B-ICON Proceeding

THE EFFECT OF YOGA AND HYPERTENSION EXERCISE ON BLOOD PRESSURE IN HYPERTENSIVE MOTHERS IN THE WORKING AREA OF THE PENURUNAN COMMUNITY HEALTH CENTER IN BENGKULU CITY

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Abstract

Hypertension remains a major health problem worldwide. Hypertension often leads to dangerous conditions because its presence is often unnoticed and does not cause complaints. Many respondents still do not practice yoga and hypertension exercises in their daily lives. This study aims to determine the effect of yoga and hypertension exercises on blood pressure in mothers with hypertension in the work area of the Bengkulu City Health Center. This study is a quantitative study with a quasi-experimental design with a two-group pretest-posttest design. The sample in this study were mothers with hypertension in the Penurunan Health Center with 60 respondents. Data analysis used to determine the difference in Systolic Blood Pressure (SBP) and Diastolic Blood Pressure (DBP) before and after the intervention was carried out using the Kolmogorov-Smirnov test. The results of this study showed that the average blood pressure before the yoga group intervention was 159/97 mmHg and the average blood pressure after the yoga group intervention was 154/87 mmHg. The average blood pressure before the hypertension exercise group intervention was 159/96 mmHg and the average blood pressure after the intervention in the hypertension exercise group was 147/89 mmHg. The results of the bivariate analysis showed that the SBP Post p-value = 0.042 ≤ 0.05 and the DBP Post p-value = 0.002 ≤ 0.05. Using a 95% confidence level, H0 was rejected, which means there is an effect of yoga and hypertension exercise on blood pressure in mothers with hypertension in the work area of the Penurunan Health Center. Yoga and hypertension exercise for mothers with hypertension can be an effective method in conveying information to hypertension sufferers.

Keywords: Yoga, Hypertension Exercise, Blood Pressure, Hypertension

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INTRODUCTION

Non-communicable diseases (NCDs) are a growing health issue in society every year and are a leading cause of death worldwide. In Indonesia, the prevalence of non-communicable diseases has increased, including hypertension, from 25.8% to 34.1%.

According to the WHO, in 2021, 1.13 billion people globally had hypertension. 37% of those with hypertension were aware of their condition, while 46% of adults were unaware that their blood pressure was abnormal. One of the global targets for non-communicable diseases is a 33% reduction in

hypertension cases between 2010 and 2030. In the age group 25-34 years, the prevalence was 20.1%; 35-44 years was 31.6%; 45-54 years was 45.3%; and 55-64 years was 55.2%.
Lack of physical activity is one of the causes of increased blood pressure, as it can increase heart rate. Regularly engaging in physical activities such as yoga and hypertension exercises can improve heart function, thereby lowering high blood pressure and reducing the risk of fat accumulation in blood vessel walls.

Doing yoga for one month with 12 sessions, three times a week for 60 minutes, can reduce systolic blood pressure by approximately 0.55 mmHg. Yoga can play a role in lowering blood pressure because it promotes gentle stretching and breathing exercises, as well as using deep relaxation and meditation techniques to balance and release muscle tension, improve posture, improve breathing, relieve mental stress, and support cardiovascular balance.

Hypertension exercises can lower blood pressure because when energy is produced, the cells' oxygen demand increases, which causes the heart rate to increase. Regularly doing hypertension exercises at moderate intensity can help lower blood pressure by 4-9 mmHg. Performing physical activity according to the duration and frequency can be beneficial for reducing blood pressure in women with hypertension.

Blood pressure reduction in mothers with hypertension can be achieved through yoga and hypertension exercises. Regular physical activity, such as yoga and hypertension exercises, can significantly reduce blood pressure in those with hypertension. Based on the above background, the researcher is interested in conducting a study to determine "The Effect of Yoga and Hypertension Exercise on Blood Pressure in Mothers with Hypertension in the Work Area of the Penurunan Health Center in Bengkulu City."

MATERIALS AND METHODS

This research is quantitative with Quasi-Experimental Design with Two Group Pre-test Post-test design. In this experiment, treatment group 1 did yoga compared with treatment group 2 did hypertension exercise. Treatment 1 given was yoga with a duration of 15-20 minutes and a frequency of 2 times in 1 week carried out for 2 weeks while in treatment 2 was given hypertension exercise with a duration of 15-30 minutes and a frequency of 2 times in 1 week carried out for 2 weeks in mothers with hypertension. This study was conducted by measuring blood pressure (pre-test) before doing yoga and hypertension exercise. Next, blood pressure measurements were carried out (post-test) to see the results of the difference in blood pressure after being given yoga and hypertension exercise.

RESULTS AND DISCUSSION

Results

Table 4.1 Frequency Distribution of Respondent Characteristics Based on Age, Body Weight, Duration of Illness, Consumption of Hypertension Medication, Physical Activity and Salt Consumption

Variable	Yoga Group		Hypertension Exercise Group	
	Frequency	%	Frequency	%
Age				
23-34 Years	6	20%	3	10%
35-44 Years	5	16,7%	2	6,7%
45-54 Years	8	26,7%	13	43,3%
55-64 Years	11	36,7%	12	40%
Total	30	100%	30	100%
Body Weight				
<50 Kg	4	13,3%	2	6,7%
50-70 Kg	19	63,3%	19	63,3%
>70 Kg	7	23,3%	9	30%
Total	30	100%	30	100%
Duration Of Illnes				
≤1 Years	19	63,3%	20	66,7%
2 Years	3	10%	2	6,7%
3 Years	3	10%	1	3,3%
4 Years	1	3,3%	0	0%
≥ 5 Years	4	13,3%	7	23,3%
Total	30	100%	30	100%
Medication Consumption				
No	18	60%	18	60%
Yes	12	40%	12	40%
Total	30	100%	30	100%
Physical Activity				
Regular	18	60%	16	53,3%
Irregular	12	40%	14	46,7%
Total	30	100%	30	100%
Salt Consumption				
Frequently	20	66,7%	17	56,7%
Rarely	10	33,3%	13	43,3%
Total	30	100%	30	100%

From Table 4.1, it was found that the analysis of respondent characteristics was based on age, weight, duration of illness, consumption of hypertension medication, physical activity and salt consumption. Almost all respondents in the yoga group were aged 55-64 years (36.7%) and in the hypertension exercise group almost all respondents were aged 45-54 years (43.3%). Most respondents in the yoga group weighed 50-70 kg (63.3%) and in the hypertension exercise group most respondents weighed 50-70 kg (63.3%). Most respondents in the yoga group had a duration of illness for ≤1 year (63.3%) and in the hypertension exercise group most respondents had a duration of illness for ≤1 year (66.7%). Most respondents in the yoga group did not take medication regularly (60%) and in the hypertension exercise group most

respondents did not take medication regularly (60%). Most respondents in the yoga group did physical activity regularly (60%), and in the hypertension exercise group, most respondents did physical activity regularly (53.3%). Most respondents in the yoga group often consumed salt (66.7%), and in the hypertension exercise group, most respondents often consumed salt (56.7%).

Table 4.2 Average Systolic and Diastolic Blood Pressure in Respondents Before and After Doing Yoga and Hypertension Exercises

Variable	Mean Systolic and Diastolic Blood Pressure					
	Pre		***Post***		**Difference**	
	Systolic	**Diastolic**	**Systolic**	**Diastolic**	**Sistolik**	**Diastolik**
Yoga	159.00±10.093	97.50±8.328	154.50±9.047	87.77±3.002	4.5 ±1.046	9.73 ±5.326
Hypertension Exercise	159.40±11.678	96.83±3.534	147.50 ±13.043	89.83±1.177	11.9 ±1.365	7 ±2.357

In table 4.2, the results of the univariate analysis show that the average systolic and diastolic blood pressure before the intervention in the yoga group was 159/97 mmHg. After yoga, the average systolic and diastolic pressure decreased to 154/87 mmHg. Then, the average systolic and diastolic blood pressure before the intervention in the hypertension exercise group was 159/96 mmHg. After hypertension exercise, the average systolic and diastolic blood pressure decreased to 147/89 mmHg.

Table 4.3 Average systolic and diastolic blood pressure in respondents before and after yoga

Systolic Blood Pressure	**n**	**Mean±SD**	**Min-Max**
Before	30	159.00±10.093	147-183
After	30	154.50±9.047	139-175
Diastolic Blood Pressure			
Before	30	97.50±8.328	85-133
After	30	87.77±3.002	80-91

Table 4.3 shows that the average systolic and diastolic blood pressure of hypertensive mothers after yoga intervention decreased, namely systolic blood pressure before 159.00 mmHg decreased to 154.50 mmHg and diastolic blood pressure before 97.50 mmHg decreased to 87.77 mmHg

Table 4.4 Average systolic and diastolic blood pressure in respondents before and after hypertension exercise

Systolic Blood Pressure	**n**	**Mean±SD**	**Min-Max**
Before	30	159.40±11.678	145-190
After	30	147.50±13.043	130-170
Diastolic Blood Pressure			
Before	30	96.83±3.534	92-105

After	30	89.83±1.177	86-92

Table 4.4 shows that the average systolic and diastolic blood pressure of hypertensive mothers after the hypertension exercise intervention decreased, namely systolic blood pressure before 159.40 mmHg decreased to 147.50 mmHg and diastolic blood pressure before 96.83 mmHg decreased to 89.83 mmHg.

Table 4.5 The Effect of Yoga and Hypertension Exercises on Blood Pressure in Mothers with Hypertension in the Work Area of the Penurunan Community Health Center in Bengkulu City

Variable	n	**Avarage Systolic and Diastolic Blood Pressure After Intervention**		***P Value***
		Yoga	**Senam Hipertensi**	
TDS Post	30	4.5 ±1.046	9.73 ±5.326	0.042
TDD Post	30	11.9±1.365	7±2.357	0.002

Based on table 4.5 through the Mann Whitney test, the difference in the average TDS Post yoga and hypertension gymnastics and TDD Post yoga and hypertension gymnastics was obtained with an average TDS Post yoga 4.5 and hypertension gymnastics 11.9 and TDD Post yoga 9.73 and hypertension gymnastics 7. The results of TDS Post p-value = 0.042 ≤ 0.05 and the results of TDD Post p-value = 0.002 ≤ 0.05 using a 95% confidence level, then H0 is rejected and Ha is accepted, which means there is an effect of yoga and hypertension gymnastics on blood pressure in mothers with hypertension in the working area of the Bengkulu City Health Center.

Discussion

Characteristics based on the age of respondents in the yoga intervention group were mostly 55-64 years old (37%), the age of respondents in the hypertension exercise intervention group were mostly 45-54 years old (43.3%). In line with research by Erma K. et.al (2021) there was an increase in the prevalence of hypertension seen in the productive age group. The characteristics of the duration of illness in the yoga intervention group were <1 year (63.3%), in the hypertension exercise intervention group were <1 year (66.7%). In line with research by Irna A. et.al (2022) it was stated that the course of hypertension was very slow and hypertension sufferers may not show symptoms. The characteristics of non-compliance in taking medication regularly in the group that followed yoga and hypertension exercise reached (60%). In line with research by Laili N. et.al (2022) which shows that complications arise due to unmanaged and untreated blood pressure. The characteristics of regular physical activity in the yoga intervention group were (60%), in the hypertension exercise intervention group (53.3%).

Based on research Ramdhika Mr. et.al (2023), physical activity provides benefits in reducing the occurrence of heart disease, stroke, and cardiovascular problems, as well as lowering systolic and diastolic blood pressure. The characteristics of frequent salt consumption in the yoga intervention group were

(66.7%), in the hypertension exercise intervention group (Purwono P. et.al, 2025). This is in line with previous research which shows that excessive salt consumption can be a cause of hypertension (Purwono P. et.al, 2025). Blood pressure before and after yoga and exercise, the average systolic and diastolic blood pressure before the intervention in the yoga group was 159/97 mmHg and the average systolic and diastolic blood pressure before the intervention in the hypertension exercise group was 159/96 mmHg. Then, after the intervention, the average systolic and diastolic blood pressure in the yoga group was 154/87 mmHg, and the average systolic and diastolic blood pressure after the intervention in the hypertension exercise group was 147/89 mmHg. Consistent with research (Wiyono J. et.al, 2022), each respondent's blood pressure was measured before yoga. Yoga sessions were conducted over two weeks, each lasting 15-30 minutes. Hypertension sufferers who regularly participate in hypertension exercise can lower their blood pressure.

The effect of yoga and exercise on blood pressure in mothers with hypertension in the Bengkulu City Health Center area showed that yoga contributes to lowering systolic blood pressure because it can improve blood circulation. Practicing yoga daily can improve blood circulation because the relaxation gained from yoga helps smooth blood circulation in the body, thus benefiting sufferers of hypertension (Subekti I. et.al, 2022). Hypertension exercise has a positive impact on diastolic blood pressure because it increases the pumping power of the heart, thus improving blood pressure when the heart relaxes and refills with blood. Exercise is performed for 30 minutes two to three times a week accompanied by special exercise movements for hypertension sufferers (Epriliyani A. et.al, 2024). In group 1 intervention, namely yoga intervention which can be an alternative non-pharmacological therapy that can lower blood pressure in hypertension sufferers. In group 2 intervention, namely hypertension exercise intervention, namely one of the sports that aims to increase blood flow and oxygen supply to active muscles and skeleton, especially to the heart muscle.

CONCLUSION

1. The hypertensive mothers in the yoga group were mostly aged 55–65 years, while those in the hypertension exercise group were 45–54 years old, weighed 50–70 kg, had a duration of illness less than one year, were not regularly taking medication, were physically active, and frequently consumed salt.
2. The average pre-intervention blood pressure in both groups was 159/96–97 mmHg (mild hypertension). After the intervention, blood pressure decreased to 154/87 mmHg in the yoga group and 147/89 mmHg in the hypertension exercise group.
3. The hypertensive mothers showed a significant effect of yoga and hypertension exercise on blood pressure reduction. Yoga had a greater effect on reducing diastolic blood pressure, while hypertension exercise had a greater effect on reducing systolic blood pressure.

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Declaration of Interest Statement

This does not present any conflicts of interest study.

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