



THE EFFECT OF SWEDISH FOOT MASSAGE THERAPY ON BLOOD PRESSURE REDUCTION IN HYPERTENSION PATIENTS

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ABSTRACT

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Introduction: Hypertension is a condition in which there is a continuous increase in systolic and diastolic blood pressure 140/90 mmHg. Hypertension is a major risk factor for cardiovascular disease such as myocardial infarction, stroke and complications. Hypertension can be treated pharmacologically and non-pharmacologically. Non-pharmacological treatment for hypertensive patients is Swedish foot massage therapy.

Method : This study used a quasi-experimental design with a two group pre-post design method. The sample consisted of 20 respondents obtained from simple random sampling. The sample was divided into two groups (10 respondents as the treatment group and 10 respondents as the control group). The treatment group was given an intervention during 3 days in a row for 15 minutes. Data analysis of this study used the T-dependent, T-independent, Wilcoxon and Mann Whitney tests.

Result: The results of data analysis using the Mann Whitney test showed that the significant difference between the intervention group and the control group was $p < 0.002$. Therefore, it can be concluded that Swedish foot massage therapy has an effect on reducing blood pressure in hypertensive patients. Future studies should conduct research on Swedish foot massage using a larger sample and a longer time

Conclusion: This study used a quasi-experimental design with a two group pre-post design method. The sample consisted of 20 respondents obtained from simple random sampling. The sample was divided into two groups (10 respondents as the treatment group and 10 respondents as the control group). The treatment group was given an intervention during 3 days in a row for 15 minutes. Data analysis of this study used the T-dependent, T-independent, Wilcoxon and Mann Whitney tests.

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1. Introduction

Hypertension is a systolic blood pressure of more than 140 mmHg and a diastolic pressure of more than 90 mmHg and can be measured at the clinic, at home or in health facilities and can be done repeatedly to ensure blood pressure (ISH, 2020 and Seiko Yamakoshi, 2020). Hypertension or high blood pressure is often referred to as the silent kill or the hidden killer because the symptoms that appear are often without complaints (Kemenkes RI, 2018). Primary hypertension is the biggest cause in the age group of 45-65 years and over 65 years (Kemenkes RI, 2017).

The Institute for Health Metrics and Evaluation (IHME) stated that of the 53.3 million deaths in the world, 33.1% of deaths were caused by cardiovascular disease (Kemenkes 2017). Until now,

hypertension is still a big problem, based on data from the WHO (World Health Organization), this disease attacks 22% of the world's population. Meanwhile, in Southeast Asia, the incidence of hypertension reaches 36%. According to the American Heart Association (AHA), the American population aged over 20 years has hypertension with a prevalence of 74.5 events, but almost 90-95% of which has no known cause (Kemenkes RI, 2017). The number of people with hypertension continues to increase every year, it is estimated that in 2025 there will be 1.5 billion people affected by hypertension, and it is estimated that every year 10.44 million people die from hypertension and its complications (P2PTM Ministry of Health RI 2019).

Reasons for hypertension sufferers do not take medication, among others, because hypertension sufferers feel healthy (59.8%), irregular visits to health facilities (31.3%), taking traditional medicine (14.5%), using other therapies (12.5%), forgetting to take medicine (11.5%), unable to buy medicine (8.1%), drug side effects (4.5%), and hypertension medicine is not available at health facilities (2%).

Hypertension or high blood pressure can be influenced by several factors, namely age, lifestyle (smoking and alcohol), obesity, heredity, stress, gender, and lack of physical activity (Kemenkes RI, 2018). Blood pressure depends on cardiac output and peripheral vascular resistance. When there is an increase in the volume of blood in the blood vessels, the cardiac output will increase and more blood will be pumped against the artery walls so that blood pressure will rise. When cardiac output increases, there has been an increase in heart rate. An increase in blood pressure will have an impact on cardiovascular disease, stroke and complications.

Management of hypertension is divided into two, namely pharmacological and non-pharmacological. Non-pharmacological treatment can be done by maintaining ideal body weight, low salt diet, smoking cessation, alcohol restriction, regular exercise or exercise, relaxation and coping with stress (Adawiyah, 2017). One of the relaxation techniques that can be done, namely massage, massage has proven to have many beneficial effects for various conditions such as pain, hypertension, aging problems such as dementia and Parkinson's (Field, 2016). One of the massages that can be done is Swedish Foot Massage, massage in Arabic means pressing gently. Swedish Foot Massage is a massage technique by pressing on the nerve points on the feet to give a relaxing effect because blood flow becomes smooth (Udani, 2016).

Swedish massage can increase parasympathetic nerve activity and decrease sympathetic nerve activity, this results in a decrease in heart rate, cardiac output and blood pressure (Supa'at, 2013). Complementary medicine is needed that is safe, practical, and economical to complement conventional medicine. In this case the researchers intervened to the target patient through Swedish foot massage therapy activities which aimed to determine the relationship between Swedish foot massage therapy and blood pressure reduction.

2. Methods

This study uses a quasi-experimental research design with a two group pre-post test design (Nursalam, 2015). Quasi experimental designs are often used in the field, because field researchers are difficult to randomize (Notoatmodjo, 2012). The pretest was carried out in the control group and the experimental group, then the Swedish foot massage intervention was given to the experimental group and no Swedish foot massage intervention was given to the control group. Posttest was conducted in both groups when the intervention was completed. The estimated time at each meeting to provide Swedish foot massage intervention is a maximum of 20 minutes for pretest, intervention and posttest for each respondent, so the researchers conducted pretest and posttest measurements in the control group with a distance of 20 minutes for each respondent..

3. Results and Analysis

This demographic characteristics data describes the characteristics of respondents including: hypertension sufferers (age, gender, smoking history). Characteristics of respondents based on the age of patients with hypertension.



3.1 Characteristics of respondents by age

TABLE 1
Characteristics of Study Respondents

Umur	Kelompok intervensi		Kelompok control	
	Frekuensi	Prosentase	Frekuensi	Prosentase
39-45 tahun	2	20.0	3	30.0
46-50 tahun	3	30.0	1	10.0
51-55 tahun	3	30.0	5	50.0
56-60 tahun	2	20.0	1	10.0
Total	10	100.0	10	100.0

Based on table 1 above, it is known that the age of respondents in the intervention group tends to be average between the intervention and control groups, the highest age in the intervention group is at the age of 51-55 years 3 people (30%) and in the control group also at the age of 51-55 years 5 people (50%).

3.2 Characteristics of respondents by gender

TABLE 2
Article Research Results

Jenis kelamin	Kelompok intervensi		Kelompok control	
	Frekuensi	Prosentase	Frekuensi	Prosentase
Laki-Laki	2	20.0	2	20.0
Perempuan	8	80.0	8	80.0
Total	10	100.0	10	100.0

Table 2 shows that the intervention and control groups had the same ratio between male and female respondents, namely 2 and 8 (20% and 80%).

3.3 Characteristics of respondents based on smoking history

TABLE 3
Article Research Results

Riwayat Merokok	Kelompok intervensi		Kelompok control	
	Frekuensi	Prosentase	Frekuensi	Prosentase
Riwayat merokok	2	20.0	2	20.0
Tidak riwayat merokok	8	80.0	8	80.0
Total	10	100.0	10	100.0

Table 3 shows that the intervention and control groups had the same smoking history, namely 2 people or 20% had a history of smoking for each group and the remaining 8 people or 80% had no smoking history.

3.4 Blood Pressure Pretest and Posttest Swedish Foot Massage Therapy in the Intervention Group

TABLE 4
Medication Adherence Motivation

Variabel	Mean	Median	Min-Max	IK (95%)	p value
Pretest TD	152	150	140 – 170	145,42 – 158,57	0,004
Posttest TD	138	140	130 – 150	133,47 – 142,52	0,004

Based on table 4, it can be seen that the average value of blood pressure has decreased. The average decrease in systolic blood pressure from 152 mmHg to 138 mmHg, in diastolic blood pressure there was an average decrease from 97 mmHg to 87 mmHg. The mean systolic and diastolic values in the intervention group decreased by an average of 10 mmHg. The results of the Wilcoxon test on blood pressure have a p value <0.05

3.5 Pretest and Posttest Blood Pressure in the Control Group

TABLE 5
Medication Adherence Motivation

Variabel	Median	Min-Max	IK (95%)	p value
Pretest	150	140-170	145,27 – 158,42	0,567
Posttest	150	140-170	146,72 - 158,97	0,567

Based on table 5, it can be seen that the average value of blood pressure remains and even has increased. The average increase in systolic blood pressure from 152 mmHg to 153 mmHg, in diastolic blood pressure there was an average increase from 94 mmHg to 95 mmHg. The mean systolic and diastolic values in the control group did not change. The results of the Wilcoxon test have a p value > 0.05, which is 0.564. This shows that there is no significant difference between the pretest and posttest in the control group. Wilcoxon test was performed on blood pressure because the results of the normality test using Shapiro-wilk were.

3.6 Mann Whitney Test Results Systolic and Diastolic Blood Pressure in the Intervention Group and Control Group

TABLE 6
Medication Adherence Motivation

Variabel	Tekanan Darah	Mean	Median	Min - Max	IK (95%)	P value
Kelompok Intervensi dan Kontrol	Sistole	145,50	142,50	130 - 170	140,52 – 150,46	0,01
	Diastole	91	90	80 – 100	87,09 – 94,47	0,02

Based on table 6, it can be seen that the results of the Mann Whitney test on systolic blood pressure between the intervention group and the control group have a p value <0.05.

4. Discussion

Based on the results of the unpaired difference test using the Mann Whitney test on blood pressure in the intervention group and the control group, it was found that the systolic blood pressure between the intervention group and the control group had a p value.

Massage is a manipulation therapy with gentle massage performed on the skin or tissue with the aim of providing physiological effects, especially on the muscular, vascular, and nervous systems of the body



(Kozier & Erb, 2009 in Septiari & Restuning, 2017). According to Supa'at et al (2013) Swedish foot massage therapy can provide a sense of relaxation and lower blood pressure through touch, massage. According to Trionggo and Ghofar (2013) doing massage in the foot area will provide bioelectric stimulation to the body's organs so that it can cause a sense of comfort and relaxation because the blood flow in the body becomes smooth. When the body feels relaxed, the sympathetic nervous system is calm and the parasympathetic nervous system plays a more active role (Ramadhani and Putra, 2008). The state of stress is regulated by the Hypothalamic Pituitary Adrenocortical (HPA) through the nervous system pathway by secreting the hormones cortisol and endorphins (Lawton, 2003 in Wahyuni, 2014). Cortisol is the main hormone in stress, touch stimulation in massage can reduce the production of the hormone cortisol by affecting the HPA in secreting corticotropin. Corticotropin can reduce cortisol by providing a sense of relaxation (Remington, 2002 in Wahyuni, 2014). Techniques in massage can stimulate nerves on the surface of the skin which are then channeled to the brain in the hypothalamus, so that patients can perceive touch as a relaxation response and can cause a decrease in blood pressure (Septiari & Restuning, 2017). Relaxed conditions will cause the heart rate to decrease.

5. Conclusion and Suggestions

Based on the results of research and discussion on the effect of therapy given Swedish Foot Massage intervention in lowering blood pressure in hypertensive patients, it can be concluded as follows.

- a. In the intervention group there were significant differences in blood pressure before and after Swedish foot massage therapy was given.
- b. In the control group there was no significant difference in blood pressure.
- c. There is an effect on blood pressure given Swedish foot massage therapy. Thus it can be concluded that there is an effect of Swedish foot massage therapy in reducing blood pressure in hypertensive patients in the working area of Poskesdes Grati with p value 0.01 in systole and 0.02 in diastole in the Mann Whitney test.

For Health Facilities, it is hoped that the results of this study can be used as additional non-pharmacological therapy in health facilities that Swedish foot massage therapy can reduce blood pressure.

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