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The Reduction of Blood Pressure in Elderly People with Hypertension Through Morning Walk Therapy

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ABSTRACT

Background: Hypertension in the elderly is a very dangerous disease because without early indications it can cause sudden death. The prevalence of people with hypertension in the Burneh Health Center in 2021 is 15.935 people (11.29%). The proportion of elderly with hypertension is 1,820 elderly men (0.10%) and 1,670 elderly women (0.09%).
Purpose: This study aims to analyze the effect of morning walking physical activity on reducing systolic blood pressure in elderly people with hypertension.
Method: This study was conducted in the village of Burneh, Bangkalan, East Java, Indonesia from May to June 2022. The research design used a Quasy Experiment with a Pre-test and Post-test approach, the independent variable in this study was physical activity therapy for morning walks and the dependent variable systolic blood pressure in elderly with hypertension. The sample size is 14 elderly with purposive sampling technique. Data analysis used the Paired t-test.
Results: The results of the statistical test obtained p-value = 0.041 <0.05 indicating that there was a difference in systolic blood pressure before and after being given physical activity therapy for the morning walk. Most of the respondents (57.14%) experienced a decrease in systolic blood pressure with an average decrease of 8.72 mmHg.
Conclusion: Therapeutic physical activity walking in the morning has a significant effect on systolic blood pressure in elderly people with hypertension. Health workers need to provide correct information about the benefits of morning walks for elderly people with hypertension and monitor the consistency of sufferers.

Keywords: elderly, hypertension, morning walk

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BACKGROUND

Elderly or old age is an aging process that naturally occurs in humans. Elderly or elderly is someone who has reached the age of 60 years and over (Regulation of the Minister of Health of the Republic of Indonesia, 2015). In the elderly phase, there is a decrease in reasoning abilities, physiological changes, a decrease in the immune system resulting in an increased susceptibility to disease. One of the problems faced in the elderly phase is a decrease in cardiovascular function which can cause hypertension. The risk of hypertension in the elderly increases with age which causes blood vessels to lose their elasticity. In the elderly the heart muscle will contract which causes the size of the heart to shrink, especially in the left ventricle of the heart. This decrease in heart capacity makes heart rate and heart function decrease and causes blood to flow in a narrower path than usual, causing greater pressure. This is what causes high blood pressure or better known as hypertension (Kristiawan, 2019).

Hypertension or high blood pressure is a degenerative disease that affects many Indonesian people and has a fairly high mortality rate. Hypertension is an increase in systolic blood pressure ≥140 mmHg and/or diastolic blood pressure ≥90 mmHg (Ministry of Health of the Republic of Indonesia, 2022). Hypertension is also called a silent killer because it often does not give symptoms as an early warning and the low number of people with hypertension to seek treatment so that their health conditions are not controlled. In Indonesia, hypertension is the number three cause of death after stroke and tuberculosis (Silwanah et.al, 2020).

Many factors cause hypertension, namely demographic factors consisting of age, family history/heredity, and gender. While behavioral factors such as lack of physical activity/exercise, obesity, stress, smoking, alcohol consumption and wrong intake. If hypertension is left uncontrolled it can cause chronic heart failure, stroke and even sudden death. Disease complications such as stroke, kidney failure, heart failure and eye damage are complications resulting from hypertension in the elderly (Supriyanto, 2019). Hypertension can be prevented by consuming healthy foods, limiting salt and caffeine intake, stopping smoking, stopping alcohol consumption, exercising regularly, maintaining body weight, and having regular health checks. The lightest and cheapest exercise that can be done by people with hypertension is walking. A good time to do walking exercise is in the morning where the morning air still tends to be clean so it is very good for the body's organs.

In various previous studies, it has been found that therapy with physical activity will greatly help people with hypertension, both young and elderly. Various kinds of physical activity that can be done to maintain health in this case can maintain blood pressure stability and prevent hypertension depending on the age of the patient. In the elderly many suggested physical activity in the form of light to moderate exercise such as gymnastics for the elderly and walking. Physical activity or exercise like that can lower blood pressure because it can relax blood vessels. Activity or exercise such as walking teraphy which is carried out in a programmed and structured manner, can have a good impact on fitness and health, improves the work of muscles and blood circulation, increases the elasticity of blood vessels, more blood will be pumped by the heart because the heart’s work becomes more efficient, helps reduce fat level in the blood, reduces the occurrence of blood clots so that walking helps reduce systolic and diastolic blood hypertension sufferers. The recommended walking intensity is 30 minutes (Ministry of Health of the Republic of Indonesia, 2024). The people who walk regularly have elastic blood vessels and smooth blood circulation, thereby minimizing the occurrence of plaque in the blood vessels (Surbakti, 2014).

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According to World Health Organization (WHO), in 2015 there were around 1.13 billion people with hypertension in the world, meaning that 1 in 3 people in the world suffer from hypertension. In 2025, an increase in cases of hypertension, especially in developing countries including Indonesia, is estimated at 80%, namely 1.5 billion cases and an estimated 10.44 million people die from hypertension and its complications every year. Based on the results of the 2018 Basic Health Research (Riskesdas), the age distribution occurs in the age group 31-44 years (31.6%), age 45-54 years (45.3%), age 55-64 years (55.2%) (Ministry of Health of the Republic of Indonesia, 2019). This shows that hypertension mostly attacks the elderly and the elderly. The prevalence of people with hypertension or high blood pressure in East Java Province is 36.3%. The prevalence increases with increasing age. When compared to the 2013 prevalence (26.4%), the prevalence of high blood pressure has increased significantly. The estimated number of hypertensive patients aged ≥ 15 years in the province of East Java is around 11,008.33 residents, with the proportion of males 48.83% and females 51.17%. Of these, 49.70% or 5,806,592 people with hypertension receive health services (East Java Provincial Health Office, 2021).

In 2020 there were 83,547 people who had hypertension in Bangkalan Regency (LAKIP, 2020) while the prevalence of people with hypertension in the working area of the Burneh Health Center in 2021 was 15,935 residents (11.29%). The proportion of elderly with hypertension is 1,820 elderly men (0.10%) and 1,670 elderly women (0.09%) (Burneh Health Center, 2021).

METHODS

This research was conducted in the village of Burneh, Bangkalan, East Java, Indonesia from May to June 2022. This study used an experimental design with the One Group Pre-test and Post-test approach. The independent variable is a morning walk and the dependent variable is blood pressure. The population in this study is the elderly who have hypertension as many as 45 elderly. The sample size is 14 elderly taken using the Lemeshow formula. The inclusion criteria in this study were the elderly who did not have lower extremity disorders and routinely checked into the health center and regularly took medication. The exclusion criteria for this study were the elderly who had complications such as stroke, heart disease, rheumatic and asthma, and the elderly with blood pressure ≥ 200 mmHg. The sampling technique used in this research is purposive sampling. Prior to the intervention, the sample filled out the provided informed consent. The data collection tool in this study was a blood pressure measuring device. Data collection was carried out by measuring blood pressure before (post test) and after (post test) intervention on the sample. Samples were given morning walking therapy for 30 minutes with a frequency of 3 times a week for 28 days. Data analysis used the Paired t-test with $\alpha = 0.05$.

RESULTS

Characteristics of Respondents

Tabel 1. Distribution of Respondents by Age

Age (years)	Frequency (person)	Percentage (%)
60-74	11	78,6
≥ 75	3	21,4
Total	14	100,0

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Based on table 1 it can be seen that most of the respondents in this study were aged 60-74 years (78,6%).

Tabel 2. Distribution of Respondents by Gender

Sex	Frequency (person)	Percentage (%)
Male	7	50,0
Female	7	50,0
Total	14	100,0

Based on table 2 it can be seen that the distribution of respondents based on gender has the same comparison between men and women.

Tabel 3. Distribution of Respondents Based on Education

Education	Frequency (person)	Percentage (%)
Elementary School	1	7,2
Junior High School	-	-
Senior High School	3	21,4
Bachelor	10	71,4
Total	14	

Based on table 3 most of the respondents have a bachelor (71,4%) and it can be said that the education of the respondents is high.

Tabel 4. Differences in Respondents' Systolic Blood Pressure Before and After Getting the Morning Walk Intervention

Responden	Pre (mmHg)	Post (mmHg)
1	182	142
2	143	146
3	148	148
4	136	123
5	117	124
6	117	134
7	110	111
8	168	164
9	150	139
10	167	148
11	177	142
12	150	127
13	165	159
14	164	167
Mean (Average Systolic Blood Pressure)	145,86	137,14
Std. Deviation	16,232	14,459
P – Value	p: 0,041	

Most of the respondents experienced a decrease in systolic blood pressure, namely 8 respondents ((57.14%). Respondents who experienced increased blood pressure were 5

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elderly (35.7%) and respondents who had stable systolic blood pressure were 1 elderly (7.1%). The average blood pressure before the intervention was 145.86 mmHg and 137.14 mmHg after the intervention with an average decrease of 8.72 mmHg. After the paired t-test statistical test with normally distributed data resulted in p-value = 0.041< 0.05. This means that there is a difference between before and after the intervention, that is, there is a difference in the blood pressure of the elderly with hypertension before and after the 30-minute morning walk intervention 3 times a week for 28 days.

DISCUSSION

Most of the respondents were elderly with an age range of 60-74 years. Hypertension is strongly influenced by age. The higher a person's age, the higher the risk of developing hypertension. At the age of 65 years, systolic pressure increases by an average of 20 mmHg and continues to increase after the age of 70 years. Likewise, the severity of hypertension increases with increasing age. This is because in the elderly there is an increase in arterial pressure in accordance with increasing age there is a decrease in the working system of the body's organs. Changes in the structure of blood vessels such as narrowing of blood vessels, reduced elasticity of blood vessel walls and become more rigid so that blood vessels become narrow and cause systolic blood pressure to rise while diastolic blood pressure increases, although not so significant (Adam, 2019 and Sartik et.al, 2017).

Gender in this study was balanced between men and women. The prevalence of hypertension in men and women is almost the same, the difference is that women tend to have hypertension detected at the age above 55 years or after menopause. This is due to differences in hormones in men and women. Women who have not gone through menopause are protected from cardiovascular disease because they have the hormone estrogen which plays a role in increasing levels of High Density Lipoprotein (HDL) which helps the elasticity of blood vessels (Aristotle, 2018).

Most of the respondents' education is undergraduate. The higher a person's education, the higher the level of understanding and knowledge possessed. The higher the education level of the elderly with hypertension, the more aware they are of treatment procedures and how blood pressure is maintained properly. Elderly with hypertension who have higher education will more easily receive information on what to do to stay healthy, one of which is to do sports.

Based on the results of the study that there were differences in systolic blood pressure in the elderly with hypertension, namely between pre and post morning walking therapy. Activity therapy has a very important role, especially for the elderly (Puspitasari, 2017). Activities that are recommended to be carried out by the elderly are activities with mild to moderate intensity. This is because walking is one way to prevent an increase in blood pressure. Walking is a light, inexpensive physical activity that is easy for the elderly to do. Walking which is a form of exercise can help restore the position and flexibility of the nervous system so that blood flow becomes smoother, besides that it can also increase the function of vasodilation which can reduce peripheral vascular resistance. Walking will move the lower extremitymuscles, this movement requires nutrients carried by the blood. So that the body will be stimulated to circulate blood to the lower extremity muscles. The heart will be trained to pump blood properly. Blood vessels will be more trained and elastic in flowing blood. This makes blood flow more smoothly.

Walking in the morning is very good for health, not only for the heart and blood vessels but is very good for training the extremity muscles and breathing. The air in the

morning is still clean and fresh, not yet polluted, which is very good for the elderly to breathe. Sunlight in the morning is also very helpful in the process of forming vitamin D to help bone health so that the elderly can still do activities well at their age. One of the mental changes in the elderly is that they tend to overthink easily which causes stress. Hypertension in the elderly can occur because the elderly were stressed. Exercising when the air is fresh and the morning atmosphere is calmer can make your mind and feelings calmer. This is in line with previous research that found a very strong relationship between morning walks and reduced stress levels (Priyatna, 2015).

The therapy given to the elderly in Burneh village, Bangkalan, East Java, Indonesia is in the form of morning walking therapy for 30 minutes with a frequency of 3 times a week for 28 days. These walks are done regularly. Regular exercise will also lower triglycerides and cholesterol so there are no blockages in the blood vessels and blood flow becomes smooth. In this study, the average reduction in systolic blood pressure was 8.72 mm Hg. 2017). The concept of good exercise given to the elderly is to keep moving, stress-free and short (30 minutes is enough), useful and safe. In a previous study it was stated that the reduction in systolic and diastolic blood pressure in elderly people with hypertension was affected by walking in the morning for 30 minutes with a frequency of 4 times a week (Silwanah et.al, 2020). This is different from the results in this study which were only carried out 3 times a week. Walking for 20 minutes twice a week is very effective for improving physical fitness (Okamoto, 2007). Walking to increase the heart rate in order to reduce the risk of cardiovascular disease by up to 50% can be done at least 20 minutes 3 times a week (Wahyuningsih, 2015). The walking that was carried out in this study was within the time span of the previous study, namely 30 minutes and was carried out 3 times a week so that it could still have a good effect on the cardiovascular system in preventing and controlling hypertension in the elderly. The combination of physical activity in the form of light exercise by walking with the selected time, namely in the morning for a duration of 30 minutes 3 times a week for 28 days is very beneficial for elderly people with hypertension in lowering blood pressure.

CONCLUSION

Therapeutic physical activity walking in the morning has a significant effect on systolic blood pressure in elderly people with hypertension because morning walking is an activity that is light, cheap, safe, and easy for the elderly to do. Morning walking therapy provides the benefit of helping the elasticity of the muscles of blood vessels and the heart so as to improve blood flow. The systolic and diastolic blood pressure is under control. Health workers need to provide correct information about the benefits of morning walks for elderly people with hypertension and monitor the consistency of sufferers and effort is needed to increase the knowledge of the elderly about the benefits of walking in the morning.

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CONFLICTS OF INTEREST

All authors declared no conflicts of interest.

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