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The Effect Of Pursed Lips Breathing On Reducing The Frequency Of Shortness Of Breath In Pneumonia Patients At RSPAD Gatot Soebroto

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ABSTRACT

Introduction Pneumonia is an inflammation of the lung parenchyma that causes symptoms of coughing, fever, and shortness of breath. One of the non-pharmacological measures to reduce shortness of breath is Pursed Lips Breathing. One of the benefits of Pursed Lips Breathing is optimizing oxygen transport to the lungs, regulating the ventilation process, and strengthening the diaphragm muscles. The purpose of this study was to determine whether there is an effect of Pursed Lips Breathing on reducing the frequency of shortness of breath in pneumonia patients at Gatot Soebroto Army Hospital. The study design used a Quasi-experimental design with a pre-test and post-test one group design. Samples were taken by purposive sampling where researchers selected samples according to the inclusion and exclusion criteria of 52 patients. The results of the implementation of Pursed Lips Breathing for 3 consecutive days with a duration of 15 minutes showed that there were significant changes in the frequency of shortness of breath in 52 pneumonia patients. The research instrument used the 1998 M-Borg and Procedur operational. Data analysis using paired t-test with a result of 0.00 < 0.05, then the hypothesis H1 is accepted. The conclusion showed to 52 patients experienced an increase in oxygen saturation, a decrease in the frequency of shortness of breath, and a controlled respiratory rate.

Keywords: Pursed Lips Breathing, Frequecy of Shortness of breath, Pneumonia.

INTRODUCTION

Pneumonia is an infectious disease that invades the parenchyma of the lungs, infecting them. Alveoli. Alveoli are small sacs in the lungs.Normal alveoli are usually filled with air, but in people with pneumonia, the alveoli become filled with exudate in the form of pus and fluid. This makes it difficult to breathe and reduces the amount of oxygen available during inspiration. Pneumonia causes symptoms of shortness of breath, such as rapid breathing or labored breathing, which can be fatal if left untreated [1].

Research results from the Global Burden of Disease [2] (2021) show 2.18 million deaths due to pneumonia. Both adults and children can suffer from pneumonia, making it the leading cause of death internationally. Pneumonia typically involves pathogens such as bacteria, viruses, and mycoplasma, which disrupt the respiratory system and damage the lungs. The lungs contain small sacs known as alveoli. Healthy lungs contain a good supply of oxygen. Furthermore, individuals

infected with pneumonia have alveoli[3].

That are Contains exudates such as pus and fluid. This exudate can impede oxygen flow and make breathing difficult because the body's cells cannot function optimally. Pneumonia can occur anywhere, but high mortality rates occur in southern Asia and tropical Africa [4]. Due to its high mortality rate, pneumonia is an international health problem that can affect both developed and developing countries, including Europe with 4.2 million cases, the US with 41,000 cases in 2021, and Canada with around 5.62 million cases in 2021 [5].

According to Indonesian health data reports, the prevalence of pneumonia in Indonesia in 2019 was 468,172 cases[6]. In 2020, the prevalence of pneumonia in Indonesia was 309,838 cases[6]. In 2021, the prevalence of pneumonia in Indonesia was recorded at 278,261 cases [6] In Indonesia, there were 386,724 cases of pneumonia recorded [7]. The prevalence of pneumonia in Indonesia was recorded at 416,438 cases [7]. Pneumonia is included in the category of 10 diseases that commonly occur in healthcare facilities. In addition, the National Health Insurance (JKN) statistical survey from 2014-2018 showed that pneumonia was the most common inpatient case in hospitals[7].

According to the 2020 National Health Research [8], 309,838 cases of pneumonia were recorded in Indonesia, with the number of patients increasing with age. For the 55-64 age group, the rate was 2.5%, for the 65-74 age group, the rate was 3.0%, and for those aged 75 and over, the rate was 2.9%. Information from the DKI Jakarta Provincial Health Office in early 2023 showed that the number of pneumonia cases had increased compared to early 2022[7]. From 2019 to 2021, there were approximately 78,659 cases of pneumonia in DKI Jakarta[9]. In the last month of 2025, 82 cases of pneumonia were recorded at RSPAD Gatot Soebroto.

Inflammation of the lung parenchyma causes an infection reaction in the lower respiratory tract that will stimulate coughing and difficulty breathing caused by pathogenic microorganisms such as bacteria, germs, fungi, and mycoplasma are clinical symptoms of pneumonia[10]. This pneumonia infects through the air in airborne droplets when coughing or sneezing. Next, the pneumonia bacteria pass into the respiratory tract during breathing or through direct transmission. Direct transmission occurs when saliva droplets when someone coughs, sneezes, or talks can be directly inhaled by people around them, or when someone touches and uses equipment that has been contaminated with fluids from the patient's respiratory tract. Pneumonia is characterized by symptoms such as coughing, rapid breathing, the lower chest is drawn in when breathing, and shortness of breath [11]. Subjective symptoms of abnormal breathing, where the Cout a candle; 3) Exhale (expression) slowly with the same mouth position as when whistling and do it for four counts (longer than when inhaling)[12]. Pneumonia will cause dyspnea for patients and must be treated immediately, 82 cases of pneumonia were recorded at RSPAD Gatot Soebroto. Therefore researchers are interested in conducting research with the Title "The Effect Of Pursed Lips Breathing

On Reducing The Frequency Of Shortness Of Breath In Pneumonia Patients At RSPAD Gatot Soebroto".

METHOD

The method used by the researchers in this study was a quasi-experimental design with a one-group pre-test and post-test design. This study was conducted at RSPAD GATOT SOEBROTO from November 21st to 15th December 2025. The population In this study, 82 pneumonia patients undergoing treatment at the Gatot Soebroto Army Hospital were used. The sample size was 52 pneumonia patients. In this sampling, the researcher used a purposive sampling technique.

The study included conscious, consenting pneumonia patients aged 30–60 years with respiratory distress, defined by a respiratory rate >22 breaths/min or oxygen saturation of 90–95% with accessory muscle use. Patients with reduced consciousness, imminent discharge, or conditions affecting safety or outcomes—including bleeding, pneumothorax, cardiovascular disorders, pleural effusion, intracranial surgery history, or jaw abnormalities—were excluded[13].

The data used were primary and secondary data. The research instrument used the Pursed Lips Breathing Standard Operating Procedure (SOP), the (M-borg) [14] [12], and an observation sheet to record the results of breathing frequency measurements before and after the Pursed Lips Breathing procedure. Pursed lips breathing evaluation was conducted on the 3rd day after the interventiont. The study was conducted from November to December 2025. Circular number results of from the nursing ethics team of Gatot Soebroto Hospital B 4820/XI/2025. The data were obtained through editing, coding, entry, and tabulation. The research analysis was based on bivariate analysis using the paired t-test.

RESULTS

Table 1. Comparison of Paired T-test before and after Pursed Lips Breathing intervention Patients with a decrease in the frequency of shrotness breath in Gatot Soebroto Hospital

Variable	Mean	N	Standard Deviation	Std. Error Mean
Pre Respiratory rate	24.5%	52	0.9%	1.2%
Post Respiratory Rate	21%	52	0.7%	1%

Source: Primary Data, December 2025

Based on the analysis results of Table 1 above, it shows that the respiratory frequency before the pursed lips breathing procedure had the highest value of 24x/minute, with a standard deviation of 0.9% and an average of 24.5% and a mean error value of 1.2%. Then, after the Pursed Lips Breathing intervention was given, there was a significant change with a value of 21%, with a standard deviation of 0.7%, and an average of 21%, with a mean error of 1%. It can be seen that the respiratory frequency level which was previously 24x/minute and categorized as mild dyspnea, has now decreased to

21x/minute after the pursed lip breathing intervention was administered independently for 15 minutes in three sessions: at 8:00 AM, 1:00 PM, and 3:00 PM. Evaluation was conducted on the third day of the intervention, resulting in a return to normal respiratory rate.

Table 2. Paired t-test results on frequency of shortness of breath in pneumonia patients at Rspad Gatot Soebroto

Variables	Mean	Standard Deviation	Std. Error Mean	95% CI Lower	95%CI Upper	T	Df	Sig (2-Tailed)
Pre-Post Frequency Breath	3.42%	0.7%	1%	3.2%	3.6%	32.9%	51	0.000

Source: Primary Data, December 2025

Based on the analysis results of Table 2 above, it can be seen that, Based on the analysis conducted using a paired t-test to see changes in respiratory frequency before and after the intervention, an average difference of 3.42% and a standard deviation of 0.7% were found. The recorded standard error value was 1%, which indicates that the estimate of this average change has quite good accuracy. The 95% confidence interval ranged from 3.2% to 3.6%, indicating that the observed decrease in respiratory frequency was within that range with a 95% confidence level. The results of the statistical analysis showed a t-value of 32.9 with degrees of freedom (df = 51) and a significance value of p = 0.000.

DISCUSSION

The effect of Pursed Lips Breathing intervention on respiratory rate

Based on the findings of this study, there was a significant decrease in respiratory rate after the intervention, indicating that the implemented intervention had a significant effect on reducing respondents' respiratory rate. This decrease in respiratory rate indicates that patients successfully achieved a better and more regular breathing pattern after the intervention. Methods such as Pursed Lips Breathing are known to prolong the exhalation phase and reduce respiratory effort, there by helping stabilize the respiratory rhythm. By reducing respiratory rate, patients become calmer, alveolar ventilation increases, and the body can meet oxygen needs more efficiently. These results are in line with previous research in the journal [13], [15] [16] concluded that breathing exercises such as Pursed Lips Breathing can reduce tachypnea and improve hemodynamic stability in patients with respiratory problems.

According to researchers, Pursed Lips Breathing therapy is an alternative to slow down the respiratory rate, maximize oxygen transport and empty the CO2 trapped in the dead space of the lungs. Dyspnea in pneumonia patients can be managed

efficiently by identifying and treating it with a variety of medical therapies and non-drug strategies. The role of nurses is crucial in managing dyspnea, especially with non-medical methods. Pursed lip breathing, one of which has advantages over other methods, is that it is easy to perform, inexpensive, effective in reducing shortness of breath, and has no side effects[17].

CONCLUSION

Overall, this study demonstrates that pursed lips breathing is effective in helping to reduce the frequency of shortness of breath in pneumonia patients at RSPAD Gatot Soebroto. The findings of this study can serve as a valuable source of information for the public to enhance understanding of the benefits of pursed lips breathing in managing dyspnea among pneumonia patients. In addition, this study contributes to the development of science and technology by providing scientific data that support evidence-based practice, particularly regarding the effectiveness of non-pharmacological interventions such as pursed lips breathing in controlling shortness of breath. Furthermore, the results of this research may be used as a reference for the author and other researchers in developing future studies related to pursed lips breathing interventions aimed at reducing the frequency of shortness of breath in patients with pneumonia.

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