

DOES THE COMBINATION OF NEBULIZER AND GUIDED IMAGERY THERAPY AFFECT THE FREQUENCY OF BREATHING IN PATIENTS WITH ASMATIC STATUS?

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ABSTRACT

The aim of this research is whether the combination of nebulizer therapy and guided imagery has an effect on respiratory frequency in patients with asthmatic status. The research design used in this study was Quasy Experimental in one intervention group. The study population was patients with status asthmatics who were experiencing attacks of status asthmatics. The population size in this study was 40 respondents. The research sample of 40 people was selected using total sampling. The independent variable in this study was a combination of nebulizer therapy and Guided Imagery, while the dependent variable was a decrease in respiratory frequency in patients with asthmatic status. The results of the study showed that p value = 0.02, with $0.02 < 0.05$ meaning that there was an effect of the combination of nebulizer therapy and guided imagery on reducing respiratory frequency in patients with asthmatic status in the emergency room at M. Yunus Hospital, Bengkulu City. In conclusion, there is an effect of a combination of nebulizer therapy and guided imagery on reducing respiratory frequency in patients with asthmatic status in the emergency room at M. Yunus Hospital, Bengkulu City.

Keywords: Guided Imagery, Nebulizer, Respiratory Frequency, Asthmatic Status

INTRODUCTION

Asthma is a disease that affects the respiratory system and can cause wheezing, shortness of breath, coughing and chest pain. This condition is often caused by inflammation of the airways leading to the lungs. The cause of asthma is not known for certain, but asthma can occur due to several factors, namely exposure to allergens such as pollen, dust and animal dander, viral infections, cold air or stress (Padila et al., 2024; Herawati et al., 2023).

The main complaint that often occurs in asthma sufferers is shortness of breath, shortness of breath occurs due to narrowing of the airways due to hyperactivity of the airways. This causes a decrease in vital lung capacity followed by an increase in functional residual and residual lung volume which causes the oxygen concentration in the blood to decrease and in clinical conditions will cause a decrease in oxygen saturation (Octaviani et al., 2023).

Oxygen saturation is the ratio of hemoglobin that binds oxygen to hemoglobin that does not bind oxygen. When oxygen saturation is low, the oxygen supply to the tissues is reduced, causing hypoxia and resulting in decreased respiratory frequency. The accumulation of large and thick secretions makes it difficult to remove the secretions. This results in changes in the patient's respiratory frequency (Prasetyo et

al., 2022).

Therefore, it is necessary to prevent these further complications, by reducing the respiratory frequency of asthma sufferers. Respiratory frequency in asthma can be influenced by several factors, including the severity of the asthma, the treatment or drugs consumed by the sufferer, as well as things that can trigger asthma. Therefore, one effort that can be made to reduce respiratory frequency is a combination of nebulizer therapy and guided imagery (Namirah et al., 2022).

A nebulizer is the best choice for inflammation, with a device in the form of a ventilator which is used to place bronchodilator fluid in the form of a very fine aerosol or vapor which is very useful for inhalation or accumulation in the lung organs, the effect of nebulizer therapy is to restore bronchospasm. Treatment with a nebulizer is more effective than oral or intravenous medication because it is inhaled directly into the lungs. The indication for nebulizer therapy aims to reduce shortness of breath (Pagesti & Kurniawan, 2022).

Based on research results Saini & Dalle (2023) which has been carried out regarding the effectiveness of using a nebulizer to reduce shortness of breath in bronchial asthma patients at RS. Dr. Tadjuddin Chalid Makassar, From 30 samples, it was found that 22 (73.3%) respondents were effective in using nebulizers, so it can be concluded that the use of nebulizers in patients with bronchial asthma is more effective.

Guided imagery therapy is one of the nurses' independent interventions that can be applied to asthma patients. Guided imagery aims to evoke a state of psychological and physiological relaxation to increase healing changes throughout the body, so it is hoped that by providing guided imagery therapy it can reduce the level of stress experienced and this will have the effect of reducing respiratory frequency in asthma patients (Abidin & Mashuri, 2023).

Results of interviews with nurses conducted by Rahmawati et al., (2023) It was found that nurses in the ER only carried out therapy programs as a result of collaborating with doctors to relieve shortness of breath, such as administering nebulizer drugs. In simple terms, it has a positive impact, namely reducing respiratory frequency after guided imagery therapy.

The large number of asthma sufferers in Indonesia, of course, requires a solution so that asthma can be reduced, apart from medical treatment, there must be treatment outside of that which functions as therapy to help reduce asthma symptoms. Based on this background, researchers are interested in conducting research with the aim of whether the combination of nebulizer therapy and guided imagery has an effect on respiratory frequency in patients with status asthmatics? The benefit of this research is that it can help and reduce asthma sufferers in Indonesia, namely by implementing complementary or non-pharmacological therapy.

RESEARCH METHOD

This research design is a quantitative design with a quasi-experimental design method. The population of this study were patients with status asthmatics who were experiencing attacks of status asthmatics. The population size was 40 respondents. The sample in this study was 40 patients selected by total sampling. The independent variable in this study was a combination of nebulizer therapy and guided imagery, while the dependent variable in this study was a decrease in respiratory frequency in status asthmatics patients. The research location is the emergency room at M. Yunus

Hospital, Bengkulu City. The research time is July-September 2023. Data analysis uses the Spearman Rho Test.

RESULT

General Research Data Characteristics

Table. 1
Frequency Distribution of Status Asthmatics Patients

No	Characteristics	Frequency (N)	Percentage (%)
1	Age (years)		
	10-20	10	25
	21-40	10	25
	41-60	14	35
	>60	6	15
	Amount	40	100
2	Education		
	elementary school	20	50
	JUNIOR HIGH SCHOOL	14	35
	SENIOR HIGH SCHOOL	6	15
	College	0	0
	Amount	40	100

Based on Table 1 shows that the majority of patients with status asthmaticus in the emergency room at Dr. M. Yunus Bengkulu has 14 people aged 41 - 60 years (35%) and the most have elementary school education, 20 people (50%).

Research Specific Data

Table. 2
Distribution of Respiratory Frequency of Patients with Status Asthmatics
Before and After Giving a Combination
of Nebulizer Therapy and Guided Imagery

No	Characteristics	Frequency (N)	Percentage (%)
1	Before		
	Bradypnea	0	0
	Normal	0	0
	Tachypnea	40	100
	Amount	40	100
2	After		
	Bradypnea	0	0
	Normal	35	87.5
	Tachypnea	5	12.5
	Amount	40	100

Based on Table 2, it explains that the majority of respiratory frequencies of status asthmatics patients in the emergency room at Dr. Hospital. M. Yunus Bengkulu before the combination of nebulizer therapy and guided imagery therapy was tachypnea in 40 people (100%) and after the combination of nebulizer therapy and guided imagery was normal in 35 people (87.5%).

Statistical Test Results

Table. 3
Results of Correlation Test Analysis of the Effect of a Combination of Nebulizer Therapy and Guided Imagery on Reducing Respiratory Frequency in Status Asthmatics Patients

Variable	Spearman's Rho correlation coefficient	Amount	p-value
Independent : Combination of nebulizer therapy and guided imagery	1,000	40	-0.02
Dependents: Decreased respiratory frequency in patients with status asthmatics	-0.325	40	0.02

Based on Table 3, it explains that the results of the non-parametric Spearman rho correlation analysis are $p\text{-value} = -0.02$, and $-0.02 < 0.05$, meaning that there is an effect of the combination of nebulizer therapy and guided imagery on reducing respiratory frequency in patients with status asthmaticus in emergency room at M. Yunus Regional Hospital, Bengkulu City.

DISCUSSION

General Research Data Characteristics

Based on general data characteristics, research shows that the majority of status asthmatics patients in the emergency room at Dr. RSUD. M. Yunus Bengkulu has 14 people aged 41 - 60 years (35%) and the most have elementary school education, 20 people (50%). The 41-60 year age group is the adult age category. Adulthood is a period of adjustment to new life patterns and new social expectations. A mature range of emotions can be categorized as having reached a level of maturity so as to provide appropriate responses according to the situation they face, in this case as an asthma patient (Saputra et al., 2022). Dewi et al., (2022) also explains that adulthood can be said to be emotionally mature and able to control it, making it easier to receive new knowledge and information from the surrounding environment.

The elementary school education group is a low education category. Someone who has a low educational background has more difficulty in the process of accepting new things so that in the end it will be more difficult to resolve problems related to these new things. The education a person attains is a determining factor in productivity, including adequate knowledge, skills, abilities, attitude and behavior in carrying out their activities (Nurhalisa et al., 2022).

The results of this research are in line with the researcher's assumption that the productivity of an asthma patient can be supported by formal education. Education provides knowledge not only directly related to carrying out tasks, but also the basis for developing oneself and the ability to utilize all means, one of which is understanding treatment during the period of treatment in hospital.

Research Specific Data

Based on special research data, it is clear that most of the respiratory frequency of status asthmatics patients in the emergency room at Dr. Hospital. M. Yunus Bengkulu before the combination of nebulizer therapy and guided imagery therapy was tachypnea in 40 people (100%), but after the combination of nebulizer therapy and guided imagery it was normal in

35 people (87.5%). The clinical manifestation of an asthma attack is a faster respiratory rate. Likewise with the research results Rahmawati et al., (2023) that asthma patients at Panti Nirmala Malang Hospital have the same symptoms as the criteria for other asthma patients, namely tachypnea, after being given a combination of nebulizer therapy and guided imagery in the emergency room at Panti Nirmala Hospital Malang, most of them are normal.

According to Aslinda et al., (2022) Giving medication via a nebulizer can be inhaled by the patient directly into the lungs to achieve the highest drug levels in the lungs and can reduce the systemic effects of drugs by minimizing drug levels in the blood. The aim of guided imagery therapy is to accelerate effective healing and help the body reduce various diseases such as depression, allergies and asthma. It is known that every patient who has been given a combination of nebulizer therapy and guided imagery has a normal respiratory frequency. Under normal circumstances, the diffusion process occurs due to the difference in partial pressure of O₂ gas between the atmosphere (159 mmHg), alveoli (103 mmHg) and pulmonary capillaries (40 mmHg). In asthma sufferers, suboptimal lung expansion results in a decrease in vital lung capacity and an increase in functional residual and residual lung volume (Fasola et al., 2022).

A decrease in vital lung capacity accompanied by an increase in functional residual and residual lung volume causes a difference in the partial pressure of gas between the partial pressure of oxygen gas in the alveoli and the partial pressure of oxygen gas in pulmonary capillary blood. A decrease in the partial pressure of oxygen gas in the alveoli due to Broncho spasm causes a small difference in the pressure gradient of oxygen gas in the alveoli and the capillaries. A decrease in alveolar oxygen pressure which is smaller than the pressure of oxygen gas in the lungs causes a decrease in oxygen diffusion (Hammad et al., 2022).

Statistical Test Results

Based on the results of non-parametric correlation analysis, Spearman's rho is p-value = -0.02, and $-0.02 < 0.05$, meaning that there is an effect of a combination of nebulizer therapy and guided imagery on reducing respiratory frequency in patients with asthmatic status in the emergency room at RSUD M. Yunus, Bengkulu City. This is in line with research Rahmawati et al., (2023) which stated that there was an effect of a combination of nebulizer therapy and guided imagery on reducing respiratory frequency in asthma patients in the emergency room at Panti Nirmala Hospital, Malang.

An increase in respiratory frequency caused by failure to handle increased secretions can cause respiratory failure. According to Firmansyah et al., (2023) Asthma attacks first attack the bronchial muscles, causing the airways to narrow. Inflammation of the airways and bronchospasm, especially narrowing of the smooth muscles of the bronchi and bronchioles, causing narrowing of the airways and shortness of breath or difficulty breathing accompanied by secondary breathing sounds, namely wheezing. The production of thick and sticky mucus increases which causes bronchial obstruction thereby reducing alveolar ventilation.

Asthma recurrence can occur because sufferers experience anxiety. This can happen because anxiety can trigger the release of a substance called histamine which can cause smooth muscle contractions and increased mucus formation. This condition causes the diameter of the airways to narrow (bronchoconstriction). When bronchoconstriction occurs, it will be very difficult for the sufferer to breathe, triggering a recurrence (Rosyida & Yolanda, 2024).

The guided imagery technique begins by asking the patient to slowly close his eyes and asking the patient to take a deep breath and then exhale slowly. Then the patient is advised to empty his mind and is asked to think about interesting and beautiful things, thereby causing

the secretion of endorphins throughout the body. The effect of releasing endorphins is to increase feelings of peace, reduce stress, and ultimately make you feel happy, thereby reducing anxiety (Ajuan, 2022).

Research results Talukdar & Shaw (2022) guided Imagery as a tool to deal with thought patterns among teenagers and young adults and help them to stay oriented towards their life goals and targets. The GI sessions have helped them become wise in their thinking and decision making.

Regarding nebulizer therapy, research results Arnott et al., (2023) states that ultimately, efficient modern nebulizers and novel therapeutic discoveries have the potential to fully exploit the physiological advantages of pulmonary drug delivery, potentially revolutionizing the noninvasive treatment of respiratory and systemic disease in critical care.

The results of this study are also supported by research Van Den Bosch, et al., (2022) that in this study we observed that small airways targeted treatment with smart nebulizer technology decreased the number of asthma-exacerbations and hospital admissions after one year of treatment, compared to the year before.

CONCLUSION

There is an effect of a combination of nebulizer therapy and guided imagery on reducing respiratory frequency in asthma sufferers in the emergency room at M. Yunus Hospital, Bengkulu City.

SUGGESTION

Further research could be useful in increasing knowledge about the role of risk factors and independent self-care when facing asthma recurrence in childhood, so that it can help reduce asthma symptoms from an early age.

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