



## Application of Semi Fowler Position to Ineffectiveness of Breathing Patterns in Congestive Heart Failure (Chf) Patients

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### ABSTRACT

**Objective:** This study aims to present care with semi-Fowler's intervention as an effort to overcome shortness of breath in congestive heart failure patients with ineffective breathing patterns in the Kenanga Room BLUD RSU Kota Banjar.

**Method:** Descriptive analysis plus a case study technique makes up the research design. Adult patients with congestive heart failure (CHF) and dysfunctional breathing patterns were the study's subjects. Interviews, observation, physical examinations, and documentation studies are a few of the data collection methods.

**Result:** The results of the case study at the assessment stage found that the client complained of shortness of breath. The intervention and implementation used to reduce shortness of breath is by giving the semi-Fowler's position by positioning the patient half-sitting or 45 degrees, while the shortness lasts. After the intervention, the client's breathing frequency decreased from 28 x/minute to 22 x/minute, while the subjective data from the anamnesis showed that the client said shortness of breath was reduced.

**Conclusion:** The conclusion of nursing care in patients with congestive heart failure (CHF) with shortness of breath is well resolved. Intervention in the semi-Fowler's position is effective in reducing respiratory frequency.

**Keywords:** congestive heart failure, ineffectiveness of breathing patterns, semi fowler

### Introduction

Congestive Heart Failure (CHF) or often referred to as Congestive Heart Failure is a physiological condition when the heart is unable to pump enough blood to meet the body's metabolic needs (Purnamasari et al., 2023). The most common cause of Congestive Heart Failure (CHF) is coronary heart disease, other causes include heart muscle strain phenomenon, high blood pressure, heart attack, cardiomyopathy, valvular heart disease, infection, cardiac arrhythmia, anemia, thyroid disease, lung disease and too much body fluid (Nurani & Arianti, 2022).

Congestive Heart Failure (CHF) is the only cardiovascular disease whose prevalence continues to increase. The risk of death from heart failure ranges from 5-10% per year in cases of mild heart failure and increases to 30-40% in cases of severe heart failure. In addition, heart failure is a disease that most often requires rehospitalization (readmission) even though outpatient treatment is given optimally. Congestive Heart Failure (CHF) is one of the main typical problems in several industrialized and developing countries like Indonesia (Mas Kusuma Jaya & Nopriani, 2022).

Based on data from Basic Health Research (Riskesmas) of the Ministry of Health of the Republic of Indonesia in 2018, the prevalence of heart failure in Indonesia based on a doctor's diagnosis is estimated at 1.5% or around 29,550 people. The highest age of sufferers is at the age of 65-74 years of 0.5%. At the age of 75 years that is equal to 1.1% (Kanine & Ismunandar Bakari, 2022). The highest distribution of heart failure is in the province of North Kalimantan, which is around 2.2%, the province of the Special Region of Yogyakarta is 2% in the second place and the province of Gorontalo is 2% in the third place. Then, the province of Central Java is 0.4%, while the fewest are in the provinces of North Maluku and West Java, which are around 0.3% (Kunto Prabowo et al., 2022).

The World Health Organization (WHO) states congestive heart failure is the cause of death with a total of 23 million cases, or around 54% of all deaths (CHF) (Tanzila et al., 2022). Studies conducted in the US have suggested a case occurrence of 20%, under the age of 40 years, with an incidence of more than 650,000 new cases of CHF diagnosed over the last few years. The case fatality rate is around 50% within five years (Azhari, 2022). In 2030 WHO predicts that the increase in sufferers of Congestive Heart Failure (CHF) will reach 23 million people in the world (Putu Ayu Aswini, 2022).

According to the American Heart Association (AHA) the signs and symptoms that appear in CHF patients include chest pain, shortness of breath, especially when lying down, fatigue, coughing or wheezing, especially when exercising or lying down. Chest pain in CHF patients is often caused by decreased oxygen supply to the myocardium, which causes cardiac cell death, while shortness of breath experienced by CHF patients is caused by abnormalities in the structure and function of the heart which results in damage to ventricular function to meet the needs of nutrients and oxygen to the body's tissues (Ananta Tanujiarso et al., 2022). The main nursing problem that occurs in CHF patients is ineffective breathing patterns.

Based on the Indonesian Nursing Diagnostic Standard book, ineffective breathing patterns are inspiration and expiration that do not provide adequate ventilation. (PPNI, 2016). In CHF patients with an ineffective breathing pattern occurs because the left ventricle is unable to pump blood coming from the lungs resulting in increased pressure in the pulmonary circulation which causes fluid to be pushed into the lung tissue (Muzaki & Pritania, 2022). CHF disease results in pulmonary failure resulting in accumulation of fluid in the alveoli. This causes the heart to not be able to function optimally in pumping blood. Another impact that arises is the changes that occur in the respiratory muscles. These things result in the supply of oxygen throughout the body being disrupted resulting in dyspnea (Aprilia et al., 2022).

One way to deal with ineffective breathing patterns is by giving them a semi-Fowler's position. Semi Fowler's position is a 45 degree position at the head of the bed area. The goal of semi-Fowler's position is to help with respiratory and cardiovascular difficulties (Yulianti & Chanif, 2021). Therefore, based on the existing cases and with this background, it is necessary to provide good nursing care to heart failure patients by giving a semi-Fowler's position so that the problem of ineffectiveness of the breathing pattern can be resolved, the authors take the title, namely the effect of applying the semi-Fowler's position on ineffectiveness of breathing patterns in CHF patients in the Tulip

Room of the Banjar City Hospital. The semi-fowler position intervention will be given for 3 days for 15 minutes and carried out at the same hour to determine the difference in oxygen saturation and respiration rate before and after being given the semi-fowler position (Hayati et al., 2023).

### **Objective**

The purpose of writing this case study is to illustrate how nursing care for breathing patterns is ineffective in CHF patients by administering semi-fowler's position in the Kenanga Room at the Banjar City Hospital.

### **Method**

This type of research is a qualitative research with a descriptive case study approach, which is compiled based on nursing care reports through a nursing process approach, namely the study of data collection conducted by researchers originating from patients, families and patient status sheets. Nursing diagnoses are determined using the Indonesian Nursing Diagnosis Standards (IDHS) based on existing data analysis.

Nursing interventions, from the nursing diagnoses found by the researcher, develop an action plan to solve the nursing problems found using the Indonesian Nursing Intervention Standards (SIKI). Nursing Implementation and Evaluation is documented with the SOAPIER model. The administration of semi-Fowler's position in CHF patients is given by positioning the patient 45° at the head of the bed area for 3 days for 15 minutes.

The tools used in the nursing process include guidelines for the assessment of nursing care, physical examination tools such as stethoscopes and sphygmomanometers, thermometers, oximeters and timers using watches. The techniques used in this case study are observation, interviews and literature.

A comprehensive assessment of the patient is carried out before the action is implemented. The semi-Fowler's position intervention was carried out for 15 minutes by positioning the patient 45° at the head of the patient's bed area for 3 days from 31 May to 2 June 2023 which is recommended to be done if complaints of tightness begin to be felt. Data collection was taken from the results of physical examinations, observations, interviews and literature based on related journal sources from the internet. The final stage in the nursing process is evaluation. Assessment of oxygen saturation and respiration rate is carried out every day after giving the semi-Fowler's position to determine the progress that has occurred.

### **Results**

#### **Assesment**

The results of the study on Congestive Heart Failure (CHF) patients with ineffective breathing pattern nursing problems in the Kenanga Room of the Banjar City Hospital, Ny. P, 37 years old, address Karang Pucung Banjar, was taken to the hospital on May 31 at 04.00 with complaints of shortness of breath. At the time of the assessment at 10.00 the client said tightness and chest pain, the client seemed to be holding the chest, grimacing in pain, the tightness increased when there was a lot of activity, and decreased when resting. The patient is on oxygen. Shortness of breath is felt like a squeezing chest, respiratory rate 28 x/minute. Shortness of breath is felt intermittent. The client said he had a history of diabetes mellitus since 2014, and 3 months ago he was treated with the same disease. Results of vital signs: blood pressure 130/80 mmHg, pulse 96x/minute, respiration 28x/minute, temperature 36.5°C and SPO2 93%.

Additionally, a head-to-toe physical examination was performed beginning with a head examination. The head is symmetrical, free of lumps or lesions, has black hair, and is not painful in any way. Eye examination results show that both eyes are symmetrical, both eyes move equally, conjunctiva and anemia are present, the pupil is isochordal, there are no visual problems, no visual aids such as glasses are present, and there is no discomfort. Examination of the ears revealed no abnormalities, discomfort, or hearing loss in either symmetrical ear. When the nose is examined, it is found to have symmetrical nostrils, no secretions, no polyps, no swelling, no soreness, and a pleasant scent. There are breathing muscles, 5 Lpm of installed oxygen, a symmetrical chest that appears tight, and the patient is coughing. Oral examination findings include a healthy smile, all of the teeth, no dental cavities, dry oral mucosa, and pleasant taste. Examining the neck reveals enlarged lymph nodes, no jugular vein edema, no discomfort, and a strong swallowing reflex. An inspection of the skin revealed brown skin, warm acral, healthy skin turgor, and no cyanosis. Inspection of the lungs and chest reveals no masses or abnormalities, and the chest is symmetrical in shape. Palpation reveals that the chest hurts Resonance in all lung areas during percussion Vesicular auscultation. abdominal examination, Examination reveals level skin tone, symmetrical form, and an unbloated stomach. Bowel sounds are audible 9 times per minute. Urinary catheter not attached, clean, no pain during genital examination. Muscle strength of the upper extremities: 5 (normal condition). Muscle strength in the lower extremities: 5 (in a healthy state). SR Thorax and EKG results: Lateral Ischemic Cardiomegaly and right pleural effusion.

The pharmacological therapy that the doctor gave was 1x1 pharos injection, 3x500 metformin, 1x1 glimepiride, 1x1 bisoprolol. For non-pharmacological therapy, patients often assume a semi-Fowler's position when shortness of breath is felt for about 15 minutes.

Table 1 results of laboratory examinations

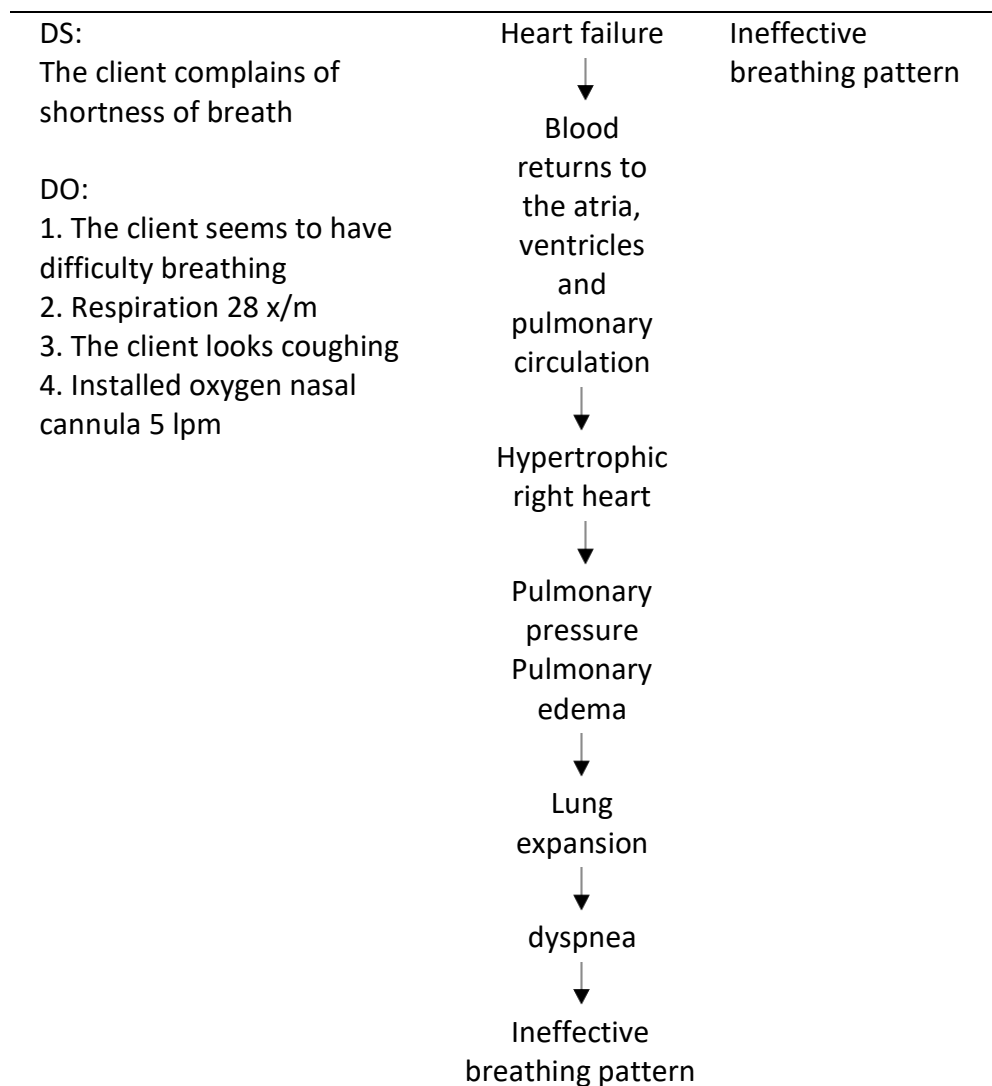
checking type	results	Normal values & units of information results
Hemoglobin	14.7	12~15 gr/dl
Leukosit	8.6	4.4~11.3 ribu\mm <sup>3</sup>
Trombosit	275	150~450 ribu\mm <sup>3</sup>
Hematokrit	36	35~47 %
Eritrosit	4.4	4.1~5.1 juta /Ul
Ureum	33	32 – 33 %
Creatinin	0.9	0.8 – 5.3 mg/dl
GDS	335	<140mg/dL

### Nursing Diagnosis

The Indonesian National Nurses Association (PPNI) based the emerging nursing diagnoses on the findings of data analysis adjusted for the grouping of nursing diagnoses in the 2017 revision of the Indonesian Nursing Diagnostics Standards (SDKI) edition 1 print III.

Table 2 nursing diagnoses

Simptom	Etiologi	Problem
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### Nursing Intervention, Implementation and Evaluation

After assessing the information from the aforementioned diagnoses, interventions that are in accordance with the Indonesian Nurses Association (PPNI) and are taken from the 2018 version I print II of the book Indonesian Nursing Intervention Standards (SIKI) are then given.

Table 3 intervention, implementation and evaluation

Diagnosis	Nursing intervention	Done/ No	Date	Evaluation
Ineffective breathing pattern	1. Monitor breathing pattern (frequency, depth, respiratory effort) 2. Monitor additional breath sounds (eg gagling,	Done	02/ June 2023	S: the client says shortness of breath is reduced O: - Clients seem more comfortable - The client looks relaxed - Oxygen is not installed

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<p>wheezing, wheezing crackles)</p> <p>3. 3Position semi fowler</p> <p>4. Do health education to increase understanding of the disease</p> <p>5. Collaborative delivery of oxygen</p>	<p>- Vital signs :</p> <p>BP : 120/80 mmHg</p> <p>P : 97 x/minute</p> <p>R : 22 x/minute</p> <p>T : 36.5°C</p> <p>SPO2 : 96%</p> <p>A : The problem of ineffective breathing pattern nursing is resolved</p> <p>P: Maintain interventions 2 and 3</p> <p>I :</p> <ul style="list-style-type: none"> <li>- Monitor breathing patterns (frequency, depth, respiratory effort)</li> <li>- Teaches 61 non- pharmacological techniques (semi fowler)</li> </ul> <p>E :</p> <ul style="list-style-type: none"> <li>- Respiration 22 x/minute</li> <li>- Shortness of breath reduced</li> <li>- The client looks calm</li> </ul> <p>R :</p> <ul style="list-style-type: none"> <li>-Shortness of breath resolved</li> <li>-The client is discharged</li> </ul>
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The researcher evaluates the semi-Fowler's position. As a result, Mrs. P stated that his shortness of breath decreased day by day and even disappeared when he was evaluated on the third day. The respiration rate before giving the semi-Fowler's position was 28x/min and after being given the recommendation to apply the semi-Fowler's position for 3 days the respiration rate was 22x/min. This proves that the semi-Fowler's position intervention has a positive effect in increasing the effectiveness of breathing patterns and helping to

reduce shortness of breath experienced by Mrs. P. The client said that before the intervention the tightness felt heavy and spread to the chest with a respiration rate of 28x/min, the tightness that was felt made it difficult to do any activity, even when resting, sometimes the tightness was felt. However, after being given the intervention in the semi-Fowler's position, the client said that the tightness had gradually decreased every day and when it was evaluated on the third day, the tightness had disappeared, although sometimes it was felt occasionally. Clients appear calmer, fresher and relaxed.

## **Discussion**

In patients with Congestive Heart Failure (CHF) symptoms of shortness of breath due to dysfunction in the left ventricle of the heart, causing left cardiac output to decrease and then an increase in end-diastolic pressure and end-diastolic volume in the left ventricle. The increased volume in the left ventricle is the workload of the left atrium to fill the left ventricle during diastole, causing an increase in volume in the left atrium and then inhibiting blood flow from the pulmonary veins. If this condition occurs for a very long time, it will cause congestion in the heart and lungs.

According to what happened to Mrs. P on the results of a chest X-ray, namely experiencing fluid accumulation in the right lung, caused by an increase in intra-vascular hydrostatic pressure (pressure that pushes blood to flow in the vessels by the pumping action of the heart). Thus causing a buildup of plasma fluid into the interstitial spaces such as in the lungs, stomach, and legs. This is what causes shortness of breath in the client.

The interventions that the authors provide are in accordance with the main complaints and signs and symptoms or problems experienced, including monitoring breathing patterns to find out the extent or ineffectiveness of the patient's breathing pattern, monitoring additional breath sounds to determine the level of shortness experienced by the patient, positioning the semi-fowler to provide comfort to the patient. patient, because usually someone who experiences shortness of breath will feel comfortable when given a semi-Fowler's position.

One of the interventions that the authors focus on to overcome the problem of ineffective breathing patterns is by providing non-pharmacological techniques in the semi-Fowler's position. This position can increase saturation and reduce respiratory rate, relax the patient and give oxygen if necessary to reduce the shortness of breath experienced by the patient (Ananta Tanujiarso et al., 2022).

In theory, the semi-Fowler's position is the client's lying position in a half-sitting position 30-45 degrees with the aim of helping breathing, so that oxygen will be absorbed to the maximum and remove carbon dioxide trapped in the lungs and the patient can breathe more easily and will reduce discomfort (Suhendar & Sahrudi, 2022).

After the first day of intervention, the patient seemed relaxed and said that the tightness had decreased, the respiration rate was from 28 to 26. Then the intervention was carried out again on the second day, the patient said that he had always gotten used to the advice given, always applied the semi-Fowler's position when tightness was felt. When evaluated the patient said that his tightness had been greatly reduced (respiration rate changed to 24), only felt occasionally but not all the time. On the third day, the researchers only conducted an evaluation and the patient said that the tightness was barely felt, only occurring occasionally with a respiratory pain rate scale of 22/minute.

Based on the results above, it is proven that intervention in the semi-Fowler's position has a positive effect on reducing respiratory frequency. According to research Muzaki & Yuli

(2021) The application of a semi-fowler's position (sitting position 45°) for 3x24 hours in accordance with the SOP helps reduce shortness of breath and helps optimize the patient's RR so that the problem of ineffective breathing patterns can be resolved. In line with research Hayati et al (2023) which was carried out in the CVCU Room at Grandmed Lubuk Pakam Hospital, obtained a p value = 0.001 which showed the result of combining the semi-Fowler's posture with the right lateral to aid in lowering oxygen consumption, raising maximum lung expansion, and reversing damage to gas exchange in order to lessen shortness and influence hemodynamic status. Strengthened by research Pritania (2022) which was carried out on 2 patients suggested that there was a change in ineffective breathing pattern after being given semi-Fowler which was characterized by an initial respiratory status of 28 x/minute and 30 x/minute decreased to 25 x/minute and 26 x/minute. The act of administering oxygen therapy and sitting position with an angle of 45o as one of the therapies that can help reduce dyspnea is reduced.

Based on research conducted using implementation with the selection of non-pharmacological therapy in the form of giving the semi-Fowler's position has a positive effect on increasing the effectiveness of breathing patterns and reducing shortness of breath. Giving a semi-fowler's position aims to reduce oxygen consumption and increase maximum lung expansion, as well as to overcome gas damage associated with changes in the alveolar membrane thereby reducing tightness. A stable breathing pattern can be characterized by a normal respiratory rate, no oxygen deficiency (hypoxia), changes in breathing pattern, and no airway obstruction (Dessy Arna & Ilma Amalia Putri, 2022). The results of this study can be used as a reference in treating clients with ineffective breathing pattern problems in the nursing process.

## **Conclusion**

The results of the implementation in the form of applying the semi-Fowler's position have a positive influence on increasing the effectiveness of breathing patterns and reducing shortness of breath in CHF patients. The implementation of the implementation of the semi-Fowler's position in CHF patients which was carried out for three days showed results that were in line with expectations.

## **Acknowledgement**

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