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The Effect of Elderly Yoga on Blood Pressure

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ABSTRACT: Yoga carried out 4 times in 2 weeks has proven that this therapy can relieve physical and psychological fatigue so that the sympathetic nervous system experiences a decrease in activity which can ultimately reduce blood pressure. Stimulation will increase impulses on the nervous system which will be forwarded to the central nervous system. The purpose of this study was to Analyzing the effect of yoga on blood pressure in the elderly at the Alyssa Medika Clinic, Tangerang in 2021. The research method used a quasi-experimental design with a pretest-pottest with control design. Interventions in the form of elderly yoga and exercise were given to the elderly at the Alyssa Medika Tangerang clinic for ± 25 minutes, activities carried out 4 times for 2 weeks. Pre-test blood pressure was measured before and after the intervention was carried out, at the time before the next intervention, a post-test was carried out for measuring blood pressure on the respondents of both groups. The results showed the average age of respondents in the intervention and control groups was 62 years, with a minimum age of 61 years and a maximum of 68 years. Most of the intervention and control respondents did not have hypertension. The majority of intervention and control respondents had normal BMI and moderate activity. Based on the results of data analysis with dependent t test a significance value of 0.000 was obtained. Based on this value, because the p value < 0.005, it can be concluded that the elderly yoga has an effect on blood pressure. The results of the multivariate analysis showed that elderly yoga given to respondents can reduce blood pressure 4.14 times higher than that given elderly exercise. Elderly yoga given to respondents can reduce anxiety levels 11.42 higher than that given elderly exercise. It is recommended that midwives teach elderly yoga at integrated development post or in clinics every month to maintain the stability of elderly blood pressure. Keywords: Yoga, elderly, blood pressure

I. INTRODUCTION

Hypertension is the third biggest risk factor that causes premature death, hypertension results in congestive heart failure and cerebrovascular disease. The risk factors for hypertension can be divided into 2 groups, namely the unmodified risk factors, which consist of age, gender and heredity factors and the modifiable factors, namely, obesity, stress, smoking, exercise, excessive alcohol consumption, excessive salt consumption and hyperlipedemia[1]. The habit of consuming saturated fat is closely related to increased body weight which is at risk of hypertension. Consumption of saturated fat also increases the risk of atherosclerosis which is associated with increased blood pressure[2].

Pharmacological management of high blood pressure (BP) or hypertension in the elderly can be done such as exercise or gymnastics. Yoga practice in the elderly can stimulate the release of endorphins. Endorphins are neuropeptides produced by the body when relaxed / calm. Endorphins are produced in the brain and spinal cord. This hormone can function as a natural sedative produced by the brain which conveys a sense of comfort and increases the levels of endorphins in the body to reduce high blood pressure.

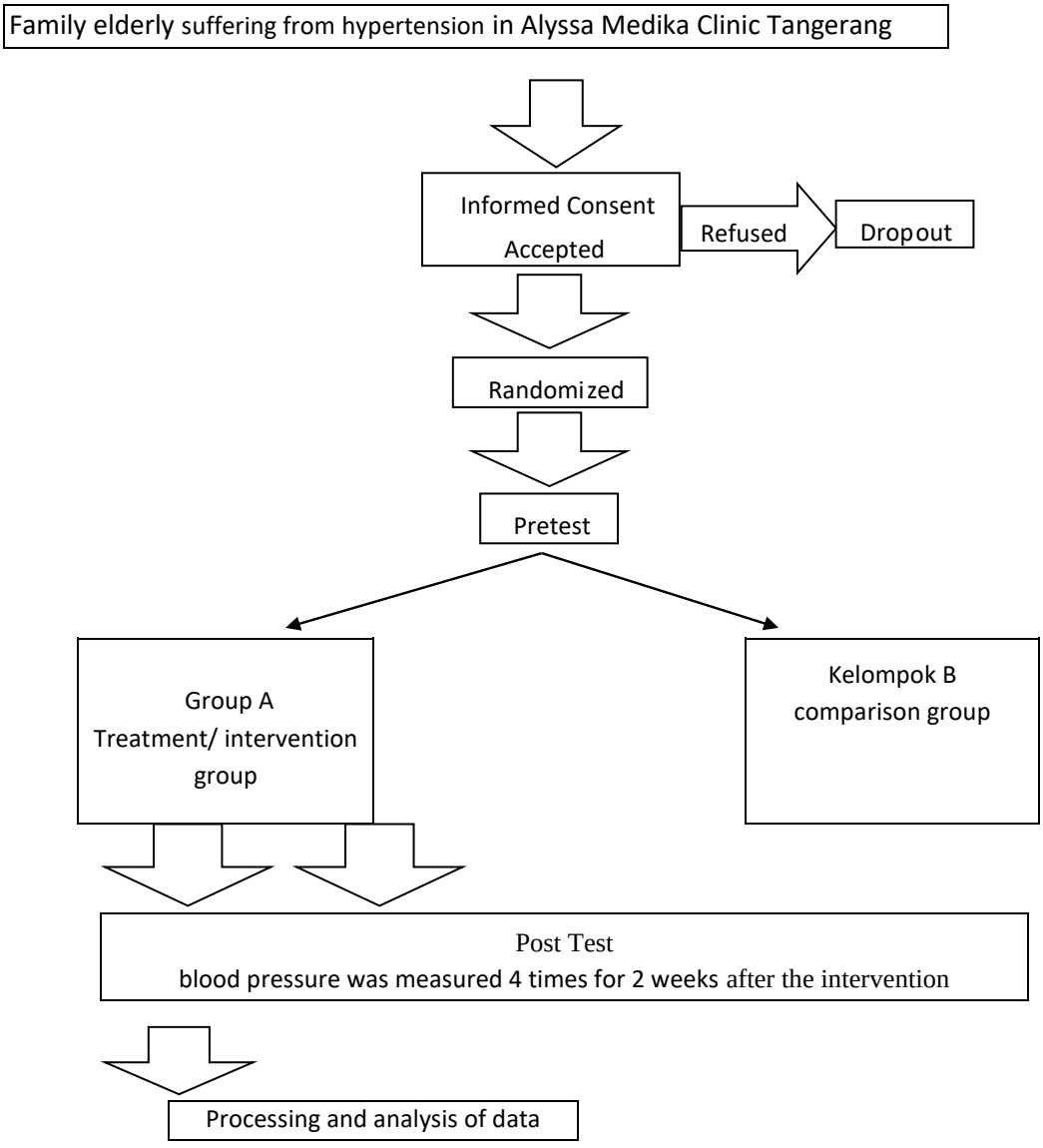
In a previous study conducted by Devi Oktavia in 2011 it was proven that after doing yoga exercises in the elderly who had hypertension, it was found that most respondents experienced a decrease in systolic blood pressure after doing yoga exercises 3 times a week. Yoga interventions are generally effective in reducing body weight, blood pressure, high glucose and cholesterol as well as mind, physical and emotional relaxation. In addition, yoga exercises can also improve blood flow in the body. So that the body becomes healthy[3].

The purpose of this research are Analyzing the effect of yoga on blood pressure and differences in blood pressure of the elderly before and after treatment in the control and intervention groups at the Alyssa Medika Clinic Tangerang.

II. METHOD

This research method is Quasi Experimental with Pretest-Pottest With Control Design. This study aims to analyze blood pressure of the elderly before and after treatment in 2021. The population in this study were the elderly at the Alyssa Medika Clinic, South Tangerang. The inclusion criteria for this study included: Elderly aged 61-68 years, suffering from hypertension, namely systolic BP ≥140 mmHg and diastolic ≥90 mmHg, taking hypertension drugs. The exclusion criteria for this study included: Elderly who are male, have had a stroke.

The research instrument in this study for elderly yoga interventions was videos made by researchers based on existing theory. The data collection instrument used a questionnaire that was given directly by the researcher. The questionnaire used is by referring to the existing theory.



Gambar 1. Alur Penelitian

III. RESULTS

This research is a Poltekkes Kemenkes Jakarta 1 which aims to analyze The Effect of Elderly Yoga on Blood Pressure. This research was conducted by taking data from Alyssa Medika Clinic Tangerang who were given treatment in elderly for the intervention group yoga and the control group and who was given gymnastics.

Table 1. Univariate analysis of respondent characteristics based on age, age, genetics, BMI and physical activity.

Age elderly	**62.82**	**61**	**68**	**2.31**	**33**	**62.91**	**61**	**68**	**2.21**	**3 (years)**
Variable	**Intervention Group**					**Control Group**				

	Frequency (n =3 3)	%	Frequency (n=33)	%
Genetics:				
No	23	69.7	21	63.6
Yes	10	30.3	12	36.4
BMI:				
Normal	18	54.5	19	57.6
Less	4	12.1	3	9.1
More	4	12.1	5	15.2
Obesity	7	21.2	6	18.2
Physical Activity:				
Low	5	15.2	4	12.1
Moderate	21	63.6	20	60.6
High	7	21.2	9	27.3

In table 1, it can be concluded that the average age of respondents in the intervention and control groups was 62 years, with a minimum age of 61 years and a maximum of 68 years. Most of the intervention and control respondents did not have hypertension. The majority of intervention and control respondents had normal BMI and moderate activity.

Tabel 2. Bivariate analysis of correlation genetic, BMI and physical activity with elderly blood pressure

Variable	Blood Pressure (Hypertension)		P Value Light	Moderate	Heavy	Very Heavy
Genetics:						
• No	12 (18.9)	7 (10.6)	5 (7,6)	3 (4,5)	0.001	
• Yes BMI:	7 (10.6)	18 (27.3)	8 (12.1)	6 (9.1)		
• Normal	7 (10.6)	3 (4.5)	2 (3.0)	1 (1.5)		
• Less	4 (6.1)	2 (3.0)	(1.5)	(1.5)	0.002	
• More	8 (12.1)	6 (9.1)	(3.0)	(3.0)		
• Obesity	11 (16.7)	8 (12.1)	3 (7.6)	5 (7.6)		
Physical activity :						
• Low	6 (9.1)	11 (16.7)	8 (12.1)	5 (7.6)		
• Moderate	8 (12.1)	5 (7.6)	4 (6.1)	1 (1.5)	0.001	
• High	5 (7.6)	7 (10.6)	3 (4.5)	3 (4.5)		
Variable	**Mean**		**Min-Max**	**SD**	**P Value**	
Age	62.86		61-68	2.246	0,002	

Based on table 2 above, it can be seen that the results of the analysis have a significant correlation between genetics, BMI, physical activity and elderly blood pressure (p value <0.05).

Table 3. Bivariate analysis of the differences in elderly blood pressure pre and post intervention in both groups

Variable	Group	Mean	SD	95% CI	t	P value*
Systolic Blood Pressure	Intervention group					
	Before	140.09	0.384	17.707-23.565	14.351	**0.000**
	After	119.45	8.482			
	Difference	20.64				
	Control group					
	Before	159.15	17.128	21.733-32.692	10.166	**0.000**
	After	131.94	11.782			
	Difference	27.21				
Diastolic Blood Pressure	Intervention group					
	Before	90.00	6.213	9.272-13.455	11.066	**0.000**
	After	78.64	5.899			

Difference	11.36				
Control group					
Before	98.97	7.728	12.812-17.854	12.390	**0.000**
After	83.64	6.284			
Difference	15.33				

From table 3, it is known that there is significant differences in systolic blood pressure and diastolic blood pressure in the intervention and control groups before and after the intervention (p value = 0.000).

Table 4. Multivariate Analysis of the Influence of yoga on blood pressure in the elderly

Variable	B	SE	Wald	p-value*	Exp (B)	95%CI
Tekanan Darah						
Yoga and gymnastics	1.421	0.645	4.863	**0.027**	4.14	1.171-14.653
Konstanta	-1.981	0.533	13.795	0.000	0.138	

From table 5 above, showed that elderly yoga and acupressure given to respondents could reduce blood pressure 4.14 times higher than those given yoga exercises. Elderly yoga and acupressure given to respondents can reduce anxiety levels 11.42 higher than gymnastics.

IV. DISCUSSION

Based on the results of this study, the average age of respondents in the intervention and control groups was 62 years, with a minimum age of 61 years and a maximum of 68 years. Most of the intervention and control respondents did not have hypertension. The majority of intervention and control respondents had normal BMI and moderate activity. There is a significant relationship between genetics, BMI and physical activity with elderly blood pressure (p value <0.05).

In the elderly stage, individuals experience many setbacks in the various functions and abilities they once had. Changes in physical and mental appearance, especially the decline in the various functions and abilities they once had. Elderly is the final stage of the human life cycle, is part of a life process that cannot be avoided and will be experienced by every individual[4].

Based on the results of the analysis performed, it showed that there were significant differences in systolic and diastolic blood pressure before and after the intervention of elderly yoga and acupressure and elderly exercise (p value = 0.000). The results of the analysis also showed that there were differences in blood pressure between the intervention group and the control group after the intervention of elderly yoga and acupressure and elderly gymnastics with a p value <0.05.

If hypertension is not cured immediately, in the long run it can cause damage to the arteries in the body to the organs that get blood supply from it, such as the heart, brain and kidneys[5]. There are two factors that cause hypertension, namely essential hypertension or primary hypertension, 90% of cases of hypertension are essential hypertension which is defined as an increase in blood pressure with no known cause (idiopathic). Several factors are thought to be associated with the development of essential hypertension, including genetics, gender, age, diet, body weight, and lifestyle. The second cause is secondary hypertension. cases of secondary hypertension as much as 10% of all cases of hypertension. Secondary hypertension is an increase in blood pressure due to a preexisting physical condition such as kidney disease or thyroid disorder.

The elderly are at risk for suffering from hypertension, this is caused by various factors such as a decrease in the anatomical and physiological structure of the cardiovascular system due to degenerative processes in the elderly. The high hypertension is in line with increasing age which is caused by structural changes in the large blood vessels, so that the blood vessels become narrower and the blood vessel walls become stiff, as a result is an increase in systolic blood pressure[6]. Physical activity (exercise) can improve the blood fat profile, namely lowering total cholesterol, LDL and triglycerides and even more importantly, exercise can improve HDL. The right dose of exercise can reduce hypertension, obesity, and diabetes mellitus. Yoga exercise is the activity of a person concentrating the whole mind to control the five senses and the body as a whole. This causes a person to be able to control, regulate, and concentrate to harmonize body, soul, and mind. In addition, yoga exercises can also expedite the flow of oxygen in the body(7). Yoga practice in the elderly can stimulate the release of endorphins. Endorphins are neuropeptides produced by the body when relaxed / calm. Endorphins are produced in the brain and spinal cord. This hormone can function as a natural sedative produced by the brain which conveys a sense of comfort and increases the levels of endorphins in the body to reduce high blood pressure.

According to the journal put forward by Hagins, et.al (2013) by combining 3 elements of yoga practice (postures, meditation, and breathing) involving 18 adults with hypertension, it can reduce systolic blood pressure by 7 mmHg, and diastolic pressure by 5 mmHg. In this study, the exercise that was carried out was yoga which included sitting movements in a yoga sitting

posture to practice breathing (training the lungs and calming the heart, as well as a mind concentration technique), followed by doing light asanas as a warm-up, followed by Savasana (Corpse Posture) and ends with returning to the Sitting Posture to silence the mind (Meditation).The decrease in blood pressure is caused by relaxation in yoga, the principle is to position the body in a calm condition, so that it will experience relaxation and in the end will experience a state of balance, thus relaxation in yoga is centered on breathing which will increase oxygen circulation to muscles, so that the muscles will relax, blood pressure will decrease[3]. The results of Pangaribuan's research (2016) explain that yoga exercises are effective in reducing blood pressure in the elderly[8].

Based on the results of multivariate analysis, it showed that elderly yoga given to respondents could reduce blood pressure 4.14 times higher than physical activity. The decrease in blood pressure is caused by relaxation in yoga, the principle is to position the body in a calm condition, so that it will experience relaxation and will eventually experience a state of balance, thus relaxation in yoga focuses on breathing which will increase oxygen circulation to the muscles, so that the muscles will relax. relaxes, blood pressure will decrease[9]. This is in accordance with the journal put forward by Cramer., et al., (2014) that regular yoga practice, namely for 8 weeks, can significantly affect changes in blood pressure in people with hypertension[10].

V. CONCLUSION

The conclusion from this study was that the average age of the respondents was 62 years, most of the intervention and control respondents did not have hypertension, had normal BMI and moderate activity and suffered from mild hypertension, there was a significant difference between blood pressure and yoga for the elderly, there was an effect of yoga on lowering blood pressure blood in the elderly.

Suggestions from this study are that it is expected that the elderly routinely screen for non-communicable diseases, especially measuring blood pressure every month and it is hoped that midwives teach elderly yoga exercises at integrated service posts or in clinics every month in order to maintain the stability of the elderly's blood pressure.

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