THE EFFECT OF YOGA GENERAL THERAPY ON BLOOD PRESSURE FOR THE ELDERLY PROLANIS GYMNASTICS AT SELABATU HEALTH CENTER SUKABUMI CITY 2020

Mayasyanti Dewi Amir[1], *Gulam Ahmad[2] and Irma Indria[1]*
[1*),2]Department of Primary Nursing Sukabumi College of Health Sciences; Email : mayasyanti@gmail.com

Abstract. **Introduction:** The health of the elderly requires special attention because there are many changes that occur so that the condition is no longer like an adult human. The aging process cause changes, one of the most experienced by the elderly is the cardiovascular system. Yoga exercises are proven to increase levels of b-endorphin up to five times in the blood. The more gymnastics, the higher the b-endorphin level. When someone does gymnastics, the b-endorphin will come out and be captured by receptors in the hypothalamus and limbic system that functions to regulate emotions. Increased b-endorphin has been shown to be closely related to decreased pain, increased memory, improved appetite, sexual ability, blood pressure and breathing.
Materials and Methods: This type of research used in this study is quasi experiment. The population in this study were all elderly prolanis gymnastics in the Sukabumi Selabatu Health Center, Sukabumi City, which amounted to 55 elderly prolanis gymnastics, the sample in this study were 20 respondents. Sampling using purposive sampling. Retrieval of data using observation sheets and statistical analysis using Wilcoxon test.
Results: The average difference in pretest and posttest systole blood pressure is 4.00 with a p-value of 0.008 and the average difference in pretest and posttest diastole blood pressure is 6.00 with a p-value of 0.004.
Conclusion: Then the p-value <0.05, which means H0 is rejected, this shows there is influence of yoga exercises on blood pressure in elderly prolanis in the Selabatu Health Center, Sukabumi City.

Keywords: Elderly, Yoga Exercise Therapy, Blood Pressure

Background

Aging is a situation that occurs in human life. Being old is a natural process that means one has gone through three stages of life, namely child, adult, and old. The aging process is not a disease, sooner or later the aging process depends on each individual concerned (2).

The aging process results in several changes, including physical, psychological, social and spiritual changes. In physiological changes there is a decrease in the immune system to deal with disorders from inside and outside the body. One of the most common health problems experienced by the elderly is in the cardiovascular system.

The health of the elderly requires special attention due to the many changes that occur so as to make the condition no longer like an adult human. In the elderly there are often complications of disease or multiple diseases. This is influenced by a variety of factors, especially by changes in the elderly physiologically.

Globally, the elderly population is predicted to continue to increase. In 2015 Asia and Indonesia have entered the era of the aging population, because the number of people aged 60 years and over (elderly population)

exceeds 7%. The composition of the elderly population is increasing rapidly both in developed and developing countries due to a decrease in fertility (birth) and mortality (death) rates as well as an increase in life expectancy which changes the overall population structure (11).

The current increasing population of the elderly makes the government need to decide on policies and programs aimed at the elderly population so that they can play a role in development and not become a burden to the community. Where the number of elderly people in Indonesia in 2019 is projected to increase to 27.5 million or 10.3% and 57.0 million people or 17.9% in 2045. Based on data from the 2015 inter-census population survey (SUPAS) the number of elderly people in Indonesia as many as 21.7 million or 8.5% (25).

The results of the projection of the Indonesian population in 2010-2035, the number of elderly people in West Java Province in 2017 was 4.16 million people or about 8.67% of the total population of West Java Province which consisted of 2.02 million people 8.31% male elderly and as many as 2.14 million 9.03% female elderly (7).

The net consolidated data for the second semester of 2018 from Population and Civil Registration Agency of Sukabumi City shows that the population of Sukabumi City is 344,797 people, based on the number of elderly people over 60 years old, 33,656 people or 9.76% of the total population. There are 16,911 male elderlies in Sukabumi city and 16,745 female elderlies.

As a polite city for the elderly (Kosal), The government of Sukabumi city is very concerned about the existence of the elderly in various fields, especially in the health sector, one of which is through efforts to provide health services in every public health center and hospital.

Currently, Indonesia is experiencing an epidemiological transition, where there is a decrease in the prevalence of infectious diseases but an increase in non-communicable diseases (NCDs) or degenerative diseases. Currently, NCDs has become a major health problem, this can be seen from the number of NCDs cases that dominate the highest case rate when compared to other infectious diseases, even NCDs has become a disease with the highest mortality rate in the community of hypertension, coronary heart disease, diabetes mellitus, stroke, chronic obstructive pulmonary disease, and others (5).

Facing the increasing prevalence of non-communicable diseases (NCDs), the government has created a chronic disease management program or what is often called PROLANIS, this is a program held by the government through Health Social Security Agency (BPJS) which is a health service system and a proactive approach that was implemented in June 2014, is a form of physical exercise. aerobics such as PROLANIS gymnastics. The purpose of this program is to encourage participants with chronic diseases to achieve optimal quality of life with cost-effective and efficient health services, especially in public health center areas (6).

PROLANIS activities are aimed at dealing with diseases that are at the primary level and are carried out to prevent complication, of course, this is very beneficial for the health of Health Social Security Agency users and participants. The form of implementation of PROLANIS includes medical or educational counseling activities, Home Visits, Reminders, SMS gateways, and monitoring of health status (6).

The PROLANIS program developed at Selabatu Public Health Center, Sukabumi City and consists of 50 elderly people under the monitoring of Selabatu Public Health Center in Sukabumi City which is routinely carried out once a week, one of which is checking blood pressure.

Based on the number of elderlies at Selabatu Public Health Center, Sukabumi City who participated in PROLANIS exercise, there were 55 people and the average blood pressure measurement of the elderly in PROLANIS exercise from June to November was in the prehypertension classification which describes the elderly with high blood pressure, but is still considered within the limits. normal (1).

A preliminary study based on interviews with 4 elderly people who took part in prolanis exercise at Selabatu Public Health Center, Sukabumi City, 1 elderly PROLANIS exercise said in the last 1 month blood pressure measurements were in the normal classification, 2 elderly PROLANIS exercisers said the last 1 month blood pressure measurements were in the prehypertension and 1 elderly PROLANIS exercise said that in the last 1 month the blood pressure measurement was in the classification of *stage 1* hypertension.

Some things that trigger blood pressure to rise and fall can be normal or abnormal. Fluctuating blood pressure can be caused by the body's response to small changes in daily life, one of the triggers that can make blood pressure go up and down are stress, lack of sleep, certain medications, food sensitivities, caffeine consumption, fever. and dehydration (8).

One of them is by living a healthy lifestyle, things that can be done and recommended is to adjust the diet, one of which is by consuming foods that are low in salt, increasing the intake of vegetables and fruits, not consuming alcohol and maintaining body weight in normal conditions. The other ways are controlling stress and emotions, stopping smoking and increasing exercise or physical activity, checking blood pressure regularly (24).

Yoga is a sport that functions to harmonize one's mind, soul and body. Yoga is an activity in which a person focuses his whole mind to control his five senses and his body as a whole. According to the *American Health Association Medical* Journal, meditation significantly controls blood pressure to become more stable, equivalent to the use of blood pressure control drugs, without the side effects of drug use (9).

Yoga is a holistic intervention that combines postures (asanas), breathing techniques (pranayana) and meditation. The yoga movement that can be done here is to further relieve and overcome so that the symptoms of hypertension do not arise. With yoga, the body's muscles will be more flexible and make blood circulation smoother and the result will be more normal blood pressure (24).

Yoga practice also stimulates the release of *Endorphins*. *Endorphins* are *neuropeptides* that the body produces when it's calm. *Endorphins* are produced in the brain and spinal cord. This hormone functions as a natural sedative produced by the brain that provides a sense of comfort and increases levels of endorphins in the body to reduce high blood pressure (16).

Yoga exercise has also been shown to increase levels of *b-endorphins* up to 5 times in the blood. The more exercise you do, the higher your *b-endorphins* levels will be. When a person does exercise, *b-endorphins* will come out and be captured by receptors in the hypothalamus and *limbic system* which function to regulate emotions. Increased b-endorphins have been shown to be closely related to decreased pain, improved memory, blood pressure and breathing (21).

Yoga is an exercise that can lower blood pressure levels. Yoga therapy for the process of lowering blood pressure in hypertensive patients is based on existing evidence, that this therapy can be applied to hypertensive patients to improve the quality of life of hypertensive patients (21).

In a previous study conducted by Devi Oktavia in 2011, it was proven that after doing yoga, most of the respondents experienced a decrease in systolic blood pressure after doing yoga exercises 3 times a week (24). This is also in line with Rahayu's research in 2016 which showed that there was a difference before and after being given yoga exercise therapy with an average decrease in diastolic blood pressure of 90.07 mmHg (18). And yoga has an effect on blood pressure which can reduce systolic and diastolic by an average of 122 mmHg and 81.25 mmHg (18).

The role of nurses in yoga exercise therapy is to be a demonstration of yoga movements. The nurse is also an educator role, the nurse plays a role in providing information or teaching about health. This role is the domain role of community nurses in providing nursing services. Provision of information can be done at formal institutions or choices according to the level of community ability (9).

In addition, based on research, nurses are also able to act as innovators (innovators). From the research results, nurses are able to move others to do something new based on the needs, developments and aspirations of individuals, families, groups and communities (9).

Therefore, based on this description, the author is interested in conducting this research and taking the title **"The Effect of Yoga Exercise Therapy on Blood Pressure in the Elderly at Selabatu Health Center, Sukabumi City 2020"**

Methods

The type of research used in this study is *quasi-experimental* or pre-experimental, namely this type of experiment has not met the requirements such as the experimental method which can be said to be scientific following certain rules (14).

The sampling method in this study uses *purposive sampling* or taking based on certain considerations made by the researchers themselves, based on the characteristics or

characteristics of the population that have been known previously (14).

Data analysis was carried out using computer software, performed using SPSS *(statistical product and service solution*) software version 16.00 in the form of univariate and bivariate analysis.

Ethical Clearance

This study was approved by Health Research Ethics Committee, Faculty of Medicine Universitas Indonesia No.592/H2. F1/ETIK/2020.

Results

This chapter will describe the results of the research analyzed by univariate and bivariate. Univariate analysis in this study included gender, age, *pre-test* blood pressure and *post-test* blood pressure. As for the univariate analysis on the variables of this study, including blood pressure before and after being given yoga exercise therapy. The bivariate analysis in this study was to determine the effect of yoga exercise therapy on blood pressure in the elderly with Prolanis exercise at the Selabatu Public Health Center, Sukabumi City.

Univariate Analysis of Respondents Characteristics: Data obtained that all gender respondents are women, as many as 20 respondents (100%)..Data is obtained that the age of the 60-year-old respondent there is 1 respondent 5.0%, the age of 61 years there are 3 respondents 15.0%, the age of 63 years there are 2 respondents 10.0%, the age of 65 years there are 4 respondents 20.0%, age 66 years there are 1 respondent 5.0%, age 69 years there are 2 respondents 10.0%, age 70 years there are 3 respondents 15.0%, age 73 years there are 2 respondents 10.0%, age 74 years there are 2 respondents 10.0%, the total is 100%. Data that the weight of the respondent is 58kg there is 1 respondent 5.0%, the body weight is 59kg there are 3 respondents 15.0%, the weight 60kg is 1 respondent 5.0%, the weight is 62kg there is 1 respondent 5.0% , weight 63kg there are 1 respondent 5.0%, body weight 66kg there are 2 respondents 10.0%, body weight 68kg there are 3 respondents 15.0%, body weight 69kg there are 1 respondent 5.0%, body weight 70kg there are 2 respondents 10.0%, body weight 71kg there are 2 respondents 10.0%, body weight 72kg there is 1 respondent 5.0%, body weight 73kg there is 1 respondent 5.0%, body weight 85kg there is 1 respondent 5.0%.

For Variable Univariate Analysis, the univariate analysis of the variables in this study including the description of blood pressure before and after yoga exercise therapy is as follows.The average value of blood pressure, measurements before (Pre-test) of 20 respondents with systolic blood pressure of 130.50 with a standard deviation of 8.870, a minimum value of 110 and a maximum value of 140. The average value Diastolic blood pressure is 85.95, with a standard deviation of 7.444, a minimum value of 70 and a maximum value of 99. The average value of blood pressure, measurement after (Post-test) of 20 respondents with systolic blood pressure of 127.00 with a standard deviation of 8.013, a minimum value of 110 and a maximum value of 140. The average value of diastolic blood pressure is 81.75, with a standard deviation of 6.742, a minimum value of 70 and a maximum value of 90.

Normality Test: Statistical analysis used is the paired sample t-test. Before analyzing with the paired sample t-test, a normality test must be carried out first, to meet the requirements of the paired sample t-test, namely the data must follow a normal distribution. The p-value in the pre-test systolic blood pressure normality test is 0.005 and the post-test is 0.012. The p-value in the pre-test diastolic blood pressure normality test was 0.001 and the post-test was 0.002. This shows that the systolic and diastolic blood pressure data in the pre-test and post-test measurements are not normally distributed. Because the data distribution is not normal, the alternative Paired sample t-test with the Wilcoxon test is used.

Bivariate Analysis: Bivariate analysis was used to test the hypothesis, the hypothesis in this study is the effect of yoga exercise therapy on blood pressure in the elderly with prolanis exercise. The type of hypothesis in this study is a paired numerical comparative hypothesis. The statistical test used in this study is a non-parametric test because the data distribution is not normal, an alternative paired sample t-test with the Wilcoxon test is used.

The results of hypothesis testing the effect of yoga exercise therapy on blood pressure in the elderly can be seen in full. It shows that the average difference between pretest and posttest systolic blood pressure is 4.00 with a p-value of 0.008 and the difference between the average pretest and posttest diastolic blood pressure is 6.00 with a p-value of 0.004. Then the p-value <0.05, which means H0 is rejected,

this shows that there is an effect of yoga exercise therapy on blood pressure in the elderly prolanis exercise at Selabatu Public Health Center, Sukabumi City.

Discussion

Overview of Blood Pressure in the Elderly Before Giving Yoga Exercise Therapy

The results show that blood pressure before hypertension exercise obtained the average value of systolic blood pressure obtained from 20 respondents in the measurement before yoga exercise therapy (Pre-test) was 130.50 and the average diastolic blood pressure before yoga exercise therapy (Pre-test) was 85.95. This shows that all respondents are in the prehypertension classification.

Blood pressure is the activity of the heart muscles and overall blood flow where when the heart pumps blood, the heart muscles constrict or contract, on the contrary when the heart rests blood from the whole body enters the heart (1).

Hypertension is an increase in systolic blood pressure of at least 140 mmHg or diastolic pressure of at least 90 mmHg. Hypertension is not only a high risk for people with heart disease, but also for people with other diseases such as diseases of the nerves, kidneys, and blood vessels and the higher the blood pressure, the greater the risk (4).

In accordance with the classification of hypertension in the elderly according to the World Health Organization (WHO) in the Ministry of Health of the Republic of Indonesia, 2013, namely normal blood pressure less than 120 and diastolic less than 80, pre-systolic hypertension 120-139 and diastolic 80-89, hypertension grade I systolic 140-159 and diastolic 90-99, level II hypertension systolic more than 160 and diastolic more than 100.

In this study, all respondents aged 60-74 are at risk of hypertension. As stated by Mujahidullah in 2012, the cardiovascular system in the elderly will experience a decreased blood pump, overall heart size decreases with clinical disease, decreased heart rate, heart valves in the elderly will be thicker and stiffer as a result of lipid accumulation. Systolic blood pressure increases in the elderly due to loss of arterial dispensability. Diastolic blood pressure remains the same or increases.

This research shows that all respondents do not work. Physical activity is a limb muscle activity that requires energy or movement that is beneficial for improving health. Examples of physical activities include gardening, swimming, cycling, yoga or others. Physical activity is very beneficial for the health of the body, especially the lungs. Physical activity also nourishes blood vessels and prevents hypertension. Efforts to prevent hypertension will be optimal if active physical activity is accompanied by a healthy diet and quitting smoking.

Gender is one of the factors that can affect blood pressure. The majority of patients with hypertension are female and occur before menopause. Women are relatively protected from cardiovascular disease by increasing HDL (High Density Lipoprotein) levels and lowering LDL (Low Density Lipoprotein) levels in Estrogen. Estrogen is an antioxidant that protects oxidized LDL from entering atherosclerotic plaques more easily.

From the results of the study revealed, that people who are overweight are prone to hypertension. People who weigh more than 30% of their ideal body weight are more likely to suffer from high blood pressure. Although the relationship between obesity and essential hypertension has not yet been explained, investigations have shown that the pumping power of the heart and circulating blood volume in obese patients with hypertension is higher than in patients with normal bodies.

Overview of Blood Pressure in the Elderly After Giving Yoga Exercise Therapy

That blood pressure after yoga exercise therapy obtained the average value of systolic blood pressure obtained from 20 respondents in the measurement after yoga exercise therapy (Post-test) was 127.00 and the average diastolic blood pressure after yoga exercise therapy (Post-test) is 81.75, this shows that the blood pressure of the elderly in prolanis exercise is in the normal classification.

Yoga therapy is done for 25 minutes, 1 time a day for 3 times a week on Tuesday, Thursday and Saturday. The yoga therapy was applied to 20 respondents with a schedule in the morning at 07:00, located in the hall of Selabatu Public Health Center, Sukabumi City and carried out simultaneously.

Yoga is a sport that functions to harmonize one's mind, soul and body. Yoga exercise is an activity in which a person focuses his whole mind to control his five senses and his body as

a whole. This exercise provides benefits for body health, strength and vitality.

Yoga exercise has been shown to increase levels of b-endorphins up to 5 times in the blood. The more exercise you do, the higher your b-endorphin levels will be. When someone does exercise, *b-endorphins* will come out and be captured by receptors in the hypothalamus and limbic system which function to regulate emotions. An increase in *b-endorphins* has been shown to be closely related to decreasing pain, improving memory, improving appetite, sexual ability, blood pressure and breathing.

In a previous study conducted by Devi Oktavia in 2011, it was proven that after doing yoga exercises for the elderly who had hypertension, it was found that most of the respondents experienced a decrease in systolic blood pressure after yoga exercise intervention was performed 3 times in 1 week.

This is also in line with Rahayu's in 2016 research showing that there is a difference before and after being given yoga exercise therapy with an average decrease in diastolic blood pressure of 90.07 mmHg. As for Ruby Susmawati's in 2018 research that yoga has an effect on blood pressure which can reduce systolic and diastolic an average of 122 mmHg and 81.25.

The conditions in the field were obtained from blood pressure measurements, there were 6 respondents with fixed blood pressure measurements and 1 respondent with increased blood pressure measurements after being given yoga exercise therapy. Respondents on the results of constant blood pressure measurements said they really took care of their food at home. Meanwhile, respondents who experienced an increase in blood pressure after being given yoga exercise therapy said they were not too focused on doing yoga exercise therapy because there were family problems.

The increase in blood pressure caused by stress will increase peripheral vascular resistance and cardiac output so that it will stimulate sympathetic nerve activity. This stress can be related to work, social class, economy and personal characteristics

The Effect of Yoga Exercise Therapy.

The average difference between pretest and posttest systolic blood pressure, which is 4.00 with a p-value of 0.008 and the difference between the average pretest and posttest diastolic blood pressure is 6.00 with a p-value of 0.004 in the p-value hypothesis test. -value <0.05, this indicates that there is an effect of yoga exercise therapy on blood pressure in the elderly Prolanis exercise.

Conclusions

The discussion of the results of data analysis is used as the basis for formulating several conclusions as follows:Blood pressure in the elderly Prolanis exercise at the Selabatu Public Health Center, Sukabumi City before yoga therapy was carried out, the median blood pressure value was 130.50 mmHg systolic and 85.95 mmHg diastolic.Blood pressure in elderly prolanis gymnastics At the Selabatu Public Health Center, Sukabumi City, after yoga therapy, the median blood pressure value was 127.00 mmHg systolic and 81.75 mmHg diastolic.There are conditions in the field from the results of blood pressure measurements, there are 6 respondents with fixed blood pressure measurement results and 1 respondent with increased blood pressure measurement results after being given yoga exercise therapy. Respondents with the results of blood pressure measurements that still said they really took care of their food at home. Meanwhile, respondents who experienced an increase in blood pressure after being given yoga exercise therapy said they were not too focused on doing yoga exercise therapy because there were family problems.There is an effect of yoga therapy on blood pressure in elderly prolanis gymnastics at the Selabatu Health Center, Sukabumi City.

For suggestions, The Selabatu Health Center should consider holding training for nurses to learn yoga exercise therapy as a non-pharmacological alternative as health services for the elderly so that those who are at risk of hypertension are prevented from hypertension, and can add insight for the elderly.

It is hoped that further research can be used as basic data to conduct research on the effect of yoga exercise therapy on blood pressure and it is recommended that when conducting subsequent research, it is necessary to pay attention to the timeliness of therapy for respondents and the consistency of respondents not to take drugs during therapy and use the control group.

References

1. Ardiansyah. Surgical medical nursing. Yogyakarta: DIVA Press, 2012.
2. Azizah. Elderly Nursing. 1st Edition. Yogyakarta: Graha Ilmu, 2011.
3. Budhiana. Data Analysis Module. Sukabumi, 2019.
4. Brunner & Suddarth. Surgical Medical Nursing. Edisi 2013. Jakarta: EGC, 2013.
5. Annual Report Records Number of Elderly Selabatu Public Health Center Sukabumi City. Sukabumi: Health Department, 2018.
6. Sukabumi City Health Department. Hypertension Annual Report Data 2018. Sukabumi City Public Health Office, 2018.
7. West Java Public Health Office. Number of Cases in West Java. Bandung: West Java Health Department, 2016.
8. Fauzi, A Yahya. Conquering Killer No. 1: Preventing and Overcoming Coronary Heart Disease Precisely and Quickly. Bandung: Qanita, 2017.
9. Harnilawati. Family Nursing Concepts And Processes. Jakarta: Graha Ilmu, 2013.
10. Junaedi, Edi, Sufrida, and Gusti, Mira, R. Hypertension Runs Away Thanks to Herbs. Jakarta: FMedia (Imprint ArgoMedia Pustaka), 2013.
11. Ministry of Health of the Republic of Indonesia. Indonesian Health Profile 2013. Jakarta, 2013.
12. Lebang, Erikar. Daily Yoga for Health. Jakarta: Pustaka Bunda Publishing, 2010.
13. Mujahidullah, Khalid. Gerontic Nursing. Yogyakarta: Pustaka Pelajar, 2012.
14. Notoatmodjo, S. Research Methodology and Health. Jakarta: Sagung Seto, 2012.
15. Notoatmodjo, S. Methodology and Health Jakarta: Saagung Seto, 2018.
16. Ovianasari, Anis & Wantonoro. The Effect of Yoga Practice on Blood Pressure in Elderly Patients with Hypertension in Niten Nogotirto Hamlet, Gamping Sleman Yogyakarta". Accesed, 3 November 2019. Yogyakarta: Aisyiyah Institute of Health Science Yogyakarta, 2015.
17. Padila. Textbook of Gerontic Nursing. Yogyakarta: Nusa Medika, 2013.
18. Rahayu. The Effect of Yoga Exercise Therapy on Blood Pressure Reduction in Hypertension Elderly in Posyandu Dusun Elapan Sindumartani Ngemoplak Sleman Yogyakarta. Accessed date 5 November 2019. Yogyakarta, 2016
19. Riani, Suksi et al. Holistic Nursing And Complementary Intervention Applications. Central Jav: LPPM Kenda Institute of Health Science, 2019.
20. Sudarmoko, A. Healthy Without Hypertension. Yogyakarta: Cahaya Atma Pustaka Sutanto, 2015.
21. Sindhu, Pujiastuti. Healthy and Balanced Life with Yoga. Bandung: Qanita Publishing, 2012.
22. Sugiyono. Quantitative Qualitative Research Methods and R&D. Bandung: Alfabeta, 2012.
23. Susilo, Yekti. The Right Way to Overcome Hypertension. 1st Edition. Yogyakarta: Andi Offset Publishing, 2013.
24. Triyanto E. Integrated Nursing Services for Patients with Hypertension. Yogyakarta: Graha Ilmu, 2014.
25. WHO. A Global Brief on Hypertension. Executive summary. Geneva: WHO Press, 2018.
26. Nur, A., Kusnanto, K., Amin, M., Sajidin, M., Kurniawati, N. D., & Bakhtiar, A. (2020). The Effect of Combination Pranayama Yoga and Endurance Training Exercise on Peak Expiratory Flow (PEF) in Adult Asthmatic Patients. Jurnal Keperawatan Padjadjaran, 8(2).