The Effect Of Hypertension Exercise On Lowering Blood Pressure In The Elderly In The Work Area Of The Gunung Kaler Health Center In 2023

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Abstract.

Background Elderly people often experience high blood pressure due to natural aging causing decreased elasticity of blood vessels which can increase blood pressure. Purpose of Writing: to find out the Effect of Hypertension Exercise on Lowering Blood Pressure in the Elderly in the Work Area of the Gunung Kaler Health Center in 2023. Research Methods: The method in this study was a Quasy Experiment with a one group pretest-posttest design. The population in this study were all elderly people who experienced hypertension. The data collected was primary data using observation. The dependent variable was a decrease in blood pressure. The independent variable was postpartum exercise. Data processing. SPSS. The results of the study showed that the assessment before and after the intervention group obtained a Sig value of 0.000, a sig value <0.05 which can be concluded that there is an effect of hypertension exercise on reducing blood pressure. Meanwhile, the before and after assessment in the control group obtained a Sig value of 0.215, a sig value > 0.05 which can be concluded that there was no effect of hypertension exercise on reducing blood pressure.Conclusions and Suggestions: Health workers can provide information about the need for education and practice to be carried out by health workers together with the elderly to implement hypertension exercises carried out in predetermined homes, it should be done routinely according to predetermined rules for doing hypertension exercises.

Keywords: *Hypertension Exercise and Decrease in Blood Pressure in the Elderly.*

I. INTRODUCTION

According to Hidayat, C. T. (2021). Hypertension or high blood pressure is a medical condition that occurs when a person's blood pressure is constantly above the normal level it should be. It is said to be hypertension if the blood pressure is above 140/90 mmHg. Hypertension in the elderly often occurs due to increasing age and the presence of other risk factors, such as unhealthy eating patterns, being overweight, lack of physical activity, and genetic factors. The elderly have a higher risk of developing hypertension because the aging process causes a decrease in the elasticity of blood vessels and increases the thickness of the arterial walls. In addition, plaque buildup and increased arterial stiffness can also exacerbate the condition of hypertension in the elderly.According to data from the World Health Organization (WHO), the incidence of hypertension in the elderly is increasing worldwide. In 2015 around 1.13 billion adults worldwide suffered from hypertension, and it is estimated that this number will increase to 1.56 billion in 2025. From these data there is a tendency that the prevalence of hypertension is increasing with age. In several countries the prevalence of hypertension in the age group over 60 years reaches 60-70%.According to the 2018 National Health Survey (SKN), the prevalence of hypertension at the age of over 60 years reached 63.9%. In addition, the SKN also shows that around 62% of people who suffer from hypertension are not aware that they have hypertension and about 43% of people who are aware of their hypertension do not take medication.According to Sri Agustina, Siska Mayang Sari, Reni Savita (2016).

There are several factors that can influence the occurrence of hypertension in the elderly including arterial stiffness, in the elderly the arteries tend to become stiff so that it can reduce arterial elasticity and increase blood pressure, decreased nitric oxide production in which nitric oxide plays a role in controlling blood pressure by relaxing blood vessels, Insulin resistance can increase blood pressure in the elderly because insulin plays a role in controlling blood vessel contractions. Impaired function of the sympathetic nervous system increases so that an increase in the sympathetic nervous system can cause an increase in

blood pressure and electrolyte balance disorders where an unbalanced electrolyte balance can increase blood pressure.According to Basuki, S. P. H., & Barnawi, S. R. (2021). Hypertension complications in the elderly can cause heart disease, stroke, heart failure, kidney failure and eye damage. The higher the blood pressure in the elderly, the higher the risk of complications that can occur. Elderly can prevent hypertension by adopting a healthy lifestyle, such as a balanced diet, regular exercise, not smoking. The type of exercise in reducing hypertension is hypertension exercise.According to Tina, Y., et al. (2021) Hypertension exercise is a type of aerobic exercise specifically designed to help lower blood pressure in people who suffer from hypertension. Hypertension exercise usually consists of light movements and easy to do such as aerobics and yoga as well as breathing exercises that can control blood pressure.As for the types of hypertension exercise, several types of hypertension exercise that are commonly performed include aerobic exercise, yoga, tai chi and breathing exercises. Aerobic exercise involves movements that help improve blood circulation and strengthen the heart muscle.

Yoga and tai chi involve movements that help improve balance, flexibility and peace of mind. Breathing exercises involve breathing techniques that can help control blood pressure.Several studies, one of which is based on the research of Sumartini, N. P., et al (2019). showed that hypertension exercise on blood pressure can reduce blood pressure in people who suffer from hypertension. Although hypertension exercise can provide significant benefits for the health of the elderly who suffer from hypertension, there are still many elderly who have not done hypertension exercise routinely.The initial survey of researchers in the working area of the Gunung Kaler Public Health Center still did not know about hypertension gymnastics. In addition, for the elderly who have been socialized about hypertension exercise, there are still some elderly who do not take part in the hypertension exercise program for the elderly. Some of the factors for the elderly who have not done hypertension gymnastics which were obtained from cadres in the Gunung Kaler Health Center work area are the lack of awareness of the elderly about the importance of doing light exercise, the presence of physical limitations such as joint pain, muscle weakness, or balance disorders making it difficult to do hypertension gymnastics, not there are adequate facilities to do hypertension exercises and there is limited time to do hypertension exercises regularly due to busyness in carrying out daily activities.Based on this research problem, the researcher is interested in knowing that exercise by doing hypertension gymnastics can reduce the incidence of hypertension in the elderly. so that the current research title is The Effect of Hypertension Exercise on Lowering Blood Pressure in the Elderly in the Work Area of the Gunung Kaler Health Center in 2023

II. METHODS

This research was conducted to determine the effect of hypertension gymnastics on reducing blood pressure in the elderly in the working area of the Gunung Kaler Health Center. The research location was in the Gunung Kaler Health Center. The method in this research is Quasy Experiment with one group pretest-posttest design. The population in this study were all elderly people who experienced hypertension. The data collected was primary data using observation. The dependent variable was a decrease in blood pressure. The independent variable was postpartum exercise. Data processing. SPSS. The implementation stage at this stage of primary data collection is in accordance with the research objectives to determine the effect of hypertension exercise on reducing blood pressure in the elderly in the working area of the Gunung Kaler Health Center.

Hypertension exercise with the aim of increasing blood flow and oxygen supply to the active muscles and skeleton, especially the heart muscle so that it can lower blood pressure. Perform hypertension exercise according to the steps in the implementation of hypertension exercise, hypertension exercise is carried out for 12 weeks routinely 3 times a week hypertension exercise is carried out. After 12 weeks, the researchers reassessed the elderly's blood pressure, whether there was a decrease in blood pressure or vice versa, whether there was a decrease in blood pressure. The study was conducted in 2 groups, namely the group given hypertension exercise and the group not given hypertension exercise

III. RESULT AND DISCUSSION

A. Univariate Analysis

1. Average Blood Pressure Before and After the Intervention Group (Performed Hypertension Exercise).

No	Action	Sistolic				No	Diastolic		
		n	M	SD	Min Max		M	SD	Min-max
1	Before	19	167,3	10,012	150-187	1	100,95	5,380	90-110
2	After		163,0	10,100	150-180	2	95,74	5,162	90 - 110

Hypertension before hypertension exercise was carried out, the average (mean) systolic blood pressure was 167.3, the standard deviation was 10.012, the minimum systolic blood pressure was 150 mmHg and the maximum systolic blood pressure was 187 mmHg. Then the average value (mean) diastolic blood pressure is 100.95 standard deviation 5.380, minimum diastolic blood pressure value is 90 mmHg and maximum diastolic blood pressure value is 110 mmHg.After the hypertension exercise, the mean systolic blood pressure was 163.0, the standard deviation was 10.100, the minimum systolic blood pressure was 150 mmHg and the maximum systolic blood pressure was 180 mmHg. Then the average value (mean) of diastolic blood pressure is 95.74 standard deviation of 5.162, the minimum diastolic blood pressure value is 90 mmHg and the maximum diastolic blood pressure value is 110 mmHg.

2. Average Blood Pressure Before and After the Control Group (without doing Hypertension Exercise).

No	Action	Sistolic				No	Diastolic		
		n	M	SD	Min Max		M	SD	Min-max
1	Before	19	166,7	8,881	150-180	1	100,16	5,398	90-110
2	After		167,8	8,322	150-180	2	101,05	4,195	95- 110

It is known that of the 19 elderly who experienced hypertension before being carried out without doing hypertension exercises, the average (mean) systolic blood pressure was 166.7, the standard deviation was 8.881, the minimum systolic blood pressure value was 150 mmHg and the maximum systolic blood pressure value was 180 mmHg. . Then the average value (mean) of diastolic blood pressure is 100.16 standard deviation of 5.398, the minimum diastolic blood pressure value is 90 mmHg and the maximum diastolic blood pressure value is 110 mmHg.After 12 weeks from the initial blood pressure check, the mean systolic blood pressure was 167.8, the standard deviation was 8.322, the minimum systolic blood pressure was 150 mmHg and the maximum systolic blood pressure was 180 mmHg. Then the average value (mean) of diastolic blood pressure is 101.05 standard deviation of 4.195, the minimum diastolic blood pressure value is 95 mmHg and the maximum diastolic blood pressure value is 110 mmHg.

B. Normality Test

	Kolmogorov - smirnov			Shapiro - wilk		
	statistic	df	sig.	statistic	df	sig.
Before systolic intervention	.130	19	.200*	.974	19	.847
After systolic intervention	.143	19	.200*	.923	19	.127
Before systolic control	.117	19	.200*	.960	19	.572
After control systolic	.246	19	.004	.912	19	.081

The results of the normality test assessment obtained results in the intervention group (performed with hypertension exercise) the Shapiro-wilk value was 0.847 (before) and 0.127 (after) then the Shapiro-Wilk value with P-value> 0.05, it can be concluded that the normality test is normally distributed . Whereas in the control group (hypertension exercise was not performed) the Shapiro-Wilk value was 0.572 (before) and 0.081 (after) so the Shapiro-Wilk value with a P-value > 0.05, it can be concluded that the normality test is normally distributed. The results are normally distributed. then the normality test is used statistical test paired sample T test

C. Bivariate analysis

1. The Effect of Hypertension Exercise on Lowering Blood Pressure in the Elderly in the Work Area of the Gunung Kaler Health Center in 2023.

Variabel	Mean	Selisih Mean	Sig(2-tailed)
Before doing hypertension exercise After doing hypertension exercise	167.63 163.00	4,63	0,000
Prior to the start, a blood pressure check was carried out After 12 weeks, hypertension was not exercised	166.74 167.58	0,84	0,215

Assessing the difference in average values in the intervention group (given hypertension gymnastics), the average difference before and after was obtained, namely 4.63, while in the control group (hypertension exercise was not performed), the average difference value before and after was obtained, namely 0.84. So that the difference resulting in a decrease in blood pressure in the elderly between the intervention and control groups there are different values found in the intervention group which experienced a decrease in blood pressure with the difference before and after, namely 4.63. So it can be concluded that the assessment before and after the intervention group obtained a Sig value of 0.000, a sig value <0.05 which can be concluded that there is an effect of hypertension exercise on reducing blood pressure. Meanwhile, the before and after assessment in the control group obtained a Sig value of 0.215, a sig value > 0.05 which can be concluded that there was no effect of hypertension exercise on reducing blood pressure.

Discussion

The results showed that the assessment before and after the intervention group obtained a Sig value of 0.000, a sig value <0.05 which can be concluded that there is an effect of hypertension exercise on reducing blood pressure. Meanwhile, the before and after assessment in the control group obtained a Sig value of 0.215, a sig value > 0.05 which can be concluded that there was no effect of hypertension exercise on reducing blood pressure.The results of this study are in line with previous research by Bassuki & Barnawi (2021), namely hypertension exercise has an effect on reducing systolic blood pressure as evidenced by a P value of 0.002. In his research, the benefits of hypertension exercise are as follows; increase heart and lung endurance and burn excess fat in the body due to movement activities to strengthen and shape muscles and several other body parts, such as: waist, thighs, hips, stomach and others. Both increase flexibility, balance, coordination, agility, endurance and being able to carry out other activities or sports.There is also a line with previous research conducted by Efliani, et al. (2022) stated that there were differences in blood pressure before and after hypertension exercise therapy was given to the experimental group with statistical test results whose ρ value was smaller than alpha (p <0.05). In his research explained that exercising regularly can reduce high blood pressure.

This is because exercise causes the walls of blood vessels to become stronger against changes in blood pressure and their elasticity (elasticity) can be maintained, accompanied by loosening (vasodilation) of the arterioles of the blood vessels. The number of active capillaries in exercised muscles is greater. Thus, blood pressure tends to be more normal, blood circulation and fluid passage become smoother.In the elderly often experience high blood pressure due to natural aging causing the elasticity of blood vessels to decrease so that it can result in an increase in blood pressure. As for the opinion of Sumartini, et al (2019), which explains that the factors that influence hypertension in the elderly are unhealthy lifestyles such as poor diet, prolonged stress in the lives of the elderly which can affect blood pressure.According to Lestari et al., (2020) movement in hypertension exercise can help lower blood pressure through a mechanism of vasodilation. Vasodilation plays a role in regulating blood flow, improving circulation, and regulating blood pressure. Postpartum exercise movements that can lower blood pressure are where every movement can trigger the release of chemical compounds, such as nitric oxide which can dilate blood vessels. With dilated blood vessels, blood flow becomes smoother and blood pressure can decrease. Body movements that are carried out regularly and consistently in the hypertension exercise program can feel the benefits of reducing blood pressure which is beneficial for cardiovascular health in those with hypertension.

Based on the theory and opinions of previous researchers, hypertension exercise is one way that can be done to reduce pharmacological treatment. Researchers can conclude that the results of this study do not experience a gap with previous studies which have proven the average (mean) systolic blood pressure is 167.3, the standard deviation is 10.012, the minimum systolic blood pressure value is 150 mmHg and the maximum systolic blood pressure value is 187 mmHg. then the average value (mean) of diastolic blood pressure is 100.95 standard deviation of 5.380, the minimum diastolic blood pressure value is 90 mmHg and the maximum diastolic blood pressure value is 110 mmHg.In this study, it can be used as a guideline for doing hypertension exercises for the elderly, especially those with hypertension. So that the researchers hope that hypertension exercise can be carried out by the elderly by being given knowledge by health workers about movements that are easy to do at home and do not require expensive costs to do them. Do hypertension exercise regularly in accordance with Rigaud's opinion which states that the type of exercise that is effective in lowering blood pressure is hypertension exercise with moderate intensity, the frequency of exercise is 3-5 times a week with 20-10 minutes of exercise once.

IV. CONCLUSION

Based on the results and discussion of the research results, it can be concluded that:

1. Of the 19 elderly who experienced hypertension before the hypertension exercise, they obtained an average (mean) systolic blood pressure of 167.3, a standard deviation of 10.012, a minimum systolic blood pressure value of 150 mmHg and a maximum systolic blood pressure value of 187 mmHg. the average value (mean) of diastolic blood pressure is 100.95 standard deviation of 5.380, the minimum diastolic blood pressure value is 90 mmHg and the maximum diastolic blood pressure value is 110 mmHg.
2. After the hypertension exercise, the mean systolic blood pressure was 163.0, the standard deviation was 10.100, the minimum systolic blood pressure was 150 mmHg and the maximum systolic blood pressure was 180 mmHg. Then the average value (mean) of diastolic blood pressure is 95.74 standard deviation of 5.162, the minimum diastolic blood pressure value is 90 mmHg and the maximum diastolic blood pressure value is 110 mmHg.
3. Of the 19 elderly who experienced hypertension before they were carried out without doing hypertension exercises, they obtained an average (mean) systolic blood pressure of 166.7, a standard deviation of 8.881, a minimum systolic blood pressure value of 150 mmHg and a maximum systolic blood pressure value of 180 mmHg . Then the average value (mean) of diastolic blood pressure is 100.16 standard deviation of 5.398, the minimum diastolic blood pressure value is 90 mmHg and the maximum diastolic blood pressure value is 110 mmHg.
4. After 12 weeks from the initial blood pressure check, the mean systolic blood pressure was 167.8, the standard deviation was 8.322, the minimum systolic blood pressure was 150 mmHg and the maximum systolic blood pressure was 180 mmHg. Then the average value (mean) of diastolic blood pressure is 101.05 standard deviation of 4.195, the minimum diastolic blood pressure value is 95 mmHg and the maximum diastolic blood pressure value is 110 mmHg
5. the difference in the average value in the intervention group (given hypertension gymnastics), the average difference between before and after is 4.63, while in the control group (hypertension exercise is not done) the average difference is obtained before and after that is 0.84. So that the difference resulting in a decrease in blood pressure in the elderly between the intervention and control groups there are different values found in the intervention group which experienced a decrease in blood pressure with the difference before and after, namely 4.63.
6. The assessment before and after the intervention group obtained a Sig value of 0.000, a sig value <0.05 which can be concluded that there is an effect of hypertension exercise on reducing blood pressure. Meanwhile, the before and after assessment in the control group obtained a Sig value of 0.215, a sig value > 0.05 which can be concluded that there was no effect of hypertension exercise on reducing blood pressure.

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