

THE EFFECT OF YOGA ON PRESSURE BLOOD IN HYPERTENSION PATIENTS

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ABSTRACT

Hypertension is a chronic disease with a high prevalence in Southeast Asia and Indonesia. Yoga as a non-pharmacological therapy has the potential to effectively lower blood pressure. This study used a quantitative method with a quasi-experimental one-group pretest-posttest design, involving 30 hypertension patients participating in a chronic disease service program at the Grogol Community Health Center. Yoga exercises were carried out for three consecutive days with a duration of 30-60 minutes per session. Data were collected using a general data sheet and a blood pressure monitor. The results of the Wilcoxon test showed a significant decrease in systolic and diastolic blood pressure after the yoga intervention ($p = 0.000$). Yoga exercises play a role in improving heart function, reducing sympathetic nerve activity, and causing vasodilation, resulting in lower blood pressure. This study concluded that yoga exercises are effective as a non-pharmacological intervention that can improve the quality of life of hypertension patients and is recommended for routine implementation in the community.

KEYWORDS

Hypertension, Blood Pressure, Yoga



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INTRODUCTION

Hypertension is a condition where blood pressure is above normal (Ekasari et al., 2021). Hypertension is also one of the other chronic and degenerative diseases that is a public health problem in Indonesia, namely hypertension, which is a risk factor for various degenerative diseases, such as coronary heart disease, stroke and other blood vessel diseases, which causes health costs and high risk of death (Kemenkes, 2023).

2023 WHO data shows that the prevalence of hypertension worldwide varies greatly. The Southeast Asia region ranks first with the highest number of hypertensive sufferers, reaching 700 million people or 33.4% of hypertensive prevalence in 2023. The

next position is occupied by the European continent and the Western Pacific region (WHO, 2023).

Based on the Indonesian Health Survey which measures blood pressure in the population aged 18 years and over, the prevalence of hypertension in Indonesia is still relatively high, reaching 30.8% of the total population, which means that almost a third of the population experiences hypertension (Survei Kesehatan Indonesia, 2023). A 2023 Central Java Health Service survey noted that hypertension occupies the largest proportion with a percentage of 72.0% of total cases of non-communicable diseases, with the number of sufferers estimated at 6,987,551 people (Dinkes Jateng, 2023).

Sukoharjo Regency health profile data for 2023 shows that there are 266,044 hypertensive sufferers, of which 212,848 have received health services. The number of hypertensive sufferers has increased compared to 2022, which numbered 263,830 people, with Grogol sub-district being the largest contributor of cases with 35,468 sufferers (Dinkes Sukoharjo, 2024)

Hypertension is a major risk factor leading to complications of various diseases such as stroke, heart failure and myocardial infarction. They are often asymptomatic and can lead to sudden death from complications in the kidney, eye and brain organs (Gianevar & Puspita, 2024). Hypertension also acts as a trigger for a continuous increase in systemic blood pressure and is the main cause of an increase in cases of cardiovascular disease and death worldwide (Midu & Astrid, 2021). Symptoms of hypertension are often found in elderly people who experience the aging process with physiological changes such as decreased elasticity of blood vessels and the ability of the heart to pump blood, making the elderly susceptible to hypertension (Manungkalit et al., 2024). Treatment for hypertension aims to prevent complications by monitoring blood pressure regularly to keep it under control. Management steps that can be taken include a healthy diet, a low-salt diet, and physical activity such as exercise. WHO recommends that aerobic activity be carried out for a minimum of 150 minutes per week (WHO, 2023).

One appropriate alternative to lower blood pressure without dependence on medication and avoid side effects is to use non-pharmacological therapy, one of which is yoga exercises. Yoga exercises can help the heart work optimally by increasing energy needs by the body's cells, tissues and organs. As a result, venous return increases so that the stroke volume increases, which directly increases cardiac output and causes arterial blood pressure to rise. Once arterial blood pressure increases, the next phase is able to decrease respiratory and skeletal muscle activity, thereby decreasing sympathetic nerve activity. This condition then reduces heart rate, stroke volume, and causes vasodilation in the arterioles and veins. This decrease leads to reduced cardiac output and total peripheral resistance, which ultimately results in a decrease in blood pressure (Andarwulan, 2021).

This research is in line with research conducted by Wiyono showing that yoga exercises have an influence on changes in blood pressure in hypertensive sufferers (Wiyono et al., 2022). Another study by Istianah with research results showed that hatha yoga exercises can lower blood pressure in hypertension sufferers after practicing hatha yoga exercises 4 times a week for 2 weeks (Istianah et al., 2025).

Based on a preliminary study at the Grogol Health Center, a program for elderly people with chronic diseases is routinely implemented, including hypertensive patients. The physical exercise given is still general and does not use yoga as a specific intervention for reducing blood pressure. Therefore, this study aims to examine the effect of yoga exercises on blood pressure reduction in hypertensive patients. The results of this study can form the basis of effective, safe and easy non-pharmacological interventions in the community to improve the quality of life of hypertensive people.

RESEARCH METHOD

This study used a quantitative method with a quasi-experimental design and a one-group pretest-posttest approach, which means that the study was only carried out in one group without a comparison group. Yoga exercises are done three times in a row for three days, with a duration of each session of between 30 and 60 minutes, to determine the effect of yoga exercises on blood pressure. The study population were hypertensive individuals who participated in the chronic disease service program at the Grogol Health Center.

Samples were taken purposive sampling based on Slovin's formula, with a total of 30 respondents. Research instruments include a general data sheet containing information on age, gender and blood pressure before and after the intervention, as well as a blood pressure measuring device, namely a tensimeter. The implementation of yoga exercises uses equipment such as mattresses and carpets, guided by an instructor who has been given instructions regarding the movements to be carried out.

RESULT

Table 1 Respondent Characteristics

		<i>Frequency</i>	<i>Percent</i>
Age	46-55 Years	7	23.3
	55-65 Years	12	40.0
	>65 Years	11	36.7
	Total	30	100.0
Gender	Male	4	13.3
	Female	26	86.7
	Total	30	100.0

The age characteristics of respondents were obtained as a result of the majority aged 55-65 years being 12 people (40%), the majority of respondents' gender being women with 26 respondents (86.7%).

Table 2 Pre-test and Post-test Blood Presssure

	Mean	Minimum	Maximum
Pretest_Sistolik	142.50	120	181
Pretest_Diastolik	82.53	70	92
Posttest_Sistolik	122.17	100	150
Posttest_Diastolik	75.60	60	84

The result of the SPSS output before yoga exercise, the lowest systolic value is 120 mmHg and the highest value is 181 mmHg with an overall average of 142.50 mmHg and the lowest diastolic value is 70 mmHg and the highest is 92 mmHg with an average of 82.53 mmHg. Meanwhile, after being given yoga exercises for 3 days, the lowest systolic blood pressure results were 100 mmHg with Diastolis at 150 mmHg with an average of 122.17 mmHg and the lowest diastolic blood pressure was 60 mmHg and the highest was 84 mmHg with an average of 75.60 mmHg.

Table 3 Wilcoxon Test Results

	Posttest_Sistolik - Pretest_Sistolik	Posttest_Diastolik - Pretest_Diastolik
Z	-4.786 ^b	-3.704 ^b
Asymp. Sig. (2-tailed)	.000	.000

SPSS output shows Asymp results. Sig. (2-tailed) from the systolic results of blood pressure before and after being given yoga exercises gets a result of 0.000 which means

that the value is <5 where there is an influence of yoga exercises on the systolic results of blood pressure before and after being given yoga exercises. Meanwhile, the results of the diastolic blood pressure values before and after being given yoga exercise show a result of 0.000, which means there is also an influence of giving yoga exercise on diastolic blood pressure.

DISCUSSION

1. Respondent Characteristics

The Ministry of Health of the Republic of Indonesia (Ministry of Health of the Republic of Indonesia) classifies elderly people into 3, namely: elderly people aged 46-55 years, elderly people aged 56-65 years, and also seniors >65 years. Based on previous research on the relationship between age and gender regarding hypertension, it shows that as we get older, the cardiovascular system in the body will experience a decrease, which will result in an increase in the incidence of hypertension (Adila & Mustika, 2023).

The age characteristics of respondents in this study found that of the 30 respondents, most were aged 56-65 years with a frequency of 12 people (40%). As we get older, a person's chances of experiencing various diseases will also increase. This is caused by the aging process which causes a decrease in the function of hormones and cells in the body. Continued aging can cause physiological changes that impact physical growth as well as changes in body function and response. Individuals in the age range of 45-59 years are therefore susceptible to degenerative diseases.

Age is an important factor that impacts the occurrence of hypertension, because there are natural changes in the body related to the heart, blood vessels and hormones. Increasing age will be increasingly associated with problems with endothelial function and increased arterial stiffness in hypertension, especially systolic hypertension among elderly adults (Ekarini et al., 2020).

This research is in line with research by Riniasih that there is significant association between age and incidence of hypertension. Hypertension often occurs in the elderly compared to adults. Because increasing age is positively correlated with the risk of hypertension, the body's cardiovascular system will decrease with age, which means the incidence of hypertension will also increase. Their hypertension increases with age. For forty years, the natural degenerative processes of large blood vessels changed their structure, causing them to narrow and stiffen, which resulted in diastolic and systolic increases. Because the heart, blood vessels, and hormones all contribute to the natural body (Riniasih & Makmun, 2025).

Increased blood pressure usually occurs at the age of forty years, as a result of arterial pressure which with age causes aortic regurgitation and degenerative processes in old age. Age also increases the risk of diseases such as nerve, heart, blood vessel disorders, and decreased function of the five senses. Apart from that, the body's metabolism also decreases (Sani et al., 2020).

The gender characteristics of the respondents in this study were mostly female, namely 26 people (86.7%). Before menopause, women have higher levels of estrogen, which is thought to protect blood vessels and may reduce the risk of hypertension. However, after menopause, a decrease in estrogen makes women more susceptible to hypertension, and the risk of hypertension after increasing age 50 years (Suripto et al., 2025).

This research is also in line with research by Salam that women suffer from hypertension more than men (Salam et al., 2023). This is because women have higher estrogen levels before menopause, which is thought to protect blood vessels and can reduce

the risk of hypertension; However, after menopause, a decrease in estrogen makes women more susceptible to hypertension, and the risk of hypertension increases at the age of fifty (Falah, 2019).

Women's blood pressure increases more quickly with age, especially systolic. Women aged 55 years are more susceptible to hypertension. Hormonal differences between the sexes are one of the causes of this pattern. When women menopause, the production of the hormone estrogen decreases, and the positive effects decrease, so blood pressure increases. Women and men are almost equally hypertensive, but the hormone estrogen which helps increase High Density Lipoprotein (HDL) levels protects women from cardiovascular disease before menopause (Yunus et al., 2021).

2. The effect of yoga on blood pressure

The results of 30 respondents who underwent yoga intervention for 3 consecutive days showed a decrease in blood pressure results before and after yoga exercise. Based on the Wilcoxon test, the significance value obtained from the systolic and diastolic blood pressure values before and after yoga exercise was 0.000 ($p < 0.05$), which means there is an influence of yoga exercise in reducing blood pressure values before and after yoga exercise in hypertensive sufferers.

Yoga usually helps reduce weight, high blood pressure, cholesterol, blood sugar and stress, as well as relaxing the body and mind. In addition, yoga exercises increase the release of endorphins, which the body produces when it feels calm and relaxed. This hormone functions as a natural medicine to calm the brain and increase endorphin levels in the body to reduce high blood pressure (Sari et al., 2022).

People with high blood pressure are strongly advised to do yoga. Because gymnastics secretes endorphins, which are captured by receptors in the hypothalamus and limbic system, which are responsible for the regulation of emotions, pain, memory, appetite, blood pressure, breathing, and sexual ability, endorphins increase (Subekti et al., 2022).

This research is in line with research conducted by Andarwulan regarding the implementation of yoga exercises given to elderly hypertensive survivors which provide results if there are significant differences in blood pressure before and after yoga exercises. This concludes that yoga exercises have an effect on hypertensive blood pressure in the elderly (Andarwulan, 2021).

Yoga exercises are considered effective in lowering blood pressure for people with mild to moderate hypertension without medication. This is because yoga practice helps relax and turn a person's mind into a positive one. Blood pressure decreases as a result of the relaxation produced by yoga, which basically aims to put the body in a calm position so that the body can relax and stay in balance. The relaxation process of yoga also focuses on breathing, which provides more oxygen to the muscles so that the muscles become sagging, which in turn reduces blood pressure (Juniartati et al., 2023).

This research is also in line with research conducted by Pujiastuti with research results that yoga exercises were significantly able to reduce the average blood pressure of systole in the group that did yoga exercise by 8.64 mmHg compared to the group that did not do yoga exercises. With a p value of 0.000 ($p < 0.05$). This means that there is an effect on reducing blood pressure in the systole after being given yoga therapy. Meanwhile, yoga exercise diastole was also able to significantly reduce the average blood pressure of diastole in the group that did yoga by 7.6 mmHg compared to the group that did not do yoga. With p value 0.000 ($p < 0.05$). This means that there is an influence on reducing diastole blood pressure after being given yoga therapy (Pujiastuti et al., 2019).

The results of this research are also supported by research conducted by Wiyono which found that of the 30 respondents with yoga exercise therapy, almost 70% experienced a decrease in systolic pressure from mild to normal hypertension and a small 30% were in the category of mild hypertension, where there was also a decrease, almost all 80% experienced a decrease in diastolic blood pressure from mild to normal hypertension (Wiyono et al., 2022).

Yoga exercises carried out to lower blood pressure in the elderly aim to lower blood pressure in the elderly. In addition, yoga usually helps you lose weight, lower blood pressure, cholesterol, blood sugar, high cholesterol, and become more physically and emotionally relaxed. This yoga exercise is more effective, done three or four times a week in a row to achieve the best results. Doing yoga regularly can also balance the autonomic nervous system, making the body more relaxed and making hormones that increase blood pressure, such as adrenaline, more controlled. As a result, blood pressure will be better after doing yoga (Ruhayana et al., 2021).

CONCLUSION

Yoga exercises carried out for 3 consecutive days with a duration of 30-60 minutes have been proven to reduce systolic and diastolic blood pressure in hypertensive sufferers with a P-value of 0.000, which means there is an influence of yoga exercises on blood pressure in hypertensive sufferers.

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