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Physical exercise and blood pressure control for hypertension in menopausal women

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Abstract

Background: Hypertension is one of the non-communicable diseases that is a concern throughout the world, including Indonesia. Hypertension occurs frequently in menopausal women, because at menopause there is a decrease in estrogen hormones, so there is a risk of suffering from hypertension. One of the non-pharmacological therapies to control blood pressure in menopausal women is aerobic exercise. *Sejati* intervention is aerobic exercise that can cause a decrease in heart rate, which will reduce cardiac output, which ultimately causes a decrease in blood pressure.
Purpose: To see the effectiveness of *Sejati* intervention on blood pressure in menopausal women.
Method: The research design used was a quasy experiment, namely with a pre-test and post-test research design with a control group. The number of samples in this study was 36 respondents with 18 respondents in the intervention group and 18 respondents in the control group. The inclusion criteria in this study were menopausal women with hypertension who have blood pressure ≥140/90 mmHg and the exclusion criteria of this study were respondents with comorbidities. The statistical analysis used in this study was a linear regression test.
Results: There was the effect of *sejati* intervention on blood pressure in menopausal women with hypertension at the Bojonggambir Health Center, Tasikmalaya Regency with a p value of 0.000 < α 0.05.
Conclusion: The *sejati* intervention has an effect on reducing blood pressure in menopausal women.
Suggestion: This research can be used as a reference material for further research.

Keywords: Blood Pressure; Hypertension; Menopausal; *Sejati* Intervention.

INTRODUCTION

Hypertension is one of the non-communicable diseases that is of concern to the whole world including Indonesia (Ministry of Health of the Republic of Indonesia, 2019b). Hypertension occurs frequently in women after menopause, because at menopause there is a decrease in estrogen hormone so that there is a risk of suffering from hypertension (Freedman, 2014). Hypertension is also one of the diseases that can cause other health problems such as stroke, ischemic heart disease, and kidney failure in the future (Ministry of Health of the Republic of Indonesia, 2019a).

Hypertension in Indonesia itself has increased from 25.8% in 2013, 34.1% in 2018, and shows a decrease to 30.8% in 2023 (Ministry of Health of the Republic of Indonesia, 2023). The prevalence of hypertension in West Java based on Riskesdas in 2018 was 29.4% and increased in 2023 to 39.6% (Ministry of Health of the Republic of Indonesia, 2023). In Tasikmalaya Regency, hypertension is still a major problem. The prevalence of hypertension is 45.3% (Ministry of Health of the Republic of Indonesia, 2018). The results of a preliminary study conducted by researchers at the Bojonggambir

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Health Center showed that hypertension is included in the top three diseases with many sufferers. As many as 24.8% suffered from hypertension in 2022, and increased in 2023 to 26.3%, so that various factors can influence the occurrence of hypertension, especially in menopausal women, so that treatment is needed (Tasikmalaya City Health Service, 2023).

To prevent complications of hypertension in menopausal women, it is necessary to maintain stable blood pressure. Maintaining stable blood pressure can be done in various ways, using pharmacology and non-pharmacology. One of the non-pharmacological therapies that is economical and can be done by all groups is aerobic exercise. *Sejati* intervention is aerobic exercise which can cause a decrease in heart rate which will then decrease cardiac output, which ultimately causes a decrease in blood pressure. *Sejati* intervention is a combination of healthy heart gymnastics movements and hypertension gymnastics, one type of gymnastics that involves all large muscles, heart capacity, and breathing. This gymnastics aims to increase endurance, strength, body coordination, and maintain health (Listiana, Effendi, & Saputra, 2020; Fakhruddin, 2013; Sianipar, & Putri, 2018; Sari, 2021).

Research on women participants of elderly posyandu in Kartasura District, with chi square test results showing that there is a significant relationship between menopausal women and hypertension, namely (p-value = 0.008) and there is a relationship between aerobic exercise and hypertension, namely (p-value = 0.016). Respondents who have menopausal age status are more at risk of experiencing hypertension with a value (OR 3.182 and p-value 0.015) and respondents who do aerobic exercise are less at risk of experiencing hypertension with a value (OR 3.457 and p value 0.030) (Khafifah, & Romadhon, 2019). The aim of this study was to see the effectiveness of *Sejati* exercise on blood pressure in menopausal women.

RESEARCH METHOD

This research is a quantitative research. The research design used is a Quasi Experiment with*pre test*and post test with control group.

The population in this study were menopausal women who experienced hypertension at the Bojonggambir Health Center, Tasikmalaya Regency, totaling 164 people. the sample was taken using purposive sampling technique, and obtained a sample of 36 participants who were divided into two groups; 18 intervention and 18 control. The inclusion criteria in this study were menopausal women with hypertension who had blood pressure ≥140/90 mmHg, systolic between 140 - 170 and diastolic 90 - 100 mmHg, did not smoke and were willing to be participants, while the exclusion criteria were if they had comorbidities (asthma, physical disability, heart disease, dumb, deaf, blind, psychotic) and refused to be participants.

The intervention group was given a *sejati* exercise intervention which was a combination of healthy heart exercise movements and hypertension exercise which was done 3 times a week with a duration of 30 minutes and 3 exercise sessions for 30 minutes were guided by a trainer and using a modified heart exercise video guide. with the following steps: Stretching/warm-up exercises: movement 1: straighten both arms above the head for 2x8 beats, movement 2: clap both hands for 2x8 claps, movement 3: clap the right arm by the left arm for 2x8 claps, movement 4: clap the left arm by the right arm for 2x8 claps. Core exercises: movement 5: walk on the spot while clapping fingers for 2x8 claps, movement 6: bend both legs while clapping calves for 2x8 claps, movement 7: step right and left while clapping shoulders for 2x8 beats, movement 8: walk on the spot and stabilize breathing, movement 9: do tiptoe movements while swinging both arms up and down while regulating breathing for 2x8 beats. Cooling down/calming down exercises: movement 10: straighten both arms forward while crossing fingers for 2x8 beats, movement 11: bend the body to the right side while raising the left hand for 2x8 beats, movement 12: bend the body to the left side while raising the right hand for 2x8 beats.

Blood pressure measurements in the intervention group were carried out before being given *sejati* exercise treatment and after a 30-minute rest, blood pressure measurements were taken again. While in the control group, blood pressure measurements were taken twice, namely at the beginning of the

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meeting in week 1 and at the end of the meeting in week 4.

Data collection using calibrated Sphygmomanometer, stethoscopes, tape recorder and observation sheet. Statistical analysis used in this study is univariate characteristic test. Bivariate with paired t-test, and for multivariate using linear regression test.

This research has been declared to have passed the ethical review by the Nursing Research Ethics Committee, Faculty of Nursing, Muhammadiyah University of Jakarta with the number: 1401/F.9-UMJ/IX/2024.

RESEARCH RESULTS

Table 1. Characteristics of the Participant (N=36)

Variable	Group		p-value
	Intervension (n=18)	Control (n=18)	
Age (Mean±SD)(Range)(Year)	(49.56±3.028)(45-55)	(50.22±2.755)(45-55)	0.749
Long Suffering (Mean±SD)(Range)(Year)	(2.72±0.574)(1-3)	(2.67±0.607)(1-3)	0.16
Education (n/%)			
Elementary – High School	13/72.2	12/66.7	0.73
Diploma – Bachelor	5/27.8	6/33.3	
Occupation (n/%)			
Employees	7/38.9	6/33.3	0.74
Unemployment	11/61.1	12/66.7	
Religion			
Muslim	16/88.9	14/77.8	0.39
Non-Muslim	2/11.1	4/22.2	
Ethnic Group			
Sundanese	16/88.9	16/88.9	1.00
Non Sundanese	2/11.1	2/11.1	

Table 1 shows the mean and standard deviation of the age of participants in the intervention group (49.56±3.028) and the control group (50.22±2.755) and the age range is the same, between 45 to 55 years. Based on the variable of duration of hypertension, the average duration of hypertension in the intervention group was (2.72±0.574) and in the control group (2.67±0.607), with a range of 1 to 3 years. The education of the participants was mostly elementary school - high school in the intervention group as many as 13 (72.2%) while in the control group as many as 12 (66.7%). As many as 11 (61.1%) of the participants in the intervention group were unemployed, while 12 (66.7%) of the participants in the control group were unemployed. The religion of the participants was mostly Islam in the intervention group as many as 16 (88.9%) while in the control group as many as 14 (77.8%). And the majority of participants with Sundanese ethnicity both in the intervention group and the control group were 16 (88.9%) each. Homogeneity test showed no differences in the characteristics of Age, Duration of hypertension, Education, Occupation, Religion, Ethnicity in the intervention group and the control group with a value of p> 0.05, it can be concluded that the data is homogeneous.

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Table 2. Differences in Systolic and Diastolic Blood Pressure (N=36)

Group	Before (Mean±SD)(Range)		After (Mean±SD)(Range)		MD	t	Sig.
	Sistole	Diastole	Sistole	Diastole			
Intervention	(152.17±5.11) (145-163)	(89.67±7.46) (80-110)	(135.94±4.07) (130-144)	79.11±5.12 70.00 86	16.22	20.11	0.000
Control	(154.39±8.27) (144-171)	(91.39±7.89) (79-107)	(156.11±8.89) (147-175)	(93.83±7.79) (84-110)	10.55	5.61	0.000

Table 2 shows the results of the paired sample t-test analysis. The sig. value is 0.000 < α 0.05. This indicates that there is a significant difference in the average systolic and diastolic blood pressure between the intervention group and the control group before and after the *sejati* intervention.

Table 3. The Effect of *Sejati* Intervention on Systolic and Diastolic Blood Pressure

Variables	β	Beta	*p-value*
Pre_Test Systole	.04	.60	.00
Post_Test Systole	.05	1.24	.00
Pre_Test Diastole	.00	.03	.68
Post_Test Diastole	.00	.01	.90

Based on table 3 shows the sig. value 0.00 < α 0.05 which means there is an Effect of True Intervention on Blood Pressure of Menopausal Women with Hypertension at the Bojonggambir Health Center, Tasikmalaya Regency.

DISCUSSION

Respondent Demographics and Characteristics

Age is closely related to hypertension because with increasing age, the risk of hypertension increases. This is due to increased arterial pressure with age, aortic regurgitation, and degenerative processes that are more frequent in old age (Gaol & Simbolon, 2020). The duration of hypertension is the time a person is diagnosed with hypertension. The cause of the duration of hypertension is of course how quickly a person experiences hypertension. This is closely related to the factors that cause hypertension. The more factors that cause hypertension in a person, the faster they are likely to develop hypertension than people who do not have risk factors or who have few risk factors (Gama, Sarmadi, & Harini, 2014). The level of education can affect a person's ability and knowledge in implementing healthy living behaviors. The higher a person's level of education, the higher their knowledge in maintaining a healthy lifestyle. Hypertension (high blood pressure) tends to be high in low education and decreases with increasing education. Based on the researcher's assumption, this happens because respondents who are more unemployed are more likely to develop hypertension due to lack of physical activity or light physical activity. Basically, one of the factors that affects blood pressure is religiosity. Religiosity is a person's spiritual expression related to a system of beliefs, values, symbols and rituals. so that it influences all actions and views on life, religiosity is an activity to calm and focus the mind. Religiosity aims to relax (Munawara, & Ruhyana, 2017). Based on the researcher's assumption, this happens because of the lifestyle and eating patterns in the traditions that are carried out. Where Sundanese people in their daily lives The majority of Sundanese people have a

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culture of eating The frequency of eating that is at risk of hypertension includes staple foods, such as rice, instant noodles, animal side dishes such as chicken, offal, fish, salted fish, eggs and foods that contain a lot of flavorings (Mulachela, 2022).

Effect of Intervention on Blood Pressure

Based on the results of the study that has been conducted, the average systolic blood pressure after the intervention was 135.9 ± 4.1. The difference in systolic blood pressure in the intervention group before and after was 16.3 ± 1.0. This shows that there is a decrease in systolic blood pressure when compared to before the respondents were given the intervention, which is with a value of 152.2 ± 5.1. While the average diastolic blood pressure after the intervention was 79.1 ± 5.1. The difference in diastolic blood pressure in the intervention group before and after was 10.6 ± 2.4. This shows that there is a decrease in diastolic blood pressure when compared to before the respondents were given the intervention, which is with a value of 89.7 ± 7.5.

This shows that this therapy helps reduce the respondent's blood pressure and can improve the health status of women experiencing menopause. Application of theoretical concept models self-care management according to Dorothea Orem is the individual's own ability to carry out self-care activities to meet the needs to maintain life, improve and maintain the health and well-being of individuals, showing a relationship (Khademian, Ara, & Gholamzadeh, 2020). The research process requires education and guidance through training between researchers and respondents. This fosters a sense of trust in respondents to carry out real training.

The Most Influential Factors on Blood Pressure

The results of the linear regression test obtained a sig. value of 0.000 <α 0.05, meaning that there was a significant difference in the average systolic and diastolic blood pressure in the intervention group and the control group between before and after the *sejati* intervention.

The presence of this decrease in blood pressure proves that *sejati* intervention is effective in lowering blood pressure in menopausal women with hypertension. Menopause is one of the natural phases experienced by a woman. A person who suffers from hypertension needs continuous treatment so that blood pressure can be controlled to avoid complications (Simamora, Sembiring, & Sinaga, 2022). Hypertension can be controlled by adjusting lifestyle (Darvishpour, Mansour-Ghanaei, & Mansouri, 2022). A person who suffers from a chronic disease will experience significant changes in daily activities, so self-care management is needed to avoid complications and reduce symptoms and risks of complications (Fauziah & Syahputra, 2021). The impacts that can arise if self-care management is not implemented include hypertension or uncontrolled blood pressure, and cause complications such as stroke, heart failure, and kidney failure (Sakinah, Ratu, & Weraman, 2020). This is important to support the healing process through *Sejati* intervention and this technique can be used as an effective method in providing treatment for menopausal women.

This proves that *sejati* intervention therapy has a significant effect on menopausal women with hypertension. Implementation of *sejati* intervention therapy can be given to menopausal women individually or in groups. Because *sejati* intervention can increase blood flow and oxygen supply to active muscles and skeletons, especially to the heart muscle. With aerobic exercise, the need for oxygen in cells will increase for the energy formation process, so that there is an increase in heart rate. So that cardiac output and stroke volume increase. Thus blood pressure will increase. After resting, blood vessels will dilate or stretch, and blood flow will decrease temporarily for about 30-120 minutes and then return to blood pressure before exercise. If exercise is done routinely and continuously, blood vessels will be elastic and the decrease in blood pressure will last longer. The mechanism of decreasing blood pressure after exercise is because exercise can relax blood vessels which causes blood vessels to widen so that blood pressure decreases (Mahardani, 2010; Mancia, Grassi, & Redon, 2014; Izzo & Black, 2018).

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CONCLUSION

The *Sejati* intervention has an effect on blood pressure in menopausal women with hypertension at the Bojonggambir Community Health Center, Tasikmalaya Regency with a sig. value of 0.000 <α 0.05.

LIMITATIONS

In this study, researchers did not analyze respondents who consumed hypertension medication, the type of hypertension medication and the length of time they consumed hypertension medication.

SUGGESTION

This research can be used as a reference material for further research related to *Sejati* interventions on blood pressure in menopausal women with hypertension.

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