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EFFECTIVENESS OF DEEP BREATHING RELAXATION TO REDUCE ANXIETY SYMPTOMS IN THE ELDERLY

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Abstract

Elderly is a stage in which individuals experience the process of aging while adapting to new social roles. As they grow older, the elderly become more vulnerable to various psychological and health-related issues, with anxiety being one of the most common psychological conditions. Anxiety is an emotional state characterized by feelings of tension, worry, and physical symptoms such as an increased heart rate and shortness of breath. One practical and easy-to-implement technique to help reduce anxiety in the elderly is deep breathing relaxation. This study aimed to examine the effectiveness of deep breathing relaxation in reducing anxiety among the elderly using a one-group pretest-posttest experimental design. The participants were five elderly individuals living in a nursing home. Data were collected using the Geriatric Anxiety Scale (GAS) and analyzed using the Wilcoxon signed-rank test. The results showed a significant reduction in anxiety levels (p-value = 0.038 < 0.05), with anxiety decreasing from a moderate to a mild category. Based on these findings, it is recommended that the elderly practice deep breathing relaxation independently as a method to manage and alleviate anxiety.

Keywords: *Anxiety, Deep Breathing Relaxation, Elderly, Nursing Home, Experiment*

Introduction

Late adulthood, or the elderly stage, is a developmental phase characterized by various changes in physical, psychological, and social domains. According to the World Health Organization (WHO, 2023), elderly individuals are defined as adults aged over 60 years. In Indonesia, the elderly population has steadily increased by nearly 4% over the past decade (2015–2024), reaching approximately 12% of the total population. As individuals age, they naturally experience a decline in both physiological and cognitive functions, which increases their vulnerability to various health problems and creates a growing need for comprehensive healthcare services, including mental health support (BPS, 2024). WHO (2023) reports that approximately 14% of elderly individuals live with mental health disorders. The most common mental health conditions among the elderly are depression and anxiety.

Chand et al. (2023) and Sun et al. (2020) explain that anxiety is an individual's response to fear, manifesting as an emotional state oriented toward the future. It involves a complex interplay of cognitive, emotional, physiological, and behavioral reactions as a form of readiness in facing events or situations perceived as threatening. Anxiety is not classified as a disease but is defined as a normal reaction to stressful situations. It is also described as an unpleasant emotional state characterized by vague feelings of fear or worry, often accompanied by uncertainty, helplessness, and irrational thoughts (Annisa & Ifdil, 2016; Dean, 2016). Similarly, Nevid (as cited in Noorrakhman & Praktikto, 2022) defines anxiety as an emotional condition marked by physiological dependency,

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unpleasant tension, and restlessness. It is associated with the anticipation of negative events, which may disrupt attention, increase worry, cause disorganized thinking, and lead to confusion.

Each individual may experience different levels of anxiety, including the elderly. The level of anxiety can be influenced by various factors such as personal experiences, current problems, environment, parenting styles, and others (Krisnawardhani & Noviekayati, 2021). Soen et al. (2022) explain that anxiety can significantly affect and disrupt several aspects of life if not properly managed. Furthermore, Crocco et al. (2017) state that anxiety in the elderly can be categorized into three main aspects: physiological, emotional, and cognitive.

Anxiety disorders in the elderly may manifest as panic disorder, post-traumatic stress disorder (PTSD), or specific phobias (Djamaluddin et al., 2023). Vito et al. (2017) reported that symptoms of anxiety, depression, and worry negatively affect cognitive performance in older adults, particularly social cognition, complex cognition, executive function, and episodic memory. Furthermore, anxiety has been linked to an increased risk of physical illness or frequently co-occurs with physical impairments in older individuals (Chang et al., 2016; Forlani et al., 2014). Prolonged, untreated anxiety can thus detrimentally impact the quality of life of the elderly by disrupting sleep patterns, reducing appetite, worsening physical health conditions, and diminishing participation in social and recreational activities.

According to statistical data from the Indonesian Ministry of Health (Kemenkes, 2019), 14.3% of elderly individuals aged 65 to over 75 years experience emotional mental disorders, including anxiety. Anxiety in the elderly is often triggered by various factors related to the aging process, such as physical decline, chronic illnesses, the loss of a spouse or peers, changes in socioeconomic status, as well as feelings of loneliness and isolation. This is supported by Kurniati and Putri (2022), who state that anxiety in the elderly is frequently associated with experiences of loss, grief, and negative life events that are commonly encountered in old age. Although aging may contribute to the onset of anxiety, this effect can be mitigated by improvements in self-esteem (Choi & Kim, 2021).

Life in a nursing home can be a potential source of anxiety for some elderly individuals. Although such facilities provide care and support, symptoms of anxiety may arise as elderly residents are required to adapt to a new environment, interact with other residents from diverse backgrounds, and cope with feelings of lost independence. These factors can contribute to an increased level of anxiety among elderly individuals living in institutional settings.

A previous study conducted by Noorrakhman and Pratikto (2022) demonstrated a reduction in anxiety levels among five elderly participants following the implementation of deep breathing relaxation interventions. Anxiety levels were measured using the Beck Anxiety Inventory, with score intervals indicating mild anxiety (0–21), moderate anxiety (22–35), and severe anxiety (above 36). The results showed that three participants experienced a decrease in anxiety from the moderate to the mild category, while the remaining two participants showed a reduction in scores within the mild anxiety category. These findings highlight the importance of identifying effective and safe interventions to address anxiety in the elderly population.

Various approaches have been utilized to manage anxiety in the elderly, ranging from medical to non-medical therapies. However, medical treatments often pose undesirable side effects for older adults, considering their potentially declining physical condition and the risk of drug interactions. This concern has led to the search for safer and more accessible non-medical interventions that can be effectively applied to the elderly population. Several types of interventions have been identified as effective in

reducing anxiety, including relaxation techniques, expressive writing, listening to classical music, and mandala coloring (Faradina et al., 2019).

Deep breathing involves slowly inhaling through the nose and exhaling through the mouth using the diaphragm a thin muscle that separates the chest from the abdomen and the abdominal muscles (Cancer.gov, 2025). This deep breathing relaxation is a simple technique that consciously regulates breathing patterns to trigger the body's relaxation response. Several previous studies have demonstrated that deep breathing relaxation can effectively reduce anxiety across various age groups, including the elderly. One such study found that deep breathing exercises activate the relaxation response and offer both physical and mental health benefits (Ma et al., 2017). These findings are further supported by Sajidah et al. (2021), whose research indicates that deep breathing relaxation significantly reduces anxiety symptoms and perceptions.

Given the high prevalence of anxiety among the elderly and the potential benefits of deep breathing relaxation as a safe and accessible intervention, this study aims to examine the effectiveness of deep breathing relaxation in reducing anxiety levels in elderly individuals. The findings of this study are expected to contribute to the development of more effective intervention strategies to enhance the psychological well-being of the elderly. The hypothesis proposed in this study is: Deep breathing relaxation is effective in reducing anxiety among the elderly.

Method

This study employed a one-group pretest–posttest experimental design. In this design, a pretest is conducted before the intervention is given, allowing for more accurate evaluation of the treatment effects by comparing the results with the participants' initial condition (Sugiyono, 2019). The research was conducted at the 'E' Nursing Home in Central Java. The deep breathing relaxation intervention was administered to five elderly participants in accordance with standard operating procedures, with each session lasting 15 minutes. The intervention was carried out over a two-week period, with sessions scheduled three times per week. After each intervention session, participants were given a one-day break before proceeding to the next session, and this cycle was repeated until a total of six intervention sessions were completed. Participants were administered the Geriatric Anxiety Scale (GAS) as both a pretest and posttest to measure anxiety levels before and after the intervention.

The researchers identified anxiety as the dependent variable and deep breathing relaxation as the independent variable. The study population consisted of elderly individuals over the age of 60 residing at the 'E' Nursing Home who were experiencing symptoms of anxiety. Participants were selected using purposive sampling in accordance with the study's criteria, resulting in five elderly individuals who met the requirements and agreed to participate in the research. The final sample consisted of five elderly participants, selected in collaboration with the nursing home management. The following table presents the demographic characteristics of the participants along with their corresponding anxiety categories:

Tabel 1. Participant Demographics and Gender Anxiety Categories

No.	Initials	Age		Anxiety Score		Category
		M	F			
1	F		v	78	37	Mild
2	EH	v		73	39	Moderate
3	R		v	78	46	Moderate
4	YY		v	82	34	Mild
5	B	v		67	42	Moderate

Based on Table 1, it was found that the five participants had anxiety levels categorized as mild to moderate, with varying score ranges. The measurement of anxiety levels was conducted using the Geriatric Anxiety Scale (GAS), developed by Segal et al. (2010, as cited in Hidayati et al., 2021). This scale is specifically designed for use with older adults or the elderly population. The GAS assesses anxiety symptoms across three indicators: somatic, cognitive, and affective dimensions experienced by elderly individuals. The items on this scale are intended to measure anxiety experienced over the past week up to the present. In addition, there are five items aimed at identifying the specific areas that cause anxiety among the elderly.

The instrument demonstrates excellent internal consistency, with total GAS reliability coefficients ranging from $\alpha = 0.88$ to 0.93. The validity of the GAS instrument is also considered strong, with a correlation coefficient of $r = 0.70$. The anxiety score categories are defined as follows: 0–18 (minimal/normal anxiety), 19–37 (mild anxiety), 38–55 (moderate anxiety), and 56–75 (severe anxiety). Data analysis was performed using a non-parametric ANOVA (Wilcoxon signed-rank test) to evaluate the effectiveness of the intervention in reducing anxiety among the elderly residents at the 'E' Nursing Home. The following table presents the instrument indicators and sample items from the GAS scale.

Tabel 2. Indicator instrument and examples of Geriatric Anxiety Scale items

Indicator	Item
Somantic	My heart raced or beat strongly (1)
Cognitive	I felt like things were not real or like I was outside of myself (4)
Affective	I was afraid of being judged by others (6)

Sumber : Segal et al,2010

Result and Discussion

Based on the measurements using the Geriatric Anxiety Scale (GAS), the anxiety levels among the participant group showed changes in scores after receiving the deep breathing relaxation intervention. This indicates that the intervention had an observable effect on their anxiety levels. The following table presents the changes in anxiety levels before and after the intervention:

Tabel 3. Elderly Anxiety Data

Participant	Score before intervention	Category	Score after intervention	Category	Description
F	37	Mild	23	Mild	Decline
EH	39	Moderate	27	Mild	Decline
R	46	Moderate	32	Mild	Decline
YY	34	Mild	22	Mild	Decline
B	42	Moderate	30	Mild	Decline

Based on Table 3, the anxiety levels of the elderly participants, as measured using the Geriatric Anxiety Scale (GAS), indicated that prior to the deep breathing relaxation intervention, participants were categorized as experiencing mild to moderate anxiety. However, following the intervention, all participants were classified within the mild anxiety category, although with varying score levels.

The Wilcoxon Signed-Rank Test was conducted using SPSS 25 for Windows, and the results are presented as follows:

Tabel 4. Statistical Analysis Results

	Posttest - Pretest
Z	-2.070[b]
Asymp. Sig. (2-tailed)	.038

Sumber: Output SPSS25

Based on the pre-test and post-test results analyzed using the Wilcoxon Signed-Rank Test in SPSS 25, the findings revealed a statistically significant result with a ρ-value of 0.038 ($p < 0.05$). This indicates that there is a significant difference in anxiety levels before and after the deep breathing relaxation intervention among elderly participants at the 'E' Nursing Home in Central Java. Prior to the intervention, data obtained from the pre-test using the Geriatric Anxiety Scale (GAS) showed that each participant experienced varying levels of anxiety. Following the deep breathing relaxation intervention, all five participants experienced a reduction in anxiety levels, with three individuals transitioning from moderate to mild anxiety, and the remaining two showing a decrease in anxiety scores while remaining within the mild category. These results demonstrate that deep breathing relaxation is effective in reducing anxiety from moderate to mild levels. However, the intervention has not yet been effective in reducing anxiety to the normal category as defined by the GAS (score range 0–18) among the elderly group at the 'E' Nursing Home.

Anxiety in older adults is a common emotional state marked by physiological responses, uncomfortable tension, and restlessness, which stem from apprehension about potential adverse events. According to Nevid (as cited in Noorrakhman & Praktikto, 2022), such a condition can interfere with concentration, cause worry, disrupt thought patterns, and lead to confusion. As shown in Table 3, anxiety scores decreased among the five elderly participants. Specifically, three experienced a categorical reduction from moderate to mild anxiety, while two others showed a reduction in score but remained within the mild anxiety category. This suggests that deep breathing relaxation techniques provide individuals with self-regulation during moments of discomfort, anxiety, physical stress, or emotional tension caused by anxiety. Therefore, it can be concluded that the anxiety levels of all five participants declined following the intervention.

Furthermore, the statistical analysis using the Wilcoxon Signed-Rank Test in SPSS confirmed a significant result ($\rho = 0.038 < 0.05$), reinforcing that the elderly participants exhibited different anxiety conditions before and after undergoing the deep breathing relaxation technique at the 'E' Nursing Home. These findings are consistent with the study by Ghofur and Purwoko (as cited in Noorrakhman & Praktikto, 2022), which found a decrease in anxiety levels in patients before and after receiving deep breathing relaxation during labor. Similarly, research conducted by Nasuha et al. (2016) on the effect of deep breathing relaxation on anxiety levels among elderly individuals at a community health post reported a significant Wilcoxon Signed-Rank Test result of $\rho = 0.001$ ($p < 0.05$), confirming that deep breathing relaxation has an impact on reducing anxiety in the elderly.

Additionally, D'silva et al. (2014) demonstrated that deep breathing relaxation effectively reduces anxiety and diastolic blood pressure in clients with coronary artery disease. Inra et al. (2019) also found a reduction in anxiety levels from moderate to mild in older adults in Telogomas, Malang, after undergoing deep breathing therapy. Other studies have shown that this technique can reduce not only anxiety in the elderly but also preoperative anxiety (Ningrum et al., 2022; Rokawie et al., 2017; Mulki et al., 2020). Moreover, Serafim et al. (2018) reported that deep breathing relaxation could lower anxiety in patients with bipolar disorder by relaxing muscle tension associated with

anxiety, inhaling slowly, holding the breath for approximately five seconds, and then exhaling gradually while relaxing the shoulder muscles.

Several previous studies have confirmed that deep breathing is a non-pharmacological intervention that effectively improves mood, and reduces anxiety, depression, and stress (Perciavalle et al., 2017). The deep breathing relaxation technique, commonly known as abdominal breathing, aims to calm the mind and body by regulating breathing patterns in a slow, rhythmic, and safe manner, often performed with eyes closed (Enesis.com, 2024; Idhayanti et al., 2022). This technique teaches individuals to inhale and exhale in a controlled manner, which activates the parasympathetic nervous system responsible for regulating heart rate and calming the nerves resulting in physical and mental relaxation, thereby reducing anxiety, stress, and physical tension. This is supported by Nestor (2020), who states that modifying the way we inhale and exhale can help reduce symptoms of anxiety, asthma, ADHD, and other conditions. Furthermore, the advantage of deep breathing lies in its practicality it can be performed in various situations without the need for special equipment, making it particularly suitable and effective for elderly individuals.

Although this study shows that deep breathing relaxation has potential in calming the physical condition and lowering anxiety levels among participants, its limited effectiveness in reducing anxiety to a normal level suggests a need for deeper analysis of the intervention's implementation. One consideration is the relatively short duration of the intervention in this study, which should be extended to achieve more optimal results.

In conclusion, the success of the deep breathing relaxation intervention depends not only on the participant's focus during the breathing process inhaling, holding the breath for less than five seconds, and exhaling slowly but also on the presence of a calm and conducive environment. Moreover, the intervention should be conducted more frequently to enhance its effectiveness in reducing anxiety to a normal category. This is supported by Asda et al. (2023), who found that deep breathing relaxation, when practiced consistently over time, can effectively reduce emotional and mental health issues, including anxiety. Nasiri et al. (2022) also reported that a four-week routine intervention showed effectiveness in reducing anxiety to normal or minimal levels.

Conclusion

The anxiety levels among elderly participants at the 'E' Nursing Home in Central Java decreased from the moderate to mild category after receiving the deep breathing relaxation intervention. However, this intervention cannot yet be considered fully effective, as the anxiety scores have not reached the normal category based on the Geriatric Anxiety Scale. Deep breathing relaxation was chosen as the intervention for older adults because it is easy to understand and can be independently practiced whenever needed to support the well-being of the elderly as well as other individuals. Moreover, this technique is considered appropriate for the elderly population, who generally experience physical and cognitive decline.

Due to the time limitations of this study, it is recommended that the deep breathing relaxation intervention be continued regularly, at least three times daily, accompanied by nursing staff at the nursing home. This practice aims to enhance the effectiveness of the intervention in reducing anxiety scores to the normal category, thereby supporting both the physical and psychological health of the elderly and contributing to a better quality of life in old age.

Furthermore, future researchers are encouraged to conduct more in-depth studies on the application of deep breathing relaxation interventions by extending the duration of the intervention. This would allow for more effective efforts in reducing anxiety and could serve as a viable alternative intervention to improve individual quality of life.

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Author Contributions Statement

In this study, all authors have performed their respective roles and contributed fully. The authors have taken responsibility for the entire content of this manuscript and have approved its submission to the journal, reviewed all findings, and agreed on the final version of the manuscript. MH developed the research idea and direction, ensured the quality of the research implementation, collected data, conducted data analysis based on research evidence, compiled supporting references, structured and wrote the manuscript, and revised the manuscript. S contributed by reviewing the manuscript structure and evaluating the research results and quality. ER assisted in reviewing the manuscript structure and assessing the research findings and overall quality.

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