



The Effect Of Warm Foot Sound On Blood Pressure In Pregnant Women With Essential Hypertension

Lince Palanta¹, ^KSri Dinengsih², Jenny Anna Siauta³

^{1,2,3} Midwifery, National University

Corresponding Author's Email (^K): dini_alba@yahoo.com

ABSTRACT

Preliminary surveys at Public Health Center Watubangga for the last 3 months, namely in October-December 2020, consists of 7 working areas, 4 villages and 3 urban villages. The number of pregnant women was 157, and those experiencing essential hypertension were 15 pregnant women. This study was to determine the effect of foot soaking in warm water on blood pressure in pregnant women with essential hypertension at the Watubangga Public Health Center. This study was a quasi-experimental study design one group Pre and Post test. The study population was all normal deliveries of 138 people. The sampling technique used was total sampling with a total sample of 15 respondents of pregnant women who experienced essential hypertension. The results of statistical tests with Wilcoxon show that there is an effect of warm foot soaking on blood pressure in pregnant women with essential hypertension at the Puskesmas Watubangga with a p-value in systole (0.001), while diastole has a p-value (0.001). The conclusion is that there is Soaking feet with warm water affecting blood pressure in pregnant women with essential hypertension at the Watubangga Health Center. It is hoped that This program can be applied to clinical midwifery practice, especially for pregnant women who have hypertension and can be a reference for further research.

Keywords: Warm Water Foot Soak, Blood Pressure, Pregnant Women, Essential hypertension

Article history :

Received: 19 Maret 2021

Received in revised form: 29 Maret 2021

Accepted: 19 April 2021

Available online: 1 Juni 2021



Licensed by [Creative Commons Attribution-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-sa/4.0/).

INTRODUCTION

Pregnancy is a wonderful gift for women. It is estimated that 15% of pregnancies and deliveries are complicated. Some of these complications can be life-threatening. Broadly speaking, it can be grouped into direct and indirect causes. The direct causes of maternal death are factors related to complications of pregnancy, childbirth and the puerperium¹

World Health Organization(WHO) reports that 14% of global maternal deaths are caused by hypertensive disorders of pregnancy. Hypertension in pregnancy in Indonesia is the second highest cause of maternal death after bleeding. The proportion of hypertension in pregnancy in Indonesia is increasing, almost 30% of maternal deaths in Indonesia are caused by hypertension in pregnancy².

Hypertension in pregnancy is the presence of a blood pressure of 140/90 mmHg or more after 20 weeks of gestation in a previously normotensive woman, or an increase in systolic pressure of 30 mmHg and or a diastolic pressure of 15 mmHg above normal values.³

According to 2015 WHO data, it shows that around 1.13 billion people in the world suffer from hypertension, meaning that 1 in 3 people in the world is diagnosed with hypertension, only 36.8% of them take medication and as many as 9.4 million people die from hypertension. There are 45% of deaths due to heart disease and 51% of deaths due to stroke caused by hypertension⁴.

The prevalence of hypertension in Indonesia obtained through a doctor's diagnosis in the population aged 18 years and over is 8.4%. Based on the proportion of history of taking medication and reasons for not taking medication in the hypertensive population based on a doctor's diagnosis or taking medication in 2018 it was 54.4% taking medication regularly, 32.3% not taking medication regularly and 13.3% not taking antihypertensive medication.⁵

It is necessary to make an effort to prevent the occurrence of morbidity and mortality in hypertension by keeping blood pressure below 140/90 mmHg. Interventions that can be carried out are divided into 2 types, namely pharmacological and non-pharmacological interventions. One of the limitations of pharmacological therapy is that it is only given in cases of severe hypertension, whereas in cases of mild hypertension, no therapy is given. In addition, antihypertensive drug therapy has dangerous side effects because these drugs can cross the placental barrier so that it interferes with blood circulation in the fetus. This of course can cause fetal emergency.⁶

Therefore, intervention can be given through non-pharmacological therapy. Non-pharmacological interventions have minimal or no side effects, but take longer. The benefits of this therapy are increasing the efficacy of the drug, as well as restoring the state of the blood vessels and heart. One therapy that can be used as a management of blood pressure in pregnant women with hypertension is by soaking the feet in warm water⁷.

Soaking feet with warm water is a natural therapy that aims to increase blood circulation, reduce edema, increase muscle relaxation, nourish the heart, relax muscles, relieve stress, increase capillary permeability, so it is very useful for blood pressure reduction therapy in pregnant women. Scientifically soaking feet, especially with warm water, has many benefits for the body, especially in improving blood circulation. Many methods can be applied by soaking the feet in warm water with a temperature of 37-39 because there can be a change of heat and cold which will stabilize the work of the heart and blood flow ⁽⁸⁾

Based on data, at the Watubangga Health Center for the last 3 months, namely in October-December 2020, which consisted of 7 work areas, 4 villages and 3 urban villages. The number of pregnant women is 157, and 15 pregnant women have essential hypertension.

Based on the problems above, the researchers are interested in conducting a study with the title "The Effect of Warm Water Foot Soak on Blood Pressure in Pregnant Women with Essential Hypertension at the Watubangga Health Center".

METHOD

This type of research is quantitative research, the research design used is quasi-experimental or quasi-experimental with the design used is One Group Pretest-Posttest Design without a control group but the first observation (pretest) has been carried out so that researchers may be able to test the changes that occur after there is an experiment (posttest)². The population in this study is all pregnant women with a history of essential hypertension at the Watubangga Health Center in the last 3 months, namely October-December, a total of 15 pregnant women. The sampling technique used a total sampling of 15 pregnant women, the subject first formerly measurement is carried out blood pressure, then after that, soak the feet in warm water for 15 minutes before going to bed for 3. On the 4th day in the morning after soaking the feet in warm water for 15 minutes before going to bed for 3 days, blood pressure measurements were taken again to determine the blood pressure of pregnant women with hypertension after soaking the feet in warm water. The type of data used in this research is primary data. Blood pressure measurement using a digital sphygmomanometer which is done door to door. The data collection tool used is an instrument sheet which includes the identity of the respondent which consists of the measurement date, respondent number, address, age, gestational age, parity to what level, and blood pressure measurements before and after soaking the feet in warm water.

Univariate analysis was used to explain the average value of blood pressure before and after being given a foot soak in warm water. Bivariate analysis was conducted to determine the effect between the

independent variable and the dependent variable, namely the effect of foot soak in warm water on blood pressure in pregnant women with essential hypertension. The analytical test used was the Wilcoxon test.

RESULTS

From Table I the value of the average value of systolic before being given the intervention of soaking the feet with warm water is 160 mmHg, while after soaking the feet with warm water for 3 days the average value of systolic drops to 129 mmHg. Meanwhile, the average diastolic value before the foot soak intervention was given with warm water was 94 mmHg, and after soaking the feet in warm water for 3 days the average diastolic value dropped to 84 mmHg.

Table 1
Average Systolic and Diastolic Blood Pressure Before and After Warm Water Therapy on the feet of pregnant women with hypertension

	mean	SD	Min	Max
Pre-Test	160	10,211		177
-Systole	94	3.251	90	99
-Diastole				
Post Test	129	11.758	110	143
-Systole	82	7.249	67	90
-Diastole				

Table 2
Test Results of the Effect of Warm Water Foot Soak on Blood Pressure in Pregnant Women with Essential Hypertension

Blood pressure	Score				P-Value
	Pre-Test		Post-test		
	mean	SD	mean	SD	
systole	160	10,211	129	11.758	0.001
diastole	94	3.251	82	7.249	0.001

DISCUSSION

The average value of blood pressure in pregnant women with essential hypertension before and after being given a foot soak in warm water

Based on the results of the research described in the research results section, it can be concluded that the blood pressure value after being given a warm water foot soak for 15 minutes in a period of 3 days, is lower than the blood pressure value before being given a warm water foot soak intervention.

Controlling maternal blood pressure with antihypertensives is important to reduce the incidence of cerebral hemorrhage and prevent stroke and cerebrovascular complications. Drugs have a risk of

entering the fetal blood circulation which may be teratogenic. Pregnancy needs to weigh the benefits and risks to produce safe and rational therapy. Non-pharmacological hypertension treatment is natural treatment including herbal therapy, nutritional therapy, aromatherapy, reflexology massage and foot bath therapy with water.⁹

Warm water foot soak therapy is believed to be able to lower blood pressure. Physiologically the body's response to heat is to cause dilation of blood vessels, reduce blood viscosity, reduce muscle tension, increase tissue metabolism and increase capillary permeability so that it will reduce blood pressure. This warm water foot soak will affect the small arteries which will experience dilation (widen) systolic and diastolic blood pressure will decrease. This warm response is used for therapeutic purposes in various conditions and conditions in the body¹⁰

Influence Soak feet in warm water on blood pressure in pregnant women with essential hypertension

Hypertension during pregnancy can cause maternal morbidity (including eclamptic seizures, cerebral hemorrhage, acute renal failure, and blood clots in the blood vessels), as well as fetal morbidity (including delayed fetal growth in utero, fetal death in utero), and premature birth). In addition, pregnancy hypertension is still a major source of maternal death. Therefore, hypertension during pregnancy should not just spread. A treatment needs to be given, one of which is a non-pharmacological method of soaking the feet in warm water.¹¹

Scientifically, warm water has a physiological impact on the body so that this foot soaking technique with warm water can be used as a therapy that can restore stiff joints and heal strokes if done through awareness and discipline. Warm water makes blood circulation smooth¹²

The effect of heat will be able to cause liquids, solids and gases to expand in all directions and can increase chemical reactions in tissues, resulting in metabolism along with increased exchange of body chemicals with body fluids. The biological effect of heat can cause dilation of blood vessels resulting in increased blood circulation. Physiologically, the body's response to heat causes dilation of blood vessels, decreases blood viscosity, decreases muscle tension, increases tissue metabolism and increases capillary permeability. This response from heat is used for therapeutic purposes in various conditions in the body¹³

The working principle of warm water immersion therapy is by conduction where heat transfer from warm water into the body will cause dilation of blood vessels and decrease muscle tension, so that it can improve blood circulation which will affect arterial pressure by baroreceptors in the cortic sinus and aortic arch which will convey impulses. carried by nerve fibers that carry signals from all parts of

the body to inform the brain about blood pressure, blood volume and the special needs of all organs to the sympathetic nerve center to the medulla so that it will stimulate systolic pressure, namely the stretch of the ventricular muscle to contract immediately. To open the aortic valve, the pressure in the ventricles must exceed the aortic valve pressure¹⁴

The condition in which ventricular contractions begin to occur so that with the dilation of blood vessels, blood flow will be smooth so that it will be easy to push blood into the heart thereby lowering its systolic pressure. At diastolic pressure, the state of isovolemic ventricular relaxation when the ventricles relax, the pressure in the ventricles drops dramatically, blood flow is smooth with the dilation of blood vessels so that it will reduce blood pressure.¹

CONCLUSIONS AND SUGGESTION

Based on the results of the research on the effect of foot bath in warm water on blood pressure in pregnant women with essential hypertension at the Watubangga Health Center, it can be concluded that the average value of systolic blood pressure before being given warm water foot soak therapy is 160 mmHg and after the intervention is 129 mmHg. While the average value of diastolic blood pressure before being given warm water foot bath therapy was 94 mmHg and after the intervention was 82 mmHg. The p value of 0.001 in systolic and diastolic <0.05, it was concluded that there was an effect of foot bath in warm water on blood pressure in pregnant women with essential hypertension at the Watubangga Health Center.

It is hoped that future researchers can carry out further research on foot soaking in warm water and develop other variables that have not been studied in this study

REFERENCES

1. Ummiyati M. Pengaruh Pemberian Terapi Air Hangat Dan Relaksasi Nafas Dalam Terhadap Penurunan Tekanan Darah Pada Ibu Hamil Hipertensi. *J Kebidanan*. 2020;9(1):24-29. doi:10.35890/jkdh.v9i1.138
2. Nurfatimah N, Mohamad MS, Entoh C, Ramadhan K. Gambaran Faktor Risiko Kejadian Hipertensi dalam Kehamilan pada Ibu Hamil Trimester III. *Poltekita J Ilmu Kesehatan*. 2020;14(1):68-75. doi:10.33860/jik.v14i1.77
3. Anggraeni Y, Rahayu DE, Asiyah S. Efektivitas Metode Inhalasi Aromaterapi (Campuran Minyak Esensial Lavender Dan Neroli) Untuk Menurunkan Hipertensi Dalam Kehamilan. 2017;2(2):132-137.
4. Departemen Kesehatan Republik Indonesia. Profil Kesehatan Republik Indonesia. Depkes RI.

5. Depkes. Departemen Kesehatan Republik Indonesia. Profil Kesehatan Republik Indonesia. Jakarta: Depkes RI : 2018. www.depkes.go.id/article/view/. Diakses pada 14 Mei 2019. 2018. 2018;3:97-102.
6. Putri LPPD, Sudhana IW. Gambaran Prevalensi dan Faktor Risiko Hipertensi Pada Penduduk Usia Produktif di Desa Rendang, Kecamatan Rendang Kabupaten Karangasem Periode Oktober Tahun 2013. *E-Jurnal Med Udayana*. 2015;4(1).
7. Ambarsari EM, Ermiami E, Hidayati NO. Pengaruh Rendam Kaki Air Hangat dan Musik Klasik Terhadap Tekanan Darah Ibu Hamil dengan Hipertensi. *J Nurs Care*. Published online 2020.
8. Diana Christine Lalendah. 2018. Preeklamsia Berat dan Preeklampsia : Tatalaksana Anestesia Peroperatif. DEEPUBLISH: Yogyakarta. *No Title*.
9. Solechah N, Massie G, Rottie J. Pengaruh Terapi Rendam Kaki Dengan Air Hangat Terhadap Penurunan Tekanan Darah Pada Pasien Dengan Hipertensi Di Puskesmas Bahu Manado. *J Keperawatan UNSRAT*. 2017;5(1):105810.
10. Santoso DA. Pengaruh Terapi Rendam Kaki Air Hangat. 2015;5:69-75.
11. Dewi EU. Pengaruh Terapi Rendam Kaki Air Hangat Terhadap Perubahan Tekanan Darah Pada Penderita Hipertensi Surabaya. *J Keperawatan*. 2016;5(2).
12. Dewi SU, Rahmawati PA. Penerapan Terapi Rendam Kaki Menggunakan Air Hangat Dalam Menurunkan Tekanan Darah. *JIKO (Jurnal Ilm Keperawatan Orthop*. 2019;3(2):74-80. doi:10.46749/jiko.v3i2.33
13. 2) 1,2. 2021;2(2).
14. Asan Y., Sambriang M. & GAM. Perbedaan Tekanan Darah Sebelum Dan Sesudah Terapi Rendam Kaki Air Hangat Pada Lansia Di Upt Panti Sosial Penyantunan Lanjut Usia Budi Agung Kupang. *Perbedaan Tekanan Darah Sebelum Dan Sesudah Ter Rendam Kaki Air Hangat Pada Lansia Di Upt Panti Sos Penyantunan Lanjut Usia Budi Agung Kupang*. 2016;11(2):37-42.