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# ALTERNATE NOSTRIL BREATHING EXERCISES IN MEETING THE ACTIVITY NEEDS OF PATIENTS WITH CONGESTIVE HEART FAILURE IN THE ICCU UNIT AT Dr. SOERADJI TIRTONEGORO HOSPITAL

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## ABSTRACT

### Introduction
Congestive heart failure (CHF) is a cardiovascular disease with high morbidity that causes a decrease in cardiac output, leading to exercise intolerance manifested as fatigue, weakness, and dyspnea during physical activity. Alternate Nostril Breathing Exercise (ANBE) is a nonpharmacological therapy aimed at improving ventilatory efficiency, balancing the autonomic nervous system, and supporting increased exercise tolerance in CHF patients.

### Method
A case study involving two CHF patients with activity intolerance. The intervention utilized the ANBE therapy standard operating procedure (SOP). The intervention was conducted for 15 minutes, once daily over three days. Measured parameters included respiratory rate, oxygen saturation ($SpO_2$), and subjective complaints of dyspnea.

### Result
Following 3×24 hours of ANBE therapy, improvements were observed in both patients. In Mr. B, respiratory rate decreased from 28 breaths/minute to 20 breaths/minute, and $SpO_2$ increased from 94% to 98%. In Mr. S, respiratory rate decreased from 27 breaths/minute to 22 breaths/minute, and $SpO_2$ increased from 93% to 97%. Both patients also reported reduced shortness of breath and fatigue, as well as improved ability to perform daily activities.

### Conclusion
ANBE therapy can be used as a complementary nursing intervention to improve activity tolerance in patients with CHF.

## INTRODUCTION

Congestive Heart Failure (CHF) is a major cardiovascular disorder characterized by the heart's inability to pump sufficient blood to meet the metabolic demands of the body. The condition remains one of the leading causes of hospitalization, morbidity, and mortality worldwide. According to the American Heart Association (2023), cardiovascular diseases caused approximately 22.1 million deaths globally in 2021, and the prevalence of heart failure continues to increase because of population aging and improved survival from acute cardiac diseases. In Indonesia, the 2023 National Health Survey reported 877,531 diagnosed cases of heart disease, indicating that CHF continues to be an important public health problem.

Patients with CHF commonly experience reduced cardiac output, resulting in inadequate tissue perfusion and oxygen delivery. Consequently, patients frequently develop dyspnea, fatigue, muscle weakness, and activity intolerance, all of which negatively affect their functional capacity and quality of life. Activity intolerance is one of the most common nursing diagnoses in patients with CHF because oxygen supply becomes insufficient to meet metabolic demands during physical activity (Heidenreich, et al., 2022).

Management of CHF consists of pharmacological and non-pharmacological therapies. While pharmacological treatment aims to improve cardiac function and reduce symptoms, complementary nursing interventions are also essential to improve patients' functional status. Breathing exercises are recommended because they improve ventilation efficiency, decrease the work of breathing, and promote relaxation through autonomic nervous system regulation. Alternate Nostril Breathing Exercise (ANBE), a pranayama breathing technique, alternates inspiration and expiration through opposite nostrils to enhance pulmonary ventilation and autonomic balance. Previous studies demonstrated that ANBE improves respiratory function, oxygen saturation, exercise tolerance, and quality of life among patients with cardiovascular (Hinkle & Cheever, 2022).

Although several studies have evaluated the physiological benefits of ANBE, evidence regarding its application as a complementary nursing intervention for activity intolerance in critically ill CHF patients remains limited. Therefore, this case study aimed to describe the implementation of Alternate Nostril Breathing Exercise in fulfilling activity needs among patients with Congestive Heart Failure admitted to the Intensive Cardiac Care Unit (ICCU) of Dr. Soeradji Tirtonegoro General Hospital.

## METHOD

This study employed a descriptive case study design involving two patients diagnosed with Congestive Heart Failure who experienced activity intolerance. The study was conducted in the Intensive Cardiac Care Unit (ICCU) of Dr. Soeradji Tirtonegoro General Hospital.

Patients were selected based on a medical diagnosis of CHF, complaints of dyspnea during activity, and nursing diagnosis of activity intolerance. Nursing assessment included respiratory status, oxygen saturation, respiratory rate, and subjective complaints of dyspnea and fatigue.

The intervention consisted of Alternate Nostril Breathing Exercise (ANBE) according to the established Standard Operating Procedure. Patients were placed in the semi-Fowler position and instructed to perform alternating nostril breathing for approximately 15 minutes once daily for three consecutive days. Respiratory rate, oxygen saturation ($SpO_2$), and patients' subjective responses were assessed before and after each intervention session. Data were analyzed descriptively by comparing clinical findings before and after implementation of ANBE, focusing on respiratory parameters and activity tolerance.

## RESULT

Two male patients diagnosed with Congestive Heart Failure completed the intervention. Following three consecutive

days of Alternate Nostril Breathing Exercise, improvements were observed in both patients. Patient 1 demonstrated a reduction in respiratory rate from 28 breaths/minute to 20 breaths/minute, while oxygen saturation increased from 94% to 98%. Patient 2 showed a decrease in respiratory rate from 27 breaths/minute to 22 breaths/minute, accompanied by an increase in oxygen saturation from 93% to 97%.

Both patients also reported reduced dyspnea during activity, decreased fatigue, improved breathing comfort, and better ability to perform daily activities. These findings indicate that ANBE contributed to improved respiratory efficiency and supported activity tolerance among patients with CHF.

## DISCUSSIONS

This case study demonstrated improvements in respiratory rate, oxygen saturation, and subjective activity tolerance following three days of Alternate Nostril Breathing Exercise. The findings suggest that ANBE may provide physiological benefits through improved breathing control and autonomic nervous system regulation.

Patients with CHF commonly experience reduced cardiac output, leading to impaired oxygen delivery during physical activity. This imbalance between oxygen supply and demand contributes to dyspnea, fatigue, and activity intolerance. Breathing exercises help optimize alveolar ventilation, reduce respiratory muscle workload, and improve oxygen exchange, thereby decreasing respiratory distress during activity (McDonagh, et al., 2023).

The reduction in respiratory rate observed in both patients is consistent with previous studies. Novitasari, et al., (2023) reported that ANBE significantly reduced respiratory rate and improved oxygen saturation in hospitalized CHF patients. Similarly, Jahan, et al., (2021) demonstrated improvements in cardiopulmonary function and exercise tolerance following ANBE. A systematic review by Sathyanath et al. (2023) further concluded that ANBE improves heart rate variability, pulmonary function, and autonomic balance, resulting in better cardiorespiratory performance.

The increase in oxygen saturation observed in this study may be explained by enhanced alveolar ventilation and more efficient gas exchange. ANBE encourages slow and controlled breathing, increasing diaphragmatic movement and improving ventilation-perfusion matching. Additionally, stimulation of parasympathetic activity reduces sympathetic overactivity, decreases myocardial oxygen demand, and promotes physiological relaxation, thereby reducing the sensation of dyspnea (Mahmoud, et al., 2024).

Subjectively, both patients reported reduced fatigue and improved ability to perform daily activities after the intervention. These findings support previous evidence indicating that breathing exercises improve functional capacity and quality of life among patients with CHF. Because ANBE is inexpensive, safe, easy to perform, and requires no specialized equipment, it may serve as an appropriate complementary nursing intervention for managing activity intolerance in clinical practice (Jang, et al., 2024).

However, this study was limited by its descriptive case study design involving only two patients without a comparison group. Therefore, causal conclusions cannot be established, and further randomized controlled studies involving larger samples are recommended to confirm the effectiveness of ANBE in improving activity tolerance among patients with CHF.

## CONCLUSION

Alternate Nostril Breathing Exercise may serve as a complementary nursing intervention to improve respiratory function and support activity tolerance among patients with Congestive Heart Failure. Following three days of intervention, both patients demonstrated decreased respiratory rate, increased oxygen saturation, reduced dyspnea, and improved ability to perform daily activities. ANBE is simple, safe, inexpensive, and may be incorporated into nursing care to assist in managing activity intolerance in patients with

CHF.

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