

NURSING CARE THROUGH THE APPLICATION OF COMBINED SEMI-FOWLER AND RIGHT LATERAL POSITIONS TO IMPROVE OXYGEN SATURATION IN PATIENTS WITH CONGESTIVE HEART FAILURE AT THE CARDIOVASCULAR CARE UNIT OF ARIFIN ACHMAD REGIONAL GENERAL HOSPITAL, RIAU PROVINCE

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Abstract

Congestive Heart Failure (CHF) is one of the leading causes of morbidity and mortality worldwide, including in Indonesia. CHF patients often experience ineffective breathing patterns due to the heart's inability to pump blood efficiently, resulting in decreased oxygen saturation. Non-pharmacological interventions such as body positioning have been proven effective in improving oxygenation. The combination of semi-Fowler and right lateral positions can enhance lung expansion, reduce cardiac workload, and improve pulmonary ventilation and perfusion. This study aims to determine the effect of combining the semi-Fowler and right lateral positions on improving oxygen saturation in CHF patients in the CVCU Room of Arifin Achmad General Hospital, Riau Province. This research used a case study approach based on Evidence-Based Nursing Practice (EBNP). Data were collected through interviews and observations over three consecutive days (August 14–16, 2025) involving two CHF patients. The intervention was conducted by applying a combination of semi-Fowler and right lateral positions, and oxygen saturation (SpO_2) values before and after the intervention were compared based on indicators from the Indonesian Nursing Outcome Standards (SLKI). The results showed an increase in SpO_2 levels after the combined positioning intervention, along with clinical improvements such as decreased respiratory rate, reduced use of accessory respiratory muscles, and more balanced chest expansion. Patients also reported feeling more relieved and comfortable when breathing after the intervention. The combination of semi-Fowler and right lateral positions is proven effective in increasing oxygen saturation among CHF patients. This intervention can be recommended as a safe, simple, and evidence-based non-pharmacological nursing measure that supports improved quality of care in the CVCU setting.

Keywords : Congestive Heart Failure, semi-Fowler position, right lateral position, oxygen saturation, Evidence-Based Nursing Practice.

INTRODUCTION

Cardiovascular disease is a condition that disrupts the function of the heart and blood vessels. Almost all diseases that interfere with cardiac function eventually lead to the development of Congestive Heart Failure (CHF). CHF, also known as heart failure, is a clinical syndrome characterized by shortness of breath at rest or during activity, caused by structural or functional abnormalities of the heart. Heart failure occurs when the heart is unable to pump sufficient blood to meet the body's metabolic needs (Pambudi & Widodo, 2020).

According to data from the World Health Organization (WHO), the highest number of CHF cases is found in the Southeast Asian region, with the Philippines recording 376.9 thousand cases, followed by Indonesia with 371.0 thousand cases. The prevalence of heart failure varies across countries, including those in Europe and North America, particularly in low- and middle-income nations. The estimated number of patients with heart failure in Hong Kong is 4,452 (2–3%), and in South Korea, 650 (0.6%) (World Health Organization, 2022).

Based on data from the Indonesian Ministry of Health (2023), there are eight provinces with CHF prevalence rates higher than the national average. These provinces include Aceh (1.6%), West Sumatra (1.6%), Jakarta (1.9%), West Java (1.6%), Central Java (1.6%), East Kalimantan (1.9%), North Sulawesi (1.8%), and Central Sulawesi (1.9%) (Kemenkes, 2023). According to the 2018 Basic Health Research (RISKESDAS), the prevalence of heart failure in Riau Province reached 1.1% of the population, or approximately 26,085 people. Medical records from Arifin Achmad Regional General Hospital in Riau Province show that the number of heart failure patients increased from 487 in 2017 to 673 in 2018 (Yunita et al., 2020).

Patients with congestive heart failure often experience various complications, including breathing pattern disorders characterized by dyspnea. This symptom occurs due to the accumulation of blood and fluid in the lungs, making breathing more difficult. Impaired tissue oxygenation and psychological stress caused by difficulty breathing, along with the awareness of cardiac dysfunction, can lead to anxiety and restlessness in patients (Kasron et al., 2022).

Management for CHF patients includes both pharmacological and non-pharmacological therapy. One of the primary pharmacological interventions is oxygen therapy, while a non-pharmacological approach commonly used in nursing care is the Semi-Fowler position (Putri Sinta Cindyana et al., 2023).

The Semi-Fowler position is a nursing intervention aimed at reducing oxygen consumption, maximizing lung expansion, and improving gas exchange efficiency by reducing alveolar membrane strain, thereby relieving dyspnea. A stable breathing pattern can be identified by a normal respiratory rate, absence of hypoxia, and unobstructed airway (Kasan & Sutrisno, 2020).

To enhance the effectiveness of the Semi-Fowler position, it can be combined with a right lateral position, which provides additional benefits such as greater expansion of the left lung and reduced cardiac pressure. The combination of the Semi-Fowler and right lateral positions has been shown to improve lung ventilation and perfusion, enhance oxygenation, and reduce respiratory effort. Research by Susanti (2021) revealed that the modified 45° Semi-Fowler position combined with right lateral positioning significantly increased oxygen saturation in CHF patients compared to the standard Semi-Fowler position, with an average SpO₂ improvement exceeding 10% (Hayati et al., 2023).

This finding is supported by Pambudi and Widodo (2020), who demonstrated that applying a 90° Semi-Fowler position in CHF patients experiencing dyspnea improved oxygen saturation by 4–5% in both respondents. Recent studies also examined a modified Semi-Fowler position with right lateral support, where the abdomen is slightly elevated to allow better chest expansion. In the ICU of RSI Siti Aisyah Madiun, the modified position increased mean oxygen saturation from 86.87% (pretest) to 98.33% (posttest), compared to an increase from 85.60% to 96.00% in the standard Semi-Fowler position. Although the difference was not statistically significant, the higher improvement in the modified position suggests its potential benefit for nursing practice in CHF management (Collins et al., 2021).

Based on this background, the author is interested in developing a scientific paper entitled “Nursing Care through the Application of Combined Semi-Fowler and Right Lateral Positions to Improve Oxygen Saturation in CHF Patients in the CVCU of Arifin Achmad Regional General Hospital, Riau Province.”

RESEARCH METHOD

The implementation began with a data collection process through interviews and direct observation, following five stages of the nursing process: assessment, diagnosis, intervention,

implementation, and evaluation. The procedure was carried out within the framework of Evidence-Based Nursing Practice (EBNP), which integrates clinical experience, patient values, and the best available research evidence. This approach is considered effective in improving the quality of nursing care by ensuring that interventions are safe, efficient, and evidence-based (Vishnoi et al., 2024). The activity was conducted over three consecutive days, from August 14 to August 16, in the Cardiovascular Care Unit (CVCU) of Arifin Achmad Regional General Hospital, Riau Province.

The indicators of success for nursing interventions in patients diagnosed with an ineffective breathing pattern were evaluated based on the outcome criteria from the *Standar Luaran Keperawatan Indonesia (SLKI)* before and after the intervention. These indicators included improvement in the breathing pattern, respiratory rate within the normal range (12–20 breaths per minute), decreased use of accessory respiratory muscles, reduced intercostal and suprasternal retractions, decreased or absence of additional breath sounds, increased oxygen saturation, and symmetrical chest expansion.

During the nursing care process, the nurse systematically observed and documented respiratory signs and symptoms before and after the intervention. Observations included the rhythm and depth of breathing, the presence of nasal flaring, abnormal breath sounds such as rhonchi or wheezing, the patient's body position during respiration, and any visible expressions of discomfort caused by shortness of breath. The success of the intervention was also assessed subjectively through the patient's statements, such as feeling relieved, breathing more easily, or experiencing greater comfort after the procedure. Meanwhile, objective indicators such as increased oxygen saturation (SpO_2), normalization of respiratory rate, and improved lung auscultation findings were used to evaluate the effectiveness of the intervention. This evaluation process was essential to determine whether the intervention produced positive outcomes and whether it should be continued, modified, or discontinued according to the patient's condition.

Data analysis was conducted using a simple comparative descriptive method. The patient's oxygen saturation values before and after the intervention were recorded in a table, followed by a direct comparison between the two measurements. The results were analyzed to identify any improvement in SpO_2 levels. If a significant increase in oxygen saturation was observed after the intervention, it was concluded that the intervention had been effective.

RESEARCH RESULTS

After the application of the combined Semi-Fowler and right lateral position in a patient diagnosed with Congestive Heart Failure (CHF), there was a notable improvement in both physiological and psychological parameters. The patient, who initially experienced severe shortness of breath, fatigue, orthopnea, and restlessness, presented with an oxygen saturation level of 93% and a respiratory rate of 28 breaths per minute. Physical examination revealed the use of accessory respiratory muscles, intercostal retractions, and reduced chest expansion, all of which indicated ineffective breathing patterns.

Following the intervention, which was administered consistently over three consecutive days, each lasting 10 to 15 minutes, there was a gradual but steady improvement in the patient's respiratory status. On the second day, the oxygen saturation increased to 96%, and by the third day, it reached 98%. The respiratory rate decreased to 20 breaths per minute, and the patient's breathing pattern became more regular and deeper. The use of accessory muscles diminished, and chest expansion appeared symmetrical. The patient also reported feeling more comfortable and experiencing less shortness of breath, especially when resting.

In addition to respiratory improvements, peripheral perfusion showed significant enhancement, as indicated by a reduction in capillary refill time from more than 3 seconds to less than 2 seconds. The patient's pulse became more regular, and skin color changed from pale to pinkish, signifying better oxygen distribution throughout the body. Moreover, the patient's anxiety level decreased as breathing became easier, contributing to a calmer and more cooperative demeanor during nursing interventions. These results demonstrate that the combined Semi-Fowler and right lateral position effectively promotes lung expansion, reduces pulmonary congestion, enhances oxygen diffusion, and provides psychological comfort in patients with CHF.

DISCUSSION

The results of this study strongly support the clinical efficacy of using the combined Semi-Fowler and right lateral position as a non-pharmacological intervention for patients with Congestive Heart Failure who experience ineffective breathing patterns. The improvement in oxygen saturation from 93% to 98%, along with normalized respiratory rates and decreased dyspnea, is consistent with previous studies that have demonstrated the positive physiological effects of positioning therapy in cardiac and respiratory patients.

From a pathophysiological perspective, patients with CHF often experience pulmonary congestion due to impaired cardiac output, which leads to increased pulmonary venous pressure and fluid accumulation in the alveoli. This condition interferes with gas exchange, resulting in dyspnea and hypoxemia. The Semi-Fowler position, where the head and chest are elevated at an angle of 30°–45°, reduces the pressure on the diaphragm, enhances lung expansion, and facilitates alveolar ventilation. When combined with the right lateral position, it allows for greater expansion of the left lung while simultaneously reducing cardiac compression. This redistribution of pulmonary blood flow enhances ventilation-perfusion matching, which directly improves oxygen diffusion and saturation levels.

The findings of this implementation align with the research of Susanti (2021) and Hayati et al. (2023), which found that modified Semi-Fowler positions with right lateral support significantly improved oxygenation levels in CHF patients, with average SpO_2 increases exceeding 10%. Similarly, Pambudi and Widodo (2020) observed a 4–5% rise in oxygen saturation after applying a 90° Semi-Fowler position in dyspneic CHF patients. The improvement observed in this study further strengthens the evidence that positional therapy contributes to both physiological stability and psychological comfort.

Furthermore, the intervention adheres to the principles of Evidence-Based Nursing Practice (EBNP), which emphasize integrating clinical expertise, patient preferences, and the best available research evidence to achieve optimal outcomes. By employing a simple, cost-effective, and non-invasive approach, this intervention minimizes the risks associated with pharmacological treatment while providing measurable benefits. The combination of Semi-Fowler and right lateral positions not only improved oxygenation but also reduced the patient's anxiety, enhanced relaxation, and facilitated better rest.

Psychologically, patients with CHF often experience significant distress due to their inability to breathe comfortably. The application of comfortable positioning not only improves physiological parameters but also has a profound effect on emotional well-being. The patient's feedback indicating relief and relaxation after the intervention suggests that addressing physical comfort can reduce psychological stress, aligning with holistic nursing care principles.

This result also reflects the importance of continuous monitoring and individualized care. Regular assessment of oxygen saturation, respiratory rate, and patient feedback allowed nurses to evaluate the effectiveness of the intervention promptly and make adjustments when necessary. These findings highlight the critical role of nursing judgment and skill in providing evidence-based care that directly improves patient outcomes.

CONCLUSION

Based on the results and evaluation of nursing care provided, it can be concluded that the implementation of the combined Semi-Fowler and right lateral positions is an effective, safe, and evidence-based non-pharmacological intervention for patients with Congestive Heart Failure. The intervention significantly improved oxygen saturation levels, stabilized respiratory rates, enhanced lung expansion, and reduced dyspnea. Additionally, it contributed to better peripheral perfusion, decreased anxiety, and overall improvement in patient comfort and participation during care.

The combined positioning promotes optimal lung ventilation by reducing diaphragmatic pressure and cardiac compression, leading to improved alveolar gas exchange and oxygen diffusion. It also supports hemodynamic stability by facilitating venous return and improving cardiac output. The findings of this study reinforce the value of simple nursing interventions grounded in scientific evidence that can produce meaningful clinical outcomes.

In the context of intensive and cardiovascular care, where patients often experience respiratory compromise, the use of this combined position can be recommended as part of routine nursing practice to improve oxygenation and comfort. Nurses are encouraged to apply this intervention consistently and integrate it into individualized care plans, particularly for patients who cannot tolerate pharmacological interventions or invasive respiratory support. Future research is recommended to involve a larger number of patients and explore the long-term benefits of combined positioning in improving cardiopulmonary function, patient comfort, and recovery time. Moreover, incorporating this intervention into standard operating procedures (SOPs) for CHF management could enhance the overall quality of care, support faster patient recovery, and reduce the burden on healthcare systems.

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