through informed consent.

Result and Discussion

The assessment results on April 25, 2026, showed that Mrs. I (73 years old) had a medical diagnosis of Pulmonary Tuberculosis. The patient complained of shortness of breath in the last two days before hospital admission, which worsened during activity and decreased with rest. The patient also complained of weakness, loss of appetite, and difficulty sleeping. Physical examination showed the patient appeared dyspneic with a respiratory rate of 29 breaths per minute, nasal flaring, use of accessory muscles, and adventitious breath sounds (rhonchi). Oxygen saturation was 93% with a nasal cannula. Based on these data, the primary nursing diagnosis established was Ineffective Breathing Pattern related to impaired respiratory effort.

The nursing interventions provided referred to the Indonesian Nursing Intervention Standards (SIKI), including Airway Management. The main action was the application of the orthopnea position, in addition to monitoring breathing patterns, breath sounds, and sputum, providing warm fluids, oxygen therapy, and collaborating on pharmacological therapy. The implementation of the orthopnea position was carried out by positioning the patient sitting upright, leaning forward, and supporting the hands on a pillow or table for 15 minutes or according to patient comfort.

Table 1. Changes in Patient’s Respiratory Status During Three Days of Intervention

Object	Day 1st	Day 2nd	Day 3rd
Respiratory Rate (breaths/min)	29	24	20
Complaint of Dyspnea	Present, continuous	Decreased	Absent
Use of Accessory Muscles	Present	Decreased	Absent
Adventitious Breath Sounds	Rhonchi	Rhonchi	Absent
Oxygen Saturation (SpO2)	93%	97%	100%

The table above shows the changes in the patient's condition during the three days of intervention. There was a decrease in respiratory rate from 29 breaths/min to 20 breaths/min, complaints of dyspnea decreased to absent, use of accessory muscles decreased, adventitious breath sounds disappeared, and oxygen saturation increased to 100%. The discussion indicates that the application of the orthopnea position is effective in overcoming the problem of ineffective breathing patterns in pulmonary TB patients. The orthopnea position helps improve lung expansion by reducing the pressure of abdominal organs on the diaphragm, so that alveolar ventilation becomes more optimal (Guyton & Hall, 2021; Potter & Perry, 2021). This is in line with the study by Syapitri et al. (2023) which stated that the orthopnea position is effective in reducing dyspnea in pulmonary TB patients. Another study by Dali et al. (2026) also showed that the orthopnea position increases oxygen saturation and significantly reduces respiratory rate. The results of this case study are consistent with these findings, where there was an improvement in the patient's respiratory status after the application of the orthopnea position.

Conclusion

The application of the orthopnea position as a non-pharmacological nursing intervention is proven effective in reducing dyspnea and improving respiratory status in pulmonary tuberculosis patients with ineffective breathing patterns. This is evidenced by a decrease in respiratory rate, reduced use of accessory muscles, and increased oxygen saturation. This intervention is easy to apply, safe, and can be recommended as part of nursing care for pulmonary TB patients.

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Author Contributions

Conceptualization, methodology, analysis, T.O. writing—review and editing, supervision, T.P. All authors have read and agreed to the published version of the manuscript.

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Conflicts of Interest

The author declares no conflict of interest.

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