IMPLEMENTATION OF ACUPRESSURE THERAPY AT GB 20, LI 11, LI 4, PC 6, LV 3 POINTS TO LOWER BLOOD PRESSURE IN HYPERTENSIVE PATIENTS

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Abstract. The incidence of hypertension is getting higher with age, obesity, psychological stress, smoking, heredity and eating habits, and unhealthy consumption patterns. Hypertensive patients sometimes do not show signs and symptoms (the silent killer). The main signs and symptoms of people with hypertension include headaches, fatigue, nausea and vomiting, soreness in the nape, blurred vision, palpitations, and ringing in the ears. Hypertension can be treated with non-pharmacological therapy to lower blood pressure without drug dependence and side effects such as acupressure. Acupressure therapy provides massage and stimulation at specific points or points on the body. Acupressure is done by pressing or giving vibrations for 15-20 seconds at each place or point. The study aimed to determine the effect of acupressure therapy on GB 20, LI 11, LI 4, PC 6, and LV 3 points on reducing blood pressure in hypertensive patients. The research method used a quasi-experimental type with a design of one group pretest and posttest without control with samples in the treatment group were 18 respondents with acupressure therapy actions at GB 20, LI 11, LI 4, PC 6, LV 3 points carried out 3 times a week with a duration of 10-30 minutes. The results showed systolic experienced a significant decrease in the second and third actions (p: 0.000) in 18 respondents, while diastolic did not experience a significant decrease in the second and third actions (p = 0.137). This study concludes that acupressure therapy at GB 20, LI 11, LI 4, PC 6, and LV 3 points affects lowering blood pressure in hypertensive clients, especially systolic.

Keywords: Acupressure, Hypertension, Blood pressure

INTRODUCTION

Hypertension is defined as persistent blood pressure with systolic pressure of 140mmHg and diastolic blood pressure>90mmHg (Mertha *et al.*, 2020). Psychological stress, unhealthy eating habits or consumption pattern, increasing age and obesity, as well as smoking then heredity is supporting factors of hypertension. Someone suffering from hypertension sometimes does not show signs and symptoms or is often called (a silent killer), the main signs and symptoms complained by people with hypertension include headaches, fatigue, nausea and vomiting, soreness in the nape, blurred vision, chest palpitations, and ringing in the ears (Nur Dina Kamelia, Anita Dwi Ariyani and Rudiyanto, 2021).

It the estimated that in 2025 there will be 1.5 billion people affected by hypertension, and every year 9.4 million people die from hypertension and its complications, then base on data from the World Health Organization in 2015 shows around 1.13 billion people in the world have hypertension, meaning that 1 in 3 people in the world are diagnosed with hypertension. The number of people with hypertension continues to increase every year (World Health Organization, 2019). Based on the results of the 2018 basic health research shows that the prevalence of the population in Central Java Province with hypertension is 35.57%. The prevalence of hypertension in women (40.17%) is higher than in men (34.83%). The prevalence in urban areas is slightly higher (38.11%) compared to rural areas (37.01%) (Dinas Kesehatan Provinsi Jawa Tengah, 2019). According to the Health Profile of Central Java Province in 2019, the prevalence of people with hypertension in Pati Regency is (25%). The estimated number of people with hypertension aged ≥ 15 years is 624,353, based on gender, with details in the male group 395,787, higher than in the female group 228,566 (Pati, 2020).

Types of hypertension treatment are divided into two, namely non-pharmacological therapy and pharmacological therapy. The treatment using drugs or compounds that in their action can affect the client's blood pressure is called pharmacological therapy, grouping pharmacological therapies used to control blood pressure are Angiotensin Converting Enzyme (ACE) inhibitors which are useful for inhibiting the formation of angiotensin II substances,

Angiotensin Receptor Blockers (ARBs) function to dilate blood vessels by inhibiting angiotensin from attaching to blood vessel muscles, which serves to reduce the pumping power of the heart, calcium channel blockers function to inhibit heart contractions, direct renin inhibitors function to prevent the activity of the renin enzyme that triggers high blood pressure, diuretics that function to remove body fluids so that the volume of fluid in the body decreases which results in the pumping power of the heart becomes light, vasodilators that work directly on blood vessels by relaxing vascular smooth muscles (Wijaya NAS, 2013). Nonpharmacological therapies include modifying lifestyle such as reducing stress, reducing obesity, and reducing salt intake. Nonpharmacological therapy is used to lower blood pressure without drug dependence and side effects like acupressure. Acupressure is one of the non-pharmacological therapies that can be done to lower blood pressure. Acupressure therapy is a form of physiotherapy by providing massage and stimulation at certain points or points on the body. Acupressure is done by pressing or giving vibrations for 15-20 seconds at each place or point. This technique is very efficient and relatively safe because it does not hurt the skin of the body The benefits of acupressure include aiding in stress management, calming nervous tension, promoting relaxation of the body, improving blood circulation so that the oxygenation process to tissues is smoother, and is very beneficial in reducing insomnia. This therapy technique uses fingers that are performed at points associated with hypertension (Kamelia *et al.*, 2021).

Based on the research of Arfian Sukmadi, La Ode Alifariki, Ida Mardhiah Arfini Kasman A, Heriviyatno J Siagian with the title Acupressure Therapy Lowers Blood Pressure of Hypertensive Clients, the results showed a different value of systolic blood mean of 13.98 with a p-value of 0.000 meaning that there is an effect of giving acupressure therapy on systolic blood pressure of hypertensive clients and the mean difference value of diastolic blood pressure of 4.78 with a p-value of 0.000 this means that there is an effect of acupressure therapy on diastolic blood pressure of hypertensive clients (Sukmadi *et al.*, 2021). Based on research by Sulton Wariin, Andi Eka Pranata with the title of the journal The Effect of Taxi Acupressure Point Suppression (Ki3), Sanyinjiao (Sp6) on Blood Pressure Reduction in the Elderly with Hypertension in PSTW Jember Blood Pressure in the Elderly shows hypertension before taxi acupressure point suppression (Ki3), sanyinjiao (Sp6) on lowering blood pressure in the elderly with hypertension in PSTW Jember has average systole of 155 mmHg and an average diastole of 93.5 mmHg and blood pressure in the elderly with hypertension after acupressure point suppression has average systole of 142 mmHg and an average diastole of 85 mmHg and there was a difference in blood pressure before and after acupressure, as seen from the decrease in blood pressure in the elderly with hypertension. This shows the action of suppressing acupressure points Ki3 and Sp 6 is effective for lowering blood pressure in the elderly with hypertension (Wariin and Pranata, 2018). Based on research by Nur Dina Kamelia, Anita Dwi Ariyani, and Rudiyanto (2021) with the title of the journal Acupressure Therapy on Blood Pressure of Hypertensive Patients, the results of a study of ten literature showed that blood pressure before acupressure therapy was given in the category of hypertension level 1 (70%) as well as hypertension level 2 (30%). The results of a study of 10 kinds of literature found changes in average blood pressure in hypertensive clients After acupressure therapy. The average change in blood pressure in systole is 4-41 mmHg and in diastole is 4-16 mmHg, meaning that there is an effect of giving acupressure therapy to lower blood pressure (Kamelia *et al.*, 2021). Based on the above phenomenon, the researcher is interested in the entitled "Implementation of Acupressure Therapy at GB 20, LI 11, LI 4, PC 6, LV 3 Points to Lower Blood Pressure in Hypertensive Clients".

METHODS

The type of quasi-experimental research with the design of one group pretest and posttest

without control with sampling technique is purposive sampling by taking samples in the treatment group are 18 respondents who fit the inclusion and exclusion criteria. The study population was hypertensive patients in Tegalombo Village, Dukuh Seti District, Pati Regency. According to Sugiono, providing a general reference for determining sample size for simple experimental research with strict experimental control is 10-20 respondents (Sugiyono, 2015). Statistical analysis used SPSS 25.0 software, and the type of hypothesis test that might be used in this study is the Paired T-Test if the data is normally distributed, but if the data is not normally distributed you can use the Wilcoxon (Dahlan, 2011).

The respondents in this study were people suffering from hypertension. The subjects of this case study were 18 respondents (clients), with inclusion criteria, namely: a) Clients are willing to be respondents, b) Clients can communicate well, c) Stage 1-4 hypertensive clients with systolic blood pressure ≥140 mmHg and diastolic blood pressure ≥90mmHg, d) Clients aged 45-55 years, and Exclusion criteria are clients who have severe complications. Hypertension can cause complications including stroke heart failure, coronary heart disease, kidney disease, hypertensive retinopathy and blindness, hypertensive crisis, and hypertensive encephalopathy (Wijaya NAS, 2013).

There are two variables in this study, namely independent variables and dependent variables. The independent variable in this case study is the application of acupressure. Acupressure is therapy by providing stimulation or stimulation of acupoints with compression techniques or mechanical techniques. The dependent variable in this study was a decrease in blood pressure in hypertensive clients. Hypertension is a condition in which a person experiences an increase in blood pressure above normal which results in increased morbidity and mortality.

Blood pressure of 140/90mmHg is based on two phases in each heartbeat, namely systolic phase 140 indicates the phase of blood that is being pumped by the heart, and diastolic phase 90 indicates the phase of blood returning to the heart (Endang Triyanto, 2014). The data collection techniques used are interviews, observation, and documentation. Ethics that can be done to support the smooth running of this case study is the approval sheet (Informed consent), the confidentiality of identity (Anonymity), and confidentiality of information (Confidentiality).

RESULTS AND DISCUSSION

Result

The results of the research were conducted on January 17, 2022, January 19, 2022, and January 21, 2022, in Tegalombo Village, Dukuh Seti District, Pati Regency.

Table 1. Frequency Distribution of Respondents by Gender (n=18)

Gender	Frequency	Percentage (%)
Male	6	33,3
Female	12	66,7
Total	18	100.0

Based on Table 1. Showing the sex characteristics of respondents consisting of 12 people (66.7%) are women and 6 people (33.3%) are men

Table 2. Frequency Distribution of Respondents by Age (n=18)

	Mean	Median	Minimum	Maximum
Age (years)	50.78	51.00	45	55

Based on Table 2. Showing the age characteristics of respondents are the average age of 51 years, the youngest age of 45 years, and the oldest age of 55 years.

Table 3. Frequency Distribution of Respondents based on systolic blood pressure (n=18)

	Mean	Median	Minimum	Maximum
Pre-test 1	153,89	150	140	160
Post-test 1	152,78	153	140	160
Pre-test 2	151,11	151,11	140	160
Post-test 2	142,22	142,22	130	150

Based on Table 3. Showed that the average blood pressure (systolic) of 18 respondents was getting better, namely the third post-test average of 126.67, minimum 110 mmHg, and maximum 140 mmHg.

Table 4. Frequency Distribution of Respondents based on diastolic blood pressure (n=18)

	Mean	Median	Minimum	Maximum
Pre-test 1	90	-	90	90
Post-test 1	90	-	90	90
Pre-test 2	86,11	86,11	80	90
Post-test 2	85,56	85,56	80	90
Pre-test 3	81,11	81,11	80	90
Post-test 3	81,67	81,67	80	90

Based on Table 4. Showed that the average blood pressure (diastolic) of 18 respondents was getting better, namely the third post-test average of 81.67, minimum of 80 mmHg, and a maximum of 90 mmHg.

Table 5. Wilcoxon Signed Ranks Blood Pressure Test Results (n=18)

	Systolic	Diastolic
Pretes Posttes 1	0,157	1,000
Pretes Posttes 2	0,000	0,317
Pretes Posttes 3	0,000	0,317

Based on Table 5. Showed a significant effect on systolic blood pressure after the second and third acupressure and no significant effect on diastolic blood pressure after the second and third acupressure

Discussion

Hypertension is a condition in which a person's blood pressure rises above normal, resulting in increased morbidity and mortality. Their blood pressure of 140/90 mmHg is based on the two phases of each heartbeat. Systolic 140 indicates the phase of blood being pumped out by the heart and diastole 90 indicates the phase of blood returning to the heart. Intraarterial hypertension occurs for several reasons. As the heart pumps more and more fluid flows every second, and the large arteries become inflexible and stiff, unable to expand as the heart pumps blood through them. Blood at each heartbeat is forced to pass through narrower vessels than normal and causes blood pressure to rise. This is what happens in old age, where the walls of the arteries have thickened and stiffened due to arteriosclerosis. Blood pressure can also increase when vasoconstriction occurs, which is if small arteries (arterioles) temporarily shrink due to the stimulation of nerve hormones in the blood. Increased fluid in circulation causes blood pressure to rise. This happens if kidney function is abnormal so that it is unable to remove salt and water from the body. The blood volume in the body increases then blood pressure will also increase (Endang Triyanto, 2014).

The results of the research after acupressure therapy at the points GB 20, LI 11, LI 4, PC

6, LV 3 as much as 3 times a week average systolic blood pressure was 126.67 and diastolic was 81.67. Hypertensive disease one the causes are stress, stress can trigger blood pressure because many thoughts are caused by mental tension such as pressure, moodiness, anger, resentment, fear, and guilt, can stimulate the kidney child glands to release adrenaline hormones and spur the heart to beat faster and stronger, so that blood pressure increases (Sya'diyah, 2018). A person's genetic makeup determines how predisposed to hypertension. People who have a family history of hypertension have a greater risk of hypertension than those who do not have a history of hypertension in their family (Nuryati, 2019).

Acupressure is therapy by providing stimulation or stimulation of acupoints with compression techniques or mechanical techniques. Emphasis is done as a substitute for needle pricking done in acupuncture to smooth the flow of vital energy (qi) throughout the body (Amigo et al., 2017). Acupressure utilizes stimulation at the client's body, ears, or scalp acupuncture points to influence the body's bioenergy flow called qi. Qi flows in a meridian (channel), so the core of acupressure treatment is the restoration of the body's balance system (homeostasis) which is manifested by the presence of a regular and harmonious flow of qi in the meridian so that the client is healthy again. With the strengthening of qi, the body's resistance becomes good, the cause of the disease can be eliminated and the strength of ci can restore the yin state so that the disease can be cured and people become healthy again. Acupressure therapy is a development of acupuncture, so in principle, it is the same, what distinguishes it from acupuncture therapy is acupressure therapy using fingers and acupuncture techniques using needles. By using fingers, the action given to clients minimizes the risk or side effects of acupressure (Setyowati, 2018).

Acupressure therapy at GB 20, LI 11, LI 4, PC 6, and LV 3 points is given 3 times a week with a duration of 10-30 minutes. Emphasis can be done with the thumb, index, and middle fingers held together in a fist. Emphasis is carried out in the complaint area to detect the type of meridian or organ complaint in addition to smoothing the flow of energy and blood. Pressing is carried out for 4 minutes. This acupressure therapy can reduce the effect of lowering blood pressure because acupressure therapy improves blood flow and makes the body relax so that blood pressure can decrease or return to normal relaxation (Setyowati, 2018). The purpose of this acupressure therapy is to provide a sense of calm and comfort, stimulate the release of serotonin, and reduce tension and fatigue (Kamelia *et al.*, 2021). There are also benefits of acupressure to increase body stamina, improve blood circulation, reduce pain, reduce stress or calm the mind, and lower blood pressure (Fengee, 2012). Several points in acupressure therapy are lung (Lu=lung), colon (Li=large intestine), stomach (St=stomach), spleen (Sp=spleen), Heart (Ht=heart), small intestine (SI=small intestine), bladder (BI=bladder), kidney (Ki=kidney), pericardium (Pc=pericardium), San cio (TE=triple energizer), gallbladder (GB=gallbladder), liver(LR=lever) (Setyowati et al., 2018).

After action for 7 days, 3 times acupressure therapy at the points GB 20, LI 11, LI 4, PC 6, LV 3 with a duration of 10-30 minutes systolic blood pressure results are ($p = 0.000$) and Diastolic ($p = 0.317$). Acupressure therapy at GB 20, LI 11, LI 4, PC 6, and LV 3 points is done in a non-pharmacological way to lower blood pressure. Acupressure therapy at GB 20, LI 11, LI 4, PC 6, and LV 3 points is carried out on hypertensive clients by providing acupressure therapy as a non-pharmacological therapy to lower blood pressure in hypertensive clients. Before being given acupressure therapy at the point GB 20, LI 11, LI 4, PC 6, LV 3 the client's blood pressure is high or has hypertension, after being given acupressure therapy at the point GB 20, LI 11, LI 4, PC 6, LV 3 for one week 3 times the client's blood pressure decreases and becomes normal. Acupressure therapy at the point of GB 20, LI 11, LI 4, PC 6, and LV 3 is done 3 times in one week because in 7 days it can reduce blood pressure due to vasodilation of blood vessels so that blood flow is smooth, and reduce heart performance so that heart frequency decreases. This is by the research of Arfian Sukmadi, La Ode Alifariki, Ida Mardhiah

Arfini Kasman A, Heriviyatno J Siagian with the title Acupressure Therapy Lowers Blood Pressure of Hypertensive Clients The results showed a difference in the mean value of systolic blood of 13.98 with a p-value of 0.000. This means that there is an effect of giving acupressure therapy on systolic blood pressure of hypertensive clients and a different value of diastolic blood pressure mean of 4.78 with a p-value of 0.000, meaning that there is an effect of giving acupressure therapy on diastolic blood pressure of hypertensive clients (Sukmadi *et al.*, 2021).

Based on research by Sulton Wariin, and Andi Eka Pranata with the title The Effect of Taixi Acupressure Point Suppression (Ki3), Sanyinjiao (Sp6) on Blood Pressure Reduction in the Elderly with hypertension. Blood pressure in the elderly showed hypertension before the, as seen from the decrease in blood pressure in the elderly with hypertension. This shows the action of suppressing Ki3 and Sp 6 is effective for lowering blood pressure in the elderly with hypertension (Wariin and Pranata, 2018). Based on research by Nur Dina Kamelia, Anita Dwi Ariyani, Rudiyanto (2021). with the title Acupressure Therapy in Blood Pressure of Hypertensive Patients, the results of a study of ten kinds of literature showed that blood pressure before acupressure therapy was given in the category of hypertension level 1 (70%) as well as hypertension level 2 (30%). The results of a study of 10 pieces of literature found changes in average blood pressure in clients with hypertension after acupressure therapy. The average change in blood pressure in systole is 4-41 mmHg and in diastole is 4-16 mmHg, meaning that there is an effect of acupressure therapy to lower blood pressure. Hypertension is influenced by several predisposing factors, including gender and age. Other causes of hypertension are high salt consumption, smoking, exercise, and sleep disorders. With some of the causes of hypertension above, a solution is needed. One solution that can be given is acupressure therapy.

Research by Nur Dina Kamelia, Anita Dwi Ariyani, Rudiyanto (2021) with the title Acupressure Therapy on Blood Pressure of Hypertensive Patients believes that stimulus administration at the Lr 3 (Taichong) action of suppressing acupressure points taixi (Ki3), sanyinjiao (Sp6) against lowering blood pressure in the elderly with hypertension in PSTW Jember had an average systole of 155 mmHg and an average diastole of 93.5 mmHg and blood pressure in the elderly with hypertension after acupressure had an average systole of 142 mmHg and an average diastole of 85 mmHg and there is a difference in blood pressure before and after acupressure point located at the proximal meeting of metatarsal bones I and II metatarsal, Sp 6 (Sanyinjao) located 4 fingers above the malleolus interns, Ki3 (Taixi) located between the malleolus interns and the Achilles tendon as high as the highest part of the internal malleolus, and Li4 (Hegu) located on the central side of the radial metacarpal bone II in the dorsum menu, stimulating these points will stimulate sensory nerves around acupressure points towards the spinal cord. The third pituitary complex is activated to release endorphins which can provide a sense of calm and comfort. This relaxation condition will affect changes in blood pressure. Another effect of acupressure treatment is that it stimulates the release of serotonin, which functions as a neurotransmitter that carries excitatory signals to the brainstem that can activate the pineal gland to produce the hormone melatonin. Melatonin can also lower blood pressure. The duration of the most used acupressure therapy in ten articles was 10 minutes to 30 minutes and was done 3 times a week (Nur Dina Kamelia, Anita Dwi Ariyani and Rudiyanto, 2021).

CONCLUSION

The results of the research for one week showed a decrease in the average systolic and diastolic blood pressure in respondents. The results showed p = 0.000 in systolic and p = 0.317 in diastolic. Acupressure can be used to lower blood pressure in hypertensive clients, because acupressure therapy provides stimulation at certain points to stimulate sensory nerves around the acupressure point towards the spinal cord, and the third pituitary complex of the hypothalamus is activated to release endorphins that can provide a sense of comfort and calm so that this relaxation condition will affect changes with decrease in blood pressure.

ACKNOWLEDGEMENT

The researcher expressed his deepest gratitude to the Institute of Health Technology Cendekia Utama Kudus for the opportunity given so that the research with the title implementation of acupressure therapy at gb 20, li 11, li 4, pc 6, lv 3 points to lower blood pressure in hypertensive patients can be done well.

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