

EFFECTIVENESS OF DEEP BREATHING RELAXATION ON DEPRESSION AND QUALITY OF LIFE FOR ELDERLY HYPERTENSION

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Abstract

Hypertension is disease chronic many experienced by the elderly age and can cause various problem physique and psychological , including depression and decline quality live . One of the intervention non-pharmacological methods that are easy , safe , and can be done in a way independent is technique deep breathing relaxation . Research This aim For analyze effectiveness deep breathing relaxation to level depression and quality living in the elderly hypertension . Research use design quasi-experimental with approach one-group pretest-posttest . Population study totaling 43 elderly people hypertension in Paya Punteut Village , Muara Dua District , Lhokseumawe City, with sample A total of 30 respondents were selected through technique purposive sampling . The instrument used is Geriatric Depression Scale (GDS) and World Health Organization Quality of Life-BREF (WHOQOL-BREF). Data analysis was performed using the Paired Sample t-test . The results of the study show that score depression experience decline from 4.90 to 3.27, while score quality life increase from 78.70 to 82.80 after intervention given . Statistical tests showed a significant difference before and after the intervention ($p < 0.001$). Thus, deep breathing relaxation techniques are effective in reducing depression and improving quality of life in elderly hypertensive patients.

Keywords: Depression , hypertension , quality life , elderly , deep breathing relaxation

INTRODUCTION

Development service health , improving nutritional status , and increasing welfare public has push improvement age hope living in various countries, including Indonesia. Conditions the impact on increasing amount resident carry on age and change structure demographics society . Increasing population elderly bring consequence in the form of increasing burden disease chronic and degenerative consequence decline function biological , changes psychological , as well as decrease ability adaptation to various stressors health . One of the problem most frequent health found in the group age carry on is hypertension , which is up to moment This Still become challenge health society at the global level because contribute to height number morbidity , mortality , disability , and decline welfare life elderly (WHO, 2023). Hypertension is condition when pressure blood be on top normal values in general settled , namely pressure systolic reaches 140 mmHg or more and/ or pressure diastolic reaches 90 mmHg or more based on inspection repeated . Most of the sufferers No feel sign or typical symptoms so that disease This often No detected until appear serious complications . If control pressure blood No done optimally , hypertension can develop become various disturbance serious , like disease heart , stroke, damage kidney disorders vision , up to problem health mental that finally influence function and quality life individuals , especially in groups carry on age (WHO, 2023; Benetos et al., 2023).

International data show that hypertension Still be one of disease No infectious with burden the largest in the world. More from One billion resident mature life with condition hypertension and some big case found in developing countries . The disease This is factor risk main various disease cardiovascular and contributes to millions death every year . Trend improvement case hypertension is also seen in the population elderly , along with with increase age and increasing prevalence disease accompanying (WHO, 2023). In Indonesia, hypertension Still become problem health that requires attention serious . The results of the 2023 Indonesian Health Survey show that prevalence hypertension tend increased in the group older age the oldest and the most found in the population carry on age . Condition the make hypertension as one of the focus main control program disease No infectious Because size the impacts caused , both to health individual and system service health in a way overall (Ministry of Health of the Republic of Indonesia, 2023). Problems Hypertension was also found in Aceh Province . Based on report health

area, hypertension including the most common disease found in the facility service health. Lhokseumawe City is one of the areas that shows amount case moderate hypertension high, especially in groups elderly. Situation This show the need for a handling strategy that is not only focus on aspects physical, but also consider condition psychological and social sufferers (Aceh Health Office, 2023).

In addition to its physiological impact, chronic hypertension can also affect the emotional and mental health of sufferers. Long-term treatment, concerns about complications, activity limitations, and changes in social roles are often sources of stress that increase the risk of depression in older adults. Depression in older adults is often not recognized early because its symptoms are considered part of the aging process, yet it can actually impair social functioning, decrease adherence to therapy, increase the need for healthcare services, and worsen the prognosis of the chronic disease (Li *et al.*, 2023).

Several recent studies have shown a bidirectional relationship between depression and hypertension. Individuals with depressive disorders are at higher risk of developing hypertension, while those with hypertension who experience depression tend to exhibit poorer blood pressure control and a higher risk of complications. Psychological instability can also affect patients' ability to perform self-care and maintain adherence to treatment (Meng *et al.*, 2022; Li *et al.*, 2023).

The depression experienced by elderly people with hypertension will subsequently influence their perception of their quality of life. Quality of life reflects a person's assessment of their living conditions, encompassing physical, psychological, social, and environmental dimensions. Elderly people living with hypertension generally report a lower quality of life than those without chronic conditions due to functional limitations, dependency in daily activities, and emotional disturbances associated with the condition. Recent studies have shown that depressive symptoms are a significant determinant of poor quality of life in elderly people with hypertension (Hu *et al.*, 2024; Fan *et al.*, 2025).

Approach management hypertension moment This No only emphasize on giving therapy medicine, but also emphasizes importance intervention non-pharmacological as therapy supporters. One of the assessed method simple, safe, economical, and can practiced in a way independent is technique deep breathing relaxation. Intervention This Work through modulation system nerve autonomous with increase domination activity parasympathetic and suppressive activity sympathetic, so that capable give effect relaxation, reduce tension emotional, repair oxygenation network, and help lower pressure blood (Ma *et al.*, 2022).

A number of study has report benefit exercise breathing to health physical and psychological. Deep breathing exercises in a way regular proven capable improve physiological parameters in patients hypertension. In addition, exercise breathing slow also known play a role in reduce stress, increase ability regulations emotions, as well as repair welfare psychological and quality life in individuals with disease chronic (Adiutama *et al.*, 2022; Laborde *et al.*, 2022; Hopper *et al.*, 2023).

Survey results The initial research carried out in Paya Punteut Village, Muara Dua District, Lhokseumawe City showed there are 43 elderly people who experience hypertension. Most of the among them complain disturbance sleep, easy feel anxious, fast tired, feeling sad, and limitations in operate activity everyday. Condition the indicates existence problem potential psychological lower quality live. In addition, some big elderly Not yet Once get education and exercise deep breathing relaxation as one of the form intervention non-pharmacological.

Based on condition mentioned, it is necessary something interventions that can help reduce problem psychological at a time increase quality life elderly hypertension. Research about effectiveness technique deep breathing relaxation in the elderly hypertension, especially those assessing aspect depression and quality living in the Aceh region, still relatively limited. Because of this that, research This done For analyze effectiveness deep breathing relaxation to level depression and quality living in the elderly hypertension in Paya Punteut Village, Muara Dua District, Lhokseumawe City.

LITERATURE REVIEW

Hypertension remains one of the most prevalent non-communicable diseases in the elderly and is a growing health problem in many countries. The World Health Organization reports that more than 1.28 billion adults worldwide suffer from hypertension, with the majority of cases found in developing and lower-middle-income countries. This condition is characterized by elevated systolic blood pressure of ≥ 140 mmHg and/or diastolic blood pressure of ≥ 90 mmHg based on repeated measurements. Hypertension often develops without obvious symptoms, so many sufferers only discover they have the disease after complications develop, earning it the nickname "silent killer" (WHO, 2023).

In the population elderly, incidents hypertension related close with the degenerative process that occurs along increase age. Aging cause change structure and function system cardiovascular in the form of decrease elasticity vessels blood, increase stiffness arteries, disorders function endothelium, as well as change hormonal and nervous regulation autonomous. Change the increase resistance peripheral so that pressure blood tend increases with age continue. Therefore that, prevalence hypertension found more high in the group elderly compared to group older age young (Benetos et al., 2023; Wang et al., 2023).

In Indonesia, hypertension Still be one of priority in control disease No contagious. Data from the 2023 Indonesian Health Survey shows that prevalence hypertension increase in a way consistent along increase age and most found in the group elderly. If No controlled optimally, hypertension can cause various complications Serious like disease heart coronary, stroke, failure kidney chronic, disorder cognitive, disability, even death early (Ministry of Health of the Republic of Indonesia, 2023).

Besides impacting physical health, hypertension also significantly impacts mental health. Chronic illnesses requiring long-term treatment often lead to anxiety, activity limitations, and dependence on others, increasing the risk of depression in older adults. Conversely, depression can also worsen hypertension by increasing sympathetic nervous system activity, activating the stress response, and decreasing adherence to therapy and healthy lifestyle changes (Lee et al., 2024; Meng et al., 2022).

Depression in older adults is characterized by persistent feelings of sadness, loss of interest in previously enjoyed activities, sleep disturbances, fatigue, decreased concentration, and impaired social functioning. A recent national study showed that nearly one-third of older adults with hypertension experience symptoms of depression. The risk of depression tends to be higher in older adults who live alone, have physical limitations, are at a lower economic level, and have less social support (Fan et al., 2025).

The presence of depression in older adults with hypertension is associated with various adverse health outcomes. Depressive symptoms can lead to poor medication adherence, increased hospitalization rates, worsened blood pressure control, and increased risk of cardiovascular complications and mortality. A recent meta-analysis showed that depression is a significant factor contributing to worsening health status and decreased physical function in people with hypertension (Li et al., 2023).

Quality of life is a multidimensional concept that describes an individual's perception of their living conditions based on physical, psychological, social, and environmental aspects. In elderly people with hypertension, quality of life often declines due to activity limitations, emotional disturbances, fatigue, and dependence in carrying out daily activities. Various studies have shown that age, education level, economic status, physical activity, family support, and psychological conditions are factors that influence quality of life in elderly people with hypertension (Hu et al., 2024).

Recent research also reveals that depression is a major predictor of poor quality of life in older adults with hypertension. The more severe the depressive symptoms, the lower the individual's perception of quality of life, particularly in the physical and psychological domains. Symptoms such as sleep disturbances, loneliness, helplessness, and low life satisfaction contribute to a reduced quality of life in older adults with hypertension (Fan et al., 2025; Lee et al., 2024).

Other factors that contribute influence depression and quality living in the elderly hypertension is age, type sex, long suffering disease, activity physical, support social, as well as existence disease accompanying elderly Woman known more prone to experience depression compared to man Because influenced by hormonal changes, conditions psychosocial, as well as height number life alone at the age of continued (Fan et al., 2025).

Activity low physical is also related with improvement pressure blood, decreased fitness body, disorders sleep, and increased symptom depression. On the other hand, activity physical activity performed in a way regular proven capable increase function physical, repair condition psychological, and improve quality living in groups age further (WHO, 2024; Sun et al., 2024).

One of approach non-pharmacological which can implemented For help overcome problem physical and psychological in the elderly hypertension is technique deep breathing relaxation. This technique done with arrange pattern breathing in a way slowly, regularly, and deeply so that body reach condition Relaxation. This intervention is relatively simple, safe, economical, and can be performed independently by older adults at home (Laborde et al., 2022).

Physiologically, deep breathing exercises can increase the dominance of parasympathetic nervous system activity while suppressing sympathetic nervous system activity. This mechanism results in decreased heart rate, decreased blood pressure, reduced stress hormone production, and a feeling of calm and well-being. Furthermore,

breathing techniques also contribute to increased tissue oxygenation, improved emotional regulation, and reduced psychological stress (Ma et al., 2022).

Several recent studies have shown that breathing and mind-body exercise- based interventions are effective in improving psychological well-being in older adults. Meta-analyses have shown that these exercises can significantly reduce depression, reduce stress, improve sleep quality, and enhance quality of life (Makhfudli et al., 2024; Tang et al., 2024).

Research by Adiutama et al. (2022) also demonstrated that regular deep breathing exercises can help lower blood pressure in elderly people with hypertension. These findings are supported by a systematic review by Hopper et al. (2023), which found that breathing exercises provide benefits for psychological well-being, sleep quality, emotional regulation, and quality of life in individuals with chronic illnesses.

Based on these findings, it can be concluded that deep breathing relaxation techniques are a potential complementary intervention in geriatric nursing care. This intervention not only helps control blood pressure but also contributes to reducing depressive symptoms and improving quality of life in older adults with hypertension.

METHOD

Research design This is type study quasi experimental (quasi-experimental), where method implementation No involving assignment subject in a way random , but rather use groups that have formed . The approach applied in study This is a one group pretest posttest design, which means No there is group comparison . However , the observation the initial (pretest) was carried out For measure changes that occur after given intervention (posttest) (Notoatmodjo , 2018). In this study, the level of depression and quality of life were measured in elderly hypertensive patients before being given deep breathing relaxation techniques. Furthermore, elderly hypertensive patients were given an intervention in the form of deep breathing relaxation techniques and the level of depression and quality of life were measured again after the intervention was given, which aimed to determine the effectiveness of deep breathing relaxation techniques on the level of depression and quality of life of elderly hypertensive patients. The design study can depicted as following :



Figure 1. Conceptual framework of the research

Information:

O₁ = Measurement of depression levels and quality of life before intervention (pretest)

X = Providing deep breathing relaxation techniques

O₂ = Measurement of depression levels and quality of life after intervention (posttest)

A population is a group of subjects targeted in a study and helps researchers determine an appropriate sample. The population in this study consisted of all elderly people with hypertension in Paya Punteut Village, Muara Dua District, Lhokseumawe City. Based on the data obtained , from local health center , number elderly hypertension recorded as many as 43 people.

Retrieval sample use purposive sampling technique , namely technique taking sample based on consideration certain appropriate with objective research . Based on calculation use Slovin's formula with level 10% error , obtained amount sample as many as 30 respondents .

Criteria inclusion in study This is elderly people aged ≥ 60 years , suffering from hypertension , able communicate with okay , willing become respondents , and follow all over series study until finished . Meanwhile criteria exclusion is elderly people who experience disturbance cognitive , complications heavy , or No willing continue study .

Instrument research used consists of from questionnaire characteristics respondents , Geriatric Depression Scale (GDS-15) for measure level depression , and World Health Organization Quality of Life-BREF (WHOQOL-BREF) for measure quality life elderly .

Intervention technique deep breathing relaxation done with request respondents is at in position comfortable , then take a deep breath slowly through nose for 4 seconds , hold your breath for 2–3 seconds , and exhale slowly . slowly through mouth for 6 seconds . The exercise is repeated for approximately 15–20 minutes in each intervention session.

Table 1. Characteristics of Research Respondents

No	Characteristics Respondents	Criteria	Amount	Percentage (%)
1	Age	60 – 64 years	18	60
		65 – 69 years old	12	40
	Total		30	100
2	Gender	Woman	18	60
		Man	12	40
	Total		30	100
3	Last education	No school	5	16.7
		Elementary School	10	33.3
		JUNIOR HIGH SCHOOL	7	23.3
		SENIOR HIGH SCHOOL	6	20
		College	2	6.7
	Total		30	100
4	Work	housewife	13	43.3
		Trader	8	26.7
		Other	9	30
	Total		30	100

Based on table 1, it shows that this study involved 30 respondents. The majority respondents be in a group aged 60–64 years that is as many as 18 respondents (60.0%), while group aged 65–69 years as many as 12 respondents (40.0%). Based on type sex, some big respondents various sex Woman that is as many as 18 respondents (60.0%), while respondents man as many as 12 respondents (40.0%). Based on education Lastly, the most respondents own education Elementary School (SD), namely as many as 10 respondents (33.3%), while education college tall is the least group that is as many as 2 respondents (6.7%). Furthermore based on work, some big respondents Work as a housewife (IRT), namely as many as 13 respondents (43.3%), followed by traders as many as 8 respondents (26.7%).

Table 2. Comparison of Depression Levels and Quality of Life Before and After Intervention

No	Characteristics	Amount	Minimum	Maximum	Mean (SD)
1	Depression Level Before Intervention	30	2	8	4.90 (2.12)
2	Depression Level After Intervention	30	1	6	3.27 (1.86)
3	Quality of Life Before Intervention	30	70	88	78.70 (4.66)
4	Quality of Life After Intervention	30	75	90	82.80 (4.16)

Based on Table 2 shows that the average score depression before given technique deep breathing relaxation is 4.90 (SD = 2.12), whereas after average intervention score depression decrease to 3.27 (SD = 1.86). With thus, it happened decrease in average score depression by 1.63 points. Furthermore, the average score quality life before given intervention is 78.70 (SD = 4.66), while after given technique deep breathing relaxation increase to 82.80 (SD = 4.16). With thus, it happened average score increase quality life by 4.10 points. Based on results the can concluded that level depression elderly hypertension experience decline and quality life experience improvement after given technique deep breathing relaxation. Next is a Paired Sample t- test. This test own criteria in taking decisions that can be made determine hypothesis research, namely:

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1. If the value significance < 0.05 , then hypothesis H_a is accepted and H_o is rejected , meaning there is effectiveness technique deep breathing relaxation to level depression and quality living in the elderly hypertension in Paya Punteut Village , Muara Dua District , Lhokseumawe City.
2. If the value significance > 0.05 , then hypothesis H_a is rejected and H_o is accepted , meaning No there is effectiveness technique deep breathing relaxation to level depression and quality living in the elderly Hypertension in Paya Punteut Village , Muara Dua District , Lhokseumawe City

Table 2. Paired Sample T-Test

Characteristics	Mean Difference	t-value	Significance
Pretest–Posttest Depression Levels	1.63	6,742	<0.001
Quality of Life Pretest–Posttest	-4.10	-7,518	<0.001

Based on the data in table 3, the Paired Sample t-test show mark significance of 0.000. Because this value is less than 0.05, the hypothesis H_a is accepted and H_o is rejected. This indicates that deep breathing relaxation techniques are effective in reducing depression levels and improving quality of life in elderly people with hypertension in Paya Punteut Village, Muara Dua District, Lhokseumawe City.

RESULTS AND DISCUSSION

This study involved 30 elderly people with hypertension who lived in Paya Punteut Village, Muara Dua District, Lhokseumawe City . distribution age , some big respondents be in range aged 60–64 years . Findings the indicates that hypertension more Lots found in the group elderly early . Improvement age relate with occurrence change degenerative in the system cardiovascular , such as decline elasticity vessels blood , increased stiffness arteries , as well as decline function various organs of the body ultimately increase vulnerability to various disease chronic and disorders psychological (Benetos *et al.*, 2023).

aging process also causes decrease ability individual in adapt to pressure physique and psychological conditions This make elderly more prone to experience depression , decline function physical , and decline quality life . In addition , the increasing amount disease accompanying age carry on can worsen health status and reduce level independence elderly in operate activity everyday (WHO, 2023; Hu *et al.*, 2024).

Based on gender characteristics, the majority of respondents were women. The high proportion of women in this study may be associated with hormonal changes that occur after menopause. Decreased estrogen levels are known to play a role in increased blood vessel stiffness, impaired endothelial function, and an increased risk of hypertension and psychological disorders in older age (Wang *et al.*, 2023).

This finding aligns with research by Fan *et al.* (2025), which reported that older women are more likely to experience depression than men. Hormonal factors, changes in social roles, activity limitations, and greater psychosocial burdens are suspected to contribute to this increased risk. Furthermore, older women are also reported to have lower quality of life scores, particularly in physical and psychological aspects.

In terms of education level, the majority of respondents only had primary education. Low levels of education can impact an individual's ability to obtain and understand health information, including their ability to independently manage chronic diseases. Low health literacy is often associated with poor medication adherence and suboptimal hypertension control, which can impact the quality of life of older adults (Lee *et al.*, 2024).

Based on jobs , the majority respondents Work as Mother House households and farmers . Types of work and conditions economy have role important in determine health status someone . Limitations economy can cause low access to service health , limitations in fulfil need live , and increasing pressure psychological which ultimately can make things worse condition health and reduce quality life elderly hypertension (Hu *et al.*, 2024).

Analysis results show existence changes in level depression and quality life after giving intervention deep breathing relaxation . Before intervention , average score depression respondents of 4.90 with standard deviation 2.12, then decrease to 3.27 with standard deviation 1.86 after intervention given . With thus , it happened decline average score depression by 1.63 points .

On the variable quality life , average score before intervention is 78.70 with standard deviation 4.66 and increasing to 82.80 with standard deviation 4.16 after implementation technique deep breathing relaxation .

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Improvement average score quality life by 4.10 points show that intervention the give benefit to welfare physique and psychological elderly hypertension .

Findings study This in line with the results of a systematic review conducted by Laborde et al. (2022), which stated that exercise breathing slow (slow-paced breathing) is effective in lower level stress , improve regulations emotions , reduce symptom depression and anxiety , as well as increase welfare psychology in individuals with disease chronic . Settings pattern breathing known can stimulate activity system nerve parasympathetic so that creates a feeling of calm and comfort .

Study Adiutama et al. (2022) also reported that exercise deep breathing exercises are performed able to routinely help lower pressure blood in the elderly hypertension . Effects the happen through decline activity nerve sympathetic , increased oxygenation network , improvement variability pulse heart , and repair balance system nerve autonomous that produces response relaxation .

Research result This participate reinforced by Hopper et al. (2023) who found that exercise breathing in a way regular give impact positive to mental health , quality sleep , function physical and quality life in individuals with disease Chronic . Breathing-based interventions have also been shown to help individuals manage stress and improve their ability to adapt to their illness.

Statistical test use Paired Sample t-test show that mark significance of the variables depression and quality life is $p = 0.000$ ($p < 0.05$). The results show existence meaningful differences between condition before and after intervention . With Thus , the hypothesis study accepted , which means technique deep breathing relaxation proven effective in lower level depression at a time increase quality life elderly hypertension in Paya Punteut Village , Muara Dua District , Lhokseumawe City.

Research by Fan et al. (2025) shows that condition more psychological Good relate close with improvement quality living in the elderly hypertension . Individual with level low depression tend own ability more adaptation good , compliance more therapy high , and perception better health positive .

Findings This is also supported by research by Lee et al. (2024) which states that depression and burden treatment is factor main influencing factors quality life sufferers hypertension . Therefore that , interventions that are capable of lower symptom depression estimated can give impact positive to various aspect quality life , especially the physical , psychological , and social domains .

According to assumptions researchers , engineering deep breathing relaxation is one of the intervention easy non- pharmacological implemented Because No need cost big , safe done , as well as can practiced in a way independently by the elderly . Arrangements regular breathing pattern capable create condition relaxation , reduce tension emotional , repair atmosphere heart , improve quality sleep , and help elderly in operate activity daily with more Good .

Decline score depression after intervention show that technique deep breathing relaxation capable help elderly in control pressure psychological issues that arise consequence disease chronic . On the other hand , increased score quality life indicates existence repair perception elderly to condition physical , psychological , relationship social and environmental place where he lives . Based on results said , technique deep breathing relaxation can considered as one of the therapy complementary in practice nursing gerontic . Intervention This potential become part from the service program health elderly , in particular for sufferers hypertension who experience disturbance psychological and decline quality life .

CONCLUSION

Based on results research , can concluded that giving technique deep breathing relaxation in the elderly sufferers hypertension in Paya Punteut Village , Muara Dua District , Lhokseumawe City has been proven effective in lower level depression as well as increase quality life respondents . Analysis results using the Paired Sample t-test show mark significance of $p = 0.000$ ($p < 0.05$), which indicates existence meaningful differences between condition before and after intervention .

Average score depression experience decline from 4.90 with standard deviation 2.12 in measurement beginning to 3.27 with standard deviation 1.86 after intervention , so that obtained decline score by 1.63 points . Meanwhile that , the average score quality life increase from 78.70 with standard deviation 4.66 to 82.80 with standard deviation 4.16, which indicates improvement by 4.10 points after giving technique deep breathing relaxation . Findings study This indicates that exercise deep breathing relaxation capable give effect positive in the form of increased sense of comfort , decreased tension emotional , reduced symptom depression , as well as repair welfare in aspects physical , psychological , social , and environmental . Therefore that , technique deep breathing relaxation can considered as one of the therapy safe , simple , economical , and easy non- pharmacological practiced in a way

independent by the elderly hypertension . Implications study This show that power health , especially nurse community and nurses gerontic , necessary consider integration technique deep breathing relaxation to in the management program hypertension in the group carry on age as effort promotive and preventive For increase mental health as well quality life elderly . In addition , research furthermore recommended use design experimental involving group control , period more interventions long , and amount more samples big to get proof more scientific strong and results study can generalized in a way more wide .

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