AUTOGENIC RELAXATION IS EFFECTIVE IN REDUCING BLOOD PRESSURE IN ELDERLY PEOPLE WHO EXPERIENCE HYPERTENSION

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ABSTRACT

Hypertension in the elderly is a degenerative disease health problem that tends to worsen over time and can increase the risk of various cardiovascular diseases. Autogenic relaxation, which involves deep breathing and self-suggestion to calm the body, is expected to help lower blood pressure. This study aims to explore the effects of autogenic relaxation techniques in lowering blood pressure in the elderly with hypertension. The research method used was pre-experimental with a One Group Pretest-Posttest Design. The population of this study were all active elderly at Posyandu for the elderly of Bintang Village in the working area of UPT Puskesmas Batang Beruh who experienced hypertension 34 samples with purposive sampling technique to collect data with measuring instruments using blood pressure meters according to SOP and observation sheets. The average decrease in blood pressure after intervention was 137.56 mmHg with an average difference in systole reduction of 15.41 mmHg, diastole blood pressure after intervention was 83.41 mmHg with an average difference in diastolic reduction of 9.26 mmHg. Statistical tests using Paired Sample t-test resulted in a p value <0.01, which indicates significance at the 95% level of significance ($\alpha = 0.05$). Autogenic relaxation is effective in reducing blood pressure in the elderly who experience hypertension.

Keywords: autogenic relaxation; elderly blood pressure; hypertension

INTRODUCTION

Hypertension, a non-communicable disease, is a serious condition that significantly increases the risk factors for damage to important organs such as the brain, heart, kidneys, retina, great vessels (aorta) and peripheral blood vessels, resulting in increased morbidity and mortality and health care costs. Blood pressure is the force exerted by circulating blood against the walls of the body's arteries, the main blood vessels in the body. Hypertension is the result of two measurements: systolic blood pressure (the top number) and diastolic blood pressure (the bottom number) which measures the pressure in the arteries when the heart is resting between beats. Hypertension is referred to when a blood pressure measurement reaches 140/90 mmHg or higher using a tensimeter or spygmomanometer.(Kemenkes RI, 2020) ((PERHIPI)., 2019)Hypertension in the elderly is one of the health problems that is increasing with age. Approximately 1.13 billion people in the world suffer from hypertension and its prevalence is expected to continue to increase, especially in countries with large elderly populations. Globally, nearly 1 in 3 adults suffer from hypertension, with a slightly higher prevalence of men than women under the age group of 50 years. Above the age of 50, the prevalence reaches almost 49%, or every 1 in 2 people, with almost equal prevalence among men and women .((WHO), 2021). In America Hypertension increases with age, with prevalence rising from 27% in patients under 60 years of age to 74% over 80 years of age. About 60% of the population has hypertension by age 60 and about 65% of men and 75% of women have high blood pressure by age 70. (Oliveros et al., 2020)

Hypertension in the elderly (aged 60 years and over) in Indonesia is quite high. Riskesdas 2018 data shows that around 60-70% of elderly people in Indonesia experience hypertension, based on the Indonesian health survey in 2023 that hypertension with a doctor's diagnosis in pre-elderly age 45-54 reached 11.8%, age 55-64 with a prevalence of 18.7%, age 65-74 with a prevalence of 23.8%, age 75+ with a prevalence of 26.1% This prevalence shows that with increasing age there is an increase in the elderly who experience hypertension.(Kemenkes, 2023)The blood vessels of the elderly tend to undergo changes as they age, which often leads to an increased risk of hypertension. Factors such as decreased vascular elasticity, changes in vascular wall components, as well as increased peripheral resistance all contribute to the condition of hypertension in the elderly. The prevalence of hypertension is high in the elderly, with many risk factors contributing to this condition, including increased vascular resistance, decreased vascular elasticity, obesity, and unhealthy lifestyle. Uncontrolled hypertension can lead to a variety of serious complications such as heart disease, stroke and kidney failure, which can reduce the quality of life and life expectancy of the elderly. Effective blood pressure management in the elderly is very important in an effort to improve the quality of life of the elderly.(Langitan, Rosamey Elleke., 2024),(Smeltzer, S. C., & Bare, 2021)(Newfiel et al., 2007)

Developed by German physician Johannes Schultz in the early 20th century, autogenic training teaches individuals to feel more relaxed body sensations such as a feeling of warmth or heaviness in certain limbs, which can affect the autonomic nervous system by using the mind-body connection to influence and regulate the body's normally involuntary autonomic functions by passively utilising the individual's central and peripheral nervous systems. Often used for stress relief, autogenic training can also be used for asthma, chronic pain, migraines, constipation, anxiety, panic attacks, and a host of other conditions. (Endredy, 2016) The use of autogenic relaxation to lower blood pressure in the elderly has attracted attention as one of the non-pharmacological approaches that can help manage hypertension in this age group. Autogenic relaxation is one of the non-pharmacological therapy options as an effort to lower blood pressure so that it can be controlled. Autogenic relaxation is a relaxation method designed to help individuals reduce physical and mental tension through self-suggestion exercises that focus on specific body sensations. This stimulates the parasympathetic nervous system, known as the 'rest and digest' system. Activation of the parasympathetic system leads to a decrease in heart rate (bradycardia) and a decrease in blood vessel contraction (vasodilatation), both of which contribute to a decrease in blood pressure.(Arlin Cuncic, 2023)

Several studies have shown that autogenic relaxation can reduce blood pressure in elderly with hypertension. the results of the study there is an effect of giving autogenic relaxation therapy on blood pressure in hypertensive elderly by Ashari 2023 when performing autogenic relaxation therapy the physical state of deep rest will overcome the perceived system response. This is activated by the parasympathetic nervous system, another branch of the autonomic nervous system. The entire body and mind system returns to a state of harmony and balance. Heart rate and breathing become slower, muscle tension and blood pressure decrease which will be able to reduce headaches. Autogenic therapy will be able to repair vascular damage in hypertension by reducing cerebral vascular resistance.(Ashari et al., 2023)

Ased on the results of an initial survey conducted on active posyandu elderly in Bintang Village, Sidikalang sub-district with the n umber of hypertension in the elderly conducted on 4 elderly people with hypertension, 2 of them did not feel symptoms, the other 2 said they often experienced increased blood pressure due to various stresses of the mind and felt

helpless because of their advanced age. This study aims to explore the effect of autogenic relaxation techniques in reducing blood pressure in elderly with hypertension

METHOD
The research design of this study uses a Pre-Experimental research design using a design (One Group Pretest Posttest Design) without a comparison group (control). In this design, one group before being given a certain intervention is observed during the pre-test, then observed again after being given the intervention treatment (post test) to determine the effect of the treatment. Cause and effect testing is done by comparing pre-test and post-test results. The form of this design can be described as follows:

Pre Test	Treatment	Post Test
01	X	02

Description:
- 01 : Measurement of blood pressure before being given the action of autogenic relaxation therapy in elderly people who experience hypertension
- 02 : Measurement of blood pressure after being given the action of autogenic relaxation therapy in the elderly who experience hypertension
- X : Providing autogenic relaxation therapy actions in the elderly who experience hypertension

The research will be carried out at Posyandu Desa Bintang in the working area of UPT Batang Beruh Health Centre, Sidikalang District, Dairi Regency. The population in this study were all elderly people with hypertension. The number of samples in this study were 34 Sampling in this study was conducted using Non Probality Sampling, namely Purposive Sampling. This technique is a sample by selecting samples among the population according to the researcher's wishes based on the inclusion criteria Willing to be a research respondent by signing a willingness form and participating in activities until completion, elderly people with hypertension who are not with serious cardiovascular conditions, such as coronary heart disease or heart failure.

The method of implementation is to identify elderly people who experience hypertension in accordance with predetermined inclusion criteria who have received approval to become respondents, then take blood pressure measurements then the researcher will teach or train autogenic relaxation techniques until the respondent can really do it well in accordance with the SOP then the respondent performs autogenic relaxation for 20-30 minutes or according to the respondent's ability. Measurement of blood pressure as the final evaluation of autogenic relaxation after the respondent can do autogenic relaxation well. The difference in measurement results before and after treatment was analysed to determine whether there was a difference in blood pressure.

Autogenic therapy
Autogenic therapy is a technique to reduce tension by giving suggestions to yourself. The instrument in this study uses Standard Operating Procedures (SOP) and uses a tensimeter instrument (sphygmomanometer). The elderly as respondents will be asked to do this exercise until they really do it well in accordance with the SOP, either under the supervision of the researcher as an instructor or independently, by focusing on breathing techniques and certain physical sensations. During the research process, blood pressure will be measured before and after the intervention to assess the changes that occur. This autogenic relaxation intervention was conducted at least once a week or according to the respondent's ability for four consecutive weeks with a duration of 20-30 minutes. Blood pressure assessment for evaluation at the end of the activity is carried out again measuring blood pressure.

Here are the basic steps in the autogenic relaxation technique: The first stage is preparation Autogenic therapy is a technique to reduce tension by giving suggestions to oneself. Here are the basic steps in the first stage of autogenic relaxation technique Preparation : There are three basic positions for autogenic relaxation: sitting on a chair, leaning on a chair, or lying down. The sleeping position is the best body position for autogenic relaxation: Find a place that is quiet and comfortable, free from distractions, preferably by lying on a carpeted floor or bed, Both hands beside the body and palms facing up and legs straight so that the heels on the floor, A thin pillow is placed under the head or knees, and the back is straight. Second stage Concentration: When first doing this exercise, what you will feel is the mind wandering to things that seem more important. What is meant by concentration in this exercise is that the mind is only here and now, especially in the current state of the body, If at first you encounter other thoughts that try to distract the mind, refocus the mind on the concentration.in the concentration stage, do the following phases: Autogenic Relaxation Phase. This exercise begins by adjusting the breath as in the deep breath relaxation technique, do it several times until you feel calmer then proceed to enter the six phases of autogenic relaxation. Fase 1: Feeling heavy. Start by suggesting to your body to feel a sense of heaviness. Focus your attention on your arm and imagine both arms or legs, and say silently or slowly: 'My arms feel very heavy,' or 'My legs feel very heavy.' Feel this sensation of heaviness in your body. Let this feeling of heaviness sink in slowly. Next, slowly imagine the arms feeling loose, light until they feel very light while saying 'I feel completely peaceful and calm'. Do the same with your shoulders, back, neck and legs. Fase 2: Feeling warmth imagine the blood flowing more smoothly to that part of the body, giving a warm soothing feeling, while saying to yourself 'I feel calm and warm'.Fase 3: eeling the heart beat Place your right hand on your left chest and left hand on your stomach. Imagine and feel the heart beating regularly and calmly while saying 'my heart beats regularly and calmly'. Repeat 4 times. Say silently 'I feel peaceful and calm'. Fase 4: Breathing exercise ;The position of both hands does not change. Say to yourself 'my breathing is regular and calm'. Repeat 4 times. Say to yourself 'I feel relaxed and calm'. Fase 5: Abdominal Exercise; The position of the hands does not change. Feel the blood vessels in the abdomen flowing regularly and feel warm. Say to yourself 'the blood flowing in the abdomen feels warm'. Repeat 4 times. Say to yourself 'I feel peaceful and calm'. Fase 6 : Head Exercise Both hands return to the starting position. Say to yourself 'my head feels really cold, my blood pressure is normal'. End of exercise End the autogenic relaxation exercise by clenching the arms together with a deep breath, then exhale slowly while opening the eyes. (Kemenkes, 2019)(Widiastuti, 2019)(Nurdini & Habibah, 2024)

Data analysis used is univariate and bivariate analysis. Univariate analysis in this study aims to describe the percentage and distribution of variables before being given autogenic relaxation therapy with after being given autogenic relaxation therapy. Each variable was analysed descriptively using frequency distribution. The data that has been collected is first tested for data normality with Kolmogorov -smirnov. Bivariate Analysis Bivariate analysis in this study was used to analyse the effectiveness of giving autoenic relaxation therapy on changes in blood pressure in the elderly who experience hypertension using the T test statistical test with the help of computer applications The t test is used to determine whether there is a difference in the dependent variable, namely changes in blood pressure. The results of the Independent Sample T-Test test if the sig value (2-tailed) < α or sig (2-tailed) < 0.05, then H0 is rejected and Ha is accepted and vice versa.

RESULT
Univariate Analysis

The results of univariate analysis are presented in the form of data on the characteristics of respondents studied based on gender, age, occupation, education. Respondents in this study were elderly people in Bintang Village from September to November 2024 with a total sample of 34 respondents.nivariate analysis was carried out to determine the frequency distribution of each variable studied in the elderly who experienced hypertension. Respondents in this study were elderly people at Posyandu Lansia Desa Bintang in the work area of UPT puskesmas Batang Beruh in September to November 2024 with a total sample of 34 respondents. These variables include respondent characteristics (age, gender, education level, blood pressure). Data distribution can be seen in the table below:

Table 1
Distribution of Characteristics of Elderly Respondents who experience hypertension

Respondent Characteristics	Total	
	f	%
Age Group		
45–59 age	5	14,70
60–74 age	27	79,41
>75 t age	2	5,88
Gender		
Male	6	17,64
Women	28	82,35
Education		
elementary school	18	52,94
Junior High School	12	35,29
Senior High School	4	11,76
Jobs		
Doesn't work	1	2.94
Farmer	31	91,17
Retired	2	5,88

Based on the table above, it shows that the characteristics of elderly people with hypertension at Posyandu Bintang, Bintang Village, aged 45-59 years were 5 respondents (14.70%), aged 60-74 years were 27 respondents (79.41%), aged >75 years were 2 respondents (5.88%).With age, blood vessels, especially arteries, tend to lose their elasticity. Arterial walls, which were previously more flexible, become stiffer due to collagen build-up and a decrease in elastin content. This process reduces the ability of the blood vessels to expand and contract properly according to the blood flow. As a result, vascular resistance increases, leading to an increase in blood pressure, particularly systolic blood pressure by performing autogenic relaxation intervention on respondents Endothelium is a thin layer that lines blood vessels and plays a role in regulating blood vessel dilation and contraction. In the elderly, the function of the endothelium often declines, which contributes to increased blood pressure.(Nugroho, 2017)

The majority of female gender were 28 respondents (82.35%), the minority of men were 6 respondents (17.64%). The prevalence of hypertension in women is higher than in men, especially after entering old age and menopause. The decrease in estrogen hormone levels that occurs in postmenopausal women plays a role in increasing blood pressure. Before menopause, women are protected by the hormone oestrogen, which maintains the elasticity of blood vessels and helps regulate blood pressure. However, after menopause, the decline in oestrogen levels increases the risk of hypertension in women.(Arum, D., & Purwanti, 2019) Characteristics of patients with hypertension based on elementary school education were 18 respondents (52.94%), junior high school 12 respondents (35.29%), high school 4 respondents (11.76%) So it can be concluded that the majority of respondents' education in this study were

elementary school respondents 18 (52.94%). Higher levels of education affect the attitudes and behaviour of the elderly in the management of hypertension, including avoiding risk factors and complying with recommended treatment.(Arum, D., & Purwanti, 2019). Education can influence the prevalence of hypertension in the elderly through various mechanisms related to knowledge, awareness, and healthy living behaviour. People who have a higher level of education tend to be more able to manage their health well, including understanding the risk factors for hypertension and how to prevent it.(Nugroho, 2017).

The characteristics of the respondents' jobs based on the results of the study were farmers as many as 31 respondents (91.17%), retirees as many as 2 respondents (5.88%), not working as many as 1 respondent (2.94%). The majority of occupations are farmers as many as 31 respondents (91.17%). Work can affect hypertension in the elderly through various factors, both from a physical and psychosocial perspective. The type of work performed, stress levels, and lifestyle related to previous work can affect the risk of hypertension in the elderly.

Bivariate Analysis Results
The results of bivariate analysis are presented in the form of data normality test data with Kolmogorov -smirnov and Shapiro-Wilk Bivariate Analysis Bivariate analysis in this study was used to analyse the effectiveness of providing autoenic relaxation therapy on changes in blood pressure in the elderly who experience hypertension using the T test statistical test with the help of computer applications The t test is used to determine whether there is a difference in the dependent variable, namely changes in blood pressure. The results of the Independent Sample T-Test test if the sig value (2-tailed) < α or sig (2-tailed) < 0.05, then H0 is rejected and Ha is accepted and vice versa.

Tabel 2.
Tests of Normality Sistole

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Systole Before	.143	34	.078	.929	34	.068
Systol After	.161	34	.025	.941	34	.030

From the results of the normality test it is stated that systole has a value of p-value < 0,05.

Tabel 3.
Tests of Normality Diastole

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Diastol Before	.315	34	.000	.768	34	.000
Diastol After	.372	34	.000	.712	34	.000

From the results of the normality test it is stated that the value p-value < 0,05.

Tabel 4.
Mean reduction in Blood Pressure after Progressive Muscle Relaxation Intervention in hypertensive patients

Blood Pressure	N	Mean	*Std Deviasi*	*P Value*
Systole	34	15,470	1,492	< 0,001
Diastole	34	9,264	1,754	< 0,001

Based on table 4, the average decrease in systole blood pressure is 15.470 with the results of the paired t test P value <0.001 (p <0.05) while for the average decrease in diastole blood pressure 9.264 with the results of the test paired t test *P value* < 0,001 (p < 0,05).

Table 5
Results of Blood Pressure analysis Before and After Autogenic Relaxation Intervention in the elderly who experience hypertension

Blood Pressure	Variable	N	Mean	Median	*Std Deviasi*	95% Confidence Interval of the Difference		*Sig.(2-tailed)*
						Lower	Upper	
Systole	before	34	153,03	150.00	.983	149.35	156.71	<,001
	after		137,56	135.00	.849	134.13	140.99	
Dyastole	before	34	92,68	90.00	.538	90.80	94.55	<,001
	after		83,41	82.00	.517	81.61	85.22	

Table 5 shows that there is a significant difference in the effect of autogenic relaxation before and after the intervention with p-value = 0.00 (<0.05). The mean decrease in blood pressure of the elderly before the intervention was 153.03 after the intervention to 137.56 mmHg, for diastole blood pressure 92.68 mmHg to 83.41 mmHg.

DISCUSSION
Blood Pressure before and after Autogenic Relaxation intervention
The results of autogenic relaxation research on the elderly who experience hypertension in the posyandu for the elderly of Bintang Village in the work area of UPT puskesmas Batang Beruh were effective in reducing blood pressure. This study involving elderly respondents who were given autogenic relaxation training over a 4-week period once a week systole blood pressure before the intervention was an average of 153.02 mmHg and after the intervention decreased by an average of 137.61 mmHg with the results of the average difference in systolic blood pressure reduction was 15, 41 mmHg while diastolic blood pressure before the autogenic relaxation intervention was 92.67 mmHg and after the intervention to an average of 83.41mm Hg with an average difference in decline is 9.26 mmHg with the results of statistical tests using Paired Sample t-test produces a value of p < 0.01, which indicates significance at the level of significance 95% (α = 0.05). esearch on the use of autogenic relaxation to lower blood pressure in the elderly has attracted attention as one of the non-pharmacological approaches that can help manage hypertension in this age group. Autogenic relaxation is a relaxation technique developed by Johannes Heinrich Schultz in the early 20th century, which teaches individuals to feel more relaxed body sensations, such as a feeling of warmth or heaviness in certain limbs, which can affect the autonomic nervous system. The results of this study are also in accordance with research conducted by Ashari 2023 the average difference before and after being given autogenic relaxation therapy of 10.92 mmHg pretest diastolic blood pressure of the intervention group 2 mmHg This shows that after giving autogenic relaxation therapy 5 times in the intervention group can cause the respondent's blood pressure to decrease more, so that a significant difference in blood pressure reduction can be seen. Then at the time of performing autogenic relaxation therapy the physical state of rest in depth will overcome the perceived system response. This is activated by the parasympathetic nervous system, another branch of the autonomic nervous system. The entire body and mind system returns to a state of harmony and balance. Heart rate and breathing become slower, muscle tension and blood pressure decrease which will be able to reduce headaches..(Ashari et al., 2023)(Hartiningsih, S.N., Oktavianto, E., & Hikmawati, 2021)

Autogenic relaxation works by utilizing the basic principles of body regulation to achieve a state of deep relaxation, which can affect the body's physiology, including blood pressure. It is a relaxation technique that involves the use of self-suggestion to create certain physical sensations, such as heaviness or warmth in the body, with the aim of helping the body achieve a state of deep relaxation. This technique is based on the principle that the body and mind

influence each other, and by giving positive suggestions to the body. Autogenic relaxation works by utilizing the basic principles of body regulation to achieve a state of deep relaxation, which can affect the body's physiology, including blood pressure. The physiological response is carried out with several stages that have an effect on the body, starting with deep breathing: Focus on slow and regular deep breathing to calm the nervous system. In the advanced phase with Self-suggestion: Using sentences or affirmations that point to specific sensations in the body, such as "my hands feel warm" or "my feet feel heavy". This can help to relax the muscles and reduce stress, personal affirmations that help to lead in a positive direction. These are most effective when they are short, simple and positive; expressed in the first person present tense; and related to something that is within the participant's control. Affirmations can be designed to affirm self-esteem or to counter negative thought patterns (T NAYLOR, 2021), (Sadigh, 2020). Next is Muscle Relaxation: By suggesting to the body sensations such as heaviness or warmth, tense muscles can be relaxed, lowering the tension that can contribute to increased blood pressure. Improves Autonomic Balance: This technique can also help improve the balance between the sympathetic nervous system (which activates during stress) and the parasympathetic nervous system (which is tasked with calming the body). The parasympathetic nervous system functions to reduce heart rate and dilate blood vessels. (Endredy, 2016), (Payne, R. A., & Donaghy, 2010),(Imamah, 2020).

Another study conducted by Sumantrie et. all 2020 with the results of the analysis showed that there were changes in mean pressure between before and after autogenic relaxation therapy with a significant systole value at p-value = 0.00 (α < 0.05) and a significant diastole value at p-value = 0.00 (α < 0.05) This autogenic relaxation therapy can be used as an alternative therapy in overcoming blood pressure problems in the elderly or parents in addition to medication therapy where autogenics imply that we have the ability to control various body functions. such as heart frequency blood flow, the results of interviews conducted by researchers to hypertensive respondents obtained subjective data stating that after doing autogenic relaxation the heart frequency became relaxed so that it made the respondents' feelings relaxed, The results of interviews conducted by researchers to hypertensive respondents obtained subjective data stating that after doing autogenic relaxation the heart frequency relaxed so that it made the respondent's feelings peaceful and calm, the respondent's stress tension became controllable, the body felt warm, which was the result of peripheral arteries experiencing vasodilation and all of that caused the respondent's feelings to become calmer.(Sumantrie & Limbong, 2020)

The results of other studies also show that there is an effect of autogenic relaxation therapy while listening to classical music on changes in blood pressure in the elderly with hypertension in the intervention group before and after autogenic relaxation with a p value of systolic blood pressure (p = 0.001), p value of diastolic blood pressure (p = 0.000) Autogenic relaxation will have a positive effect on lowering blood pressure, where the response to relaxation will stimulate the work of the cortex in cognitive and emotional aspects. The results of positive perceptions and emotions will provide a positive coping response. With positive coping, it will cause a calm and relaxed feeling towards the money tension caused by stress. A decrease in stress hormones (cortisol and catecholamines) will reduce plasma cirenine production in the blood, so that the formation of angiotensin II in the blood is also reduced, the reduced formation of angiotensin II will cause vasodilation and a decrease in blood volume can also reduce blood pressure.(PARDOSI et al., 2022). Other research results with the research design used in this study are descriptive case study research types. This type of case study research uses participatory observation. The results of observations on the subject under study showed a decrease in blood pressure, the client's face looked relaxed and the

client looked happy the client's face looked relaxed and the client looked happy This autogenic relaxation can be categorised into mental relaxation or physical relaxation.(Retnowati et al., 2021)

The results of data analysis of systole blood pressure before the intervention was an average of 153.02 mmHg and after the intervention decreased to an average of 137.61 mmHg with the average difference in systolic blood pressure was 15.41 mmHg while diastolic blood pressure before the autogenic relaxation intervention was 92, 67 mmHg and after the intervention to an average of 83.41mm Hg with an average difference in decline is 9.26 mmHg with the results of statistical tests using Paired Sample t-test produces a value of $p < 0.01$, which indicates significance at the level of meaningfulness 95% ($\alpha = 0.05$) that autogenic relaxation effectively reduces blood pressure from each stage in the autogenic relaxation phase. At the stage of each action that begins with preparation, breath relaxation lowers tension and allows oxygen to enter the body by regulating breathing, which contributes to a decrease in stress, heart rate, and ultimately blood pressure. Slow, deep breathing stimulates the parasympathetic and reduces the effects of the stress response on the body. This contributes to a decrease in blood pressure, as the body becomes more relaxed and the cardiovascular system is not overburdened by excessive activity. Balance the cardiovascular system by lowering peripheral vascular resistance and improving blood flow. More relaxed blood vessels reduce the pressure received by the heart, reducing the work of the heart and lowering overall blood pressure.(Hartiningsih, S.N., Oktavianto, E., & Hikmawati, 2021)

As we age, blood vessels, especially arteries, tend to lose their elasticity. The artery walls, which were previously more flexible, become stiffer due to the build-up of collagen and a decrease in elastin content. This process reduces the ability of the blood vessels to expand and contract properly according to the blood flow. As a result, vascular resistance increases, leading to an increase in blood pressure, particularly systolic blood pressure by performing autogenic relaxation intervention on respondents Endothelium is a thin layer that lines blood vessels and plays a role in regulating blood vessel dilation and contraction. In the elderly, endothelium function often declines, which contributes to increased blood pressure. Autogenic relaxation techniques can help improve endothelium function, increasing the production of compounds such as nitric oxide that serve to dilate blood vessels. This helps to lower vascular resistance and overall blood pressure.(Nugroho, 2017)

The elderly respondents will be asked to perform these exercises regularly, either under the supervision of the researcher as an instructor or independently, focusing on specific breathing techniques and physical sensations. During the research process, blood pressure will be measured before and after the intervention to assess changes. Increased sympathetic nervous system activity in the elderly is associated with increased blood pressure. Activation of the sympathetic system causes contraction of blood vessels, which narrows the arterial lumen and increases blood pressure. In old age, the body is more susceptible to increased activation of the sympathetic system, which increases the workload of the heart and causes hypertension, autogenic relaxation techniques with various stages by self-suggestion to feel relaxed and calm release endorpine hormones so that breathing with deep breaths increases lung expansion for inspiration to supply oxygen to the whole body so that muscle muscles participate in being relaxed further with autogenic relaxation can reduce the production of stress hormone hormones such as cortisol and norepinephrine, such as cortisol and norepinephrine, which function to increase blood pressure by calming the body and mind with self-suggestion with affirmation words that can provide a sense of relaxation and comfort. Decreased levels of cortisol and norepinephrine reduce stimulation of the sympathetic nervous

system, which in turn reduces vasoconstrictor responses and increases blood pressure.(Kaplan, 2015)(Nurdini & Habibah, 2024)

The results of this study are effective in reducing blood pressure in the elderly who experience hypertension with an average difference of 9.26 mmHg with the results of statistical tests using Paired Sample t-test results in a p value <0.01, which indicates significance at the level of meaningfulness 95% (α = 0.05). The results of this study are also supported by when doing autogenic relaxation the physical state of deep rest will overcome the perceived system response, this is activated by the parasympathetic nervous system another branch of the autonomic nerves. The entire body and mind system returns to a balanced state and when exhaling slowly, namely making suggestions to yourself by thinking of several positive sentences that can create a relaxed state so that it can control breathing, blood pressure, heart rate. (Siaunta., 2023). Autogenic relaxation has a positive effect on lowering blood pressure because the response to relaxation will stimulate the work of the cortex in cognitive and emotional aspects, resulting in positive perceptions. Positive perceptions and emotions will trigger coping to be positive because it can cause a sense of calm and relaxation and overcome the tension caused by stress. In a relaxed state, the body will activate the parasympathetic nervous system whose function is to slow the breathing rate, decrease heart rate and blood pressure. (Cempaka, 2024)

The results of research whose results have an effect on lowering blood pressure conducted by Sucipto (2022) state that there is a decrease in blood pressure in elderly hypertension, which can create a sense of calm, relaxation, comfort and a warm sensation that causes dilation of blood vessels and results in decreased blood pressure and a decrease in muscle tension which results in a mild sensation Autogenic relaxation has an effect on lowering blood pressure because it is influenced by autonomic nerves and has vasodilator properties whose effect widens blood vessels and heart pumping activity decreases resulting in a decrease in blood pressure.

CONCLUSION

The results of the study of autogenic relaxation in the elderly who experience hypertension in the elderly posyandu of Bintang Village in the work area of UPT puskesmas Batang Beruh were effective in reducing blood pressure. This study involving elderly respondents who were given autogenic relaxation interventions over a 4-week period once a week systole blood pressure before the intervention was an average of 153.02 mmHg and after the intervention decreased by an average of 137.61 mmHg with an average difference in systolic blood pressure reduction of 15, 41mmHg while diastolic blood pressure before the autogenic relaxation intervention was 92.67 mmHg and after the intervention to an average of 83.41mmHg with an average difference in decline is 9.26 mmHg with the results of statistical tests using Paired Sample t-test produces a value of p < 0.01, which indicates significance at the level of significance 95% (α = 0.05). Autogenic relaxation is effective in reducing blood pressure in elderly people who experience hypertension.

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