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NURSING CARE FOR HEART FAILURE PATIENTS: INEFFECTIVE BREATHING PATTERN WITH SEMI-FOWLER POSITION INTERVENTION

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ABSTRACT

Background: Heart failure is a clinical syndrome characterized by the inability of the heart to pump blood adequately to meet the body's oxygen and nutrient requirements. Non-pharmacological nursing interventions, including positioning, can support respiratory function and improve oxygenation. This study aimed to describe nursing care for a heart failure patient with an ineffective breathing pattern by applying the semi-Fowler position.
Methods: This study employed a descriptive case study design using a nursing care approach. The subject was one adult patient diagnosed with NYHA I–II heart failure who presented with dyspnea, hypoxia, and an ineffective breathing pattern. The case was conducted at Panti Waluyo Hospital in Surakarta on February 5, 2025. The intervention consisted of positioning the patient in a 45° semi-Fowler position for 15 minutes, combined with oxygen administration at 10 LPM via a non-rebreather mask. Oxygen saturation was assessed before and after the intervention.
Results: After 15 minutes of the 45° semi-Fowler position combined with oxygen administration, oxygen saturation increased to 99%, representing a 9% increase. The patient also reported a reduction in shortness of breath, although the ineffective breathing pattern had not completely resolved.
Conclusion: The use of a 45° semi-Fowler position for 15 minutes, combined with oxygen therapy, may be considered a non-pharmacological nursing intervention to support oxygenation and respiratory comfort in patients with heart failure.
Keywords: heart failure, ineffective breathing pattern, nursing care, oxygen saturation, semi-fowler position

INTRODUCTION

Heart failure is a disease caused by the heart's inability to pump blood sufficiently to meet the body's oxygen and nutrient needs (Nopitasari et al., 2020). According to data from the World Health Organization (WHO), heart disease has been a leading cause of death over the past 20 years. According to WHO data in 2021, the estimated number of patient deaths increased to 17.9 million, representing 32% of the total global death toll of 38%. According to WHO data in 2022, cardiovascular disease is the number one cause of death worldwide, with 17.9 million deaths recorded annually (WHO, 2021).

In Indonesia, heart failure cases increased by almost 24% in 2020 compared to 2005, equivalent to 82 million people with heart failure (Suraji, Abd. Charis Fauzan, 2022). Meanwhile, in Central Java Province, comparing data from 2018 to 2019, data shows a

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decrease in the cumulative incidence rate, or proportion of new heart failure cases, in Central Java, from 9.82% in 2018 to 1.90% in 2019 (Kementrian Kesehatan Indonesia, 2021). However, according to the 2018 Indonesian Health Research Data, this figure is still higher than the general prevalence of heart failure (diagnosed by doctors) in Indonesia, which is 1.5%, or an estimated 1,017,290 people (Prahasti S.D., 2021).

Heart failure is a clinical syndrome with signs and symptoms caused by abnormalities in cardiac structure and function, accompanied by elevated natriuretic peptide levels and/or objective evidence of pulmonary or systemic congestion (Bozkurt et al., 2021). Clinical symptoms that typically appear in heart failure include dyspnea (shortness of breath), orthopnea (difficulty breathing while lying down), dyspnea on exertion, and Paroxysmal Nocturnal Dyspnea (PND) (severe shortness of breath that occurs at night). Furthermore, heart failure can also lead to pulmonary edema (fluid buildup in the lungs), ascites (fluid buildup in the abdominal cavity), pitting edema (swelling that can leave pressure marks), weight gain, and even life-threatening cardiogenic shock or circulatory failure (Suharto, Agusrianto, Manggasa, 2020). Previous research indicates that risk factors influencing heart failure include genetics or family history, age (45-60 years), gender (male), history of hypertension, smoking, diabetes mellitus, consumption of foods containing saturated fat, high cholesterol levels, and lack of activity (Marlinda R, Dafriani P, 2020).

Patients with heart failure may experience disorders such as hypoxia. Hypoxia is a condition of tissue oxygen deficiency or inadequate cellular oxygen demand due to insufficient inhaled oxygen or increased cellular oxygen consumption (Suwaryo et al., 2021). This is because increased filling pressure causes pulmonary congestion, which reduces pulmonary diffusion capacity, leading to increased intrapulmonary shunting, resulting in hypoxia (Ramachandran et al., 2022).

Treatment options available to nurses include pharmacological and non-pharmacological approaches. Pharmacological treatment aims to alleviate symptoms, slow the progression of the heart condition, and manage acute events resulting from the cardiac compensatory response. This is achieved through the administration of medications such as diuretics, aldosterone antagonists, angiotensin-converting enzyme inhibitors (ACE inhibitors), angiotensin receptor blockers (ARBs), beta-blockers, cardiac glycosides, vasodilators, beta-agonists, pyridine, and natriuretic peptides (Adista, 2020).

One non-pharmacological treatment for hypoxia in heart failure patients is adjusting the sleeping position. The semi-Fowler's position aims to reduce oxygen consumption and maximize lung expansion. It also addresses gas damage associated with changes in the alveolar membrane, thereby reducing shortness of breath (Kasron, 2016).

Based on previous research on the same topic, the semi-Fowler position can increase oxygen saturation in heart failure patients by reducing pressure on the diaphragm (Aprilia, 2022). The average oxygen saturation before being given a semi-Fowler position was 95.40%, increasing to 98.20% after. Given the background above, the author is interested in conducting research titled "Nursing Care for Heart Failure Patients: Ineffective Breathing Patterns with Semi-Fowler Position Intervention".

RESEARCH METHOD

This research uses a case study design with a nursing care approach. The subject was a patient diagnosed with NYHA I-II heart failure, presenting with shortness of breath and hypoxia. This case study was conducted at Panti Waluyo Hospital in Surakarta on February 5,

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2025. Data collection methods included interviews, observation, and physical examination. The intervention, a semi-Fowler's position, involved adjusting the bed at a 45° angle for 15 minutes, documented on an observation sheet. Pulse oximetry was used to measure oxygen saturation. The data were analyzed descriptively by comparing SpO2 measurements before and after the intervention. Ethical Clearance, which has been approved by the Ethics Committee of the University of Kusuma Husada Surakarta under the ethics number 2529/UKH.L.02/EC/I/2025.

RESULTS

Assessment

Primary Survey assessment obtained the following results: Airway assessment: patent airway, no obstruction in the airway. Breathing assessment: abnormal breathing pattern, there are additional breath sounds, rhonchi, there is visible use of respiratory accessory muscles, the patient complains of shortness of breath, RR: 30 times/minute, SpO2: 90%. Circulation assessment: blood pressure 150/90 mmHg, heart rate 137 times/minute, temperature 36.4℃, cold extremities, Capillary Refill Time (CRT) <2 seconds, strong palpable pulse, tan skin. Disability assessment: composmentis level of consciousness, GCS 15 with (E4 M6 V5) isochoric pupils, good reaction to light. Exposure assessment: no edema, no bleeding, no wounds, no fractures.

The Secondary Survey assessment includes the Give Comfort (PQRST) assessment which obtained the following results: Provocative (P): The patient complained of chest pain, Quality (Q): The patient said the pain was sharp like being stabbed, Region (R): The patient said the pain in the left side of the chest penetrated to the back, Severity (S): Pain scale 6 (0-10), Time (T): The patient said the pain was felt continuously and got worse when lying down.

History assessment (SAMPLE) obtained subjective data (S): The patient complained of chest tightness and shortness of breath since 3 days ago, shortness of breath worsens during activity and lying down, chest pain since last night but has worsened this afternoon, nausea and vomiting 3 times, fatigue during activity, and heart palpitations. Allergies (A): The patient stated he has no allergies to any particular foods or medications. Medications (M): The patient stated that he has been taking Isosorbide Dinitrate (ISDN) 4 tablets every 1/2 hour starting at 11:00 WIB. Previous illnesses (P): The patient's family stated that Mr. M has a history of hereditary diabetes mellitus. Mr. M has suffered from heart disease for about 11 years and was hospitalized at Panti Waluyo Hospital about 2 months ago with the same complaint. Last Meal (L): The patient's family stated that Mr. M last ate chicken porridge and warm water.

Event Leading (E): The patient came to the Emergency Department of Panti Waluyo Hospital complaining of chest tightness and shortness of breath since 3 days ago. The pain started last night and has worsened since this afternoon at 11:00 a.m. WIB. The patient reported nausea and vomiting 3 times. He has been taking ISDN 4 tablets every ½ hour since 11:00 a.m. WIB. The patient reported shortness of breath and pain that worsens when lying down. The patient tires easily during activities. The patient appears to be coughing, the patient appears restless and grimacing in pain. Full Set of Vital Signs: blood pressure: 150/90 mmHg, heart rate: 137 beats/minute, respiratory rate: 30 breaths/minute, temperature: 36.4 ℃, SpO2: 90%.

Nursing Diagnosis

The main nursing diagnosis is Ineffective Breathing Pattern related to respiratory effort obstruction (respiratory muscle weakness) as evidenced by subjective data: the patient

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complains of shortness of breath (dyspnea), shortness of breath worsens when lying down (orthopnea), objective data: visible use of accessory respiratory muscles, abnormal breathing pattern RR: 30 times/minute (tachypnea) (D.0005).

Nursing Intervention

Prepare nursing interventions in accordance with the Indonesian Nursing Intervention Standards (SIKI), namely Airway Management (I.01011), which focuses on providing a semi-Fowler position with the following interventions: Observation: monitor breathing patterns (frequency, depth, respiratory effort), monitor additional breath sounds (e.g.). gurgling, wheezing, dry rhonchi. Therapeutic: position semi-Fowler, provide oxygen 10 LPM if necessary. Education: Teach effective coughing techniques. Collaboration: Collaboration in administering bronchodilators, expectorants, and mucolytics, if necessary.

Implementation

Nursing care was implemented on Wednesday, February 5, 2025, at 1:25 PM. The first step was to monitor vital signs before placing the patient in a 45-degree semi-Fowler's position. Subjectively, the patient complained of shortness of breath and chest pain. Objective data were BP: 150/90 mmHg, SpO2: 90%, RR: 30 beats/minute, HR: 137 beats/minute, and Temperature: 36.4°C. At 1:30 PM, the author placed the patient in the 45-degree semi-Fowler's position, administered 10 LPM of oxygen, and monitored oxygen saturation after 15 minutes. The patient's subjective response indicated that shortness of breath had decreased. Objectively, the patient was sleeping in a 45-degree semi-Fowler's position. SpO2 increased from 90% to 99% after 15 minutes.

Table 1. Evaluation of SpO2 Values Pre-Post Semi-Fowler Position

Variable	Pre-test (%)	Post-test (%)
Oxygen Saturation (SpO2)	90	99

Evaluation

After implementing nursing care, the author conducted the final nursing process, namely a nursing evaluation. On Wednesday, February 5, 2025, at 4:05 PM WIB, the author conducted a nursing evaluation based on subjective data: the patient reported reduced shortness of breath, but the shortness of breath worsened when lying on his back. Objective data: visible use of accessory respiratory muscles, BP: 150/90 mmHg, RR: 28 beats/minute, HR: 128 beats/minute, Temperature: 36.4°C, SpO2: 99%. Assessment: The nursing problem of Ineffective Breathing Pattern has not been resolved, because it does not meet the results criteria. Planning: monitor breathing pattern, position in a semi-Fowler position, monitor oxygen delivery, and monitor oxygen saturation. After administering the patient in a 45-degree semi-Fowler position and 10 LPM of oxygen, it was concluded that the patient experienced a 9% increase in oxygen saturation.

DISSCUSSION

A chest X-ray shows moderate to severe cardiac decompensation with Hypertensive Heart Disease (HHD), cardiomegaly, and pulmonary edema. Based on the previous search, cardiomegaly was found in all 51 samples studied. Cardiomegaly is a major criterion for diagnosing heart failure (Husna et al., 2024). Heart enlargement can be associated with several

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factors, including systemic hypertension, aortic stenosis, and other conditions that increase the workload of the heart. In response to prolonged cardiac workload, myocardial cells may undergo hypertrophy as a compensatory mechanism. Based on these findings, there was a congruence between the clinical findings and the theoretical framework, in which cardiomegaly was identified on the chest X-ray of the patient with heart failure. The radiological finding therefore provided additional clinical evidence supporting the presence of cardiac structural abnormalities in this case.

The patient's assessment revealed chest tightness and shortness of breath that had been present for three days and worsened during activity and when lying down. Dyspnea is one of the common clinical manifestations of heart failure and may occur as a consequence of pulmonary congestion and impaired gas exchange. Fluid accumulation in the alveolar or pulmonary interstitial spaces can interfere with the normal process of oxygen diffusion and contribute to respiratory discomfort. Dyspnea may occur during activity and, in more severe conditions, may also occur at rest. Orthopnea, which refers to shortness of breath that becomes worse when lying down, may occur because changes in body position redistribute blood volume from the lower extremities and abdominal organs toward the thoracic circulation. This redistribution can increase pulmonary vascular congestion and consequently worsen respiratory symptoms (Kasron, 2016).

The presence of orthopnea in this patient was particularly important because it provided a direct clinical rationale for selecting the semi-Fowler position. The patient reported that shortness of breath became worse when lying down, indicating that body position influenced respiratory comfort. Therefore, positioning the patient with the upper body elevated was clinically relevant to the patient's presenting symptoms. The semi-Fowler position can reduce pressure on the diaphragm and facilitate lung expansion, thereby potentially supporting more effective ventilation and reducing the sensation of breathlessness.

The primary survey revealed an abnormal breathing pattern characterized by tachypnea with a respiratory rate of 30 breaths/minute, additional rhonchi breath sounds, visible use of accessory respiratory muscles, subjective shortness of breath, and an oxygen saturation of 90%. These findings can be associated with impaired pulmonary function in patients with heart failure. The inability of the left ventricle to pump blood effectively can increase pressure within the left atrium and pulmonary circulation, potentially resulting in pulmonary congestion and pulmonary edema. The resulting disturbance in gas exchange can contribute to hypoxia and increased respiratory effort (Sari & Habib, 2021). Based on the 2016 Indonesian Nursing Diagnosis Standards (SDKI), the data obtained met 80% to 100% of the major criteria, including shortness of breath (dyspnea), abnormal breathing patterns (tachypnea), and use of accessory muscles. This was further supported by the presence of the aforementioned clinical manifestations of CHF, including the nursing diagnosis of ineffective breathing pattern related to respiratory effort (respiratory muscle weakness) (PPNI, 2016).

The chief complaint revealed that Mr. M complained of sudden chest pain on the left side radiating to the back. This chest pain was caused by decreased cardiac output, which decreased oxygen supply to the myocardium, resulting in increased myocardial tissue hypoxia, leading to changes in myocardial metabolism (P. D. S. K. Indonesia, 2023). Based on the above theory, there is congruence between the theory and the facts: the complaint of left-sided chest pain was caused by decreased cardiac output, which reduced oxygen supply to the myocardium, resulting in increased myocardial hypoxia and changes in myocardial metabolism. Based on the above data, the patient also experienced nausea and vomiting three times. In the original

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discussion, this symptom was associated with impaired right ventricular function and fluid accumulation around the liver and intestines, which may interfere with digestive function. These findings demonstrate that heart failure can produce manifestations beyond the respiratory system. The nursing assessment, therefore, needs to consider the patient's overall physiological condition rather than focusing exclusively on respiratory symptoms. This nausea and vomiting occurred because the right ventricle of the heart, which pumps blood to the lungs, was not functioning properly, resulting in fluid accumulation around the liver and intestines, thus disrupting digestion (Kurnia, 2020).

The semi-Fowler position can increase oxygen saturation in patients with heart failure because it can reduce pressure on the diaphragm and support lung expansion (Aprilia, 2022). In this case, the 45° semi-Fowler position was maintained for 15 minutes with oxygen saturation assessed before and after the intervention. The intervention was selected as part of the patient's nursing management for ineffective breathing patterns and hypoxia. The selection of the semi-Fowler position is consistent with the physiological needs of patients who experience dyspnea and orthopnea. Elevating the upper body can facilitate a more favorable respiratory posture and may allow the diaphragm to move more freely. A more upright position may also improve the patient's subjective ability to breathe and reduce respiratory discomfort. These effects are particularly relevant in patients whose dyspnea is exacerbated by lying supine, as occurred in this case.

The planned intervention was therefore expected to improve the patient's oxygenation and respiratory comfort. The intervention consisted of positioning the patient at a 45° semi-Fowler angle for 15 minutes while monitoring the patient's respiratory response. This approach was supported by previous research, which reported increased oxygen saturation with semi-Fowler positioning. In that study, the average oxygen saturation increased from 95.40% before the intervention to 98.20% after the intervention, with a mean difference of 2.80% (Aprilia, 2022). The finding was also supported by other research that applied a 45° semi-Fowler position for 15 minutes. Their study reported an increase in mean oxygen saturation from 90.50% before intervention to 94.25% after intervention, representing a difference of 3.75%. These findings suggest that semi-Fowler positioning may support improvement in oxygen saturation among patients with heart failure (Wirawan N, Periadi N, 2022).

The current case demonstrated an increase in oxygen saturation from 90% to 99% following the intervention. The direction of this finding is consistent with the previous studies cited above. However, the magnitude of the increase in this case exceeded the increases reported in those studies. This difference may be influenced by variations in patient characteristics, baseline oxygen saturation, severity of heart failure, degree of pulmonary congestion, and concurrent interventions. Therefore, the 9-percentage-point increase observed in this patient should not be interpreted as a standard effect expected in all patients with heart failure.

An important consideration in interpreting the present finding is that the patient received oxygen therapy simultaneously with the semi-Fowler intervention. The nursing implementation involved administration of oxygen at 10 LPM while the patient was positioned at 45°. Oxygen therapy increases the concentration of oxygen available for pulmonary uptake and may therefore directly contribute to improved oxygen saturation. Consequently, the increase from 90% to 99% should be interpreted as the response to the combined intervention rather than as evidence of the isolated effect of the semi-Fowler position. The use of a non-rebreathing mask at 10 LPM delivers a higher oxygen concentration than room air, increasing the amount of oxygen available for uptake by the blood. In a patient experiencing hypoxia,

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supplemental oxygen can substantially improve oxygen saturation. At the same time, the semi-Fowler position may support respiratory mechanics and improve the patient's ability to breathe comfortably. The two interventions may therefore have complementary effects (Tandlich, 2022).

The combined use of positioning and oxygen therapy is clinically reasonable in a patient presenting with hypoxia and respiratory distress. Positioning addresses the mechanical and symptomatic aspects of breathing, while supplemental oxygen addresses the reduced availability of inspired oxygen. However, because both interventions were administered together in this case, it is not possible to determine the independent contribution of either intervention to the 9-percentage-point improvement in SpO_2.

Despite this methodological limitation, the patient's subjective response provides additional support for the clinical relevance of positioning. Following the intervention, the patient reported that shortness of breath had decreased. The improvement in subjective respiratory comfort is particularly relevant, as the patient initially reported dyspnea that worsened when lying down. Thus, the intervention was associated not only with improved oxygen saturation but also with reduced perceived respiratory difficulty.

The subsequent nursing evaluation further demonstrated the importance of assessing multiple clinical parameters. At evaluation, the patient's SpO_2 was 99%, while the respiratory rate had decreased from 30 to 28 breaths/minute. However, the patient continued to experience shortness of breath when lying supine and continued to demonstrate use of accessory respiratory muscles. Therefore, the nursing problem of ineffective breathing pattern had not been completely resolved.

This finding demonstrates that improvement in oxygen saturation does not necessarily indicate complete resolution of the nursing diagnosis. Oxygen saturation represents one aspect of oxygenation, whereas an ineffective breathing pattern also involves respiratory frequency, depth, effort, and subjective respiratory difficulty. A patient may achieve an improved SpO_2 while continuing to demonstrate increased respiratory effort. Therefore, nursing evaluation should remain comprehensive and should include both objective and subjective indicators.

The persistence of dyspnea when lying down also indicates that the underlying pathophysiological condition remained present. The patient had evidence of pulmonary edema and cardiac decompensation, which cannot be corrected by positioning alone. The semi-Fowler position may improve respiratory mechanics and reduce symptoms, but it does not directly correct the underlying cardiac dysfunction or eliminate pulmonary fluid accumulation. Therefore, the intervention should be considered a supportive component of comprehensive management rather than a definitive treatment for heart failure.

The finding is consistent with the nursing process, in which evaluation determines whether the identified problem has been resolved, partially resolved, or remains present. In this case, the improvement in SpO_2 and reduction in dyspnea indicate a favorable response, but the continued presence of orthopnea and accessory muscle use indicates that additional monitoring and intervention remain necessary. This supports the decision documented in the article to continue monitoring the breathing pattern, maintain the semi-Fowler position, and monitor oxygen administration and oxygen saturation.

The implementation of the intervention also demonstrates the importance of standardized nursing care. The nursing intervention was developed in accordance with the Indonesian Nursing Intervention Standards (SIKI), particularly for airway management. The intervention included monitoring breathing patterns, monitoring additional breath sounds, positioning the

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patient in a semi-Fowler position, providing oxygen when necessary, teaching effective coughing techniques, and collaborating in medication administration when indicated.

The integration of SDKI and SIKI provides a systematic framework for clinical decision-making. The assessment findings supported the diagnosis of an ineffective breathing pattern, while the identified diagnosis guided the selection of interventions aimed at respiratory function and oxygenation. This standardized approach facilitates continuity of care and provides a clear basis for evaluating patient outcomes.

Continuous respiratory assessment is particularly important in patients with heart failure because their clinical status can change rapidly. Respiratory rate, respiratory effort, breath sounds, oxygen saturation, heart rate, blood pressure, and subjective dyspnea should be monitored throughout the nursing care process. In this patient, the initial respiratory rate of 30 breaths/minute, heart rate of 137 beats/minute, and SpO_2 of 90% indicated significant physiological stress and justified close monitoring during the intervention.

The use of semi-Fowler positioning also has practical advantages in clinical nursing practice. It is a relatively simple intervention that can be implemented without complex equipment and can be integrated into routine care. It may be particularly useful in patients who experience orthopnea or respiratory discomfort in the supine position. However, despite its simplicity, positioning should still be individualized according to the patient's clinical condition, tolerance, hemodynamic status, and respiratory response.

The 45° position used in this case provided a moderately upright posture. The patient's response suggests that this position was tolerated and was associated with reduced shortness of breath. Nevertheless, the optimal angle may vary among patients. Nurses should therefore assess the patient's response rather than assume that a single angle is universally appropriate. Continuous monitoring is important, especially in patients with cardiovascular instability.

The patient's clinical history also provides an important context for the nursing intervention. The patient had a history of heart disease for approximately 11 years and had been hospitalized at Panti Waluyo Hospital approximately two months before with similar complaints. This history indicates recurrent cardiovascular problems and highlights the importance of long-term disease management in addition to immediate symptom management.

Patient and family education is therefore an important component of nursing care. Patients and families should understand the signs and symptoms that may indicate worsening heart failure, including increasing shortness of breath, worsening orthopnea, reduced activity tolerance, and other changes in respiratory status. The original article recommends providing information to patients and families regarding changes occurring in patients with heart failure and ineffective breathing patterns.

Education regarding positioning may also be useful. Patients who experience dyspnea when lying down can be taught to maintain a comfortable semi-upright position as part of symptom management, while understanding that persistent or worsening symptoms require professional assessment. Positioning should not be presented as a substitute for prescribed medical treatment but as one component of supportive care.

The patient's chest pain and history of heart disease further demonstrate the need for integrated cardiovascular and respiratory assessment. The patient reported left-sided chest pain radiating to the back, with a pain score of 6 out of 10. The original discussion relates this symptom to reduced cardiac output and decreased oxygen supply to myocardial tissue. In a patient with heart failure and chest pain, nurses must therefore remain alert to changes in cardiovascular status while managing respiratory symptoms.

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The patient's nausea and vomiting also indicate that the effects of heart failure may extend beyond the respiratory system. The original discussion linked these symptoms to impaired right ventricular function and fluid accumulation around the abdominal organs. This emphasizes the importance of holistic nursing assessment and reinforces the need to integrate respiratory management with the assessment of other physiological systems.

The findings in this case are therefore best interpreted within the context of comprehensive nursing care. The semi-Fowler position was not used in isolation but as part of a sequence involving assessment, diagnosis, intervention, oxygen therapy, monitoring, and evaluation. This integrated approach reflects the nursing process and enables interventions to be adapted according to the patient's response.

From a clinical perspective, the increase in oxygen saturation from 90% to 99% is an important finding, as it demonstrates immediate improvement in oxygenation following the combined intervention. The reduction in dyspnea further supports the patient's subjective improvement. However, the persistence of an ineffective breathing pattern indicates that the underlying clinical problem requires continued management.

The difference between physiological improvement and complete resolution is important when evaluating nursing outcomes. If SpO_2 has normalized but the patient continues to exhibit tachypnea, use of accessory muscles, or orthopnea, the nurse should not conclude that the respiratory problem has been completely resolved. Instead, the nurse should continue the assessment and determine whether further intervention is required.

This case, therefore, illustrates the value of using multiple outcome indicators. Oxygen saturation should be evaluated together with respiratory rate, respiratory effort, breath sounds, dyspnea, and patient comfort. Such multidimensional evaluation provides a more accurate representation of the patient's clinical response than reliance on a single measurement.

The findings also have implications for evidence-based nursing practice. Previous research cited in the article supports the use of semi-Fowler's position to improve oxygen saturation in heart failure patients. The present case demonstrates a similar direction of improvement. Although the evidence from a single case cannot establish efficacy, the consistency of the findings with previous studies strengthens the clinical rationale for considering positioning as part of supportive respiratory nursing care.

Nevertheless, the interpretation should remain cautious. Because the patient received oxygen therapy simultaneously, the increase in SpO_2 cannot be attributed exclusively to the semi-Fowler position. In addition, the study involved only one patient and did not include a control or comparison group. Therefore, the study provides a detailed description of an individual clinical response rather than definitive evidence of treatment effectiveness.

The single-patient design is an important limitation. Patients with heart failure differ in terms of disease severity, comorbidities, baseline oxygenation, pulmonary congestion, cardiac function, and response to intervention. Consequently, the 9-percentage-point increase observed in this patient should not be generalized to all patients with heart failure.

The short observation period is another limitation. The intervention lasted 15 minutes, and the immediate response was assessed. Although subsequent evaluation showed that SpO_2 remained 99%, the study did not systematically assess the long-term sustainability of the improvement. Further research with longer observation periods would be necessary to determine whether repeated semi-Fowler positioning produces sustained benefits.

The concurrent administration of oxygen represents an additional methodological limitation. Since oxygen was administered at 10 LPM during the positioning intervention, the

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specific effect of positioning cannot be separated from the effect of supplemental oxygen. Future studies could consider appropriate comparative designs to distinguish these effects when clinically and ethically feasible.

Future research could also examine different positioning angles and durations. Comparisons of the 30°, 45°, and 60° positions may provide information on which position offers the greatest improvement in oxygenation and respiratory comfort. Studies could also evaluate whether repeated or longer-duration positioning provides additional benefits.

In addition, future studies could use standardized dyspnea scales and other patient-centered outcome measures. Oxygen saturation is an important objective indicator, but patient comfort, perceived dyspnea, respiratory effort, activity tolerance, and sleep quality may also be relevant outcomes. A multidimensional assessment would provide a broader understanding of the clinical benefits of positioning.

From the perspective of nursing education, this case also illustrates how standardized nursing terminology can be applied in clinical practice. The case demonstrates the sequence from the assessment and identification of ineffective breathing patterns to the selection of a SIKI-based intervention and the evaluation of outcomes. This may be useful as a clinical learning example for nursing students and practicing nurses.

The intervention also demonstrates that simple nursing actions can have an important role in supportive patient management. Positioning requires limited resources but should be based on an appropriate clinical rationale and careful monitoring. The nurse's ability to recognize orthopnea and identify the patient's response to positioning is an important aspect of clinical judgment.

The patient's response further emphasizes the importance of individualized nursing care. The patient experienced worsening dyspnea when lying down, making a semi-upright position more appropriate for respiratory comfort. However, individual responses may vary, and the nurse should continue to evaluate the patient's tolerance and clinical status.

Overall, the findings of this case are consistent with the theoretical rationale and prior research on the use of semi-Fowler positioning in patients with heart failure. The patient's oxygen saturation increased from 90% to 99% after a 45° semi-Fowler position was applied for 15 minutes in combination with oxygen administration at 10 LPM, and the patient reported decreased shortness of breath. These findings indicate a favorable immediate response in oxygenation and respiratory comfort.

However, the improvement should be interpreted as the response to the combined intervention rather than as definitive evidence of the independent efficacy of the semi-Fowler position. The nursing problem remained unresolved at evaluation because the patient continued to experience dyspnea when lying supine and continued to demonstrate accessory muscle use. Thus, continued nursing assessment and comprehensive management remained necessary.

The case ultimately supports the clinical relevance of semi-Fowler positioning as a complementary non-pharmacological nursing intervention for heart failure patients experiencing ineffective breathing patterns, particularly those with orthopnea and respiratory discomfort in the supine position. The intervention should be integrated with oxygen therapy when indicated, monitoring, medical treatment, education, and collaborative care. The findings also highlight the importance of evaluating both objective physiological parameters and subjective patient responses.

In clinical practice, nurses should therefore consider semi-Fowler positioning as part of individualized respiratory management while continuing to monitor oxygen saturation,

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respiratory rate, respiratory effort, breath sounds, heart rate, blood pressure, and subjective dyspnea. The intervention should be continued or modified according to the patient's response. Further research involving larger samples, appropriate comparison groups, longer observation periods, and standardized outcome measures is required to determine more precisely the specific contribution of semi-Fowler positioning to oxygenation and respiratory comfort in patients with heart failure.

CONCLUSION

The results of a study conducted by researchers after administering the semi-Fowler's position to Mr. M showed that it was effective in increasing oxygen saturation and reducing shortness of breath. Based on the intervention, evaluation data showed an increase in oxygen saturation from 90% to 99%. These findings indicate that the combination of semi-Fowler positioning and oxygen therapy yielded a favorable immediate response in oxygen saturation and subjective respiratory comfort. However, the ineffective breathing pattern had not been completely resolved, as the patient continued to experience shortness of breath when lying supine and to use accessory respiratory muscles during evaluation. Therefore, the semi-Fowler position should be considered a supportive non-pharmacological nursing intervention that can be integrated into the comprehensive management of heart failure patients with respiratory problems, rather than being considered a definitive treatment for the underlying cardiac condition. Because this study involved only one patient and the semi-Fowler position was implemented simultaneously with oxygen therapy, the observed improvement in oxygen saturation cannot be attributed exclusively to the positioning intervention. Further studies involving larger samples, longer observation periods, and appropriate comparison groups are needed to provide stronger evidence regarding the specific contribution of semi-Fowler positioning to oxygenation and respiratory comfort in patients with heart failure.

RECOMMENDATIONS

Based on the findings of this case study, nurses and healthcare institutions are recommended to consider the 45° semi-Fowler position as a supportive non-pharmacological intervention for heart failure patients experiencing dyspnea, orthopnea, ineffective breathing patterns, and impaired oxygenation, particularly when respiratory symptoms worsen in the supine position. The intervention should be implemented according to the patient's clinical condition and tolerance and accompanied by continuous monitoring of oxygen saturation, respiratory rate, respiratory effort, breath sounds, heart rate, blood pressure, subjective dyspnea, and overall patient comfort. Semi-Fowler positioning should be integrated with appropriate oxygen therapy, medical management, patient and family education, and collaborative care rather than being used as a substitute for definitive treatment of heart failure. Healthcare institutions are also encouraged to strengthen the implementation of standardized nursing care based on SDKI and SIKI, and to ensure adequate documentation of respiratory assessments, interventions, and pre- and post-intervention outcomes. Patients and families should receive appropriate education on signs of respiratory deterioration, the importance of maintaining a comfortable position, adherence to prescribed treatment, and the need to seek professional assistance if dyspnea or other symptoms worsen. For future researchers, further studies with larger samples, longer follow-up periods, standardized dyspnea assessment, and comparisons of different positioning angles, with and without supplemental oxygen, are recommended to determine the effectiveness and specific contribution of the semi-Fowler position in improving oxygenation

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and respiratory comfort among heart failure patients.

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