



Effectiveness of guided imagery lowers stress levels in Chronic Obstructive Pulmonary Disease patients at Universitas Sebelas Maret Hospital

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ABSTRACT

Introduction: Patients with Chronic Obstructive Pulmonary Disease (COPD) in Central Java rank seventh with 31,817 cases, or 2.1%. Nearly half of COPD patients experience stressful events that have a serious impact on their lives. Guided imagery therapy is a mind-body intervention that relieves stress and promotes a sense of peace and calm by activating the parasympathetic system. The provision of guided imagery therapy is thought to reduce stress levels in COPD patients.

Objectives: Determine whether guided imagery therapy can reduce stress levels in COPD patients at the Pulmonary Outpatient Poly of Universitas Sebelas Maret (UNS) Hospital in Surakarta.

Methods & Materials: This study is experimental analytical research conducted at the Pulmonary Outpatient Poly of UNS Hospital. It utilizes a randomized controlled trial with a pre- and post-test design. Stress levels were assessed using the Perceived Stress Scale (PSS) questionnaire. Guided imagery is given in the form of audio recordings, listened to at least once a week for one month. The study included 38 outpatients at the study site who met the inclusion and exclusion criteria in February 2023, divided into 2 groups: intervention (19) and control (19).

Results: Subjects given guided imagery intervention experienced a decrease in PSS scores more than the control group, statistically significant with PSS scores (Δ) ($p = <0.001$), $p < 0.05$.

Conclusion: Guided imagery therapy can reduce stress levels in COPD patients at the Pulmonary Outpatient Poly of UNS Hospital.

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INTRODUCTION

Chronic Obstructive Pulmonary Disease (COPD) is a disease that causes morbidity and mortality around the world. According to the *Global Burden of Disease* study, COPD was the fifth disease in the world as a global disease burden from 1990 to 2013. COPD is currently the 4th leading cause of death in the world and is estimated to be third in 2020 (Varmaghani et al., 2019). The results of Riskesdas in 2018 found that the prevalence of COPD in Indonesia was 4.5%, with the highest prevalence in Central Sulawesi Province at 5.5%, NTT at 5.4%, and Lampung at 1.3%. These figures show the increasing mortality due to COPD (Kemenkes R1, 2019). COPD in Central Java ranks seventh with 31,817 cases, or 2.1%. The impact of COPD on health continues to increase, including as many as 2.6% of people with disabilities globally in their daily lives and 3.2 million deaths per year in the world. The increase in the proportion of COPD occurred mainly in low- and

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middle-income countries, along with progress in disease control and due to the expansion of the tobacco industry (Allinson et al., 2017).

An increase in COPD patients with three or more comorbidities makes them more likely to be hospitalized frequently, and the mortality rate is quite high. Systemic somatic changes affect changes in the patient's psyche, and vice versa. COPD patients are prone to feeling symptoms of stress, depression, and anxiety. In a cohort study by Yu et al., nearly half of the COPD patients in the study reported having experienced a stressful event that seriously impacted their lives (Wrzeciono et al., 2021; Yu et al., 2018).

According to Tusek and Cwynar (2000), guided imagery therapy is a mind-body intervention intended to relieve stress and increase a sense of peace and calm. It is the process of combining the power of the mind to relax and the body to heal through inner communication involving all the senses (example sight, touch, smell, sight, and sound). The goal of guided imagery relaxation is to intentionally shift mental focus from a painful stimulus or anxiety-causing stimulus to a more pleasurable mind and relaxation (Pauwels, 2021). During relaxation training, people are guided to a state of relaxation in which the mind is calm and silent (Tusek, 2000).

At the beginning of the guided imagination relaxation, the patient is first asked to slowly close his eyes and focus on breathing. Then I was asked to focus on all the obvious details of the serene and peaceful scene, including sights, sounds, and smells. Furthermore, it is invited to face fears, uncertainties, or challenges that the patient may feel. The response is to activate the parasympathetic nervous system, which in turn lowers blood pressure and heart rate, results in deeper, slower breathing, and helps relax skeletal muscles. So that it can provide a therapeutic effect to reduce fear, uncertainty, and challenge (Tusek, 2000). From this explanation, researchers are interested in knowing the effectiveness of guided imagery therapy, which is thought to reduce stress levels in COPD patients.

METHODS & MATERIALS

This is experimental analytical research with a randomized controlled trial pre- and post-test design. The study population was all patients with COPD. The affordable population is COPD patients at the Pulmonary Outpatient Poly of UNS Hospital for the February 2022 period. The inclusion criteria are patients at the Pulmonary Outpatient Poly of UNS Hospital who are diagnosed with COPD by a lung specialist, agree to informed consent either orally or in writing at the beginning of the study, are able to understand and be able to speak Indonesian, and meet the stress level criteria based on the Perceived Stress Scale (PSS) instrument with a score of 12–20. While the exclusion criteria are patients experiencing severe mental disorders assessed through interviews, suffering from dementia, cognitive impairment assessed through interviews, experiencing sensory impairments that interfere with the use of guided imagery in the application of relaxation, in conditions of exacerbation or endangering the patient's life, are using mental drugs, and cannot operate WhatsApp via mobile phone.

The independent variable of this study is guided imagery, which is defined as an audio recording or sound in the form of therapist instructions to be heard by the patient. In this study, guided imagery was carried out at least once a week for one month, and each session was 60 minutes long. The first and fourth sessions were conducted at UNS Hospital, while the second and third sessions were carried out independently at each patient's home and evaluated with guided imagery evaluation sheets. The dependent variable is the level of stress, which is defined as an individual's perception of a stimulus that is considered severe and can cause a measurable

response to changes in the condition felt by COPD patients and will be measured using the PSS (Perceived Stress Scale). The data obtained were then statistically tested using SPSS 21.0. The research carried out has been declared to have passed the research ethics review from the Health Research Ethics Commission of Dr. Moewardi Hospital with No. 1.108/XII/HREC/2021.

RESULT

This is an experimental study involving two groups: an experimental group (intervention) receiving guided imagery therapy, which consisted of 19 patients and the control group (as a control) receiving the standard therapy, which consisted of 19 patients. Both groups underwent therapy sessions with the following results:

Table 1. Overview of the basic characteristics of the research subject

Characteristic	Intervention (n=19)		Control (n=19)		p-value
	n	%	n	%	
Gender					0.721
Man	13	68.42	14	73.68	
Woman	6	31.58	5	26.32	
Age ^b	56.11 ±5.05		57.53± 4.55		0.368
Education ^c					0.160
SD	9	47.37	4	21.05	
SMP	3	15.79	6	31.58	
SMA	6	31.58	6	31.58	
PT	1	5.26	3	15.79	
Work ^a					0.482
Laborer	4	21.05	5	26.32	
IRT	5	26.32	2	10.53	
Pensioner	5	26.32	6	31.58	
Private	1	5.26	0	0.00	
Self employed	3	15.79	6	31.58	
Does not work	1	5.26	0	0.00	
Income ^c					0.586
<1 million	1	5.26	4	21.05	
1-2 million	14	73.68	10	52.63	
2-3 million	3	15.79	5	26.32	
>4 million	1	5.26	0	0.00	
Smoking ^a					0.721
Already	13	68.42	14	73.68	
No	6	31.58	5	26.32	
Long Suffering					0.511
≤ 5 years	9	47.37	7	36.84	
> 5 years	10	52.63	12	63.16	

Description: The results of observations of categorical data are described with a frequency distribution (%), The results of observations of numerical data are described with the mean± SD, ^atest different groups are not paired categorical data with the Chi-square / Fishser exact test. ^buji beda group unpaired numerical data pass normality requirements (Independent t-test). ^ctest different groups unpaired numerical data do not pass normality requirements (Mann-whitney).

Based on the description above, there is no significant difference in the characteristics of the study subjects between the intervention group and the control group, or it can be said that the characteristics of the two groups are homogeneous or come from the same population.

Table 2. Pss difference test between intervention group and control group

Group	PSS		p-value	PSS Difference (Δ)
	Pre	Post		
Intervention	15.16 ±1.83	13.63 ±2.31	<0.001* ^c	-1.53 ±1.54
Control	15.21 ±2.25	15.47 ±2.55	0.262 ^c	0.26 ±0.99
p-value	0.937 ^a	0.025* ^a		<0.001* ^b

Description: The results of the observations are described by the SD mean±, the test of different unpaired groups passed the normality requirements (Independent t-test), the test of different unpaired groups did not pass the normality requirements (Mann-whitney), the test of different unpaired groups passed the normality requirements (Pair t-test). *Declared significant if the test produces p < 0.05

In the intervention group, it is known that the PSS pre- and post-test scores have decreased statistically significantly, with a value of p = < 0.001 (p < 0.05). Meanwhile, in the control group, the PSS pre- and post-test scores obtained a statistically insignificant increase with a value of p = 0.262 (p > 0.05).

The PSS score before intervention in the two groups was not significantly different because p = 0.937, but after intervention, it got a value of p = 0.025 (p < 0.05), which means there was a significant difference in PSS scores between the intervention and control groups. The provision of guided imagery intervention is more effective in reducing the PSS score; this is evidenced in the pair t-test on the difference value of PSS change (Δ) (p = <0.001) with a value of p < 0.05.

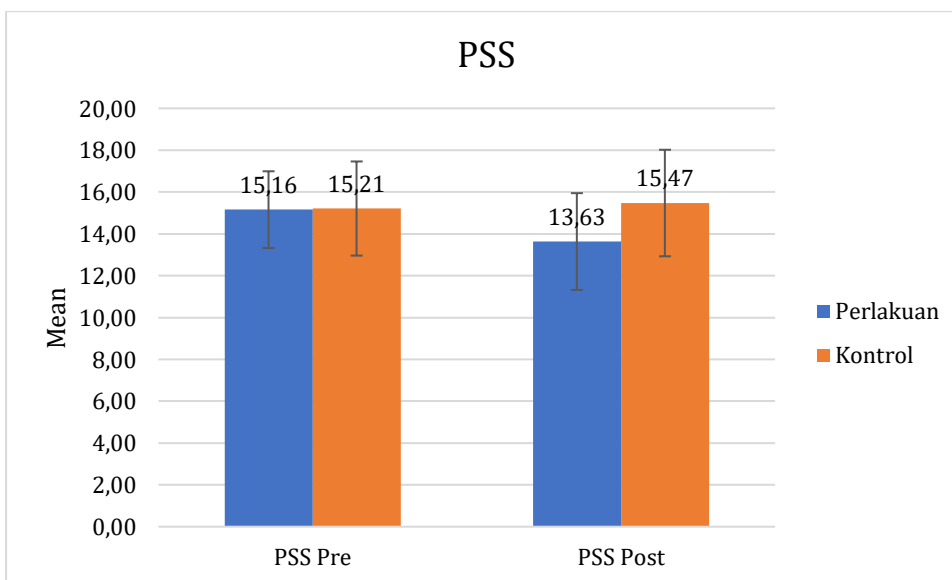


Figure 1. Bar chart overview of pss scores between intervention group and control group

Based on the description above, the provision of *guided imagery* has an effect on reducing the PSS score compared to the control. Patients with *guided imagery* were 10.70% effective in reducing PSS scores (stress levels) compared to controls.

DISCUSSION

Researchers have conducted preliminary studies before conducting this research, including collecting information about data that will later be collected both in the form of literature studies and directly reviewing the research location. At the research location, researchers tried to prove the information obtained through literature studies related to the background underlying this study. Data assessment began with demographic characteristics, including gender, age, occupation, education, income, and duration of illness, as shown in Table 1. The characteristics of sex, age, recent education, occupation, income, smoking history, and length of suffering from COPD in the intervention group and control group had homogeneous subject sizes.

The data obtained showed the prevalence of male participants and smoking history was much greater, with the same percentage of 73.68% of the total participant data. These results are in accordance with the epidemiological study of Oemiati (2013), which states that smoking is the cause of COPD (95% of cases) in developing countries. Active smokers may experience mucus hypersecretion and chronic airway obstruction. There is reportedly a relationship between a decrease in the volume of first-second forced expiration (VEP1) and the amount, type, and duration of smoking (Oemiati, 2013).

After the intervention was obtained, guided imagery intervention was more effective in reducing the PSS score; this was proven in the unpaired difference test on the difference value of PSS change (Δ) ($p = <0.001$) with a value of $p < 0.05$. These results are in line with research conducted by Tusek and Cwynar (2000), who found that guided imagery is a mind-body intervention that relieves stress and provides calm. Through a process that involves all these senses forming a connection between mind, body, and spirit (Tusek, 2000).

According to research conducted by Parekh (2020), relaxation can reduce muscle tension, so guided imagery is effective for reducing stress and anxiety in people with chronic diseases (Harding, 1996). Using mental imagery, the mind-body connection is activated to increase an individual's sense of well-being, reduce stress, and reduce anxiety, and can also boost an individual's immune system (Krau, 2020). Another study by Bigham tested the effect of guided imagery to reduce perceived stress. With twenty-nine participants, it has also been proven that stress levels decrease as a result of short, guided imagery (Elizabeth Bigham, Lauren McDannel, Isabel Luciano, 2014).

The limitation of this study is that the place where guided imagery for weeks 2 and 3 is carried out is different because it is carried out at the patient's home. So that it can cause bias in research. The presence of comorbidities of other diseases, recurrence, the amount and type of drugs consumed by the patient, as well as the presence of significant stress-triggering events that may be experienced by the patient.

CONCLUSION

This study showed that guided imagery was effective in reducing stress levels in COPD patients at UNS Hospital, where the results showed a decrease in the average PSS pre-post test score with a value of $p = < 0.001$ ($p < 0.05$). It is hoped that this study can be the foundation for future research and an additional therapeutic option for COPD patients who experience stress at UNS Hospital.

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