# Case Study: Effectiveness Of Semi-Fowler Position On Ineffective Breathing Patterns In Patients With Pleurals Undergoing Palliative Care

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**Abstract**. Background: Pleural effusion is the accumulation of fluid between the parietal and visceral pleura (pleural cavity). This may be due to infection, malignancy or inflammation of the parenchymal tissue, or congestive heart failure, a common symptom of pleural effusion is shortness of breath. Pain can arise from a large effusion in the form of pleuritic chest pain or dull pain depending on the amount of fluid accumulation. Extensive pleural effusion will cause shortness of breath. Palliative care is a way to improve the quality of life of patients and families with life-threatening illnesses by reducing pain and providing physical, psychosocial and spiritual support from the time of diagnosis until the end of the patient's life . The semi-Fowler position can maximize lung expansion and reduce the effort of using respiratory muscle aids. Maximal ventilation opens the atelectasis area and increases the movement of secretions into the large airways for expulsion . Objective: To determine the effectiveness of the semi-Fowler position in patients with pleural effusion . Method: This type of research is descriptive qualitative using a case study approach using 1 respondent who experienced pleural effusion in the ICU room of Dr. Loekmono Hadi Kudus Regional Hospital. Results: After the semi-Fowler position was performed, the patient's oxygen saturation increased from 95% to 98% with respiration of 16 x/minute to 21 x/minute, and the O2 NRM which was initially given at 10 lt/minute decreased to 8 lt/minute . Conclusion: Providing a semi-Fowler position is effective in overcoming the ineffectiveness of breathing patterns in patients with pleural effusion, so that the problem of ineffective breathing patterns is partially resolved .

**Keywords**: Semi Fowler, Pleural Effusion.

## INTRODUCTION

Disturbance on system breathing cause decrease supply oxygen to vital organs that can result in disturbance function of that organ . One of disease disturbance system respiration in humans that is pleural effusion . . Pleural effusion is excess fluid in the membrane layered double surrounding lungs . Etiology from disease very severe pleural effusion diverse start from disease infectious and non- infectious diseases . infection such as tuberculosis, pneumonia and abscesses , whereas non- infectious diseases like carcinoma lung , pleural carcinoma , failure kidney , pulmonary embolism and failure heart . Pleural effusion is accumulation fluid between the parietal and visceral pleura ( pleural cavity ). This may be Because infection , malignancy or inflammation of the tissue parenchyma , or fail heart congestive (D'Agostino et all., 2020).

According to *World Health Organization* (WHO) approximately 20% of the world's population breathes air dirty risky tall caught disease lungs and airways breathing including pleural effusion . Prevalence disease The prevalence of pleural effusion in Indonesia reached 2.7% (Rozak et al., 2022). In Indonesia, national data about prevalence pleural effusion still limited . However , based on the 2018 Basic Health Research ( Riskesdas ), the prevalence of pleural effusion in Indonesia reached 2.7%, or around 1.39 million souls . In West Java, the prevalence reached 5.47%, or around 270,000 people (Syed et al., 2022).

The long-term impact of pleural effusion is influenced by the amount of pleural fluid. Benign effusions can be treated, but this differs from pleural effusions caused by malignancy. If the pleural effusion is asymptomatic, drainage is not always indicated unless infection is present. If the pleural effusion is caused by malignancy, drainage is performed to prevent shortness of breath and even empyema (Krishna & Rudrappa, 2021).

The semi-Fowler's position maximizes lung expansion and reduces the use of accessory respiratory muscles. Maximal ventilation opens the atelectasis area and increases the movement of secretions into the large airways for expulsion (Aprilia, 2022). Semi-Fowler is a bed position that elevates the head and chest by 45° without knee flexion. The semi-Fowler position is a position with the head and chest raised 30°-45° to increase intrapleural pressure and also increase intra-alveolar pressure at the base of the lungs, thus relieving difficulty breathing.

Based on medical problems, the role of nurses is also important in nursing problems. Nurses as implementers are able to provide professional nursing care services to patients, for example, providing a semi-Fowler's position for shortness of breath. Nurses as educators are able to provide health education to patients regarding the causes, signs and symptoms of ineffective airway clearance and effective coughing techniques. Nurses as administrators are able to manage all forms of services and health workers involved in patient care. Nurses as researchers are able to develop scientific knowledge regarding nursing problems of ineffective airway clearance, especially in patients with pleural effusion (Sari et al., 2019).

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## CASE METHOD

This research is a descriptive qualitative study using a case study approach with one respondent experiencing pleural effusion. Management was carried out for 3 x 7 hours from April 28, 2025, to April 30, 2025, and was adjusted to the patient's condition by including the time of nursing care. The data collection techniques used were interviews with respondents and families, as well as observation and providing nursing care.

## CASE STUDY RESULTS

The results of the case study management on April 28, 2025 – April 30, 2025 and adjusted to the conditions . Providing a semi-Fowler position to a patient with pleural effusion on April 28, 2025, had an effect on the effectiveness of the breathing pattern, with the patient's breathing results increasing from 16x/min to 20x/min and saturation from 94% to 98%.

## DISCUSSION

In this case study, the author discusses the provision of a semi-Fowler position to reduce the ineffectiveness of breathing patterns in patients with pleural effusion. The semi-Fowler's position was administered to a 49-year-old patient with a junior high school education in the ICU of Dr. Loekmono Hadi Kudus Regional Hospital who was experiencing pleural effusion . The patient experienced shortness of breath during a check-up at the outpatient clinic, and after examination and radiology, the patient was diagnosed with pleural effusion.

Pleural effusion is a lung condition characterized by the presence and accumulation of fluid within the pleural space. The pleura is a thin membrane that lines the surface of the lungs and the inside of the chest wall outside the lungs. In the pleura, fluid accumulates in the space between the pleural layers. Normally, an undetectable amount of fluid is present in the pleural space, allowing the lungs to move smoothly within the chest cavity during breathing (Tika, 2020).

Pleural effusion is the accumulation of fluid between the pleural cavity, namely the parietal pleura and the visceral pleura. It can occur spontaneously or be caused by various things, such as infection, malignancy, and inflammatory processes. Effusion is a common cause of pulmonary mortality and morbidity (Krishna R, Rudrappa M. Pleural effusion. StatPearls. 2021). Pleural effusion is a term commonly used to describe the presence of excess fluid accumulation in the pleural cavity (Harjanto, 2018).

According to Angarsari et al (2018), several diseases that cause pleural effusion include non-tuberculous lung infections, malignancies, tuberculosis, penetrating or blunt chest trauma, and liver cirrhosis. The causes of pleural effusion are grouped into four categories (Blacks and Hawks: Umara et al., 2020), namely the first category, namely increased systemic hydrostatic pressure, for example, heart failure, superior vena cava syndrome.

Normally, there is no empty space between the parietal and visceral pleurae. Between them, there is a fluid between 10 and 20 cc, a thin layer of serous membrane that is constantly moving. This small amount of fluid acts as a lubricant between the two pleurae, allowing them to slide easily against each other. Fluid is known to be produced by the parietal pleurae and subsequently absorbed by the hydrostatic pressure within the parietal pleurae and the colloid osmotic pressure within the visceral pleurae. Most fluid is absorbed by the lymphatic system, with only a small portion absorbed by the pulmonary capillary system. The numerous microvilli surrounding the mesophelial cells facilitate fluid absorption in the visceral pleurae. The amount of fluid in the pleural cavity remains constant due to the balance between production and absorption. This occurs due to hydrostatic pressure and colloid osmotic pressure. This balance can be disturbed by several things, one of which is pulmonary tuberculosis infection (Tika, 2020).

One non-pharmacological method for managing pleural effusion is the semi-Fowler's position. The semi-Fowler's position is a bed position that elevates the head and chest by 45° without flexing the knees. The semi-Fowler's position, with the head and chest elevated 30°-45°, increases intrapleural pressure and intra-alveolar pressure at the base of the lungs, thus alleviating breathing difficulties. This is in line with research by Qomaria (2023) which states that there are changes in oxygen saturation in patients with pulmonary edema when positioned in a semi-Fowler position. The semi-Fowler's position maximizes lung expansion and reduces the effort required to use respiratory aids. Maximal ventilation opens the atelectasis area and increases the movement of secretions into the large airways for expulsion . The semi-Fowler's sleeping position, at a 45° angle, results in better sleep quality for patients with respiratory disorders because it affects the

expansion of the patient's lung cavities, thereby reducing shortness of breath and optimizing sleep quality. The expansion of the chest cavity and lungs improves oxygen intake, thus returning the respiratory process to normal (Kusuma & Kurniawan, 2020).

## CONCLUSION

Based on the results of the case study, the author concluded that there were changes in the patient's saturation and respiration when the patient was placed in the semi-Fowler's position. The semi-Fowler's position maximizes lung expansion and reduces the use of respiratory accessory muscles. Maximal ventilation opens the atelectasis area and increases the movement of secretions into the large airways for expulsion . The semi-Fowler's position is effective in addressing ineffective breathing patterns in patients with pleural effusion, thus partially addressing the problem of ineffective breathing patterns.

## SUGGESTION

1. For Educational Institutions

   Suggestions for educational institutions to improve the quality of education so as to create professional, skilled and high-quality nursing graduates who are able to provide comprehensive nursing care based on the nursing code of ethics.
2. For the Community

   It is hoped that this will increase insight and lead to a better lifestyle. It is hoped that people will be more aware of the complaints, age factors, and symptoms experienced by relatives/siblings so that treatment can be initiated early to reduce the occurrence of potentially life-threatening complications.
3. For the Nursing Profession

   It is hoped that this scientific paper will broaden our knowledge and understanding of patients with pulmonary edema. Nurses, when providing nursing care, must consider the underlying causes of their patients' health problems. Nurses are expected to continually update their knowledge and understanding by regularly attending training or workshops to ensure high-quality nursing care and benefit patients.

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