



The Effect of Asmed Lasti Exercises on the Blood Pressure of the Elderly at Nursing Home

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Abstract. Hypertension is a significant public health problem and is one of the main causes of premature death worldwide. Hypertension exercise is one of the interventions for preventing and managing hypertension that can reduce blood pressure. This research aimed to identify the effect of Asmed Lasti Exercises on the blood pressure of the elderly at nursing home. The population in this study were hypertension sufferers who were at the Tresna Werdha Budi Sejahtera II nursing home. Samples were included as many as 30 people taken randomly. The results indicated that this exercise had no effect on population who took part in this exercise. This indicated result is likely influenced by the consumption of fatty and high-salt foods such as fried foods, vegetables with coconut milk, salted fish, etc, in their lifestyle. It is highly recommended that nursing home staffs regulate the members' diet pattern and exercise schedule.

Keywords: Asmed Lasti Gymnastics, Elderly, Exercise, Hypertension

1 Introduction

Hypertension is a significant public health problem and is one of the main causes of premature death worldwide. According to the World Health Organization (WHO) [1], elevated blood pressure is thought to be the cause of 7.5 million deaths globally, or 12.8% of all fatalities. South Kalimantan Province is the province with the highest prevalence of hypertension, namely 44.1% [2]. This number is spread across the 45-54 age group, based on a doctor's diagnosis, 16.32%, and 17.80% based on a diagnosis of taking medication. The city of Banjarbaru has an incidence of hypertension of 14,727 cases and the incidence in the Southern Banjarbaru sub-district is still high at 37%, and 47% of them have uncontrolled hypertension and 80% rarely do exercise activities [2]. The number of elderly is 11% and pre-elderly 33%, which of course will have an impact on degenerative disease factors that may occur. Hypertension is known to be a leading contributor to many diseases [3]. However, hypertension can be prevented and treated. The elderly are more likely to acquire hypertension since their blood pressure tends to be higher. There are many factors that effected uncontrol blood pressure for elderly. As many as 52.6% of elderly hypertension patients had blood pressure that was out of control in Indonesia [4]. The three factors that had the greatest impact on uncontrolled

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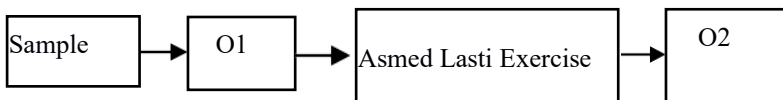
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blood pressure were salt consumption [5], smoking habit, and lack of antihypertensive medication regimen, drinking coffee, exercising are the most important ones [6] [7] and long-term exposure to air pollution [8]. Furthermore, alcohol consumption was associated with high blood pressure in men who reported moderate and excessive consumption [9].

Hypertension can be prevented by a healthy lifestyle and controlling risk factors. The previous research was conducted by Lopes et al [10] stated that systolic and diastolic BP decreased in the group given aerobic exercise intervention compared to the control group. Decreased systolic BP by 7.1 mmHg (95% CI, -12.8 to -1.4; $P = 0.02$), and decreased diastolic BP by 5.1 mmHg (95% CI, -7.9 to -2.3; $P = .001$). In addition, there was an increase in cardiorespiratory fitness (5.05 mL/Kg oxygen consumption per minute; 95% CI, 3.5 to 6.6; $P < 0.001$) in the intervention group compared with the control group. Other studies also prove that aerobics can lower blood pressure [11]. Other research results also reveal that exercise can reduce blood pressure in people with hypertension. Exercise leads to significant reduction in both systolic and diastolic blood pressure [12]. The results of a literature study conducted by Saco-Ledo et al [13] showed that aerobic exercise significantly reduce systolic BP by 5.4 mmHg; [95% CI, -9.2 to -1.6] and reduced diastolic BP by 3.0 mmHg [-5.4 to -0.6]. The sample used in the study continued to consume anti-hypertension medication, but only the intervention group was given aerobic exercise which provided significant benefits ($P < 0.05$). Therefore, this research is to identify the effect of Asmed Lasti exercise on reducing blood pressure in hypertensive elderly people.

2 Method

This research employed quasi-experimental research, in the form of a nonequivalent design (pre-test and post-test) without group design. The design of the quasi-experimental research is illustrated as follow:



Note:

O1: Blood pressure before Asmed Lasti exercise therapy.

O2: Blood pressure before Asmed Lasti exercise therapy.

Starting from June 2022 to August 2022 the data was collected from Tresna Werdha Budi Sejahtera II nursing home by conducting treatment in the form of physical exercise. The sample is elderly people at Tresna Werdha Budi Sejahtera who meet the criteria for CM awareness, do not experience disorientation in time, place and person, do not experience complications, and have no paralysis taken randomly according to the sample size formula, namely 30 people.

Research stages:

1. Chosen samples had their blood pressure measured before the exercise intervention.
2. The chosen samples then participant in Asmed Lasti Exercise led by a gymnastics instructor.
3. After 15 minutes of exercise, samples' blood pressure was remeasured.
4. The exercise intervention was conducted for 10 minutes every morning for period of two weeks.
5. The results of blood pressure measurements before and after exercise were then compared to determine changes. In order to determine changes in the blood pressure before and after intervention, the study analyzed the data using a paired t test

3 Result

The result of the intervention then analyzed in accordance to experimental procedue, result in the following table

Table 1. Sample Blood Pressure Description Before and After “Asmed Lasti”

Blood Pressure (BP)	Exercise treatment.		Paired T-Test	Significance
	Before	After		
Systolic Average	141,083	135,25	1,123	0,285
Diastolic Average	82,08	78,16	1,178	0,264

Based on Table 1. it was found that the average systolic BP decreased for 5.83, from 141.083 mmHg before exercise to 135.25 mmHg after exercise. Likewise, the average diastolic BP showed small decrease which was previously 82.08 mmHg decreased to 78.16 after exercise. However, the result of paired t test suggested that the t value was 1.123 with a significance of 0.285 in systolic BP, meanwhile t value was 1.178 and a significance of 0.264 in diastole. This figure was greater than the alpha value of 0.05, this indicated that there was no significant difference in systolic and diastolic blood pressure before and after Asmed exercises intervention.

4 Discussion

The average systolic blood pressure of the respondents was 141.083 mmHg, which was slightly elevated but not too alarming given their age. However, some respondents had blood pressure readings as high as 162 mmHg, which is alarming and need routine monitoring. Furthermore, diastolic blood pressure on average is 82.08 mmHg which indicates normal blood pressure. However, one respondent had dangerously high diastolic blood pressure (110 mmHg), requiring close attention to the respondent's blood

pressure. It is due to the fact that Systolic-diastolic hypertension can develop from untreated diastolic hypertension [14].

It has also been found that blood pressure did somewhat drop before and after Asmed Lasti exercise, however this is most likely only because exercise made people feel more at ease after the exercise. At a glance, the study's finding indicates that elderly with hypertension had experienced lower systolic and diastolic blood pressure after the exercise [15]. Exercise increases the requirement for oxygen in the cells for the production of energy, which raises heart rate and increases cardiac output and stroke volume. Regular and continuous exercise will make your blood vessels more elastic and prolong the duration of the blood pressure lowering [16]. This condition is consistent with the findings of a study conducted by Zhu et al [17] there is pooled effect value showed that systolic blood pressure in the experimental group was reduced by 5.94 mmHg (95% CI: -8.57, -3.30) compared with the control group, and the difference was statistically significant and there is a correlation between exercise for hypertension and elderly's blood pressure [18]. This finding is also consistent with study of Fu et al, the aerobic training group could significantly reduce systolic blood pressure compared with the control group $P < 0.0001$. The Diastolic Blood Pressure was reduced significantly in the aerobic training group $P < 0.001$ [19].

The research findings from the utilized paired t test have suggested that Systolic and diastolic blood pressure before and after performing Asmed exercises did not alter significantly. This probably occurs because the respondent had fried food from the nursing home personnel following the Asmed exercise activity, negating whatever impact the exercise had on changes in the respondent's blood pressure. According to study by Jabbari et al, they stated that higher consumption of processed meat and poultry had a suggestive direct association with the incidence risk of stroke [20] and has significant association between red meat consumption and hyperlipidemia [21] [22]. Besides that, substituting one serving/day of poultry, fish, eggs, dairy products, or plant-based protein sources for total red meat was each associated with 8–15% lower odds of hypertension [23]

Exercise training (ET) induces positive modifications in skeletal muscles, including angiogenesis, enhanced oxidative metabolism, higher strength, decreased fatigue, and increased mitochondrial biogenesis. Since angiogenesis is an adaptive response brought on by oxygen deprivation, it is known to encourage endothelial cells to produce new blood vessels [24]. The dual renin-angiotensin system (RAS), which has two opposing arms, can be modulated by aerobic exercise [25]. Angiotensin converting enzyme (ACE), angiotensin type II (Ang II), and angiotensin type 1 receptors combine to produce the first arm, which is known as the classical arm. The ACE2 and Mas receptor-containing counterregulatory arm makes up the second arm [26].

5 Conclusion

Systolic and diastolic blood pressure did drop following Asmed exercise, but the decrease was not substantial and the respondents did not maintain their eating habits to stay away from fatty and high-salt meals. Therefore, it is recommended that nursing

home staffs always monitor respondents' diet patterns, activity patterns, blood pressure control schedules. Further respondents are expected to abide by treatment regimen for hypertension that has been arranged by the staff.

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