PROCEEDING
1st International Conference of Health Polytechnic of Jambi
icon@poltekkesjambi.ac.id
http://journal.poltekkesjambi.ac.id/index.php/ICoHPJ
ISSN **2988-7356**

THE EFFECT OF PROGRESSIVE MUSCLE RELAXATION ON BLOOD PRESSUREAND ANXIETY OF HYPERTENSION PATIENTS

***Abbasiah*[1,2*], *Ernawati*[1,2], *Reni Novianti*[1,2]**
[1]*Nursing Departement of Politeknik Kesehatan Kementerian Kesehatan Jambi*
[2]*PUI-PK Politeknik Kesehatan Kementerian Kesehatan Jambi*
**Corresponding author: ummisaza@gmail.com*

ABSTRACT

Hypertension is the leading cause of premature death worldwide; hypertension management must be done correctly. Control can be divided into two, namely pharmacological management and non-pharmacological management; relaxation techniques that can be done are slow deep breathing exercises and progressive muscle relaxation. Progressive muscle relaxation (PMR) is a technique for reducing blood pressure. The study aimed to determine the impact of progressive muscle relaxation on blood pressure and anxiety in hypertension patients in the Suko Awin Jaya Health Center in 2022.

This study was a quasi-experimental quantitative study with two group pre-test and post-test designs. The population in this study was 87 hypertension sufferers in the Suko Awin Jaya Health Center working area in 2021. The sampling technique was purposive, and 76 people were included in this study. The research was carried out in June 2022 in the Working Area of the Suko Awin Jaya Health Center. Data were analyzed using the dependent T-test. The difference was considered statistically significant at $p<0.05$. This research found that progressive muscle relaxation affected blood pressure ($p=0.000$) and the anxiety level of hypertension sufferers in the Work Area of the Suko Awin Jaya Health Center ($p= 0.000$). It is hoped that the community can apply the interventions that health workers have taught. Thus, that blood pressure and anxiety levels are always controlled.

Keywords: Anxiety Level Progressive; Blood Pressure; Muscle Relaxation.

BACKGROUND

Blood pressure is the pressure that occurs in the arteries when a person's blood is pumped from the heart and flows throughout the body. *Systolic blood pressure* is the blood pressure that occurs when the heart muscle contracts (constricts). Systolic blood pressure is also known as the maximum arterial pressure when the left ventricular lobe of the heart contracts. *Diastolic blood pressure* is the pressure that occurs when the heart muscle is in a state of rest or relaxation (diastolic and relaxation) (Perki, 2015). Blood pressure above normal is called high blood pressure. Hypertension is a blood vessel disorder that causes the body's tissues to block the flow of oxygen and nutrients carried by the blood so that blood pressure is above the normal limits: 140 mmHg and 90 mmHg for systolic and diastolic blood pressure, respectively (Agustina, 2014).

High blood pressure is a condition where blood pressure increases above normal limits. Normal blood pressure limits vary according to age (Ministry of Health 2016). Blood pressure classification by The Joint National Community on Prevention, Detection, Evaluation and

Treatment of High Blood Pressure 7 (JNC-7) for adult patients (age ≥ 18 years) includes four categories with average values in systolic blood pressure (SBP) < 120 mm Hg and diastolic blood pressure (DBP) < 80 mm Hg. Prehypertension (systolic 120-139 mm Hg and diastolic 80-89 mm Hg) is not considered a disease category but identifies patients whose blood pressure is likely to rise to the future hypertension classification. There are two stages of hypertension, and all patients in this category should be given drug therapy, namely hypertension stage 1 (systolic 140-159 mmHg and diastolic 90-99 mmHg) and hypertension stage 2 (systolic ≥ 160 mmHg and diastolic ≥ 100 mmHg) (RI Ministry of Health, 2016). In general, there are several signs and symptoms experienced by hypertensive patients, including headaches, fatigue, nausea, vomiting, shortness of breath, and anxiety (Rahayu & Wahyu, 2015).

Hypertension is the leading cause of premature death worldwide. Based on data (World Health Organization. 2020), it is estimated that 1.13 billion people worldwide suffer from hypertension, most (two-thirds) live in low and middle-income countries, including Indonesia, and it is estimated to increase to 1.5 billion people in the next year. 1 in 4 men and 1 in 5 women suffer from hypertension. One of the global targets for non-communicable diseases is reducing hypertension's prevalence by 25% by 2025.

Hypertension sufferers amounted to 25.8% of the total population of Indonesia in 2013 (Ministry of Health RI, 2013). In 2018, they experienced a significant increase of up to 63.5%. Bangka Belitung (30.9%), South Kalimantan (30.8%), and East Kalimantan (29.6%) were Indonesia's highest rates prevalence of hypertension, while Jambi Province had 28.99%. If not handled properly, it will have a very detrimental impact. Hypertension is a significant cause of disability (loss of limb function) and death in almost every country, killing 9.4 million people worldwide each year and around 13,000 people (World Health Organization, 2019). In addition, Annisa (2018) reported the effects of high blood pressure had caused death in all age groups reaching 6.8% in Indonesia. Wiharja (2016) also added that 75% of hypertension sufferers could cause heart disease, 15% stroke, and 10% o In line with Wiharja (2016), hypertension can be a severe threat and, if left untreated can cause stroke, myocardial infarction, kidney failure, encephalopathy and seizures (Nuraini, 2014). Hence, early diagnosis and appropriate management are essential to reduce morbidity and mortality and prevent further damage. (Untari et al, 2016).

Management of hypertension needs to be done in the right way. Management can be divided into two, namely pharmacological management and non-pharmacological management. Pharmacological management can be done by administering anti-hypertensive drugs. The standard pharmacological treatment of hypertension recommended by the Committee for Hypertension Experts is diuretics, beta-blockers, calcium antagonists, and ACE (Angiotensin Converting Enzyme) inhibitors (Nuraini, 2016). Pharmacological drugs have a fast reaction to lower blood pressure, but this can have dangerous side effects for hypertensive patients. In addition, if the anti-hypertensive drug is consumed excessively, it will cause fluid retention, allergies, and cardiac arrhythmias.

Non-pharmacological therapy is recommended for people with hypertension to control food and sodium intake, lose weight, limit alcohol and tobacco consumption, and exercise and relaxation (Kusumastuti, 2016). According to Nuraini (2016), non-pharmacological approaches that can be taken include limiting sodium and alcohol, routine control, exercise, lifestyle changes, and relaxation techniques. Relaxation techniques that can be done are slow deep

breathing exercises and progressive muscle relaxation. Progressive muscle relaxation (PMR) is a technique for reducing muscle tension with a simple and systematic process of tensing a group of muscles and then relaxing them again. If this muscle tension is left unchecked, the impact can disrupt the activities and balance of a person's body (Sigalingging, 2017). PMR provides satisfactory results in therapy programs for muscle tension, facilitating sleep and depression, reducing fatigue, muscle cramps, neck, and back pain, lowering blood pressure, mild phobias, and reducing anxiety (Setyoadi, 2021). Mayo (2021) explains that PMR is perfect for people with a social anxiety disorder (SAD) and problems with blood pressure. This is because when doing PMR, tense muscles will relax, making the body feel comfortable and causing anxiety and blood pressure to decrease.

In addition, according to Price and Wilson in Lestari and Sabar (2020), Progressive Muscle Relaxation benefits nursing actions for people with hypertension, especially in reducing blood pressure because progressive muscle relaxation is beneficial in reducing blood pressure, both systolic and diastolic blood pressure. Patient and sustainable (2020) also explain that by doing Progressive Muscle Relaxation in a calm, relaxed, and concentrated state for 15 minutes, there is a decrease in the secretion of CRH Corticotropin Releasing Hormone) Moreover, ACTH (Adrenocorticotropic Hormone) in the hypothalamus, which results in a decrease in the activity of the sympathetic nerves resulting in the release of adrenaline and non-adrenaline, resulting in a decrease in heart rate, dilated blood vessels, reduced vascular resistance, and decreased heart pump, so that blood pressure decreased cardiac arteries. After experiencing relaxation, the heart's pumping activity decreases, the arteries experience dilation, and much fluid comes out of circulation, as it is known that young people have better blood vessel elasticity.

This elasticity of the blood vessels causes the tolerance of the vessels to the end-diastolic pressure. The walls of the arteries, which are elastic and easily distensible, will readily expand the diameter of the walls of the arteries to accommodate changes in pressure. The ability of the arteries to distend prevents the widening of blood pressure fluctuations. It is what makes PMR more effective than hypertension exercises. Based on research conducted by Hidayanti (2021), hypertension exercise effectively reduces blood pressure in hypertension sufferers. However, hypertension exercise has several drawbacks, such as having a gymnastic instructor who understands exercise movements. Besides that, adequate sound system equipment is also needed.

The results of research conducted by Sartika (2018) concluded that PMR, carried out routinely for three days, was effective in lowering blood pressure ($p=0.003$). Another similar outcome has been reported by Pome (2019) that PMR can reduce blood pressure in hypertensive patients ($p= 0.000$). In addition, Sabar and Lestari (2020) have pointed out that after PMR exercise, a decrease in systolic blood pressure was obtained by 22 mmHg and diastolic blood pressure decreased by 5.34 mmHg.

Data obtained from the Muaro Jambi District Health Office (2020), the incidence of hypertension reached 14,513 sufferers. In (2021) Of the 22 Community Health Centers in Muaro Jambi, the Health Center most suffering from hypertension was the Muaro Kumpeh Health Center, with a total of 2761 people, while the least number of Health Centers was the Suko Awin Jaya Health Center, with 87 cases (Muaro Jambi Health Office, 2021). However, the Suko Awin Jaya Health Center showed an increase in cases of hypertension from year to year, wherein (2019) there were 30 cases. In (2020) there were 65 cases, and in (2021) there were 87 cases.

Preliminary studies conducted by researchers at the Suko Awin Jaya Health Center, Muaro Jambi Regency, on February 24, 2022, found that hypertension data for January (10 patients) and February (20 patients), while the interventions provided by the Suko Awin Jaya Health Center were only limited to diet. In addition, 8 out of 10 hypertension patients interviewed said they experienced anxiety. 5 out of 10 patients said that not knowing about Progressive Muscle Relaxation techniques can reduce blood pressure and anxiety. 9 out of 10 people with hypertension also ask to be taught how to do Progressive Muscle Relaxation. With the role of nurses in overcoming the problem of hypertension to become educators.

RESEARCH METHODS

This study was a quasi-experimental quantitative study with two group pre-test and post-test designs. The population in this study was 87 hypertension sufferers in the Suko Awin Jaya Health Center working area in 2021. The sampling technique was purposive, and 76 people were included in this study, with 38 respondents were the control group and 38 in the intervention group. The sampling technique used was purposive sampling. The research was carried out in June 2022 in the Working Area of the Suko Awin Jaya Health Center. A dependent T-Test was used, and the difference was statistically significant at $p<0.05$.

RESULTS AND DISCUSSION

Description of the gender characteristics of hypertensive patients in the working area of the Suko Awin Jaya Health Center

Table 1. *An overview of the the gender characteristics of hypertensive patients in the working area of the Suko Awin Jaya Health Center.*

Gender	f	%
Male	51	67.1
Female	25	32.9
Total	76	100

Based on table 1, it can be seen that the male respondents were 51 people (67.1%), while the female respondents were 25 people (32.9%).

Table 2. An overview of education level characteristics of patients with hypertension in the work area of the Suko Awin Jaya Health Center.

Level of education	f	%
Elementary school	15	19.7
Junior high school	32	42.1
Senior high school	29	38.2
Total	76	100.0

Based on table 2, it can be seen that 15 respondents with elementary education level (19.7%), 32 junior high school students (42.1%), and 29 high school students (38.2%).

Table 3. An overview of employment status characteristics of hypertension patients in the work area of the Suko Awin Jaya Health Center

Employment-status	f	%
Working	30	39.5
Not working	46	60.5
Total	76	100.0

Based on table 3, it is known that the respondents who work as many as30 people (39.5%) while the respondents who do not work are 46 people (60.5%).

Table 4. An overview of the marital status characteristics of hypertension patients in the work area of the Suko Awin Jaya Health Center

Marital status	f	%
Married	71	93.4
Single/widow/widower	5	6.6
Total	76	100.0

Based on table 4, it can be seen that

the married respondents were 71 people (93.4%), while the single/widowers/ widows' respondents were 5 people (6.6%).

Table 5. Description of the medication-taking history of hypertension patients in the work area of the Suko Awin Jaya Health Center

Taking-medication History	f	%
Taking medication	59	77.6
Not taking medication	17	22.4
Total	76	100.0

Based on table 5 it can be seen that the respondents who consumed the drug were 59 people (77.6%) while the respondents who did not take the drug were 17 people (22.4%).

Table 6. An overview of the smoking habits characteristics of hypertension patients in the work area of the Suko Awin Jaya Health Center

Habit	f	%
Yes, smoking	46	60.5
Do not smoke	30	39.5
Total	76	100.0

Based on table 6, it can be seen that the respondents who had smoking habits were 46 people (60.5%), while the respondents who had non-smoking habits were 30 people (39.5%).

Table 7 Description the headache history characteristics of hypertension patients in the work area of the Suko Awin Jaya Health Center

Headache pain	f	%
No headache pain	64	84.2
Headache pain	12	15.8
Total	76	100.0

Based on table 7, it can be seen that the respondents who did not experience headaches were 64 people (84.2%), while the respondents who experienced headaches were 12 people (15.8%)

Univariate Results

Average overview of Blood Pressure of Hypertension Patients Before intervention.

Table 8. Description of Blood Pressure of Hypertension Patients Before intervention

Sample group	Average Blood Pressure
PMR	180/120 mmHg
Control (SDB)	180/120 mmHg

Based on the research results, it is known that the average blood pressure before intervention was given was 180/120 mmHg

Table 9. Description of the Average Blood Pressure of Hypertension Patients After Intervention

Sample group	Average Blood Pressure
PMR	161/108 mmHg
Control (SDB)	173/114 mmHg

Based on the results of the study it was known that the average bloodpressure after being given the PMR intervention was 161/108 mmHg

Table 10. Description of the anxiety level of hypertension sufferers in the work area of the Suko Awin Jaya Health Center

Sample group	Anxiety level	f	%
Intervention (PMR)	Mild	8	21.1
	Moderate	29	76.3
	Severe	1	2.6
	Total	38	100
Control (DSB)	Mild	1	2.6
	Moderate	36	94.7
	Severe	1	2.6
	Total	38	100.0

Based on the results of the study, it was found that the level of anxiety in the intervention group before the PMR was carried out was found to be eight people (21.1%) experienced mild anxiety, 29 people (76.3%) experienced moderate anxiety and one person (2.6%) experienced severe anxiety. Whereas in the control group, it was found that prior to SDB, one

person (2.6%) had mild anxiety, 36 people (94.7%) experienced moderate anxiety, and one person (2.6%) experienced severe anxiety.

Table 11. Description of the anxiety level of hypertension sufferers in the working area of the Suko Awin Jaya Health Center.

Sample group	Anxiety level	f	%
Intervention (PMR)	No worries	3	7.9
	Moderate	30	78.9
	Severe	5	13.2
	Total	38	100
Control (DSB)	No worries	10	26.3
	Moderate	27	17.1
	Severe	1	2.6
	Total	38	100.0

Based on the results of the study, it was known that the level of anxiety in the intervention group after the PMR was found that three people (7.9%) did not experience anxiety, 30 people (78.9%) experienced mild anxiety, and five people (13.2%) experienced moderate anxiety. Whereas in the control group, it was found that after SDB, ten people (26.3%) experienced mild anxiety, 27 people (71.1%) experiencedmoderate anxiety, and one person (2.6%) experienced severe anxiety.

Results Bivariate

The Effect of Progressive Muscle Relaxation on Blood Pressure in Hypertension Patients in the Work Area of the Suko Awin Jaya Health Center.

Table 12. The Effect of Progressive Muscle Relaxation on Blood Pressure in Hypertension Patients in the Work Area of the Suko Awin Jaya Health Center.

Group	BP (before)	BP (after)	*p*
Intervention (PMR)	180/120 mmHg	161/108 mmHg	0.00
Control (DSB)	180/120 mmHg	173/114 mmHg	0

Based on the results of the study, it was found that Progressive Muscle Relaxation affected the blood pressure of hypertensive patients in the Working Area of the Suko Awin Jaya Health Center (p=0.000). This means that after doing Progressive Muscle Relaxation, the blood pressure of people with hypertension has decreased compared to before doing Progressive Muscle Relaxation

Table 13. The Effect of Progressive Muscle Relaxation on Anxiety in Hypertension Patients in the Work Area of the Suko Awin Jaya HealthCenter

Group	Means	*p*
Intervention (PMR)	0.763	0.000
Control (DSB)	0.237	0.05

Based on the results of the study, it was found that after being given PMR, the patient's anxiety level decreased by 0.763%, which also means that there is an effectof PMR on the level of anxiety (p-value: 0.000). Whereas in the control group, the average decrease in anxiety levels (0.237) was obtained with a value (p-value: 0.005). So, it can be concluded that PMR is more effective in reducing anxiety levels in hypertensive patients at the Suko Awin Jaya Health Center.

The Effect of Progressive Muscle Relaxation on Blood Pressure in Hypertension Patients in the Work Area of the Suko Awin Jaya Health Center.

High blood pressure is the pressure that occurs in the arteries when a person's blood is pumped from the heart and flows throughout the body. *Systolic blood pressure* is the blood pressure that occurs when the heart muscle contracts (constricts). Systolic blood pressure is also known as the maximum arterial pressure when the left ventricular lobe of the heart contracts. *Diastolic blood pressure* is the pressure that occurs when the heart muscle is in a state of rest or relaxation (diastolic and relaxation) (Perki, 2015). Blood pressure above normal is called high blood pressure. Hypertension is a blood vessel

disorder that causes the body's tissues to block the flow of oxygen and nutrients carried by the blood so that blood pressure is within normal limits: systolic blood pressure is not > 140, and diastolic blood pressure is 90 mmHg (Agustina, 2014).

This study's results align with the results of a study conducted by Sabar and Lestari (2020), which concluded that after the Progressive Muscle Relaxation (PMR) exercise, the systolic blood pressure decreased by 22 mmHg and the diastolic blood pressure decreased by 5.34 mmHg.

High blood pressure is a condition where blood pressure increases above normal limits. Normal blood pressure limits vary according to age (Ministry of Health 2016). Blood pressure classification by The Joint National Community on Prevention, Detection, Evaluation and Treatment of High Blood Pressure 7 (JNC-7) for adult patients (age ≥ 18 years) includes four categories with average values in systolic blood pressure (TDS) < 120 mm Hg and diastolic blood pressure (TDD) < 80 mm Hg. Prehypertension (systolic 120-139 mm Hg and diastolic 80-89 mm Hg) is not considered a disease category but identifies patients whose blood pressure is likely to rise to the future hypertension classification. There are two stages of hypertension, and all patients in this category should be given drug therapy; namely, stage 1 hypertension (140-159 mmHg systolic and 90-99 mmHg diastolic) and stage 2 hypertension (systolic ≥ 160 mmHg and diastolic ≥ 100 mmHg) (RI Ministry of Health, 2016). In general, there are several signs and symptoms experienced by hypertensive patients, including headaches, fatigue, nausea, vomiting, shortness of breath, and anxiety (Rahayu & Wahyu, 2015). One of the actions that can be taken to overcome this problem is to do Progressive muscle relaxation.

PMR is a technique for reducing muscle tension with a simple and systemic process of tensing a group of muscles and then relaxing them again. If this muscle tension is left unchecked, the impact can disrupt the activities and balance of a person's body (Sigalingging, 2017). Progressive Muscle Relaxation provides satisfactory results in therapy programs for muscle tension, facilitating sleep and depression, reducing fatigue, muscle cramps, neck, and back pain, lowering blood pressure, mild phobias, and reducing anxiety (Setyoadi, 2021). Mayo (2021) explains that Progressive Muscle Relaxation is very good for people with a social anxiety disorder (SAD) and problems with blood pressure. This is because when doing PMR, tense muscles will relax to make the body feel more comfortable, causing anxiety and blood pressure to decrease. Researchers assume that Progressive Muscle Relaxation significantly lowers blood pressure in people with hypertension. So, this can be considered for people with hypertension to carry out routine PMR.

The researcher's assumptions are supported by the results of research conducted by Sartika (2018) concluded that PMR, which is carried out routinely for three days, is proven to be effective in reducing blood pressure (p-value: 0.003)

Widianti & Proverawati (2010) said that by doing Progressive Muscle Relaxation, the need for oxygen in the cells would increase for the process of forming energy, increasing heart rate, so cardiac output and stroke volume increase. Thus, blood pressure will increase. After resting, the blood vessels will dilate or stretch, the blood flow will decrease temporarily, and about 30-120 minutes later, it will return to the blood pressure before Progressive Muscle Relaxation. By doing PMR regularly and continuously, the blood pressure decrease will take longer, and the blood vessels will be more elastic. The mechanism for reducing blood pressure after doing Progressive Muscle Relaxation is because Progressive Muscle Relaxation can relax the blood vessels. So that by dilating blood vessels, blood pressure will decrease.

In line with the theory presented by Widianti & Proverawati (2010) and Victor et al. (2013), relaxation, such as PMR, can encourage the heart to work optimally. Exercise can increase energy requirements by cells, tissues, and organs of the body, which can increase venous return, thereby causing stroke volume, which will directly increase cardiac output, causing arterial blood pressure to increase. After arterial blood pressure increases first, the impact of this phase can reduce respiratory and skeletal muscle activity which causes sympathetic nerve activity to decrease, after it will cause decreased heart rate and stroke volume, arteriolar venous vasodilatation, and this can lead to a decrease in cardiac output and total peripheral resistance, resulting in a decrease in blood pressure.

Martha (2012) stated that the longer the PMR exercise, the more it can relax the blood vessels because Progressive Muscle Relaxation can reduce peripheral resistance. In addition, the heart muscle in people who exercise regularly is powerful, so the heart muscle in these individuals' contracts less than the heart muscle in individuals who rarely exercise because exercise can cause a decrease in heart rate, and exercise will also reduce cardiac output, which can ultimately lower blood pressure.

Based on the elaboration and results of previous research and previous research, the researchers concluded that the blood pressure of hypertension sufferers at the Suko Awin Jaya Health Center after the implementation of Progressive Muscle Relaxation had decreased significantly. Based on the findings obtained by researchers, it is hoped that the Suko Awin Jaya Health Center can make PMR alternative management for patients with hypertension and create Standard Operating Procedures (SPO) that officers can use to treat hypertension experienced by the community. It is also hoped that the people at the Suko Awin Jaya Health Center can also carry out Progressive Muscle Relaxation regularly following the recommendations of local officials so that blood pressure decreases permanently.

The Effect of Progressive Muscle Relaxation on the Anxiety of HypertensionPatients in the Work Area of the Suko Awin Jaya Health Center.

Anxiety is a vague and pervasive worry associated with feelings of uncertainty and helplessness. This emotional state has no specific object. Anxiety is experienced subjectively and communicated interpersonally. Anxiety is different from fear, which is an intellectual judgment of danger. (Stuart in Wuryaningsih et al., 2020).

The anxiety experienced by hypertensive patients is related to the condition of blood pressure which must be continuously controlled, including diet, activity, and rest. Patients also think a lot about things beyond their control. Baharudin (2019) states that someone who experiences anxiety will experience physical imbalances such as changes in vital signs, eating disturbances, sleep patterns, and muscle tension. Anxiety causes several sensations and physical changes, including increased blood flow to the muscles, muscle tension, quickening or slowing of breathing, increased heart rate, and decreased digestive function. Giving PMR therapy can help muscle tension as one of the symptoms of physical imbalance in hypertensive patients.

In line with the previous opinion, Yuliarti (2017) explained that Progressive Muscle Relaxation combines controlled breathing exercises with muscle contractions and relaxation. In addition, PMR has also been shown to be more effective than other exercise therapies in reducing anxiety levels. This opinion is reinforced by a study by Nurpriyati (2021), which concluded that PMR is 3x more effective in reducing anxiety levels in patients with high blood pressure. Based on the explanation and results from a study conducted in previous research, the

researchers concluded that the anxiety level of hypertension sufferers at the Suko Awin Jaya Health Center after implementing Progressive Muscle Relaxation had decreased significantly. Progressive Muscle Relaxation.

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of research conducted at the Suko Awin Jaya Health Center, it was found that progressive muscle relaxation affected the blood pressure of hypertensive patients. It is hoped that the community can apply the interventions that health workers have taught so that blood pressure and anxiety levels are always controlled.

REFFERENCES

Agustina, S. (2014) "Factors Associated with Hypertension in Elderly Over the Age of 65 Years." Journal of Community Health 2(4):180–86.

Ministry of Health, Republic of Indonesia. (2016). Hypertension in Indonesian Elderly. Jakarta: RI Ministry of Health.

Hardani, H., Sukmana, DJ, Andriani, H., &. Fardani. (2020). Book of Qualitative & Quantitative Research Methods. Jakarta: TEAM Publishing.

Kostova, H. (2015). The Danger of Hypertension. Jakarta: Nuha Medika.

Kusumastuty, I. 2016. "Intake of Protein and Potassium Associated with Lowering Blood Pressure in Outpatient Hypertension Patients." Indonesian Journal of Human Nutrition 3(1):19–28.

Martha, K. (2012). Smart Guide to Overcoming Hypertension. yogyakarta: Araska Publishing.

Medika, B, T. (2014). Peace With Hypertension. Jakarta: Earth Literacy. Nurain, D. . 2014. "Differences in Slow Deep Breathing and Diaphragmatic Breathing in Reducing Blood Pressure in Hypertension Patients at Ambarawa Hospital." Journal of Nursing and Midwifery (JIKK). 6(2):1–10.

padila. (2013). Internal Medicine Nursing Care. Yogyakarta: Nuha Medika.

Perki. (2015). Guidelines for the Management of Hypertension in Cardiovascular Disease.

1st Edition. RI Ministry of Health.

Penddi, k. (2019) Complementary Therapy: Concepts and Applications in Nursing Yogyakarta: Araska Publishing.

Rudianto, F. (2014). Conquering Hypertension And Diabetes Mellitus. Yogyakarta:sakkasukma.

Semple, P. (2015). Health Smart Book - High Blood Pressure. Semarang: ArcanPublishing.

Siyoto, S., &. Sodiq. (2015). Basic Research Methodology. yogyakarta: Media Literacy.

Sugiyono. 2015. Educational Research Methods Quantitative, Qualitative, and R&D Approaches. Bandung: Alphabet

Suherman. (2020). Essential Hypertension: Neurobehavior and Genetic Aspects.

Jakarta: Gramedia Pustaka Utama

Triyanto, E. (2014). Integrated Nursing Services for Hypertension Sufferers. Yogyakarta:Graha Ilmu.

World Health Organization. (2020). Global Hypertension Report. Germany: WHO. INT

Wuryaningsih, Emi, W. et al. (2020). Textbook of Mental Health Nursing. Yogyakarta: Salemba Medika.