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THE EFFECT OF HYPERTENSION GYMNASTICS ON REDUCING BLOOD PRESSURE IN ELDERLY

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ABSTRACT

Hypertension is when blood pressure in the blood vessels chronically increases. This can occur because the heart works harder to pump blood to meet the body's need for oxygen and nutrients. Increased blood pressure or hypertension is influenced by several risk factors including age, gender, family history, genetics (risk factors that cannot be changed/controlled), and lifestyle such as smoking habits, salt consumption, saturated fat consumption, drinking habits, alcohol, obesity, lack of physical activity, etc. The highest prevalence of elderly people who experience hypertension is over 60 years. The aim of this study was to determine the effect of hypertension gymnastics on reducing blood pressure in elderly people. The research method used in this study is experimental with a pre-post test one group design. Data were collected by measuring blood pressure using a sphygmomanometer and interviews and data were analyzed using SPSS. Conclusion The results of the study found that there was an effect of hypertension gymnastics on reducing blood pressure in the elderly at Rindang Asih II Nursing Home, Bongsari.

Keywords: Hypertension, Hypertension Gymnastics, Elderly

BACKGROUND

The aging process is a process of slowly disappearing the ability of tissues to repair themselves or replace and maintain their normal function so that they cannot defend against infection and repair the damage suffered (Kumullah & Chotimah, 2021). Elderly (elderly) is a period in which a person reaches maturity in cell size and function, causing deterioration over time. The elderly have several characteristics including 1) an elderly person is someone who has reached the age of 60 years and over, 2) needs and problems that vary from healthy to sick, from biopsychosocial to spiritual needs, and from adaptive conditions to maladaptive conditions, 3) varied environments and places of residence (Raga et al, 2017).

When individuals enter the aging process, it scientifically causes physical, mental, social, economic and physiological problems. Hypertension is one of the major health problems faced by the elderly. With age, the risk of hypertension increases, and this can lead to serious complications such as heart disease, stroke, and kidney disorders (Agustiningrum et al, 2021). In addition, a lifestyle that is fond of fast food that is rich in fat, salty, lazy to exercise and easily depressed also plays a role in increasing the number of hypertensive patients and the risk of experiencing health problems (Prasetyaningrum, 2014). According to data from the World Health Organization (WHO) in 2018, about 1.13 billion people in the world have hypertension, meaning that 1 in 3 people in the world are diagnosed with hypertension. Hypertension is a silent killer where the symptoms vary greatly in each individual and are almost the same as other diseases. These symptoms are headaches or heaviness in the nape of the neck. Vertigo, heart palpitations, fatigue, blurred vision, ringing in the ears or tinnitus, and nosebleeds (Kemenkes, 2018).

Hypertension can be classified into 2 namely primary or essential hypertension and secondary hypertension. Primary hypertension is hypertension whose cause is unknown while secondary hypertension is hypertension caused by other diseases such as kidney, endocrine and heart diseases. According to Triyanto (2014) primary hypertension occurs at the age of 30-50 years. Patients with primary hypertension are not found with renovascular disease, aldosteronism, renal failure, and other diseases. Genetics and race are part of the cause of primary hypertension. Many risk factors cause hypertension in the elderly such as genetic factors, environmental factors, lifestyle, obesity, diet and also age factors. Age is one of the risk factors for hypertension, where the risk of developing hypertension at the age of 60 years and above is greater when compared to age ≤ 60 years. This is because with increasing age the function of the body's organs decreases so that there is a decrease in arterial elasticity and vascular stiffness. Therefore, the management of hypertension is very important for the elderly.

Hypertension therapy is very important in the elderly including nonpharmacological and pharmacological where there is a decrease in morbidity and mortality. Nonpharmacologic therapy can be done by stopping smoking, losing weight, reducing excess alcohol consumption, reducing salt intake, increasing fruit and vegetable consumption and

routine physical exercise (Chen & Dai, 2014). Physical exercise or light activity is very useful for inhibiting degenerative processes such as hypertension gymnastics. This sports activity will help the elderly body to stay fit and fresh because it can train bones to stay strong, encourage the heart to work optimally, and help eliminate free radicals that roam the body (Zakirullah, 2013).

In addition, by doing hypertensive gymnastics, the need for oxygen in cells will increase for the process of energy formation, increasing heart rate, cardiac output, and the contents of the bud. Consequently, blood pressure will increase. After resting, the blood vessels will dilate or stretch and blood flow will temporarily decrease. About 30-120 minutes later, it will return to the blood pressure before the exercise. If you exercise regularly and continuously, the reduction in blood pressure will last longer and the blood vessels will be more elastic. The mechanism of lowering blood pressure after exercise is that exercise can relax and stretch blood vessels through the mechanism of the heart's pumping activity. (Hermawan & Fahrun, 2017).

For this reason, the purpose of the study was to determine the effect of hypertension exercises on lowering blood pressure in the elderly with the benefits of research, namely adding knowledge and insight into the science of Physiotherapy, especially about cardiovascular health science to determine the effect of hypertension exercises on lowering blood pressure.

METHOD

The design of this study is experimental with a pre-post test one group design which aims to determine the effect of hypertension gymnastics on lowering blood pressure in the elderly. The population in this study were all elderly people who indicated hypertension with an affordable population of 30 elderly people at Panti Wredha Rindang Asih II, Bongsari which was carried out in December 2022. Inclusion criteria are the elderly do not have disorders or injuries to the extremities. Data was collected in the form of blood pressure using a sphygmomanometer. The data that has been obtained in this study was analyzed using SPSS. The number of ethical test results in the study is 04/EC-LPPM/WHS/I-2023.

RESULT AND DISCUSSION

Research on the Effect of Hypertension Gymnastics on Decreasing Blood Pressure in the Elderly at Panti Wredha Rindang Asih II, Bongsari which was conducted in December 2022. Furthermore, the data description is presented in the form of characteristics of research respondents in the form of diagrams. The following is a description of the characteristics of respondents consisting of age and gender.

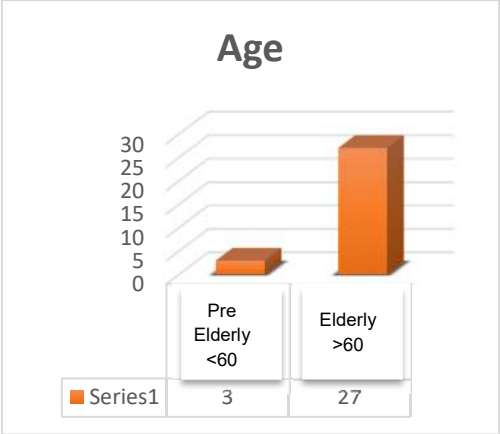

Diagram 1. Data Characteristics by Age

Based on diagram 1, it shows that the most age frequency data is in> 60 years where 27 respondents fall into the elderly category and <60 as many as 3 respondents fall into the pre-elderly category.

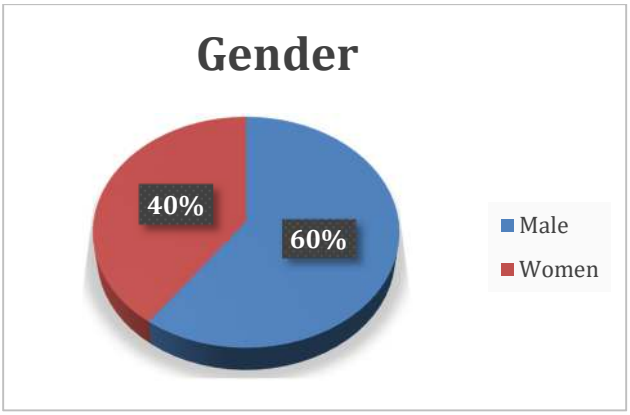

Diagram 2. Data Characteristics by Gender

Based on diagram 2, it shows that male gender is the highest frequency, 60% compared to 40% of women.

a. Univariate Analysis

Data analysis was conducted to determine the frequency distribution and percentage of the independent variable (hypertension gymnastics) and the dependent variable (blood pressure reduction).

Table 1. Frequency Distribution Based on Hypertension Category Before Hypertension Gymnastics

Category	Frequency	Percentage
Normal	8	26.7
Pre hypertension	12	40
Hypertension 1	10	33.3
Total	**30**	**100**

Based on table 1, shows that before the hypertension gymnastics, there were 8 respondents (26.7%) who had normal blood pressure, 12 respondents (40%) who had hypertension in the pre-hypertension category, and 10 respondents in the hypertension 1 category (33.3%).

Tabel 2 Frequency Distribution Based on Hypertension Category After Hypertension Gymnastics

Category	Frequency	Precentage
Normal	17	56.7
Prehypertension	10	33.3
Hypertension 1	3	10
Total	**30**	**100**

Based on table 2, shows that after the hypertension gymnastics, the respondents who had normal blood pressure increased by as many as 17 people (56.7%), respondents experiencing hypertension in the pre-hypertension category decreased to 10 people (33.3%), and respondents with hypertension category 1 decreased to 3 people (10%).

b. Bivariate Analysis

Data analysis was carried out to determine the effect between the independent variable and the dependent variable. The statistical test used is the Wilcoxon Signed Rank Test.

Table 4.3 Differences in Blood Pressure Values Before and After Hypertension Gymnastics

	Blood Pressure								*p-value*
	Normal		Pre Hypertension		Hypertension 1		Total		
	n	%	n	%	n	%	n	%	
Before	8	26.7	12	40	10	33.3	30	100	0.000
After	17	56.7	10	33.3	3	10	30	10	

Based on table 4.3, it was found that there were differences in values before and after hypertension exercises. Respondents with normal blood pressure categories as many as 8 (26.7%), pre-hypertension as many as 12 (40%), and hypertension 1 as many as 10 (33.3%) there was a decrease in blood pressure after hypertension exercises where 17 (56.7%) for normal blood pressure, 10 (33.3%) for pre-hypertension blood pressure, and 3 (10%) for hypertension 1 blood pressure. Based on statistical calculations using the Wilcoxon Signed Rank Test, the value of p = 0.000 (p <0.05) means that there is a significant influence between the independent variable (hypertension exercises) and the dependent variable (blood pressure reduction).

The research was conducted in December 2022 at Panti Wredha Rindang Asih II, Bongsari with 30 respondents with hypertension blood pressure category. The majority of respondents with age characteristics> 60, namely 27 people who fall into the elderly category and the majority of respondents have male gender, 18 people (60%). According to Ekasari (2018) with increasing age, the risk of hypertension increases. Although hypertension can occur at any age, it is most commonly found in people aged 35 years or older. This is due to natural changes in the heart, blood vessels and hormones. However if these changes are accompanied by other factors, it can trigger hypertension. Apart from age, gender also affects the occurrence of hypertension. According to Rahmayani (2019), statistically more men suffer from hypertension 4.182 times greater than women. Men are thought to have a lifestyle that tends to increase blood pressure compared to women. However, after menopause, women tend to have higher blood pressure than men (Chasanah & Syarifah, 2017).

Based on the results of statistical tests using the Wilcoxon Signed Rank Test, it was found that p = 0.000 (p <0.05), which means that there is a significant difference where it can be concluded that there is an effect of hypertension exercises on lowering blood pressure in the elderly at Rindang Asih II Wredha Home, Bongsari. According to Anwari's research (2018), one of the non-pharmacological approaches used in lowering blood pressure is hypertension gymnastics. Gymnastics in the elderly aims to reduce anxiety, stress, and depression levels, whereas gymnastics consists of warm-up exercises, core exercises, and cooling exercises. This decrease can stimulate the work of the peripheral nervous system (autonomic nervous system), especially the sympathetic ones, which causes vasodilation of blood vessel reservoirs, resulting in a decrease in blood pressure both systolic and diastolic (Yanti, 2021). Hypertensive gymnastics can encourage the heart to work optimally, which can increase energy demand by cells, tissues, and organs. As a result it can increase venous return so that it causes a volume of buds that will directly increase cardiac output and cause arterial blood pressure to increase. After arterial blood pressure increases, this phase will be able to decrease respiratory and skeletal muscle activity which causes sympathetic nerve activity to decrease. Subsequently, it will cause the heart rate velocity and shock volume to decrease and vasodilation of the venous arterioles. This will result in a decrease in cardiac output and a decrease in total peripheral resistance, resulting in a decrease in blood pressure (Sherwood, 2011).

Physical activities such as gymnastics in old age that are carried out regularly will improve physical fitness, so indirectly gymnastics can improve heart function, lower blood pressure, and reduce the risk of fat accumulation in the walls of blood vessels so that they will maintain their elasticity (Sartika et al., 2020). The impact of elderly gymnastics is to provide a relaxing effect on the elderly body. Elderly gymnastics provides a relaxing effect on sympathetic nerve fibers and there is also relaxation in the walls of blood vessels so that the body feels calm and comfortable (Wratsongko, 2014). Similar research results by Mua et al. (2022) hypertension gymnastics is quite effective for controlling hypertension in the elderly, especially for reducing the level of systolic blood pressure in the elderly, if it is carried out regularly and is controlled and sustained, while for diastolic blood pressure, the level of effectiveness obtained is unknown.

CONCLUSIONS AND SUGGESTIONS

From the results of the study, it was found that there was a significant effect between hypertension exercises and a decrease in blood pressure. Hypertension or high blood pressure is a chronic condition when the blood pressure on the walls of the arteries (clean blood vessels) increases. In patients with severe hypertension, symptoms such as headache, fatigue, nausea and vomiting, shortness of breath, anxiety, blurred vision, etc. will usually occur. Physical activity such as gymnastics for at least 30 minutes for 3 times a week (warm-up, core, and cooling) in the elderly which is done regularly will improve physical fitness, so that indirectly gymnastics can improve heart function and lower blood pressure and reduce the risk of fat accumulation in the walls of blood vessels so that it will maintain its elasticity.

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