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Reducing Blood Pressure on Elderly with Hypertension with Progressive Muscle Relaxation Therapy

Ida Noefitasari[1], Desi Natalia Trijayanti Idris[2]
[1,2]Nursing Department, STIKes RS Baptis Kediri, Indonesia

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Abstract

Elderly is a process of life's journey of getting old. Physiological changes in the cardiovascular system experienced by the elderly are hypertension which occurs due to decreased elasticity of the arteries in the aging process. The purpose of this research was to analyze the effect of progressive muscle relaxation on reducing blood pressure in hypertensive elderly in Banjarejo Village. Pre-experimental research design with One group Pre-Post Test Design approach. The research sample is 30 elderly hypertension people with Quota Sampling. Research variables are progressive muscle relaxation therapy and blood pressure. Collecting data using observation sheets, using the Wilcoxon statistical test. The results showed that there were changes in blood pressure before and after therapy, namely systolic blood pressure -7.82 mmHg and diastolic blood pressure -5.54 mmHg. Wilcoxon statistical test showed p value = 0.000 which means there is a change in blood pressure in the elderly after doing progressive muscle relaxation therapy. The conclusion of this research shows that progressive muscle relaxation is a therapy that can be used to lower blood pressure in hypertensive patients.

✉Correspondence Address:
STIKes RS Baptis Kediri - East Java, Indonesia
Email : idrisdede87@gmail.com
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INTRODUCTION

At the time of the elderly, there will be physiological changes in the cardiovascular system experienced by the elderly, including hypertension, this is due to a decrease in arterial elasticity in the aging process (Padila, 2013). Essential factors that occur in the elderly include gender, weight, diet, genetics, lifestyle and age, and secondary factors that occur in the elderly with hypertension include pregnancy, burns, use of oral contraceptives, coarctation of the aorta, smoking, increased intravascular volume, neurological (encephalitis, psychic, brain tumors) (Udjianti Wajan, 2011).

According to WHO 2015 (WHO, 2015) shows that in the world there are approximately 1.3 billion people who have a history of hypertension, which means that out of 3 people there is 1 affected by hypertension. age is hypertension. From every year that has a history of hypertension continues to increase, it is estimated that approximately 1.5 billion people will have a history of high blood pressure in 2025, and every year who die due to complications of hypertension, it is estimated that around 10.44 million people will die.

In the Health Profile of East Java Province in 2019 based on the number of estimates there are around 11,952,694, with men ranking 48 among women with 52%. From this figure, 40.1% of people with hypertension received health services as many as 4,444 people or 4,792,862 people (Dinkes Jawa Timur, 2019). Data from the Health Office District Kediri with hypertension were 85,513 people spread across 37 Puskesmas (Kediri, 2019). Based on the number of elderlies in Banjarejo Village, 607 elderly and for the number of elderly who have hypertension and contact with health workers there are 48 elderly.

Hypertension is usually also called the silent killer or also called the Silent Killer, because people with hypertension often do not experience any disturbances and symptoms for years. Therefore, sufferers who experience it do not know that they have hypertension and only know it after complications occur. In case of high hypertension, the person may have the following signs: heaviness in the back of the neck (headache), fatigue, palpitations, vomiting, nausea, excessive sweating, anxiety, muscle tremors, nosebleeds, chest pain, blurred vision or double, tinnitus (hearing ringing) and insomnia (Udjianti Wajan, 2011).

Some efforts to handle high blood pressure that can control high blood pressure include controlling blood pressure in an easy way that can be made independently and inexpensively to control blood pressure for hypertensive elderly. Some efforts to treat high blood pressure include controlling and avoiding medicines that can be made independently and affordable to keep blood pressure stable in patients with high blood pressure. Several studies have provided drug-free treatment that can reduce high blood pressure, namely steam bath therapy, deep breathing relaxation, hypnotherapy, progressive muscle relaxation and through rose aromatherapy therapy. (Sucipto, 2014 dalam (Akhriansyah, 2019). In this research, the aim of this research was to analyze the decrease in blood pressure in the elderly hypertension after being given muscle relaxation therapy progressive in Banjarejo Village.

An elderly will definitely experience physiological changes in the cardiovascular system. One of these physiological changes in blood pressure is commonly called high blood pressure (hypertension). Hypertension is a symptom of degenerative cardiovascular disease that is most commonly experienced by the elderly whose cause is not known for sure (Anggraini, Yanti, 2022). The occurrence of hypertension is due to a decrease in arterial elasticity in the aging process (Padila, 2013). Essential factors that occur in the elderly include gender, weight, diet, genetics, lifestyle and age, and for secondary factors that occur in the elderly who experience hypertension including pregnancy, burns, use of oral contraceptives, coarctation of the aorta, smoking, increased intravascular volume, neurological (encephalitis, psychic, brain tumor) (Udjianti Wajan, 2011). Hypertension if left untreated can cause stroke, myocardial infarction, kidney failure and encephalopathy (Sri Mulyati Rahayu, Nur Intan Hayati, 2020).

According to 2015 WHO (Word Health Organization) data, it shows that in the world there are approximately 1.3 billion people who have a history of hypertension, which means that out of 3 people there is 1 who has hypertension. It is estimated that approximately 1.5 billion people will have a history of high blood pressure every year who have a history of hypertension, and every year who die due to complications of hypertension it is estimated that around 10.44 million people will die.

East Java Province Health Profile in 2019 based on the estimated number there are around 11,952,694, with men ranking 48th among women with 52%. Of this figure, 40.1% of people with hypertension received health services as many as 4,444 people or 4,792,862 people. (Kediri, 2019). Data from the Office of Health, Regency, Kediri, have hypertension, with a total of 85,513 people spread across 37 Community Health Centers (Kediri, 2019). Based on the number of elderlies in Banjarejo Village, there are 607 elderly and for the number of elderlies who have hypertension and are in contact with health workers, there are 48 elderly.

Hypertension is usually referred to as the silent killer or also known as the Silent Killer, because people with hypertension often do not experience

any disturbances or symptoms for years. Therefore, sufferers who experience it do not know that they have hypertension and only find out after complications occur. In cases of high hypertension, people may have the following signs: heaviness in the back of the neck (headache), fatigue, palpitations, vomiting, nausea, excessive sweating, anxiety, muscle tremors, nosebleeds, chest pain, blurred vision or double, tinnitus. (sense of hearing ringing) and insomnia (Udjianti Wajan, 2011).

Treatment that has been carried out in hypertensive patients includes pharmacological therapy such as administration of anti-hypertensive drugs, counseling about a low-salt diet and regular control carried out with prolanis activities. Another effort that can be done besides taking medication is to do exercises that can lower blood pressure such as progressive muscle relaxation techniques. Some efforts to treat high blood pressure that can control high blood pressure include controlling blood pressure in an easy way that can be made independently and inexpensively to control blood pressure in elderly hypertensives. Some efforts to treat high blood pressure include controlling and avoiding drugs that can be made independently and are affordable to keep blood pressure stable in patients with high blood pressure. Several studies have provided drug-free treatments that can reduce high blood pressure, namely steam bath therapy, deep breathing relaxation, hypnotherapy, progressive muscle relaxation and rose aromatherapy. (Sucipto, 2014 in (Akhriansyah, 2019) Relaxation therapy gives individuals self-control when discomfort or pain occurs (Susilo, Y., Wulandari, 2011).

Progressive muscle relaxation is a systematic technique to achieve a state of relaxation. The method is applied through the application of a progressive method with gradual and continuous training of the skeletal muscles by tensing and relaxing them which can restore muscle feeling so that the muscles become relaxed and can be used as a treatment for lowering blood pressure in sufferer's essential hypertension. The Progressive Muscle Relaxation Method explains that one of the ROP training methods is to combine deep breathing exercises and a series of muscle relaxation contractions, accompanied by instructions in the form of movement instructions such as contracting and stretching one muscle group at a time, starting with the head muscle group and ending with the leg muscles. This action usually lasts 15 to 30 minutes a day and is carried out continuously for at least 3 consecutive days and ideally for 7 consecutive days (Richard, S. D., & Sari, 2019). In this research the aim was to analyze the decrease in blood pressure in elderly hypertensives after being given progressive muscle relaxation therapy in Banjarejo Village.

METHOD

Based on the research objectives, the research design used Pre-Experimental Design method. By using the design approach One-Group Pre-Post Test Design where has a type of investigation that finds causal relationships through the participation of a group of subjects. The group subjects were observed before the intervention and then re-observed after the intervention. The population in this research with the number of elderly hypertension 48 respondents with a sample size of 30 respondents with inclusion criteria using Quota Sampling. This research used a digital Sphygmomanometer instrument or measuring instrument. Progressive muscle relaxation becomes the independent variable, and blood pressure becomes the dependent variable. This research was conducted from 15 September 2021 – 30 September 2021 and the initial data collection was carried out at the Wonorejo Health Center, Ngadiluwih District and the second to sixth data collection was carried out at the Banjarejo Village Hall. The results of the normality test on the research data used the Shapiro0Wilk test, by obtaining data that had an abnormal distribution so that the Wilcoxon Rank Test.T statistical test was used. Ethics Clerance with number: 045/13/VI/EC/KEPK-4/STIKES RSBK/2022.

Based on research objectives, the research design used in this research uses the Pre-Experimental Design method, where the design used for research seeks causal sources by involving the manipulation of the dependent variable in the research. By using the design approach 0One-Group Pre-Post0Test0Design where 0ini0 has a type of investigation that finds causal relationships through the participation of a group of subjects. Group subjects who were observed before0intervention and then observed again after the intervention. The population in this research was 48 elderly hypertensive respondents with a sample size of 30 respondents with inclusion criteria using quota sampling. This research used a digital Sphygmomanometer instrument or measuring device. Where in conducting this research technique0progressive muscle relaxation became the independent variable, and blood pressure became the dependent variable. This research was carried out from 15 September 2021 – 30 September 2021 and the initial data collection was carried out at the Wonorejo Health Center, Ngadiluwih District and the second to sixth data collection was carried out at the Banjarejo Village Hall. The results of the normality test on research data used the Shapiro0Wilk test, by obtaining ldata that had an abnormal distribution so that the WilcoxonqRankg Test was used. ETHIC test with number:

045/13/VI/EC/KEPK-4/STIKES RSBK/2022. The data collection was carried out by collecting elderly people with hypertension who were given explanations for conducting research. If the elderly agrees, the researcher will come to the elderly's house and the elderly will sign the informed consent witnessed by the family. So, the researchers will measure blood pressure before doing progressive muscle relaxation therapy exercises. Exercise is done 3 times in 2 weeks for 20 minutes.

RESULT

Table 1: Frequency of Elderly Respondents conducted in Banjarejo Village from September 2021 (n=30).

Characteristics	Amount	Prosentase %
Sex		
Man	1	3,3
Woman Perempuan	29	96,7
Total	30	100
Age		
60-74 Year	25	83,4
75-90 Year	4	13,3
≥ 90 Year	1	3,3
Total	30	100
Education		
Not school	5	16,7
Primary School	17	56,7
Junior High School	7	23,3
Senior High School	1	3,3
Total	30	100
Pekerjaan		
Job	9	30,0
Self-employed	6	20,0
Etc	15	50,0
Total	30	100

Source: *Primary Data*

Based on the results in the table. 1, it was found that the majority of respondents were women, as many as 29 respondents (96.7%). It was stated that the majority of respondents were people aged over 60-74 years, namely as many as 25 respondents (83.3%). It was explained that some of the last education of the elderly was elementary school with 17 respondents (56.7%). It was explained that 50% of the main occupations of the elderly were others (farmers, farm laborers) excluding those from self-employed and with a total of 15 respondents (50%) not working.

Table 2: Measurement of blood pressure in systolic and diastolic before after progressive muscle relaxation therapy intervention was carried out in Banjarejo Village on September 2021 (n = 30).

No. Res	Blood Pressure Tekanan darah					
	Sistolic		Diastolic		Difference	
	Pre	Post	Pre	Post	Sistolik	Diastolik
1	162	112	141	98	- 21	- 14
2	134	92	131	86	-3	- 6
3	147	105	1134	92	- 3	- 13
4	184	116	155	103	- 29	- 13
5	162	84	166	98	+ 4	+14
6	171	94	164	96	- 7	+2
7	152	103	159	92	+ 7	- 11
8	137	84	136	86	- 1	+ 2
9	159	60	144	65	- 15	+ 5
10	184	115	160	93	- 24	- 22
11	152	100	137	79	- 15	- 21
12	181	102	146	89	- 35	- 13

13	137	84	139	96	+ 2	+ 12
14	148	106	146	92	- 2	- 14
15	146	94	152	103	+ 6	+ 9
16	184	113	149	92	- 35	- 21
17	134	80	144	93	+ 10	+ 13
18	143	106	147	89	+ 4	- 17
19	188	104	158	88	- 30	- 16
20	139	96	136	82	- 3	- 14
21	185	96	148	92	- 37	- 4
22	155	101	128	72	- 27	- 29
23	146	104	132	96	- 14	- 8
24	156	111	143	78	- 13	- 33
25	133	82	138	82	+ 5	0
26	147	103	138	79	- 9	- 24
27	152	106	149	74	- 3	- 32
28	150	100	153	97	+ 3	- 3
29	160	112	141	86	- 19	- 26
30	153	94	143	99	- 10	+ 5

Based on Table 2, it was found that 30 respondents experienced changes in systolic diastolic blood pressure after the intervention, 18 respondents, and 22 respondents only experienced a decrease in systolic blood pressure, and diastolic blood pressure decreased after the intervention was given, there were 22 respondents, and 4 respondents there was a change in pressure drop. blood pressure to systolic and an increase in diastolic, and there was 1 respondent who had no change at all after the intervention on diastolic blood pressure was 1 respondent.

Table 3: Normality test regarding systolic blood pressure before the progressive muscle relaxation technique was carried out in Banjarejo Village on September 2021 (n=30).

	Blood Pressure Tekanan darah					
	Systolic (mmHg)			**diastolic (mmHg)**		
	Pra-Test	Post-Test	Changes	Pra-Test	Post-Test	Changes Perubahan
Mean	155,07	147,25	-7,82	97,10	91,56	-5,54
Shapiro-Wilk	0,073	0,263		0,087	0,010	
Wilcoxon		p=0,000 N=30 P=0 T=0			p=0,000 N=27 P=2 T=1	

Based on Table 3, the results of the analysis show that the systolic diastolic air pressure according to the Shapirol Wilk normality test (n = 30) with a significant value of p> 0.05 where the systolic pressure before after the intervention, the p-value of blood pressure was 0.073 mmHg for after and for before 0.263 mmHg, and for bdiastolic blood pressure before and after being given The intervention obtained p-values of 0.087 mmHg and 0.010 mmHg. Because the results of the four data are p < , the variance of the data is not normal, so a statistical test was carried out using the Wilcoxonl Signed C Rank Test in analyzing the effect of progressive muscle relaxation techniques on abnormal data variants with a significant p < 0.005. From the results of statistical tests carried out, it was obtained that p = 0.000b where p <α so that bH0 was rejected, mH1 was accepted, which means that the elderly's blood pressure decreased after being given progressive muscle relaxation therapy in Banjarejo village.

DISCUSSION

It is known that based on the results of the research, most of the respondents were women, namely 29 respondents (96.7%), and it was also found that the majority of respondents aged 60-74 years were 25 respondents (83.3%).), and the mean systolic and diastolic blood pressure before the intervention in the elderly with hypertension in the village of Banjarejo was 155 mmHg and 97 mmHg, the blood pressure after the intervention in the elderly respondents with hypertension decreased to 147.25mmHg and there was a change in diastolic blood pressure to 91.56mmHg. There was a change. in blood pressure before and after with a difference in changes of -7.82 mmHg and diastolic blood pressure of -5.54 mmHg.

Blood pressure pressurej is a measurement of the pressure of the heart against the resistance of the walls of blood vessels during systole and diastole. The systolic stage measures the pressure when the myocardium contracts and pumps blood into the ventricles. The pdiastole stage is a relaxation period

that describes the pressure in the peripheral blood vessels after blood is pumped. Ordinary blood pressure measurement using a sphygmomanometer or aneroid device with the unit of measurement is mmHg. This blood pressure is usually measured in the upper dominant arm (Deborah, 2017) Hypertension, or high blood pressure, is an abnormal increase in blood pressure in the arteries that results in a continuous increase in arterial area over a long period of time. This occurs when the arterioles of the arteries narrow.

Arterioles narrow, so that blood flows difficult and the pressure on the walls of the arteries increases so that it can trigger high blood pressure because the work of the heart becomes heavier and blood vessels that continue to work hard can damage the heart and blood vessels (Udjianti Wajan, 2011). There are several factors that can affect blood pressure results, namely: 1) psychological and physical stressors, 2) differences in pressure measurement positions between sitting, standing, and lying positions, 3) Race, 4) smoking, 5) gender which is significantly not There is a difference between the blood pressure of women and men. After puberty, men tend to have high blood pressure and women tend to have higher blood pressure when women enter puberty period after menopause, 6) variation in diuria, 7) Age. (Deborah, 2017). While there are two causes of hypertension, namely essential causes and secondary causes, essential causes consist of 1). Genetics where people with a family history of high blood pressure are at high risk of having the disease. 2). A diet high in salt or fat is directly related to the development of high blood pressure. 3) Obesity (> 25% above ideal body weight) is associated with the development of high blood pressure. 4) Gender Men aged 30 to 35 years and postmenopausal women are at high risk of developing high blood pressure. 5). Lifestyles such as smoking and consumption of alcoholic beverages or foods increase blood pressure when a sedentary lifestyle.

While the causes of secondary hypertension are the use of contraception, vascular parenchyma and kidney disease, endocrine disorders, coarctation of the aorta, neurogenic disease, pregnancy, burns, increased intravascular volume and smoking. There are four systems that play a role in keeping blood pressure under control, including regulation of body fluid volume, arterial baroreceptors, vascular autoregulation and the renin-angiotensin system. The carotid arteries are found mainly in the arterial baroreceptor system, but baroreceptors are also found in the walls of the left ventricle and aorta. What controls blood pressure levels is the baroreceptor system by denying increased blood pressure through cardiac mechanisms by slowing it down through stimulation of the parasympathetic response (vagal) and vasodilation with a decrease in sympathetic tone (Udjianti Wajan, 2011).

In this research, female respondents were found to be more than male, this is due to hormonal problems before entering menopause which is one factor in the occurrence of hormonal imbalances in women which results in a decrease in hormones, therefore elderly women become more susceptible to hypertension. In addition to hormones with increasing age, it can also affect blood pressure, it is proven that it is found that more elderly respondents are aged 60-74 years, namely 25 respondents (83.3%) who have hypertension. which can lead to a decline in organ function. The higher the higher the risk of high blood pressure so that the heart needs more pressure to pump blood throughout the body, but blood pressure can be lowered. Patients with high blood pressure can control their blood pressure with medication and without using drugs, including progressive muscle relaxation therapy to lower blood pressure in the elderly with high blood pressure. This is evidenced by the results of a research where the blood pressure of hypertensive elderly in Banjarejo Village who received progressive muscle relaxation therapy averaged 147.25 mmHg and 91.56 mmHg with a minimum systolic pressure of 129.50 mmHg and showed a maximum systolic blood pressure. pressure 174.17 mmHg. The minimum diastolic blood pressure was 66.67 mmHg and the maximum was 100.83 mmHg with a mean diastolic systolic change of 7.82 mmHg and -5.54 mmHg.

The results of the analysis showed that the systolic diastolic blood pressure with the Shapiro-Wilk normality test (n=30) with a significant level of p>0.05 the g value of systolic pressure before and after 0.073 and 0.263 and the p-value of diastolic pressure before and after 0.087 and 0.010. Because the results of the four data sets p < which means that the four data groups have abnormal data variance, so the statistical test used to analyze the effect in this research is Wilcoxon's Signed b Rank with a significance of p < 0.05. The results of the statistical test carried out obtained p = 0.000, so that p < then H0 was rejected and H1 was accepted, which means there was a change in the blood pressure of the elderly after being given progressive muscle relaxation techniques to the blood pressure of the hypertensive elderly in Banjarejo Village.

Reduction of high blood pressure can be done through the use of pharmacological (with drugs) and non-pharmacological (without drugs). With the use of drugs of course there are long-term effects, alternative medicine is the choice of some people to treat high blood pressure, including herbal therapies that are recognized by the medical community to treat high blood pressure disorders and even have benefits. because herbal therapy has no side effects. Some of these relaxation technique therapies,

namely yoga, progressive muscle relaxation, and deep breathing relaxation, can reduce blood pressure hypertension blood pressure (Megawati, 2020). The benefits of doing progressive relaxation are as follows: (1) Progressive relaxation can relieve stress and depression which is one of the threats that can harm a person. (2) Progressive relaxation can relieve excessive anxiety and phobias, progressive relaxation is also very good for reducing a person's level of anxiety and phobias. (3) Progressive relaxation is very good for people with hypertension. Several studies have shown that this therapy is able to overcome the disorders experienced by people with hypertension. For people with hypertension who do not know the right way to cure their disease, progressive muscle relaxation is the right choice to help lower blood pressure. (4) Progressive relaxation can relieve psychomatic disorders which are one of the disorders in health that arise due to stress or psychological symptoms. (5) Progressive relaxation is very good for the health of the body's muscles to prevent stiffness in the muscles.

This therapy is very good for maintaining muscle health and endurance, because the techniques used in this therapy require muscle performance and provide activity for the muscles. (6) Progressive relaxation can prevent or cure tingling and muscle tension. (7) Progressive relaxation can relax muscles and joints. (8) Progressive relaxation can prevent insomnia and sleep disorders, the techniques used in relaxation can make the body feel relaxed and more relaxed, so it will prevent insomnia. (9) Progressive relaxation can relieve neck aches and pains (Amalia, 2019). The Progressive Muscle Relaxation Method explains that one of the ROP training methods is to combine deep breathing exercises and a series of muscle relaxation contractions, accompanied by instructions in the form of movement instructions such as contracting and stretching muscle groups one by one, starting with the head muscle group and ending with the leg muscles. This action usually lasts 15 to 30 minutes a day and is carried out continuously for at least 3 consecutive days and ideally for 7 consecutive days (Richard, S. D., & Sari, 2019).

Things that must be considered when giving progressive muscle relaxation therapy 1) do not put too much pressure on the muscles because they can injure themselves. 2) the position of the body must be considered and carried out in a comfortable position with eyes closed, 3) the time it takes about 20-50 seconds to do therapy so that the muscles become relaxed, (4) Tense the muscle group with twice the strength. (5) Do it twice on the right side of the body, then twice on the left. (6) Make sure the client is completely relaxed. (7) Give further instructions. (8) Do not give directions too quickly or too slowly (Idris, D. N. T., & Astarani, 2019).

According to elderly researchers in Banjarejo village after progressive muscle relaxation techniques showed a significant decrease and change in blood pressure in the elderly. Progressive changes can cause changes in blood pressure. Progressive muscle relaxation techniques have various benefits, one of which is for people with hypertension because in this research it was proven that this therapy is able to overcome high blood pressure, this therapy is safe for the elderly because the movements are not complicated and easy to remember. After being given the progressive muscle relaxation technique, the respondents felt a more relaxed feeling and also felt that their body was back in shape, a happy feeling that could stimulate hormones that can improve blood pressure. Lowering blood pressure in people with hypertension by using this progressive muscle relaxation technique can stimulate the heart to work with a gentle and complete intensity in movements that involve most of the body's muscles. Blood pressure will decrease when the blood vessels dilate which can cause relaxation of the blood vessels, which can make them relax. by providing regular progressive muscle relaxation causes changes in the correct application of progressive muscle relaxation, including correct movement through conscious stretching and relaxation of muscles, correct sequence of movements (hand muscle training, bicep training, muscle training). shoulder muscles, facial muscle relaxation, training the jaw and mouth muscles, training the neck muscles, training the back muscles, relaxing the chest, training the abdominal muscles and training the leg muscles), improving the position in a comfortable sitting position, and doing it in a quiet and closed place so that the muscles Progressives feel completely relaxed when doing relaxation therapy techniques so that they can reduce blood pressure in the elderly and at least do it 3 times a week with a duration of once doing the Progressive Muscle Relaxation Technique for 150 seconds.

According to elderly researchers in the village of Banjarejo, after the progressive muscle relaxation technique was carried out, it showed a significant decrease and change in blood pressure in the elderly. This can be seen where each respondent who experienced high blood pressure took progressive muscle relaxation therapy, which initially had high blood pressure after muscle relaxation therapy. Progressive can provide changes in blood pressure. Progressive muscle relaxation techniques have various benefits, one of which is for people with hypertension because in this research it was proven that this therapy is capable of dealing with high blood pressure, this therapy is safe for the elderly because the movements are not complicated and easy to remember. After being given the progressive muscle relaxation technique, the respondents felt more relaxed and also felt their body back in shape, a feeling of happiness that can stimulate hormones that can improve blood pressure. Lowering blood

pressure in people with hypertension by using this progressive muscle relaxation technique can stimulate the heart to work with gentle and complete intensity in movements that involve most of the body's muscles. Blood pressure will decrease when blood vessels dilate which can cause relaxation of the blood vessels, which can make them relax.

By providing regular progressive muscle relaxation causes a change in the correct application of progressive muscle relaxation, including the correct movement through conscious stretching and muscle relaxation, the correct sequence of movements (hand muscle training, bicep training, muscle training). shoulder muscles, relax facial muscles, train the muscles of the jaw and mouth, train the muscles of the neck, train the muscles of the back, relax the chest, train the muscles of the stomach and train the muscles of the legs), fix the position in a comfortable sitting position, and do it in a quiet and closed place so that the muscles progressives feel completely relaxed when doing relaxation therapy techniques so that they can lower blood pressure in the elderly and at least it is done 3x once a week with a duration of one time doing the Progressive Muscle Relaxation Technique for 150 seconds. In line with the results of research conducted (Rusnoto & Alviana, 2017)) which said that there was an effect of progressive muscle relaxation on reducing blood pressure in prolanis participants with a p-value of 0.001 (systole) and 0.002 (diastolic) < α (0.05) which means There is an effect of progressive muscle relaxation therapy on reducing blood pressure. A decrease in blood pressure after performing progressive muscle relaxation techniques carried out for 2 weeks in a row will lead to an increase in parasympathetic nerve activity so that the neurotransmitter acetylcholine will be released, and this acetylcholine will affect the activity of skeletal and smooth muscles in the peripheral nervous system.

Acetylcholine neurotransmitters are released by neurons to the blood vessel walls will stimulate the endothelium cells in these vessels to synthesize and release NO (nitric oxide). will decrease (Valentine, D. A., Kp, S., Kes, M., Saparwati, M., & Kep, 2013) and (Rosidin, U., Sumarni, N., & Suhendar, 2019). Apart from that, after doing progressive muscle relaxation, the elderly feels happy and feel their bodies are getting fit again. The happy feelings you get will of course also stimulate substances such as serotonin (as a blood vessel vasodilator) and endorphins which can improve blood pressure more smoothly and contribute to decrease in blood pressure (Azizah, 2011) and (Rosidin, U., Sumarni, N., & Suhendar, 2019). Research that also supports the results of research conducted by researchers is research conducted by (Sri Mulyati Rahayu, Nur Intan Hayati, 2020) which says progressive muscle relaxation techniques can be used as nursing interventions to lower blood pressure in hypertensive patients because it is proven to reduce blood pressure in elderly, the results showed systolic and diastolic blood pressure obtained a value of 0.000.

CONCLUSION

Based on the results of the data analysis and discussion that has been carried out, conclusions can be drawn. The blood pressure of the hypertensive elderly in Banjarejo Village was obtained. The average results of blood pressure values before giving progressive muscle relaxation therapy to hypertensive elderly in Banjarejo village were 155.07 mmHg for systolic before intervention and 147.25 mmHg for systolic after intervention while for diastolic before intervention 97.10 mmHg and 91.56 mmHg for diastolic after intervention. Blood pressure in the elderly with hypertension has changed after the application of progressive muscle relaxation therapy in Banjarejo Village.

SUGGESTION

For elderly posyandu cadres, the results of this research are expected to be a substitute for providing input to posyandu cadres in carrying out lowering blood pressure in the elderly by using non-pharmacological progressive muscle relaxation techniques. For people with hypertension, according to research, elderly hypertension can be used for non-pharmacological treatment in reducing blood pressure at least 3 times a week. For further researchers, the results of this research can be developed by increasing the duration of the research and adding variables.

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CONFLICTS OF INTEREST

This research has no conflict of interest. The lead researcher and members jointly conduct research.

AUTHOR CONTRIBUTIONS

In this research the first author was responsible for the research process, namely data collection and data analysis. The second author is a correspondent and is responsible for processing research results and is responsible for the research process up to publication by writing articles that have been adapted and in translating published articles.

REFFERENCE

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