



Application of Swedish Massage for Blood Pressure in Elderly Hypertension at Karanganyar Regional Hospital

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ABSTRACT

The aging process in the elderly affects physical changes with the emergence of degenerative diseases, namely hypertension, often found in old-age complaints. Swedish massage is a complementary therapy that can be used to reduce blood pressure in elderly hypertensives. Objectives in this study is to find out the application of Swedish massage to blood pressure in elderly hypertensives in the Mawar Room 2 Karanganyar Hospital. The research design is observational methods with research instruments using blood pressure observation sheets, SOP for Swedish Massage Techniques and digital sphygmomanometers. Respondents taken in this study were 2 elderly hypertensive patients in the Mawar Room 2 Karanganyar Hospital. The results showed that after doing Swedish Massage 3 times a day in the morning, afternoon and evening with a duration of 60 minutes, blood pressure in both respondents decreased. The results of Mrs. S's blood pressure before Swedish massage therapy was 191/118 mmHg after Swedish massage therapy 3 times a day became 163/99 mmHg and for Mrs. K before Swedish massage therapy was 188/99 mmHg after Swedish massage therapy 3 times a day to 149/90 mmHg. Swedish massage is proven to help lower blood pressure in hypertensive elderly and can be recommended as complementary therapy management in improving blood pressure in hypertensive elderly in hospitals and the community.

Keywords: Swedish Massage, Blood Pressure, Hypertension

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1. INTRODUCTION

Blood pressure is the pressure exerted by blood on the walls of the arteries in units (mmHg) and is recorded in two numbers, namely systolic and diastolic

pressure. Systolic blood pressure is the blood pressure when the heart pumps blood into the arteries (when the heart beats). Meanwhile, diastolic blood pressure is blood pressure when the heart

expands and sucks blood (blood vessels) when it is empty (Intarti & Khoriah, 2018: 145). Hypertension or what is known as the silent killer is one of the diseases with the highest mortality rate in the world where there is an increase in both systolic and diastolic pressure reaching more than 140 mmHg and 90 mmHg (WHO, 2019: 14).

Hypertension is a chronic disease that is one of the main causes of death in the world. According to WHO in 2023 an estimated 1.28 billion people aged 46-65 years worldwide suffer from hypertension, and most of them live in low and middle income countries. Based on the prevalence of hypertension in elderly Indonesians according to the Ministry of Health Republic of Indonesia (2018) it shows that the age of 46-65 years (45.9%) suffers from hypertension. Based on the results of the 2018 Basic Health Research (RISKESDAS) shows that the prevalence of hypertension has increased from 25.8% to 34.1%. Using estimates of the number of hypertension problems in Indonesia, there are 63,309,620 people, with 427,218 deaths due to hypertension.

According to the Central Java Provincial Health Office in 2022, despite the increasing prevalence of hypertension in Indonesia, challenges remain in managing and treating the condition. This is based on the Indonesian Basic Health

Research survey results, which found that the number of people with hypertension has increased. The prevalence of hypertension in Central Java is 9.4% in 2022. Hypertension still occupies the largest proportion of all reported non-communicable diseases, namely 68.6%. The measurement results show that the prevalence of Central Java province with hypertension in women is greater (40.17%) than men (34.83%).

Based on the Health Profile of Karanganyar Regency in 2022, there are 10 most common diseases and hypertension is ranked 2nd most with a total of 31,513 cases, ranking 2nd most after Acute Nasopharyngitis (Common Cold). Hypertension cases in Karanganyar Hospital in 4 internal inpatient wards, namely Mawar 1, Mawar 2, Lotus 3, and Cempaka 3 wards, in 2022 there will be 6,672 cases.

Causes of hypertension include heredity, age, salt/sodium, cholesterol, obesity, stress, smoking, caffeine, alcohol and lack of exercise. However, this condition is related to a bad lifestyle, one of which is an unhealthy diet including consuming excessive salt or salty foods. This is because salty foods contain high sodium so they will bind a lot of fluids that flow with the blood to the heart. This condition will burden the work of the heart

so that it can increase blood pressure which will form Angiotensin II which is formed through Angiotensin I converting enzyme (ACE) which forms Angiotensin I in the lungs. Through Angiotensin II, there are 2 actions that can increase blood pressure, namely increased thirst and secretion of Antidiuretic (ADH) which can cause an increase in blood volume and blood pressure also increases through withdrawal of intracellular fluid volume to the extracellular part, and through the adrenal cortex which stimulates secretion aldosterone and increase the volume of extracellular fluid can cause an increase in blood volume and pressure. This can also result in the accumulation of collagen in the muscle layer of the artery walls which causes thickening of the artery walls so that the blood vessels become narrow and stiff. As a result, if not controlled, hypertension can lead to complications such as stroke, atherosclerosis, aneurysms, metabolic syndrome and kidney disease (Anindya, et al. 2023).

The management of hypertension is pharmacological and non-pharmacological, at the age of 46-65 years will experience side effects if given pharmacological treatment of hypertension. Pharmacological treatment of hypertension in the elderly is slightly different from the young due to

physiological changes due to aging. Physiological changes that occur in old age cause drug concentrations to be greater, drug elimination times to be longer, decreased function and the response of organs, the presence of various other co-morbidities (co-morbidities), the presence of drugs for co-morbidities that are temporarily consumed must be taken into account in the administration of antihypertensive drugs. Changes in biological systems in old age will affect drug molecule interactions, ultimately affecting pharmacotherapy's clinical benefits and safety. The frequency of side effects in the elderly is higher when compared to the general population. In addition, elderly patients are one of the patients who are vulnerable to drug interactions (Suharjono, 2019).

Management of hypertension does not always use drugs. Several studies have shown that non-pharmacological approaches can be used in hypertensive patients, which include: weight loss techniques, alcohol, sodium and tobacco restrictions, sports or exercises that have the effect of increasing high-density lipoprotein, relaxed which is a mandatory intervention that must be performed in every therapy. hypertension and massage (Tri, W. 2020). If the blood pressure is too high, the relaxed blood vessels will cause

vasodilation of the blood vessels which will cause the blood pressure to drop and return to normal. It can be done in several ways to relax the body, such as progressive muscle relaxation, classical music therapy, deep breathing techniques, and Swedish massage therapy (massage therapy). Massage therapy can facilitate the communication process between the nurse and the client because there is a touch process, a nonverbal communication that has a therapeutic effect. The feeling of relaxation that appears after massage therapy can be caused by a decrease in the hormone cortisol (Nur, R. 2021).

Swedish massage therapy is a complementary therapy that is believed to be able to provide a relaxation response, besides that it is also able to reduce blood pressure (Adawiyah, et al. 2020). Swedish Massage is carried out in a lying position and the massage starts from the feet, thighs, waist, back, hands, shoulders, neck, head and face (Intari et al. 2018). Swedish Massage Technique is a massage technique originating from Sweden by manipulating soft tissues throughout the body through 5 movements including petrissage, effleurage, friction, vibration and tapotement. Each movement in Swedish Massage provides the benefit of Eflurage which is useful for relaxing the nervous system, Friction is useful for restoring the

position of muscle fibers, improving blood and lymph circulation, Petrisage is useful for making muscles more relaxed, Vibration is useful for breaking down cells that are experiencing agglomeration, Tapotement is useful to relieve muscle pain (Fahriyah et al. 2021).

Based on the results of observations made in July 2023 in the Mawar Room 2 of the Karanganyar Hospital, there were 3 most diseases in the last 2 months. The first most common disease was hypertension with a total of 279 cases, the second most common disease after hypertension was diabetes mellitus with 198 cases, and the third was stroke with 120 cases. In the Mawar 2 room at Karanganyar Hospital there are 32 beds. Based on the results of the interview on July 10, 2023 in the Mawar Room 2 of the Karanganyar Hospital, there were 9 hypertension patients. Out of 9 hypertension respondents, they said that they experienced complaints of dizziness, difficulty sleeping and did not routinely take hypertension medication. They also said they had never been given Swedish massage therapy. After being interviewed, 4 hypertensive patients said they only managed high blood pressure if they felt dizzy, they bought medicine at the pharmacy and consumed cucumber juice, while the other 5 hypertensive patients said they did nothing to lower their blood

pressure because they thought this was a hereditary disease that simply could not be overcome. healed.

Based on the existing phenomenon and based on the data obtained, the researcher is interested in carrying out an application with the title "Application of Swedish Massage on Blood Pressure in Elderly Hypertension in the Mawar 2 Room Karanganyar Hospital"

2. METHODS

The research design used is the Observational Method with a case study approach, the observational method is the process of seeing, observing, examining and recording behavior systematically for a particular purpose. Researchers will observe and examine the Swedish massage process performed on hypertensive elderly, and whether it can achieve the goal of lowering blood pressure.

This study took 2 patient subjects because this study only observed based on

the results of existing studies. The subjects taken were 2 hypertensive elderly with high blood pressure in the Mawar Room 2 of Karanganyar Hospital. Inclusion criteria: Cooperative patients, Patients who are willing to be respondents for 1 day are given 3 times Swedish massage, Patients who have systolic and diastolic blood pressure reaches more than 140 mmHg and 90 mmHg, Patients taking hypertension medication.

3. RESULTS

The results of applying Swedish massage therapy to blood pressure in elderly hypertensives in the Mawar Room 2 of Karanganyar Hospital were carried out on 10 & 11 July 2023. The application involved 2 respondents with the same medical diagnosis, namely Mrs.S and Mrs.K. The results of applying Swedish massage therapy in table 1.

Table 1. Results of blood pressure in before Swedish massage therapy

No	Respondent	Hours of application of Swedish massage	Blood pressure before Swedish massage	Hypertensi on
1.	Mrs.S	08.00-09.00 AM	191/118 mmHg	Hypertensi on degree 3
2.	Mrs.K	08.00-09.00 AM	188/99 mmHg	Hypertensi on degree 3

Based on table 1, the results of blood pressure before Swedish massage therapy were carried out in Mrs.S had grade 3

hypertension and Mrs. K also had grade 3 hypertension.

Table 2. Results of blood pressure after Swedish massage therapy

No	Respondent	Hours of application of swedish massage	Blood pressure before swedish massage	Hypertension
1.	Mrs.S	16.00-17.00 PM	163/99 mmHg	Hypertension degree 2
2.	Mrs.K	16.00-17.00 PM	149/90 mmHg	Hypertension degree 1

Based on table 2, the results of blood pressure after Swedish massage therapy were carried out 3 times a day in Mrs. S

decreased to degree 2 hypertension and in Mrs. K also decreased to degree 1 hypertension.

Table 3. Results of blood pressure before and after Swedish massage therapy

No	Respondent	Hours of application of Swedish massage	Blood pressure before swedish massage	Hours of application of Swedish massage	Blood pressure before Swedish massage
1.	Mrs.S	08.00-09.00 AM	191/118 mmHg	16.00-17.00 PM	163/99 mmHg
2.	Mrs.K	08.00-09.00 AM	188/99 mmHg	16.00-17.00 PM	149/90 mmHg

Based on table 3, the results of Mrs. S's blood pressure before Swedish massage therapy were 191/118 mmHg after Swedish massage therapy 3 times a day to 163/99

mmHg and for Mrs. K before Swedish massage therapy was 188/99 mmHg after done Swedish massage therapy 3 times a day to 149/90 mmHg.

Table 4. The results of reducing blood pressure before and after Swedish massage therapy

No	Respondent	Blood pressure before Swedish massage	Blood pressure before Swedish massage	Decreasing Systole	Decreasing Diastolic
1.	Mrs.S	191/118 mmHg	163/99 mmHg	28 mmHg	19 mmHg
2.	Mrs.K	188/99 mmHg	149/90 mmHg	39 mmHg	9 mmHg

Based on table 4, the results obtained were that Swedish massage therapy was performed on 2 respondents, namely Mrs.S and Mrs.K 3 times a day, and there was a decrease in both respondents' blood pressure, both systolic and diastolic. Mrs. S

experienced a decrease in systolic blood pressure of 28 mmHg and 19 mmHg diastolic and Mrs. K experienced a decrease in systolic blood pressure of 39 mmHg and 9 mmHg diastolic.

4. DISCUSSIONS

The results of blood pressure in both respondents before Swedish massage therapy was carried out

Based on table 1, before Swedish massage therapy was carried out, Mrs. S experienced degree 3 hypertension and Mrs. K also experienced degree 3 hypertension. This was due to the age factor according to the author's assessment that Mrs. S was 51 years old and Mrs. K was 59 years. According to Arum's research (2019: 56) states that women will experience an increased risk of high blood pressure after menopause, namely age over 45 years because women who have not reached menopause are protected by the hormone estrogen which plays a role in increasing levels of High Density Lipoprotein (HDL). Low HDL and high LDL levels will affect the occurrence of atherosclerosis and result in high blood pressure. Hypertension is also a degenerative disease that can be passed on to family members.

In line with Adam's research (2019: 20) the elderly are more at risk of experiencing hypertension. This is because old age is more susceptible to decreased structure and function of organs, one of which is the cardiovascular system. When humans enter old age, the elasticity of blood vessels will decrease and peripheral

vascular resistance will increase which will cause an increase in blood pressure (Nugroho, 2016: 20). Elderly with decreased body function, resulting in decreased physical activity due to weakness and an unhealthy lifestyle, such as sedentary can increase the risk of having uncontrolled hypertension. If this chronic disease is not properly controlled, then the elderly at the end of their lives are at risk of increasing morbidity, further cognitive decline, loss of self-autonomy, and even death (Benetos et al., 2019: 45).

Apart from being caused by the age factor, it is also caused by the food factor, Mrs.S and Mrs.K have a habit of eating foods that are salty/contain a lot of sodium. According to the Indonesian Ministry of Health (2018) states that excessive salt consumption will increase the amount of sodium in cells and disrupt fluid balance. The entry of fluid into the cells will dry out the diameter of the arteries so that the heart pumps blood more forcefully, resulting in increased blood pressure. Increased blood pressure has an effect on increasing the heart's work, ultimately increasing the risk of having a heart attack and stroke. In addition, high salt consumption can interfere with kidney function. Salt must be excreted from the body by the kidneys, but because sodium binds a lot of water, the higher the salt

increases blood volume. The blood volume is higher while the width of the blood vessels remains the same, so the flow becomes swift, which means that blood pressure increases. So it will increase the risk of hypertension. Strengthened by the results of research by Sarumaha & Diana (2018: 20) explaining that there are unhealthy lifestyle factors such as obesity, lack of exercise, smoking, stress, alcohol consumption and excessive salt consumption. These factors cause humans to be susceptible to hypertension.

According to the authors, this condition is related to a bad lifestyle, one of which is an unhealthy diet including consuming excessive salt or salty foods. In addition, the authors also obtained the results of the study that the two respondents did not routinely check their blood pressure at the nearest health facility. Both respondents only seek treatment when they feel symptoms of dizziness. The lack of knowledge of respondents to routinely control their health can be a result of the increasingly severe condition of hypertension suffered by respondents. If this is left unchecked it will cause some serious complications such as stroke, kidney failure, heart disease etc.

The results of blood pressure in the two respondents after Swedish massage therapy

Based on table 2, after Swedish massage therapy was carried out 3 times a day, Mrs. S experienced a decrease to degree 2 hypertension and Mrs. K also experienced a decrease to degree 1 hypertension. According to Badaru's research (2020:23) in his book regarding basic massage techniques, Swedish massage has the effect of relaxing muscles and improving blood circulation so that it can lower blood pressure. This research is supported by the research of Anindya, et al. (2023:23) which states that when viewed physiologically, massage evokes a relaxation response because it affects the parasympathetic nervous system. This marks a decrease in the hormone cortisol which contributes to stress and affects blood circulation. This drop can lower blood pressure and reduce heart rhythm. Various studies have been conducted to test the effect of Swedish massage on lowering blood pressure and obtained a decrease in blood pressure. This is the researchers' focus that aspects influence the effects of Swedish massage therapy, including the patient's biological and psychological responses.

According to Mahmood et al (2019: 45) state that the management of

hypertension does not always use drugs. Several studies have shown that non-pharmacological therapy can effectively reduce the blood pressure of hypertensive clients, such as lifestyle modifications, avoiding stress, increasing physical activity and exercise, and reducing alcohol consumption. Strengthened by research (Adawiyah, 2017; Ratih, 2018; Ritanti, 2020: 45) which revealed that in addition to lifestyle modifications, avoiding stress, increasing physical activity and exercise, and reducing alcohol consumption, massage therapy can be a non-pharmacological action because several studies shown to be useful in chronic diseases, including hypertension.

Swedish massage therapy is one of the massage therapies that can give a relaxing sensation to the body. Swedish massage is a therapy that can reduce systolic blood pressure (SBP) and diastolic blood pressure (DBP). Swedish massage therapy is the manipulation of body tissues by massaging using five basic movements, including effleurage, petrissage, friction, tapotement and vibration (Sritoomma et al., 2014 p. 45). This massage technique shows benefits in reducing blood pressure in the elderly (Adawiyah & Fithriana, 2020; Ritanti & Sari, 2019, p. 45).

In the study Elon et al (2021: 48) explained that the stimulus given to the

network was a non-pharmacological intervention carried out by means of massage or massage where respondents with hypertension were given Swedish massage therapy. So that the elderly will feel relaxed in their body. This relaxing sensation helps lower blood pressure. The purpose of nursing care with massage therapy is to reduce blood pressure and provide comfort during the care process. According to the Comfort Theory developed by Kolcaba, it states that comfort interventions are designed to meet unmet comfort needs, for example in terms of physical, social, psychospiritual, and environmental needs.

The decrease in blood pressure in both respondents before and after Swedish massage therapy

Based on table 3 the results of Mrs. S's blood pressure before Swedish massage therapy was 191/118 mmHg after Swedish massage therapy 3 times a day became 163/99 mmHg and for Mrs. K before Swedish massage therapy was 188/99 mmHg after massage therapy swede 3 times a day to 149/90 mmHg. This can be influenced by several things, especially related to the condition of patients who have hypertension. The main problem found in both respondents was headaches.

The decrease in blood pressure in both respondents occurred after the application of Swedish massage therapy by the author. However, seen from the two respondents and based on the study conducted by the author, respondent 1 or Mrs.S has a comorbid disease, namely Diabetes Mellitus and takes diabetes medication regularly, while respondent 2 or Mrs.K does not have a comorbid disease. According to the author, of the two respondents who often experienced complaints of headaches, namely Mrs. S and from the blood pressure results it was also seen that Mrs. S's blood pressure was higher. According to Triyanto (2018) this is because diabetes mellitus will increase the strength of the arteries so that it can reduce the ability of blood vessels to stretch and can increase blood pressure. In addition, diabetes mellitus causes changes in the way the body produces and handles insulin so that it can directly cause an increase in blood pressure. An increase in triglycerides also triggers plaque formation, which can clog blood vessels.

According to Suhardjono (2019), excess blood sugar can have many consequences, including damage to slowly sensitive blood vessels called capillaries. Damage to certain capillaries in the kidneys can impair the ability of blood pressure to regulate the kidneys and this causes high

blood pressure. Hypertension also affects insulin secretion in the pancreas, raising blood sugar levels. With this ability, the combination of diabetes or hypertension pressure is a system that can exacerbate the condition itself which causes these two diseases to tend to get worse over time.

According to the author, the difference in the decrease in Mrs. S's and Mrs. K's blood pressure depends on the factors that affect changes in blood pressure in each individual. Because there are various factors that can affect changes in blood pressure, including age, physical and psychological stress, unhealthy eating patterns, lack of physical activity, and comorbidities. In accordance with the results of the author's study that Mrs.S had a comorbid disease, namely Diabetes Mellitus, her blood pressure after being given Swedish massage therapy was still higher for Mrs.S than Mrs.K who did not have comorbidities.

The comparison of decreased blood pressure before and after Swedish massage therapy

Based on table 4, the results showed that Swedish massage therapy was performed on 2 respondents, namely Mrs.S and Mrs.K for 3 times a day, there was a decrease in blood pressure both systolic and diastolic in both respondents. Mrs. S

experienced a decrease in systolic blood pressure of 28 mmHg and 19 mmHg diastolic and Mrs. K experienced a decrease in systolic blood pressure of 39 mmHg and 9 mmHg diastolic. So the final result of a decrease in blood pressure between the 2 respondents who experienced a decrease more was Mrs.K

This is because according to Ali, Nathan et al (2020) the classification of hypertension based on its causes is classified into 2, namely primary hypertension or often called essential and secondary hypertension. Primary hypertension is most commonly caused by poor lifestyle habits or family history (heredity). While secondary hypertension results from diseases or other medical conditions that are known to suffer the patient for a long time. According to the results of the study by the author, Mrs.S had a comorbid disease, namely Diabetes Mellitus and was treated for Anemia, so Mrs.S experienced secondary hypertension. Meanwhile, Mrs. K did not have co-morbidities or was not being treated for a disease or other medical condition, so Mrs. K had primary hypertension.

According to Susilawati (2022) in this condition the end result of a decrease in blood pressure between the 2 respondents who experienced a greater

decrease was Mrs. K. This is because Mrs. K has primary hypertension whose treatment can be directly directed towards hypertension so that she can focus on lowering her blood pressure. Whereas Mrs.S experienced secondary hypertension that for the treatment of secondary hypertension must first treat underlying conditions such as conditions suffered by Mrs.S with Diabetes Mellitus and Anemia. After the condition suffered is treated, the blood pressure will drop/return to normal.

During the writer's application of Swedish massage therapy, the two respondents looked very relaxed and enjoyed every massage performed by the author. Respondents also said that their dizziness had decreased after being given Swedish massage therapy by the author. This is because the movements contained in Swedish Massage can affect the parasympathetic nervous system, making the body more relaxed. This is because the body will release adrenaline when it relaxes which will work to reduce blood pressure (Dhanitri, et al. 2020).

5. CONCLUSIONS

Based on the results of the application of Swedish massage therapy which was carried out on 2 patients with a medical diagnosis of hypertension related to blood pressure in the Mawar Room 2 of

Karanganyar Hospital, the authors can conclude the results:

Blood pressure results before Swedish massage therapy was carried out in Mrs.S who had degree 3 hypertension and Mrs.K also had degree 3 hypertension. The results of blood pressure after Swedish massage therapy 3 times a day on Mrs.S decreased to degree 2 hypertension and on Mrs.K also decreased to degree 1 hypertension.

The results of Mrs. S's blood pressure before Swedish massage therapy was 191/118 mmHg after Swedish massage therapy 3 times a day became 163/99 mmHg and for Mrs. K before Swedish massage therapy was 188/99 mmHg after Swedish massage therapy 3 times a day to 149/90 mmHg.

The results show that Swedish massage therapy was carried out to 2 respondents, namely Mrs.S and Mrs.K for 3 times a day, there was a decrease in blood pressure, both systolic and diastolic in both respondents. Mrs. S experienced a decrease in systolic blood pressure of 28 mmHg and 19 mmHg diastolic and Mrs. K experienced a decrease in systolic blood pressure of 39 mmHg and 9 mmHg diastolic. So the final result of a decrease in blood pressure between the 2 respondents who experienced a decrease more was Mrs.K

AUTHOR CONTRIBUTIONS

Substantial contributions to conception, data collection, and analysis: Oky Intan Ayu Nuraini, Eska Dwi Prajayanti and Sutarwi. Writing and manuscript revisions: Oky Intan Ayu Nuraini.

CONFLICT OF INTEREST

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

DATA AVAILABILITY STATEMENT

The data are not publicly available due to privacy or ethical restrictions.

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