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The Effect Of Brisk Walking Exercise On Reducing High Blood Pressure In Hypertension Patients

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ABSTRACT
The development of society with a modern lifestyle like today is not always beneficial but can be detrimental to human life, causing individuals to be exposed to infectious and non-communicable diseases. Several non-communicable diseases that cause high mortality and morbidity include stroke, cardiovascular disease and diabetes. The aim of this study was to determine the effect of brisk walking exercise on reducing high blood pressure in hypertensive patients at Posbindu Gemaharjo. The research design used was Quasy Experimental with a Pretest Posttest Control Group Design approach. The population in the study was 40 potential respondents, the sampling technique used was accidental sampling, the sample size obtained was 28 respondents who would be divided into two groups, 14 control groups and 14 treatment groups. The average blood pressure value before brisk walking exercise was carried out in patients taking hypertension medication at Posbindu Gemaharjo was 162.07, the diastole value was 107.7 and after the intervention the systole value was 133.07 and the diastole value was 94.9. Meanwhile, in the group that only took hypertension medication, the average systole value was 159.71 and the diastole value was 107.93 and the post test results showed that the diastole value was 131.00 and the diastole value was 90.79. The statistical test results for both groups obtained a value of p=0.000 (a<0.05), so it can be concluded that there is an influence of brisk walking exercise intervention on reducing high blood pressure in hypertensive patients who take hypertension medication at Posbindu Gemaharjo. It is hoped that Posbindu Gemaharjo will routinely provide exercise therapy interventions in the form of the Brisk Walking Exercise for patients with hypertension, so that the risks of complications related to hypertension can be managed properly.

Keywords: Blood Pressure, Brisk Walking Exercise, Hypertension

INTRODUCTION
The development of society with a modern lifestyle like today is not always beneficial but can be detrimental to human life, causing individuals to suffer from infectious and non-infectious diseases. Some non-infectious diseases that cause high mortality and morbidity include stroke, cardiovascular, and diabetes (Sari, 2017).

Based on data from the World Health Organization (WHO) in 2014 there were around 600 million people with hypertension worldwide. The highest prevalence in the African region is 30% and the lowest incidence is in the American region at 18%. Hypertension is the leading cause of premature death worldwide. The prevalence of hypertension in Indonesia itself is very worrying, in 2013 to 2018 it increased from 25.8% to 34.1% with a difference in increase reaching 8.3% according to diagnosis, diagnosis or taking medication and measurement results in the population aged ≥ 18 years (Riskesdas, 2018).

Hypertension is often called a "silent killer" because sufferers usually do not

experience symptoms before checking their blood pressure (Tawenda, 2019). This can happen because the heart works harder to pump blood to meet the body's oxygen and nutrient needs. If left untreated, this disease can interfere with the function of other organs, especially vital organs (Ministry of Health of the Republic of Indonesia, 2018). Currently, hypertension management relies on standard treatment pillars and lifestyle changes such as; regulating diet, activity, stress coping management, avoiding alcohol and cigarettes and a low-salt diet (James PA et al., 2016). Factors that cause hypertension are genetic factors, lack of physical activity, excessive nutrient intake, dyslipidemia, and vitamin D deficiency. The emergence of health problems is not only due to individual errors, but people who do not know can be the cause of limited correct information about certain diseases (Rahmadiana, 2012). Non-pharmacological therapy is therapy without using drugs. One example of non-pharmacological therapy is by creating a relaxed state, living a healthy lifestyle and doing sports activities. Exercise is not only useful for maintaining physical fitness, but can also treat several types of diseases including heart disease, diabetes mellitus and hypertension (Suranti, 2017). Walking is the most common and most beneficial type of exercise from physical activity (AHA, 2020; & CDC, 2020). The American Heart Association (AHA) recommends that to lower blood pressure, "Do moderate-intensity physical activity, such as brisk walking for 150 minutes (two hours, 30 minutes) per week. by setting a target of five times a week for 30 minutes each exercise, although there are shorter exercise sessions that are still counted. In addition, do muscle strengthening activities at least two days per week, flexibility exercises and muscle stretching exercises "(The American Heart Association, 2020). Brisk Walking Exercise works by decreasing peripheral resistance, when muscles contract through physical activity there will be a 30-fold increase in blood flow when contractions are done rhythmically. The presence of precapillary and arteriole sphincter dilation causes a 10-100-fold increase in capillary opening. Blood vessel dilation will also result in a decrease in the distance between the blood and active cells and the distance traveled by O2 diffusion and metabolic substances is greatly reduced which can improve cell function due to adequate blood supply, oxygen and nutrients in the cells (Fadhillah, 2018).

Researchers have conducted a preliminary study on August 6, 2023 at the Gemaharjo posbindu, eight out of ten people who routinely check their health at the posbindu every month have a history of high hypertension. Researchers have interviewed several people who were there, they admitted that they tend to have high blood pressure. They also do not have a regular exercise schedule, even if it's just walking. Some people are still working so they don't have time to do light exercise such as walking or others. Interviews with the posyandu manager obtained information that no one had ever suggested or carried out the program that the researcher would carry out, namely Brisk Walking Exercise before. Based on this, researchers are interested in conducting research with the title the effect of brisk walking exercise on reducing high blood pressure in hypertensive patients.

METHODS

The research design used is Quasy Experimental with the Pretest Posttest Control Group Design approach. The sample size obtained was 28 respondents who would be divided into two groups of 14 control groups and 14 treatment groups. The statistical test conducted was the paired T-Test because it was conducted on 2 paired samples.

RESULT

Respondent Characteristics

Table 1 Characteristics of respondents in this study include age, gender, smoking history, occupation, weight of the treatment group.

No	Characteristics (Treatment)	ΣN	Σ%
1	Age 36-45 Years	14	100
2	Gender		
	Male	9	64,3
	Female	6	35,7
3	Smoking history Yes		
	No	10	71,4
		4	28,6
4	Weight		
	Overweight	4	28,6
	Obesity	10	71,4
5	Employment		
	Fishermen	5	35,7
	Farmers	3	21,4
	Factory workers	4	28,6
	Private employees	2	14,3

Based on the results of the study, it is known that most of the respondents in the treatment group were male, namely 64.3% with the highest smoking history of 71.4%. All respondents had an average age of 36-45 years and the most occupations were fishermen, namely 35.7%.

Table 2 Characteristics of respondents in this study include age, gender, smoking history, occupation, weight of the control group.

No	Characteristics (Control)	ΣN	Σ%
1	Age		
	26-35 Years	4	28,6
	36-45 Years	10	71,4
2	Gender		
	Male	7	50,0
	Female	7	50,0
3	Smoking history Yes		
	No	8	57,1
		6	42,9
4	Weight		
	Overweight	4	28,6
	Obesity	10	71,4
5	Employment		
	Fishermen	2	21,4
	Farmers	7	50,0
	Factory workers	1	7,1
	Private employees	3	21,4

Based on the results of the study, it is known that most of the respondents in the control group have a history of smoking as much as 57.1% with an obesity weight status of 71.4%. In this group, the most jobs are farmers, namely 50.0%.

Statistical Test Results

Table 3 Results of paired t-test systolic and diastolic test of treatment groups before and after brisk walking exercise intervention.

	Group	N	Mean	*Sig.*
Sistole	Pretest	14	159,71	0,000
	Posttest	14	131,00	

	Group	N	Mean	*Sig.*
Diastole	Pretest	14	107,71	0,000
	Posttest	14	94,9	

The results of the statistical test using paired t-test with a p value = 0.000 (a <0.05), so it can be concluded that there is an effect of consuming hypertension drugs on reducing high blood pressure in hypertension patients at the Gemaharjo posbindu. The range of systolic values in the control group obtained a mean difference of 28.714 which indicates a decrease in systolic values. The range of diastolic values in the treatment group obtained a mean difference of 12.929 which indicates a decrease in diastolic values.

Table 4 Results of paired t-test systolic and diastolic control group before and after brisk walking exercise intervention.

	Group	N	Mean	*Sig.*
Sistole	Pretest	14	159,71	0,000
	Posttest	14	131,00	

	Group	N	Mean	*Sig.*
Diastole	Pretest	14	107,93	0,000
	Posttest	14	90,79	

Statistical test using paired t-test with p value = 0.000 (a <0.05), so it can be concluded that there is an effect of consumption of hypertension drugs on reducing high blood pressure in hypertension patients at Posbindu Gemaharjo. The range of systolic values of the control group obtained a mean difference of 28.714 which indicates a decrease in systolic values. The range of diastolic values of the control group obtained a mean difference of 17.143 which indicates a decrease in systolic values.

DISCUSSION

Blood Pressure Before The Treatment Group

The results showed that the average systolic pressure in patients was 162.07 and the diastolic value was 107.71. Hypertension is often called the "silent killer" because sufferers usually do not experience symptoms before checking their blood pressure. Hypertension is said to be if systolic blood pressure is >130mmHg and >85mmHg in diastolic blood pressure (Tawenda, 2019). This can happen because the heart works harder to pump blood to meet the body's oxygen and nutrient needs. If left untreated, this disease can interfere with the function of other organs, especially vital organs (Ministry of Health of the Republic of Indonesia, 2018). In line with this opinion, the results of the study showed that all respondents had blood pressure above normal, both systolic and diastolic. So this requires proper treatment to lower blood pressure, for example exercise.

The results of the study showed that respondents with a history of active smoking in the treatment group as many as 9 people experienced hypertension with systolic values> 140mmHg and diastolic values> 100mmHg. Samiadi (2016) stated that toxic chemicals in cigarettes can cause high blood pressure or hypertension. One of these toxic substances is nicotine, where nicotine can increase adrenaline which makes the heart beat faster and work harder, the heart rate increases. In line with this statement in this study, respondents with a history of active smoking tend to have above normal blood pressure than respondents who do not smoke. Researchers argue that this is caused by carbon monoxide in cigarette smoke replacing oxygen in the blood. This causes blood pressure because the heart is forced to pump to enter enough oxygen into the organs and tissues of the body and heart contractions increase, causing blood pressure to increase.

Blood Pressure After In The Control Group

The results showed that the average systolic pressure in patients was 159.71 and the diastolic value was 107.93. Cardiovascular disease is a collection of disorders that occur in the heart and the entire blood vessel system (vascular), there are several factors that can trigger heart disease but among all the factors there are two risk factors that cause someone to experience heart disease including high blood pressure (hypertension) (Nurrahmani, 2014). The results of the study showed that all respondents still experienced high blood pressure even though it was controlled with hypertension medication. Researchers argue that this is caused by an unhealthy lifestyle and lack of exercise. Exercise is not only useful for building physical fitness, but can also treat several types of diseases including heart disease, diabetes mellitus and hypertension.

The results of the study showed that based on gender in the control group, all respondents experienced hypertension. A total of 7 men and 7 women had an average blood pressure above normal, namely >150/100mmHg. Nuraini (2015) stated that the prevalence of hypertension in men is the same as in women. According to Arifin (2016) who stated that there is no relationship between gender in hypertension sufferers because gender is only a protective factor, especially in women. Based on this statement, researchers have the same opinion based on the results of this study. Men and women in the same number and both experiencing hypertension indicate that the incidence of hypertension is not based on gender.

Blood Pressure After In The Treatment Group

The results showed that the average value of systolic pressure in patients after brisk walking exercise was 133.07 and the diastolic value was 94.9. According to Sukarmin (2013) Brisk Walking Exercise can lower blood pressure by dilating blood vessels due to a decrease in peripheral resistance which causes muscles to contract which can increase physical activity. so that blood flow will increase 30 times if done rhythmically. Researchers argue that by doing brisk walking exercise the amount of blood that can be pumped out will also be smoother. This is due to several factors, the first is deeper breathing causes changes in pressure in the chest cavity. Because of this change, blood flows more easily into the heart.

Blood Pressure Before In The Control Group

The results showed that the average value of systolic pressure in patients taking hypertension medication was 131.00 and the diastolic value was 90.79. Gayatri (2013) stated that it is important for hypertensive patients to take high blood pressure medication to control blood pressure and must be balanced with exercise because taking medication regularly is not enough. In line with this statement, if studied further, the average decrease in blood pressure values in the group that only took hypertension medication with the group that did brisk walking exercise, there was a significant difference. It can be said that the decrease in blood pressure by taking medication and providing intervention was higher than those who

only took medication. This proves that exercise greatly affects the decrease in blood pressure in hypertensive patients.

The Effect Of Brisk Walking Exercise On Reducing High Blood Pressure In Hypertensive Patients

The results of the statistical test of the study showed p = 0.000 (a <0.05), so it can be concluded that there is an effect of brisk walking exercise intervention on reducing high blood pressure in hypertensive patients who take hypertension medication at the Gemaharjo Posbindu. Brisk Walking exercise is one type of exercise recommended by the American Heart Association (AHA) and the American College of Sport Medicine with a frequency of 3-5 times a week for 30 minutes. This exercise is very useful for reducing mortality in people with cardiovascular disorders including hypertension. It can be seen that the range of systolic values in the treatment group before the intervention was given a mean of 162.07 and after the intervention was given a mean value of 133.07 with a mean difference of 29.00 which indicates a decrease in systolic values. The same results were also found in diastolic pressure.

Syamsudin (2023) stated that hypertension cannot be cured but can be controlled or controlled by taking antihypertensive drugs as an effort to lower blood pressure. In line with this opinion, it can be seen that the range of systolic values in the control group obtained a mean of 159.71 and after being given intervention, a mean value of 131.0 was obtained with a mean difference of 28.714, indicating a decrease in systolic values. If examined further, the decrease in the average value was not more than the group with intervention. So the researcher agrees with Gayatri's opinion (2013) that even though taking hypertension medication shows a significant decrease in blood pressure, it is possible that patients still experience other symptoms of hypertension such as dizziness, palpitations, and difficulty sleeping. Therefore, drug therapy needs to be combined with other therapies such as providing a low-salt diet, low-cholesterol diet, regular exercise, stopping smoking, and providing stress management techniques.

CONCLUSION

The results of the research that has been conducted obtained conclusions including:

1. The average value of blood pressure before the brisk walking exercise action in the treatment group was 162.07 and the diastolic value was 107.71.
2. The average value of systolic blood pressure in the control group was 159.71 and the diastolic value was 107.93.
3. The average value of blood pressure after the brisk walking exercise action in the treatment group was 133.07 and the diastolic value was 94.9
4. The results of the statistical test using the paired t-test with a p value = 0.000 (a <0.05), so it can be concluded that there is an effect of the brisk walking exercise intervention on reducing high blood pressure in hypertensive patients who take hypertension medication.

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