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# Application of Pursed Lips Breathing Exercise Technique in Patients with Ineffective Breathing Pattern Disorders



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**Abstract**

**Background:** Respiratory system disorders are conditions in which lung function is impaired, causing impaired ventilation, diffusion of oxygen and carbon dioxide, as well as tissue perfusion, which can lead to hypoxia or disorders. Based on Virginia Henderson's theory, the function of nurses helps individuals, both in sick and healthy conditions, by carrying out various activities that support health. This application aims to reduce shortness of breath with the Pursed lips breathing exercise technique which helps reduce shortness of breath, improve the oxygenation of patients.

**Methods:** The research method used was a descriptive case study with two patients. Data was collected through observation sheets, oxygen saturation, shortness of breath degree scale, notebooks, flylets to teach the pursed lips breathing exercise technique

**Results:** The study showed that after the implementation of pursed lips breathing exercise, there was an increase in oxygen saturation as evidenced on the 1-3rd day of Mrs. D 99% and Mrs. 99%, It can be done independently with 3 cycles

**Conclusions:** The results of the research on the *pursed lips breathing exercise technique* have been proven to be effective in reducing oxygen saturation and the function of nurses in Virginia Henderson's concept is independence, patients will slowly begin to regain their independence, although this independence is relative because humans are social creatures who cannot live alone. Everyone has different needs. This is where the role of nurses as helpers helps achieve the patient's health and facilitates the recovery of their independence.

**Keywords:** Ineffective breathing, Pursed lips breathing, oxygen saturation, Virginia Henderson's Theory

## Introduction

The human respiratory system works to absorb oxygen from the surrounding air and produce carbon dioxide through the lungs. The breathing process is regulated and controlled to suit the body's changing oxygen needs. If the body does not get enough oxygen, there will be a decrease in energy that can be seen from symptoms such as feeling sleepy, tired, weak,

dizzy, muscle cramps, feelings of sadness, and difficulty breathing. If not corrected immediately, this condition can cause very dangerous consequences (Muttaqin *et al*; 2018). The respiratory system is a group of organs that function to absorb oxygen through the lungs (Pratiwi & Chanif; 2021).

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As for the theory of the nursing model that the researcher takes, according to Virginia Henderson's Nursing Theory based on 14 basic components of human needs from breathing in a normal way, eating and drinking enough, elimination (bowel movements and bowel movements), moving and maintaining posture, sleeping and resting, choosing the right clothes, maintaining body temperature within the normal range by adjusting clothes used and changed environment, keep clean and handsome, avoid danger and harm to others, relate to others, communicate with others to convey emotions, needs, concerns, and opinions, worship in accordance with their religion and beliefs, work as a source of wealth to meet the needs of life, which are used and changed by the environment, maintain personal hygiene and appearance, avoid environmental hazards and avoid harming others, communicate with others to convey emotions, needs, concerns, and opinions, worship in accordance with their religion and beliefs, work as a source of wealth to meet the needs of life, play or participate in various forms of recreation, study, discover, or satisfy curiosity that leads to normal development, health and use of health facilities that lead to normal development. available (Susanto, et al., 2015).

As a reference from the World Health Organization (WHO, 2018), it is estimated that 65 million people worldwide experience mild to severe COPD. More than 3 million people have died from chronic obstructive pulmonary disease since 2015, which is 5.5% of all deaths worldwide. Unless there is rapid action to reduce the risk factors that affect COPD, deaths will continue to increase over the next 30 years. Chronic obstructive pulmonary disease is expected to be the third highest trigger of death in the world by 2020. COPD sufferers in Asia reached 56.6 million, with a prevalence of 6.3%. These figures are equivalent to 3.5 to 6.7 percent in China, 38.160 million, Japan, 5.140 million, and Vietnam, 2.068 million. (WHO, 2018). Prevalence Results of COPD in West Java, especially the Bogor area, obtained a prevalence rate of COPD of 5.5%, research by Biomax Indonesia in 2013 on population bukan perokok, usia 40 tahun yang Spirometry and questionnaires carried out in the provinces of DKI Jakarta, Banten and West Java obtained a prevalence of 6.3%, namely 5.4% in urban areas and 7.2% in rural areas (Ministry of Health, 2019) And at the time of an interview with the nurse in the Mawar room, the information obtained that currently there has never been an action of pursed lips breathing exercise as an independent nursing action.,

from the results of data obtained by researchers in the Rose Room, data on the frequency of cases of respiratory system disorders over the last three months, namely from February 2025 to April 2025, was successfully collected. In this period, there were 4 cases (1.7%) recorded out of a total of 117 patients. Researchers took data from the last 3 months.

Based on this background, the author is interested in raising a title "The application of pursed lips breathing exercise, researchers are interested in taking this case study because that healing in patients with respiratory system disorders so that the next complication is the duty of the nurse as a nursing caregiver by paying attention to basic human needs. Nurses can help patients in carrying out daily activities and also provide health education as an educator to patients or family members. This approach aims to increase patient knowledge about their health conditions, disease symptoms, and actions that must be taken. With health education and pursed lips breathing exercises, it is hoped that there will be changes in the patient so that the disruption of the breathing pattern is not effective.

Methods

This research method is descriptive in the form of a case study on the Application of Pursed Lips Breathing Exercise. Case study according to Nursapia Harahap, 2020 case study is the study of an event, situation, event or so-called social phenomenon which aims to reveal the peculiarities or uniqueness of the characteristics contained in The case being researched is research that includes an assessment carried out with the aim of providing a detailed picture of the background, nature and character of a case, in other words that the case study focuses on a case intensively and in detail. Research in methods is carried out in depth on a condition or conditions in a systematic way starting from observation, data collection, information analysis and reporting of results

Results

Table 1. Oxygen Saturation

Table with 4 columns: Initial, Day, Pre, Post. It shows oxygen saturation (SpO2) for Mrs. D and Mr. S over three days, with Pre and Post measurements.

application of pursed lips breathing exercise, Mrs. D obtained 97% oxygen saturation on the





first day after being given the application of the pursed lips breathing exercise technique, for 3 days the application of oxygen saturation was increased to 99%. Meanwhile, in Mr. S, the oxygen saturation results on the first day were 98% after being given the pursed lips breathing technique, for 3 days the application of oxygen saturation obtained increased to 99% and both respondents said that shortness of breath improved.

### Discussion

Mrs. D obtained 97% oxygen saturation on the first day after being given the application of the pursed lips breathing exercise technique, for 3 days the application of oxygen saturation was increased to 99%. Meanwhile, in Mr. S, the oxygen saturation results on the first day were 98% after being given the pursed lips breathing technique, for 3 days the application of oxygen saturation obtained increased to 99% and both respondents said that shortness of breath improved. It can be concluded that the results of the implementation of Pursed lips breathing exercise given to both respondents showed an increase in oxygen saturation. This research is in line with that contained in the journal (Gelok, M.H.D 2024), entitled The application of pursed lips breathing exercise to overcome ineffective breathing patterns in patients with pneumonia in the rose room of dr. T.C Hillers Maumere was carried out on 2 respondents for 3 days by performing the pursed lips breathing exercise technique. In this implementation, the author used a study (Devia et al., 2023) which said that the pursed lips breathing exercise is a breathing exercise in the form of breathing or inspiration through the nose for 2-3 seconds followed by slowly expiration through the mouth for a minimum of 2 times (4-6 seconds) carried out for 30 minutes with a 5-minute rest tolerance for 3 times (5 interventions, 5 minutes of rest, 5 minutes of rest time, 5 minutes of rest and 5 minutes of rest time, then 5 minutes of 3 minutes and 5 minutes of rest/completion time) then SpO<sub>2</sub> measurement was carried out using a pulse oximeter. There can be a decrease in oxygen saturation so that this technique can be associated with the nursing theory about the decrease in oxygen saturation put forward by Gelok M.H.D. As for another study in line with the journal (Neneng Ayu Pudi, 2023) entitled The Application of Pursed Lips Breathing Regarding Respiration Rate in Pneumonia Patients, a Case Study found that there were 15

initial respondents and dropped to 10 by performing the pursed lips breathing exercise technique, there can be a decrease in respiration rate so that this technique can be associated with the nursing theory of decreasing respiration rate put forward by "Very well, Princess. And as for other supporters in the study contained in the journal (Wangsit Ridho Ramadhan 2024), entitled The Application of Pursed Lips Breathing to Changes in Oxygen Saturation in Patients with Chronic Obstructive Pulmonary Disease, results were obtained in 1 respondent as evidenced by 1x8 hours of application with the results of patients saying that shortness of breath decreased that there was a decrease in respiration rate due to the application of pursed lips breathing in patients. Disruption of breathing patterns is not effective so this technique can be associated with the nursing theory of decreasing respiration rate put forward by Wangsit Ridho. To get maximum results, respondents must be willing and able to do Pursed lips breathing exercises independently to be able to reduce oxygen saturation in the normal range of 95%-100%. This research is also in line with Virginia Henderson's theoretical concept model known as the 14 model of meeting basic needs. Patients with respiratory system disorders. Physiological needs are important things that must be met, but psychological and spiritual needs should not be ignored. Virginia Henderson through the concept model that she proposed has explained the needs of the patient in detail, where the components of basic needs such as physiological, psychological, spiritual, and social are included in the model. The researcher chose the application of pursed lips breathing exercise with patients with ineffective breathing pattern disorders as the main management case to reduce oxygen saturation in patients.

### Limitations

The limitations of this case study discuss related to the application of pursed lips breathing exercise in patients with ineffective breathing pattern disorders, the limitations are found in patients because the application was carried out only 3 times at PMI Bogor Hospital. When applying it to Mrs. D, the results of oxygen saturation on the 3rd day were 99% and Mrs. S the results of oxygen saturation on the 3rd day, which was 99%, were carried out in 3 cycles. In Mrs. D, she can do the pursed





lips breathing exercise technique, there are difficulties in applying it assisted by nurses with 3 cycles in a span of 5 minutes, which should be done in theory as many as 5 cycles. When implementing the pursed lips breathing exercise technique to the 2 respondents independently, there were no difficulties in implementing the pursed lips breathing exercise with 3 cycles in a span of 5 minutes.

### Conclusion

The conclusions that can be drawn from the application of Pursed lips breathing exercise at PMI Bogor Hospital are as follows: The application of non-pharmacological nursing measures of the Pursedlips breathing exercise technique in patients with ineffective breathing pattern disorders is applied for 3 consecutive days, The results of the application of non-pharmacological nursing measures of the pursed lips breathing exercise technique in patients with ineffective breathing pattern disorders. In the rose room for 3 days, Mrs. D was found with oxygen saturation before 96% application and after 99% was applied, Mr. S was obtained with oxygen saturation before 96% application and after 99% was done. There was a decrease in oxygen saturation due to the application of the pursed lips breathing exercise technique as evidenced by a decrease in oxygen saturation in 2 respondents from 96% to 99%.

### Reference

- Anjani, N. (2023). Nursing Care with Respiratory Disorders: Pneumonia by Providing Pursed Lips Breathing Therapy to Reduce Shortness of Breath at Padangsidempuan City Hospital. Aufa Royhan University in the city of Padangsidempuan.
- Ayu, N. P. (2023). The application of pursed lip breathing to respiration rate in pneumonia patients in the ICU room of Indriati Solo Baru Hospital. (Doctoral dissertation, Kusuma Husada University Surakarta).
- Azizah, R. A. U., Nataliswati, T., and Anantasari, R. (2018). The effect of pursed lips breathing exercise on changes in RR of pneumonia patients at Lawang Hospital. *Journal of Ners and Midwifery*, 5(3), 188–194.
- Devia, R., Inayati, A., and Ayubbana, S. (2023). Application of Tripod Position and Pursed Lips Breathing Exercise on Respiratory Frequency and Oxygen Saturation of COPD Patients in the Pulmonary Room of General Ahmad Yani Hospital, Metro City in 2022. *Journal of Young Scholars*, 3(4), 535–544.
- Fikriya, A., and Fajar, D. M. (2020). Development of Cigarette Hazard Props and Respiratory Mechanisms.
- Fitriani, Y. (2023). Nursing Care Ineffectiveness of Breathing Patterns with Bronchial Asthma in the Emergency Room of the West Lombok Nursing Hospital. *Journal of Health Sciences*, 3(3), 186–190.
- Harahap, N. (2020). *Qualitative Research*. Medan: Wal Ashri Publishing.
- Indriono, W. (2022). *The Application of Anger Energy Distribution in Fulfilling Psychosocial Needs in Patients with Violent Behavior at Wisma Bima RSJ Grhasia Yogyakarta*. (Doctoral dissertation, Polytechnic of the Ministry of Health of Yogyakarta).
- Ministry of Health of the Republic of Indonesia. (2019). *Indonesia's Health Profile in 2019*. Jakarta: Ministry of Health of the Republic of Indonesia.
- Ministry of Health of the Republic of Indonesia. (2022). *Health Profile of Indonesia*. Jakarta: Ministry of Health of the Republic of Indonesia.
- Kurniasih, E., and Daris, H. (2017). *Textbook of Respiratory System Disorders*. Blue Ocean.
- Mutaqqin, A. (2019). *Nursing Care of Clients with Respiratory System Disorders*. Jakarta: Salemba Medika.
- Muttaqqin, A. (2018). *Nursing Care Textbook for Clients with Respiratory System Disorders*. Jakarta: Salemba Medika.
- Notoatmodjo, S. (2018). *Health Research Methodology*. Jakarta: Mitra Cendikia Press.
- Rachmawati, A., Winarno, M. E., and Katmawanti, S. (2018). The Relationship Between Smoking Behavior in Parents and the Incidence of Upper Respiratory Tract Infection (Ispa) in Elementary School Children Aged 7-12 Years at the Porong Health Center. *Preventia: The Indonesian Journal Of Public Health*, 3(1).
- Ragil, S. P., and Cahyaningrum, E. D. (2023). Inhalation of eucalyptus oil to improve breathing patterns is not effective in children with bronchitis. *Pen Nursing*, 2(01), 42–50.





- Ramadhan, W. R., and Rahmad, M. N. (2024). Application of Pursed Lip Breathing to Changes in Oxygen Saturation in Patients with Chronic Obstructive Pulmonary Disease (COPD). Doctoral Dissertation, Kusuma Husada University Surakarta. Retrieved from <https://jurnal.akperdharmawacana.ac.id/index.php/JWC/article/view/626>
- Sari, A. A. P., and Handayani, T. S. (2021). Application of Virginia Henderson's Theory in Nursing Care in Post-Sectio Caesaria Cases at Argamakmur Bengkulu Hospital. *Nursing Inside Community*, 4(1), 18–24.
- Smeltzer, S. C., and Bare, B. G. (2017). *Medical Surgical Nursing Textbook 9th Edition*. Volume 2. Jakarta: EGC. Team Plus. (n.d.). Medical Research Council (MRC) Dyspnea Scale.
- SDKI DPP PPNI Working Group Team. (2018). *Indonesian Nursing Diagnosis Standards: Diagnostic Definitions and Indicators*. Jakarta: PPNI Central Management Board.
- Siki DPP PPNI Working Group Team. (2018). *Indonesian Nursing Intervention Standards: Nursing Definitions and Actions*. Jakarta: DPP PPNI.
- SLKI DPP PPNI Working Group Team. (2018). *Indonesian Nursing Output Standards: Nursing Definitions and Actions*. Jakarta: PPNI Central Management Board.
- Utami, R. T., Ismail, I. U., Dinata, A. S., Delfira, A., Rinarto, N. D., Safitri, M., and Efitra, E. (2023). *ANFISMAN: Human Anatomy & Physiology*. PT. Sonpedia Publishing Indonesia.
- WHO. (2017). Prevention and control of acute respiratory tract infections (ARI) which tend to become epidemics and pandemics in health care facilities.
- Yunita, S. (2021). Application of Balloon Blowing Therapy in Asthma Patients with Ineffective Breathing Patterns in Selokerto Village. (Doctoral dissertation, University of Muhammadiyah Gombong).

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