THE INFLUENCE OF HEART GYMNASTICS ON BLOOD PRESSURE CHANGES IN COMMUNITIES

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ABSTRACT

Data from the World Health Organization (WHO) shows that around 1.13 billion people in the world have hypertension. The incidence of hypertension in the world has now reached 26.4% of the world's population. In addition, the ASEAN region also has a fairly high incidence of hypertension, such as in Thailand as much as 17%, the Philippines 22%, Malaysia 29.9%. This study aims to determine the effect of heart exercise on changes in blood pressure. This research is a quantitative research with a pre-experimental research design and a one group pretest-posttest design. The population in this study were all elderly people who had high blood pressure and the sample size was 20 respondents. This research was conducted in November 2020 at the Pasir Mulya Community Health Center. The results of the study on average before the heart exercise intervention was 140/93.5 mmHg. Meanwhile, after the cardiac exercise intervention was carried out, the average was 133.5/87.5 mmHg. Cardiac exercise intervention for blood pressure. The results showed that there was an effect of heart exercise on changes in blood pressure in the elderly after 9 interventions of heart exercise. For this reason, it is hoped that heart exercise can be used as an alternative therapy with regular administration to reduce and control blood pressure. Meanwhile, after the cardiac exercise intervention was carried out, the average was 133.5/87.5 mmHg. Cardiac exercise intervention for blood pressure. The results showed that there was an effect of heart exercise on changes in blood pressure in the elderly after 9 interventions of heart exercise. For this reason, it is hoped that heart exercise can be used as an alternative therapy with regular administration to reduce and control blood pressure. Meanwhile, after the cardiac exercise intervention was carried out, the average was 133.5/87.5 mmHg. Cardiac exercise intervention for blood pressure. The results showed that there was an effect of heart exercise on changes in blood pressure in the elderly after 9 interventions of heart exercise. For this reason, it is hoped that heart exercise can be used as an alternative therapy with regular administration to reduce and control blood pressure. 05) So it can be concluded that at a significance of 5% there is a significant effect on the intervention of heart exercise on blood pressure. The results showed that there was an effect of heart exercise on changes in blood pressure in the elderly after 9 interventions of heart exercise. For this reason, it is hoped that heart exercise can be used as an alternative therapy with regular administration to reduce and control blood pressure. 05) So it can be concluded that at a significance of 5% there is a significant effect on the intervention of heart exercise on blood pressure. The results showed that there was an effect of heart exercise on changes in blood pressure in the elderly after 9 interventions of heart exercise. For this reason, it is hoped that heart exercise can be used as an alternative therapy with regular administration to reduce and control blood pressure.

Keywords: Heart Gymnastics, Blood Pressure, Society

INTRODUCTION

Elderly is the final stage of the human life cycle, which will definitely happen and be experienced by every individual. At this stage each individual will experience changes both physically and mentally, especially the decline in various organ functions and capabilities.The onset of old age is marked by a person's failure to maintain a balance of physiological stress conditions.

This failure is associated with a decrease in the ability to survive as well as increased individual sensitivity.[1]

Elderly is a natural process that occurs in humans where when a person ages he will experience several changes which will ultimately affect the state of function and ability of the whole body.[2] Elderly can also be interpreted as a decrease in the ability of tissues to repair themselves and maintain their normal structure and function, so they cannot survive injury. Elderly is someone who is more than or equal to 55 years of age.[3]

The Ministry of Health noted an increase in the number of elderly people (elderly) from 18 million people (7.6%) in 2010 to 25.9 million people (9.7%) in 2019. The number is predicted to increase to 48.2 million people (15.8%) in 2035 and is predicted to continue increase to 57.0 million people (17.9%) in 2045.[4]

Along with the aging process, the body will experiencing various health problems called degenerative disease. Wrong one example is high blood pressure which is the main risk factor development of heart disease and stroke, and also referred to as "*the silent disease*" Because No signs or symptoms detected can be seen from the outside.[5]

Health problems that often occur in the elderly due to system changes such as problems in the respiratory system such as COPD, tuberculosis, influenza and pneumonia. Health problems in the cardiovascular system such as hypertension, coronary heart disease, heart failure, health problems in the neurological system such as cerebro vascular accident (stroke) and health problems in the musculoskeletal system including fractures, osteoporosis, osteoarthritis.[6]

In hypertension, a complete assessment (anamnesis and physical examination) is carried out, skinning or screening tests. The important thing to do here is to measure blood pressure. Normal blood pressure for the elderly, with systolic at 120 and diastolic at 80, or expressed in numbers as 120/80, while the elderly are said to suffer from hypertension if their blood pressure is above 130/80.[7]

Data from the World Health Organization (WHO) in 2015 showed that around 1.13 billion people in the world suffer from hypertension, meaning that 1 out of 3 people in the world is diagnosed with hypertension. The incidence of hypertension in the world has now reached 26.4% of the world's population. The number of people with hypertension will continue to increase and it is estimated that 10.44 million people die every year due to hypertension and its complications. In addition, the ASEAN region also has a fairly high incidence of hypertension, such as in Thailand as much as 17%, the Philippines 22%, Malaysia 29.9%.

The 2018 Riskesdas stated that there were 63,309,620 cases of hypertension in Indonesia, while the number of deaths due to hypertension was 427,218.There are 5 provinces in Indonesia that exceed the normal national percentage, namely Bangka Belitung Province with 426,655 people or 30.9%, followed by South Kalimantan Province with 1,025,483 people or 30.9%, East Kalimantan Province with 1,218,259 people or 29 .5% and Gorontalo province with 33,542 people or 29.4%.In the elderly, the incidence of hypertension increases to reach 60% to 80% of the elderly population who are more than 60 years old.[8]

The incidence of hypertension in the ProvinceIn West Java, there were 13,612,359 people or 29.4% of the incidence of hypertension. From the prevalence of hypertension of 34.1%, it is known that 8.8% are diagnosed with hypertension and 13.3% of people diagnosed with hypertension do not

take medication and 32.3% regularly take medication. This shows that many people with hypertension do not know that they have hypertension, so they do not get more serious treatment.[9]

Hypertension was ranked first for outpatient disease in the elderly at the Bogor District Health Center with a total of 99,260 cases or 14.18% and ranked second for outpatient disease in hospitals in the same age group with 8,074 cases or 12.84%. This data shows the magnitude of the potential for increased morbidity due to hypertension in Bogor Regency.[10]

The specific cause for 95% of cases of high blood pressure is unknown, and this condition is known as primary or essential hypertension. However, lifestyle and genetic factors play a role as a cause. This condition is most often encountered in the elderly because the arteries in their bodies have become stiff.

Blood pressure tends to increase with age, but also because of changes in lifestyle. In addition to lifestyle and genetic factors, there are also several factors that cause increased blood pressure, such as being overweight (obesity), consuming too much salt, not consuming enough potassium, and gender. Blood pressure fluctuates throughout the day and is usually higher during exercise because the heart pumps blood faster, but people who exercise regularly tend to have lower blood pressure than people who are not very active.[11]

The elderly can maintain their blood pressure to stay normal by routinely undergoing ithealthy lifestylesone of them is by exercising so that blood flow becomes smooth. For the elderly, one of the good sports to do is gymnastics. Because in old age the power of the heart to pump decreases so that it makes the blood vessels in the heart and brain experience stiffness. Regular physical exercise can help increase the strength of the heart's pump, so that blood flow can return smoothly and of course have a good impact on the blood pressure of the elderly.

Gymnastics is a form of physical exercise that is arranged systematically by involving selected and planned movements to achieve certain goals. So we can see that gymnastics has its own systematics, has goals to be achieved, such as endurance, muscle strength, body flexibility, movement coordination, or it can also be expanded to form an ideal body.[12]

Cardiac gymnastics is a sport that is arranged systematically by prioritizing the ability of the heart muscle, large muscle movements as well as joint flexibility. Heart exercise movements are also made specifically to maintain heart performance, with the aim of being able to take in as much oxygen as possible so that oxygen levels in the body can be fulfilled. Heart gymnastics should be done regularly 3 times a week with a duration of 15-20 minutes, so that the benefits are felt. Besides that, heart exercises also have several other benefits such as improving the pulse rate, improving blood flow and improving the body's metabolism.[13]

Based on the results of the preliminary study that the researchers had conducted in the Pasir Mulya Health Center area, data obtained that there were 120 families, of which 60 families had 30 elderly people. And based on the results of a survey that the researchers conducted, out of the 30 elderly, 20 of them had high blood pressure.

Based on the background above, the researcher wants to conduct further research on "The effect of heart exercise on changes in blood pressure in the elderly in the Pasir Mulya Community Health Center, Bogor Regency" to compare again whether there is a significant effect of heart exercise on changes in blood pressure, especially in the Health Center area. Mulya Sand.

RESEARCH METHODS

This type of research is quantitative, pre-experimental using the One Group Pretest Posttest Design. This research was conducted in November 2020 with a total population of 20 elderly people. The sampling technique in this study used total sampling.

The instruments used are observation sheets and digital tensimeters to assess changes in blood pressure before and after being given heart exercises. The data analysis used is univariate and bivariate (t test).

RESEARCH RESULT

Table 1. Frequency Distribution of Respondent Characteristics based on gender, age, last education, and occupation of the elderly

No	Category	Frequency	Percentage (%)
1	Gender		
	Woman	20	100
	Man	0	0
2	Age		
	55-59 years	3	15
	60-64 years	12	60
	65-69 years	5	25
3	Last education		
	SD	8	40
	SLTP/Equivalent	6	30
	High School/Equivalent	6	30
4	Work		
	IRT	15	75
	Businessman	5	25
	Total	**20**	**100**

Based on the results of table 1 above, it is known that out of 20 respondents, it was found that all respondents were female (100%), the majority of respondents aged 60-64 years were 12 (60%), the majority of last education was elementary school as many as 8 respondents (40%)), and the majority of IRT jobs were 15 respondents (75%).

Based on the results of a study of 20 elderly respondents in the Pasir Mulya Health Center area, before being given heart exercises, the average blood pressure was 148.0 mmHg for systolic blood pressure and 93.5 mmHg for diastolic blood pressure. When included in the blood pressure

classification, it is in the hypertension classification, with the lowest blood pressure of 140/80 mmHg and the highest blood pressure of 160/110 mmHg.

After being given the intervention of cardiac exercise, the average blood pressure decreased to 133.5 mmHg for systolic blood pressure and 87.5 mmHg for diastolic blood pressure.

Table 2.Results of Test Analysis Effect of heart exercise on changes in blood pressure

Changes in Blood Pressure			
Intervention	N	*mean ± sd*	*P-Value*
Pretest-Posttest	20	20,500±18,202	0.000

Based on the results of table 2 aboveIt is known that the hypothesis testing in the pretest and posttest intervention groups is known to have a significance value of 0.000 which indicates that the significance value is <0.05 which means Ho is rejected. So it can be concluded that at a significance of 5% there is a significant effect on the provision of heart exercise interventions on the blood pressure of the elderly in the Pasir Mulya Health Center area..

DISCUSSION

1. Blood Pressure Before Heart Exercise (pretest).

   Based on the results of research on 20 respondentselderly in the Pasir Mulya Community Health Centerbefore giving heart exercises, the average blood pressure was 148.0 mmHg for systolic blood pressure and 93.5 mmHg for diastolic blood pressure. When included in the blood pressure classification, it is in the hypertension classification, with the lowest blood pressure of 140/80 mmHg and the highest blood pressure of 160/110 mmHg.

   From the results of the study, it was found that all respondents were female, 20 people (100%). This is also in line with the results of research conducted by Subekti (2015), namely the majority of the healthy heart exercise group are female. It is possible that the interest of women is greater than that of men. These results are also supported by research conducted by Eksanoto (2011) which states that there is a significant relationship between gender and the incidence of hypertension with the majority of hypertension sufferers being women.

   Of the 20 respondents who were studied, there were 20 elderly people who had hypertension, with the most presentation being at the age of 60-64 years with a percentage of 60.0%.According to the Indonesian Ministry of Health (2019) the risk of developing hypertension will increase with age, so the prevalence of hypertension among the elderly is quite high, which is around 40%, with deaths around the age of 65 years.[14]

   Systolic pressure continues to increase until the age of 80 years while diastolic pressure continues to increase until the age of 55-60 years, then decreases slowly or even decreases dramatically.[15]

The conclusion from the researchers is that the results of research that has been conducted by researchers in the Pasir Mulya Health Center area, that those who have high blood pressure in this area are mostly women, who have the final level of education in elementary school and are not working. So that the intervention of heart exercise will be carried out to find out whether or not there is an effect of heart exercise on changes in blood pressure.

2. Blood Pressure After Heart Exercise (posttest)

Based on the results of research on 20 respondentselderly in the Pasir Mulya Community Health Centerbefore giving heart exercises, the average blood pressure was 148.0 mmHg for systolic blood pressure and 93.5 mmHg for diastolic blood pressure. After being given the intervention of cardiac exercise, the average blood pressure decreased to 133.5 mmHg for systolic blood pressure and 87.5 mmHg for diastolic blood pressure.

Characteristics of age that experienced the most decline was at the age of 55-60 years. The results of this study indicate the effectiveness of reducing blood pressure which is quite significant due to heart exercise. Although heart exercise techniques will not have much impact on people with severe hypertension, several studies have proven that heart exercises can reduce blood pressure in people with mild and moderate hypertension. These results are consistent with research conducted by Hakim (2016) with the result that there is an influence from the implementation of elderly gymnastics on reducing blood pressure in the elderly with the results of the analysis test obtained a p-value of 0.000.

Heart gymnastics can reduce blood pressure because when the body performs sports movements it can cause heart rate and breathing to increase. This increase causes more oxygen demand to be needed at the level of working muscles so to get more oxygen we breathe faster and allow more oxygen to pass through the bloodstream every minute.[16]

The conclusion from the researchers is that the results of research that has been conducted by researchers in the Pasir Mulya Health Center area, that heart exercises can affect changes in blood pressure. The more often a person does heart exercise activities, the better the change in blood pressure will be in hypertension prevention behavior, so it is recommended to take regular heart exercise to help improve the prevention of increased blood pressure, especially for those who have high blood pressure.

3. Bivariate Test Analysis

From the results of the hypothesis testing research contained in Appendix 9, it is known that the significance value is 0.000. These results indicate that the p-value is <0.05, which means that Ho is rejected. So it can be concluded that there is a significant effect on the provision of heart exercise interventions on the blood pressure of the elderly in the Pasir Mulya Health Center area.

Based on the results of research conducted by researchers, there is an effect of heart exercise on changes in blood pressure. Increased blood pressure apart from being due to age can also be caused by environmental factors, such as emotions, fear, anxiety, so doing heart exercises can relieve stress as well as reduce obesity so that it can cause a decrease in blood pressure.

CONCLUSION

1. It is known that the average blood pressure in the elderly before being given heart exercises is 148.0 mmHg for systolic blood pressure and 93.5 mmHg for diastolic blood pressure with the highest blood pressure being 160/110 mmHg and the lowest blood pressure being 140/80 mmHg.
2. It is known that the average blood pressure in the elderly after being given heart exercises is 133.5 mmHg for systolic blood pressure and 87.5 mmHg for diastolic blood pressure with the highest blood pressure of 140/100 mmHg and the lowest blood pressure of 120/80 mmHg.
3. There is an effect of heart exercise on changes in blood pressure in the elderly with a p value of 0.000.

SUGGESTION

1. For the Pasir Mulya Health Center Work Area
   Based on the results of the research that the author has done, it can be used as an insight enhancer to become a provision of knowledge and to be applied properly, especially for the elderly who suffer from hypertension and mothers or fathers who will experience aging in the future.
2. For Educational Institutions
   Used to add to the literature in order to provide input for future researchers.
3. For Further Researchers
   The results of this study are expected to be used as a reference for further researchers.

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