

THE EFFECT OF PROLANIS EXERCISES ON PRESSURE REDUCTION BLOOD IN ELDERLY WITH HYPERTENSION AT BAPINANG HEALTH CENTER

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ABSTRACT

Background: Hypertension is a very common health problem in society. In the Hanaut Island sub-district alone, 633 people are suffering from hypertension. At the same time, in Bapinang village, the working area of the Bapinang Community Health Center, 62 people are suffering from primary hypertension. **Purpose:** to analyze The effect of Prolanis exercises on declining blood pressure in elderly with hypertension at the Bapinang Community Health Center. **Method:** This type of research is experimental research with sampling using non-probability sampling type sample fed up, namely hypertensive patients who participate in prolanis exercise activities that are This research was conducted in the working area of the Bapinang Community Health Center from August 04, 2023, to August 18 2023. The normality test uses Shapiro-Wilk, and statistical analysis uses the Paired T-test. **Results:** There is an influence between routine prolanis exercise activities for hypertension sufferers on blood pressure stability at the Bapinang Community Health Center difference Values for pre and post-data on systolic and diastolic blood pressure before and after administration intervention in the form of prolanis exercises for patients hypertension with a p-value = 0.001 for systolic blood pressure and 0.003 for diastolic blood pressure so that the p value < 0.05. **Suggestion:** Puskesmas can strengthen health promotion efforts related to hypertension by providing services or facilitating prolanis exercise activities for each village in the working area of Bapinang Puskesmas.

Keywords: Prolanis gymnastics, stability, Blood pressure

INTRODUCTION

Hypertension is a very common health problem in society, both in developed countries and in countries that are still developing. Develop. Enhancement prevalence hypertension related to eating patterns, intake nutrition and people's lifestyles. Untreated hypertension can appear and cause Lots of degenerative diseases in humans, including disease kidney disease, heart failure (congestive), peripheral vascular disease, and even heart failure and stroke (Patnaik et al., 2017). Hypertension is one of the diseases Degenerative diseases that is a serious problem this is because Hypertension is a silent killer disease. After all, The sufferer does not know that he is. You suffer from hypertension if you don't have your blood pressure checked.

WHO 2018 (Musa, Esther Candrawati, 2021), hypertension is a health problem that poses a significant risk because it is a major contributor to cardiovascular diseases such as heart attacks, heart failure, stroke and kidney disease. In 2016, ischemic heart disease and

stroke were the two most common causes of death in the world. The prevalence of hypertension among the elderly has recently begun to increase. The World Health Organization (WHO) defines the elderly as individuals aged over 60 years. As many as 1.13 billion people worldwide suffer from hypertension, according to WHO data. Reducing the prevalence of hypertension by 33% between 2010 and 2030 is one of the global goals for non-communicable diseases based on WHO (Musa, Esther Candrawati, 2021). Most cases come from lower middle-class economies. In contrast, the prevalence of hypertension in Southeast Asia was 39.9% in 2020 (Jeemon et al., 2021).

Many reasons for hypertension in a person are Eating habits such as high fat and salt consumption, obesity or overeating, unhealthy lifestyles such as drinking alcohol, stress, emotional and lack of physical activity, which can increase the risk of being overweight are also risk factors that cause hypertension (

Mangendai et al., 2018). Hypertension is a risk factor for non-communicable diseases such as heart disease, stroke and other cardiovascular diseases, which cause many deaths in the world (Pramana et al., 2019).

Basic Health Research (Riskesdas 2018) shows that hypertension in Indonesia is 34.1%. The prevalence of hypertension based on a doctor's diagnosis in residents aged ≥ 18 years in Indonesia reached 8.4% (Susanti, Siregar, & Falefi, 2020). Central Kalimantan, 10,567 people aged between 25 and 60 years will suffer from hypertension, with the addition of 1,124 new cases every year. (Central Kalimantan Provincial Health Service, 2020). According to Riskesdas data (2018), Indonesia has a prevalence of hypertension of 34.1%, Central Kalimantan with a prevalence of 28.7% and East Kotawaringin with a prevalence of 28.7% (BPS Central Kalimantan, 2018). In Hanaut Island sub-district alone, 633 people are suffering from hypertension. At the same time, in Bapinang village, the working area of the Bapinang Community Health Center, 62 people are suffering from primary hypertension (Bapinang Community Health Center, 2023).

The government has attempted to overcome the morbidity rate due to hypertension through various programs, including establishing the Public Health Social Security Administration Agency (BPJS) and the Chronic Disease Management Program (Prolanis). These two programs are integrated with health service collaboration from BPJS specifically for people suffering from chronic diseases to achieve optimal quality of life (BPJS, 2014). The quality of life of hypertension sufferers has a significant relationship with implementing the Prolanis program (Sari, 2017). This is because Prolanis exercise, which is one part of the implementation of the program, influences the blood pressure of hypertension sufferers (Mulfianda & Tahlil, 2018)

Prolanis exercise stimulates the heart to contract optimally, where the energy produced from this sports activity can maximize the needs of cells in body tissues so that it can increase respiratory activity, including muscles (Marasinta, 2016). Another type of exercise that affects blood pressure is fitness exercise, where during exercise, the heart rate and breathing increase, the muscles require more oxygen, so vasodilation of blood vessels occurs so that

much of the blood flow is blocked to active muscles, including blood flow to damaged body tissues. If it is inactive, smooth muscle contraction increases, and flow to the periphery decreases suddenly so that systolic and diastolic blood pressure (BP) is low (Carey et al., 2018). Regular physical activity such as gymnastics can improve physical fitness, indirectly improve heart function, lower blood pressure, and reduce the risk of fat buildup on blood vessel walls. (Anwari et al., 2018)

Prolanis is a government program aimed at sufferers of chronic diseases such as hypertension so they can control their blood pressure. The results of a study by Zuraidah et al. (2012) showed that of the 160 respondents who took part in the prolonged exercise, 51.2% suffered from hypertension (Zuraidah et al., 2012). Regular physical activity such as gymnastics can improve physical fitness, indirectly improve heart function, lower blood pressure, and reduce the risk of fat buildup on blood vessel walls. (Anwari et al., 2018).

The Bapinang Community Health Center already has a prolanis exercise activity where most exercise participants are elderly, which is held every week to help hypertension sufferers because the activity is still new. The situation and conditions are not yet possible to carry it out in other villages in the working area of the Bapinang Community Health Center. Hence, the prolanis exercise activity is for now Just in Bapinang village. However, it is still rare for hypertension sufferers to know about the effect of prolanis exercise on reducing blood pressure. There is a need for understanding and proving to hypertension sufferers about the influence of prolanis activities as a form of management of hypertension.

Based on the background above, researchers are interested in conducting research titled "The Effect of Prolanis Exercise on Reducing Blood Pressure in Elderly People with Hypertension at the Bapinang Community Health Center".

METHODS

This research is experimental. The research design used in this research is quantitative research with a pre-experimental one-group pre-post-test design. The population reachable in this study were hypertensive

patients who suffered from disease hypertension at the Bapinang Community Health Center and regularly participated in prolanis exercise activities of as many as 31 people aged 61 – 69 years, including the young and elderly category. A bivariate test using parametric analysis tests uses the paired sample t-test. This research was ethically tested with an ethical certificate, KEPK Number: 0128226371, issued on July 29, 2023.

RESULTS

a. Univariate Analysis

Table 4. 1Characteristic Description Respondent Based on Gender

Gender	Frequency (f)	Presentation (%)
Man	7	22.6
Woman	24	77.4
Total	31	100

Based on table 4.1 above shows that based on gender, the majority of respondents own type sex Woman, namely 24 respondents (77.4%)

Description of Respondent Characteristics Based on Physical Activity

Table 4. 2 Pressure Respondents' Blood Before Taking Part in Exercise Prolanis

Systolic Blood Pressure	Number of people)	Diastolic Blood Pressure	Number of people)
130–140 mmHg	4	80–90 mmHg	12
141–150 mmHg	17	91-100 mmHg	14
151–160 mmHg	8	101-110 mmHg	5
161–170 mmHg	2	111-120 mmHg	0

Table 4.2 above shows that the respondent's blood pressure is highest in systole at threshold 161-170 mmHg there are 2 people and diastole 101-110 mmHg there are 5 people. Table 4. 3 Respondents ' Blood Pressure After Participating in Prolanis Exercise

Systolic Blood Pressure	Number of people)	Diastolic Blood Pressure	Number of people)
120–130 mmHg	5	70–80 mmHg	5

131–140 mmHg	14	81-90 mmHg	12
141–150 mmhg	10	91-100 mmHg	14
151–155 mmHg	2	101-110 mmHg	

Table 4.3 above shows that the respondent's blood pressure is highest in systole at threshold 151-155 mmHg there were 2 people and diastole at 91-100 mmHg there were 14 people. Average Blood Pressure of Hypertension Sufferers Before Doing Prolanis Exercises at Bapinang Community Health Center.

Table 4. 4 Identification of the Average Blood Pressure of Hypertension Sufferers Before and After Administration Prolanis Exercise Intervention at Bapinang Community Health Center.

Variabl e	N	Averag e	Mi n	Ma x	elementar y school
Pre Systole	3	150.00	135	165	7.303
Post Systole	1	140.16	125	155	7.798
Pre Diastole		94.84	80	110	8.009
Post Diastole		90.16	75	100	7.581

Based on table 4.6 shows that the average blood pressure of sufferers with hypertension before the administration of prolanis exercise intervention obtained an average value of pressure systole 150.00 mmHg and value the lowest systolic pressure is 135 mmHg and the highest is 165 mmHg by standard deviation 7.303. The average diastolic pressure was 94.84 mmHg, the lowest diastolic pressure was 80 mmHg, and the highest was 110 mmHg, with a standard deviation of 8.009. Meanwhile, the average blood pressure of hypertension sufferers after being given prolanis exercise intervention was obtained as an average pressure value systole of 140.16 mmHg with the lowest systolic pressure of 125 mmHg and the highest of 155 mmHg by the standard deviation of 7.798. The average diastolic pressure was 90.16 mmHg, the lowest diastolic pressure was 75 mmHg, and the

highest was 100 mmHg, with a standard deviation of 7.581.

Data Normality Test

Table 4. 5 Shapiro-Wilk Normality Tests (n=31)

		Df	Sig.	Information
Blood pressure	Systole	Pre-Test	0.162	Normal Distribution
		Post-Test	0.262	Normal Distribution
	Diastole	Pre-Test	0.258	Normal Distribution
		Post-Test	0.010	Normal Distribution

Table 4.7 shows that the p-value for blood pressure was 0.162 for the pre-test value, and the post-test value was 0.262 for systole pressure. In contrast, for diastole pressure, it was marked pre-test 0.258 and post-test 0.010 so that the p-value obtained is > 0.05 so it can be concluded or normally distributed. The statistical test used is statistics parametric with a Paired Sample T-test.

Bivariate Analysis

Analysis results The effect of prolanis exercises on blood pressure in sufferers of hypertension at Bapinang Community Health Center

Table 4. 6 Analysis of the Effect of Prolanis Exercise on Blood Pressure in Hypertension Sufferers at the Bapinang Community Health Center

Variable		Df	Mean \pm SD	Difference (Mean \pm SD)	P
Darah pressure	Systole	Pre-Test	150.00 \pm 7.303	9.839 \pm 6.644	0.000
		Post-Test	140.16 \pm 7.798		
	Diastole	Pre-Test	94.84 \pm 8.009	4.677 \pm 7.180	0.001
		Post-Test	90.16 \pm 7.581		

Based on table 4.6 shows that there are differences in the values in the pre and post-data for systolic and diastolic blood pressure before

and after being given intervention in the form of prolanis exercises for hypertension sufferers with a p-value = 0.000 for systolic blood pressure and 0.001 for diastolic blood pressure so that the p-value < 0.05 . That means there is a difference in blood pressure before and after the administration of prolanis exercise intervention for sufferers of hypertension at Bapinang Community Health Center

DISCUSSION

Characteristics of Respondents Based on Gender

The research results showed that the characteristics of respondents were based on type gender; the majority of respondents own type sex Woman, namely 24 respondents (77.4%), whereas only 7 respondents (22.6%) were male. Solihah (2015) supported this research's results and said that female respondents were the largest number of respondents in his research, namely 11 (73.3%). The same research results were also presented by Bahtiar & Anita (2016), who said that female respondents were the largest number of respondents in their research, namely 11 (75%). The high rate of hypertension in women is caused by several factors, such as influence hormonal factors that trigger increasing blood pressure and are influenced by psychological factors (Meliana, 2021).

Researchers assume, Because Respondents were predominantly elderly and elderly women, that Hormonal factors are the cause of hypertension apart from psychological ones. The menopause condition experienced in women causes the hormone estrogen to decrease so that women over 50 years are more at risk of getting hypertension than men. Community health centres, in particular, Hypertension program holders, can make screening activities at homes in the work area of the puskesmas in coordination cadres village locally for housewives and elderly women who cannot go or rarely utilize health facilities can be caught so that recorded at the health centre and treatment Hypertension can be effective.

Average Blood Pressure of Hypertension Sufferers Before Doing Prolanis Exercises at Bapinang Community Health Center. The study's results showed that the average blood

pressure of patients with hypertension before administering prolanis exercise intervention obtained an average pressure systole of 150.00 mmHg, the lowest systolic pressure was 135 mmHg and the highest was 165 mmHg. The average diastolic pressure was 94.48 mmHg, the lowest diastolic pressure was 80 mmHg, and the highest was 110 mmHg. One of the factors that could result in blood pressure increases in patients is a lack of physical activity, such as exercising regularly (Harrison et al., 2015). Lack of exercise Physical exercise, such as exercise, can also result in hypertension because of decreased cardiac output (bulk heart), so pumping to the heart becomes less and less. Lack of physical exercise activity can cause stiffness in blood vessels, so blocked blood flow can cause hypertension. Besides, it is influenced by lack of sleep (insomnia) (Giriwijoyo, 2017).

In line with the results of research conducted by Yanti et al. (2021), The average blood pressure value in the control group before exercise was 176 mmHg, and in the intervention group before exercise, The average blood pressure value was 180.5 mmHg. Also in line with the results of research conducted by Sartika et al. (2020), the research results show that before being given intervention, all respondents had high systolic blood pressure, namely 20 people (100%)

Researchers assume that hypertension in patients will increase Because lack of physical activity will lower the elasticity of blood vessels. Lack of physical activity physique can also improve stress and depression factors and can quickly increase blood pressure because of disturbed hormone production in the body. Supported by the data obtained in the field, the respondent's blood pressure is high because it is insufficient and not optimal for his activity physical exercise (exercise) carried out by the respondent.

Average Blood Pressure of Hypertension Sufferers After Doing Prolanis Exercises at Bapinang Community Health Center. The study's results showed that the average blood pressure of patients with hypertension after administration of prolanis exercise intervention obtained average pressure systole of 140.48 mmHg. The lowest systolic pressure is 125 mmHg, and the highest is 165 mmHg. The average diastolic pressure was 90.48 mmHg, the lowest diastolic pressure was 75 mmHg, and the

highest was 110 mmHg. Prolanis exercises can reduce blood pressure due to exercise, causing pulse, heart and breathing to increase (Kurniasari et al., 2019). This increase causes a request for more oxygen required at the working muscle level to get more oxygen. Then, we breathe faster and let more oxygen pass through the blood flow every minute (Dinata, 2020).

Creating an atmosphere of relaxation will eliminate the voices in the mind so that the body can release muscle tension. When the body begins to relax, breathing slows down and positively influences the entire circulatory system and the heart to rest and experience a rejuvenation process. The sympathetic nervous system receives a safe message to relax, while the parasympathetic nervous system will respond to relaxation. Apart from sympathetic nerves, messages for relaxation are also received by the glands. The endocrine system is responsible for most emotional and physical situations (Sukarno, 2017). Circumstances relax the body. As a result, blood vessels widen, blood circulation becomes smooth, central venous pressure (CVP) decreases, and heart function decreases to be optimal. CVP will decrease, followed by a decline in the bulk heart and pressure arteries average. Veins have a larger diameter than equivalent and provide arteries with little resistance. Therefore, veins are called capacitance vessels and work as blood volume reservoirs (Murtianingsih & Suprayitno, 2018).

Gymnastic activities are very beneficial for the management of hypertension. Doing regularly 3x a week with a duration of 15-45 minutes will have a good effect on hypertensive patients; it can increase blood vessel permeability. When the exercise is done, it will have an effect like a beta blocker, which can calm the sympathetic nerves by reducing sympathetic nerve activity, hormone receptors and hormone function. Decreased sympathetic nerve activity will cause blood vessels to become congested, relaxed and widen (vasodilation), which decreases cardiac output (bulk heart), which in the end will cause a decline in blood pressure (Widjayanti et al., 2019). This aligns with research conducted by Fithriyani & Mahardika (2017) titled " Influence Deep Breathing Exercises on Changes in Blood Pressure in Sufferers Hypertension Essential at the Putri Ayu Community Health Center, Jambi City." The research results obtained mean

systolic blood pressure value experienced a decline from 158.00 mmHg to 131.00 mmHg. Meanwhile, the mean value of diastolic blood pressure experienced a decline from 117.33 mmHg to 73.00 mmHg. The table above shows the obtained mean and median values of systole in respondents before and after giving the intervention. Deep breathing exercises show quite a significant decrease. Also, in line with the research conducted by Muharni & Wardhani (2020), the results showed that blood pressure began to drop significantly in the 4th week, with a p-value = 0.00 for systolic blood pressure and 0.00 for diastolic blood pressure. This research concludes that ergonomic exercise influences the decline of blood pressure in elderly with hypertension. Supported by research by Suwanti et al. (2019), the study results show that the systolic p value = 0.000 and the diastolic p value = 0.011 are smaller than the α value (0.05). The results show that ergonomic exercise significantly influences the systolic and diastolic effects of the elderly.

Researchers assume that this research will find a decrease in the average pressure systole value of 150.00 before award intervention to 140.48 after administration intervention because prolonged exercises can cause the body to become more relaxed. If the body's condition is relaxed and not experiencing stress, the blood vessels will experience absent vasodilation. This can maximize oxygen supply and launch blood circulation throughout the body. What's more, if prolonged exercise activities are carried out regularly, and a healthy lifestyle is maintained to get maximum results in controlling blood pressure to remain within normal limits.

Analysis of the Effect of Prolanis Exercise on Blood Pressure in Hypertension sufferers at the Bapinang Community Health Center

The results of the study showed that there were differences in pre and post-data values for systolic and diastolic blood pressure before and after administration intervention in the form of prolanis exercises in hypertensive patients with a p-value = 0.001 for systolic blood pressure and 0.003 for diastolic blood pressure so that the p-value < 0.05. That means there is a difference in blood pressure before and after administration of Prolanis exercise intervention on sufferers' hypertension at Bapinang Community Health

Center. Combination exercises movement of muscle groups with exercise breathing can stimulate the Activation system nerve autonomous parasympathetic nuclei raphe located in half of the lower part of the pons and the medulla (Setyowati, 2015). The activation system nerve parasympathetic will hinder the stimulation system nerve sympathetic. Its hampered system nerve will cause a decline in bulk heart rate and decline prisoner peripheral so vasodilation happens.

The combination of vasodilation and decreased cardiac output will cause a decrease in blood pressure (Muttaqin, 2014). Physical activity such as exercise that is done regularly will increase physical fitness, so exercise can indirectly improve heart function, reduce blood pressure, and reduce the risk of fat accumulation on the walls of blood vessels, thereby maintaining their elasticity (Sartika et al., 2020). The impact of exercise is that it has a relaxing effect on the body. A sense of calm and comfort during therapy can positively impact feelings of calm, comfort, relaxation, and reduced stress (Yuniarti & Dewi, 2019). This positive response is via the HPA (hypothalamic-pituitary-adrenal) axis will stimulate the hypothalamus and LC (Locus Coerulus) (Noventi & Kartini, 2020). The hypothalamus will lower the secretion of CRH (Corticotropin Hormone) so that ACTH (Adrenocorticotrophic Hormone) decreases and stimulates POMC (Proopiomelanocortin), which will also lower ACTH production and stimulate the production of the endoprin The The The The (Yuniarti The The The & The Dewi, 2019) The. LC (Locus Coerulus) is responsible for mediating Many sympathetic effects during stress. Under the circumstances, relaxation will lower the synthesis of norepinephrine in the adrenal medulla, stimulating decreased AVP (Arginine Vasopressin). Decreased AVP and ACTH, as well as enhanced endorphins, will lower prisoners' peripheral and cardiac output; thus, blood pressure will be decreased (Guyton & Hall, 2014). Gymnastics can stimulate the decline of activity nerve sympathetic and increased nerve parasympathetic, which influences the decline of the hormones adrenaline, norepinephrine and catecholamines, as well vasodilation or widening of blood vessels, which results in oxygen transport, the whole body, especially the brain becomes

smooth so that it can lower blood pressure and pulse become normal. Activity Regular exercise burns _ glucose through activity muscles that produce ATP so that endorphins will appear and bring comfort, joy and happiness. Sports will also stimulate the HPA (Hypothalamus-Pituitary -Adrenal) axis mechanism to stimulate the pineal gland to secrete serotonin and melatonin. From the hypothalamus, stimulation will pass to the pituitary (pituitary) to form beta-endorphins and enkephalins, giving rise to relaxation and happiness (Triyanto, 2014).

Previous research obtained similar results(Hernawan et al., 2017). Wilcoxon Signed Rank Test results, pretest, and posttest systolic blood pressure obtained calculated Z value amounting to 4,370 with value significance (p-value) 0.001. The test significance value (p-value) is smaller than 0.05 ($0.001 < 0.05$), while the pretest and posttest diastolic blood pressure were obtained calculated Z value amounting to 4,311 with value significance (p-value) is 0.001. The test significance value (p-value) is smaller from 0.05 ($0.001 < 0.05$), so It is decided that H_0 is rejected, which means that there exists a significant difference in mean systolic and diastolic blood pressure pretest and posttest. Also supported by research conducted by Sidiq (2019), the analysis of systolic blood pressure before and after treatment obtained a mark Pvalue = 0.002. Meanwhile, the results of the analysis on diastolic blood pressure before and after treatment obtained a mark Pvalue = 0.001 with level A significance of 0.05, which means that H_0 is rejected and H_a has accepted for systolic blood pressure, not diastolic or present. The effect of prolanis exercise on systolic blood pressure nor diastolic respondents. It can be concluded that prolanis exercise treatment can reduce systolic blood pressure or diastole in hypertensive patients.

Researchers assume that regular Prolanis exercise for hypertensive patients will improve physical fitness, so exercise can indirectly improve heart function, reduce blood pressure, and reduce the risk of fat accumulation on the walls of blood vessels, thereby maintaining their elasticity. So that necessary education from the health and traffic workers sector about its importance and necessity activity. The special physical exercise is performed regularly, effectively and in a directed manner.

CONCLUSION

There are different Values for pre and post-data on systolic and diastolic blood pressure before and after administration intervention in the form of prolanis exercises in hypertensive patients. This means There is a difference in blood pressure before and after administration Prolanis exercise intervention for hypertension patients at the Bapinang Community Health Center.

RECOMMENDATIONS

Community health centres can strengthen health promotion efforts related to hypertension by providing services or facilitating prolanis exercise activities for each existing village _ in the working area of the Bapinang Community Health Center so that prolanis exercise activities do not only focus on the Bapinang village.

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