



The Effect of Foot Bath Therapy With Warm Water and Salt on Blood Pressure in Hypertension Patients

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ARTICLE INFO

ABSTRACT

Article history

Received : 23 September 2023

Revised : 13 December 2023

Accepted : 29 December 2023

Keywords

Blood Pressure

Foot

Warm

Hypertension or high blood pressure is a condition of abnormally increased blood pressure in the arteries (Harnani & Axmalia, 2021). Treatment of hypertension could be performed using non-pharmacological measures or naturally at a relatively low cost. Non-pharmacological treatments are therapeutic such as acupressure therapy, herbal therapy, aromatherapy, and hydrotherapy of warm water foot soaks (Santoso, et al 2021). Foot bath therapy with warm water is a type of hydrotherapy to improve blood circulation, relax tight muscles, and provides warmth to the body. It is beneficial for blood pressure reduction therapy in hypertension sufferers. The research adopted a quantitative study using a pre-experimental design with a one-group pre-post-test design. The sampling used a non-probability sampling technique with 39 respondents. Data analysis operated the Wilcoxon test with a p-value = 0.000 (p-value <0.05). Thus, H_0 was rejected, and H_a was accepted. The results revealed that the blood pressure in the pre-foot bath therapy of warm water and salt presented averaged 140 – 159 mmHg of 21 respondents (53.8%). The post-action of foot bath therapy of warm water with salt presented an average blood pressure of 140-159 mmHg of 21 respondents (53.8%). The Wilcoxon test concluded that foot bath therapy with warm water and salt had affected blood pressure in hypertensive patients in Joho Village of Mojolaban District.

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INTRODUCTION

Hypertension, or high blood pressure, is associated with various cardiovascular diseases (CVD), including angina, myocardial infarction, heart failure, stroke, peripheral artery disease, and abdominal aortic aneurysm. (Chen & Chauhan, 2019). Hypertension often called high blood disease is a condition of change in which abnormal blood pressure increases in the arteries. (Harnani, 2017) Hypertension is categorized as a silent killer

because it is a disease that occurs suddenly or without symptoms and can attack anyone, both young and old. (Wulandari et al., 2016)

According to 2019 World Health Organization (WHO) data, it is currently estimated that global hypertension sufferers make up 22% of the total population of Indonesia. The results of the 2018 Riskesdas show that the prevalence rate of hypertension in the population aged >18 years nationally, based on measurements, is 34.11%, and 41% of them do not routinely control their health. (Kemenkes RI, 2019) The prevalence of hypertension in Central Java Province is 8,070,378 sufferers, or 37.5%. Sukoharjo Regency had 266,832 cases in 2020, consisting of 132,462 men and 134,371 women; the largest number of cases was at the Grogol Health Center with 35,485 cases. Meanwhile, at the Mojolaban Community Health Center, there were 27,028 cases of hypertension, consisting of 13,401 men and 13,627 women. Hypertension treatment can be done in two ways, namely pharmacological and non-pharmacological. Pharmacologists usually use drugs that have side effects.

Non-pharmacological action, namely treatment that is carried out naturally and costs relatively little. Non-pharmacological treatments are therapeutic, for example, acupressure therapy, herbal therapy, aromatherapy, and hydrotherapy, namely in the form of warm water foot soak that can be done at any time. (Santoso et al., 2015). Warm water immersion therapy or hydrotherapy is one of the non-pharmacological treatments to lower blood pressure. Warm water foot soak therapy is a type of hydrotherapy therapy that aims to improve blood circulation, relieve stress, relax tight muscles, relieve pain, and provide warmth to the body so it is useful for blood pressure lowering therapy in hypertension sufferers..(Ulinnuha, 2017)

According to Andreas' research regarding efforts to reduce blood pressure with hydrotherapy, the results show that investigation suggest a beneficial adaptive response to repeated brief cold stimuli in addition to enhanced peripheral perfusion due to thermal hydrotherapy in patients with chronic heart failure.(Michalsen et al., 2003)

Pratama's 2022 research showed that soaking in warm water with salt and lemongrass had a positive impact on blood pressure management. According to Fildayanti's research (2020), soaking the feet in warm water mixed with salt can help reduce blood pressure. Salt has many functions, including removing excess acidity from brain cells, a very strong natural antihistamine, an anti-stress element, maintaining fitness and muscle strength, stabilizing irregular heartbeats, regulating sleep, lowering blood pressure, and eliminating toxins in the body. (Nuraini, 2016)

Based on the results of a preliminary study conducted by researchers at the Mojolaban Community Health Center, data was obtained on hypertension sufferers in the last 3 months in January - March in the Joho Village area, as many as 65 people, with an average of stage I to stage II hypertension. Then the results of a preliminary study with the Head of Joho Village Previously Joho Village had never been taught the warm water foot soak intervention with salt and the results of a survey by researchers in Joho Village interviewing hypertension sufferers found that the people in Joho Village did not know about therapy that could lower blood pressure and respondents said that so far, if they are sick, they only come to the Community Health Center and are only given antihypertensive medication.



METHOD

This study used a pre-experimental research design with a one group pre-post test design approach. Sampling in this research used non-probability sampling with a sample size of 39 respondents. Data analysis using the Wilcoxon test.

RESULT

The results obtained in this research include:

Table 4.1 Age Characteristics of Respondents

Characteristic	Mean	Median	Max	Min	Sd.deviasi
Age	58.03	59.00	82	39	11.032

Based on table 4.1 above, it shows that the average age of respondents is 58.03 years with the oldest being 82 years and the youngest being 39 years.

Table 4.2 Gender Characteristics of Respondents

Gender	Frequency	Percentage (%)
Woman	23	59,0
Man	16	41,0
Total	39	100

Based on table 4.2, it shows that the research results show that the majority of respondents were female, 23 respondents (59.0%).

Table 4.3 Blood Pressure Before Intervention

Variable	Frequency	Percentage (%)
<i>Pre Test</i> Blood Preasure		
120 – 139 mmHg	0	0
140 – 159 mmHg	21	53,8
>160 mmHg	18	46,2
Total	39	100

Based on table 4.3, it shows that of the total of 39 respondents before giving a warm water foot soak with salt, the average blood pressure was in the range of 140 -159 mmHg for 21 respondents (53.8%), blood pressure was in the range >160 mmHg for 18 respondents (46.2%).

Table 4.4 Blood Pressure After Intervention

Variable	Frequency	Percentage (%)
<i>Post Test</i> Blood Preasure		
120 – 139 mmHg	16	41,0
140 – 159 mmHg	21	53,8
>160 mmHg	2	5,1
Total	39	100

Based on table 4.4, it shows that of the total of 39 respondents after giving warm water foot soaks with salt, the average blood pressure was in the range of 140 -159 mmHg for 21 respondents (53.8%), blood pressure was in the range of 120 - 139 mmHg for 16 respondents. (41.0%), and blood pressure in the range >160 mmHg for 2 respondents (5.1%).

DISCUSSION

Hypertension is highly prevalent and remains one of the most frequent and preventable causes of cardiovascular morbidity and mortality. Yet, suboptimal blood pressure control is common. Hypertension clinics might play an important role in improving target attainment, by targeting drug therapy adherence, improving guideline compliance and by involving pharmacists.(Hias et al., 2023). Hypertension is one of the most dangerous diseases. However, medicine for hypertension may cause adverse effects. Thus, alternative treatments may be beneficial to patients. (Napavichayanun et al., 2023). Pharmacological therapy has been proven in lowering blood pressure, but non-compliance often occurs and causes side effects. A combination of non-pharmacological therapies, such as acupressure therapy, is important.

With the oldest respondent being 82 years and the youngest being 39 years, the average age for respondents was 58.03 years. According to Noviyanti's (2015) opinion, the older a person becomes, the more diseases they experience and suffer from. In advanced age, there will be various setbacks in the body's organs, so it is easy to be affected by diseases such as hypertension.

Researchers concluded that in this study the majority of hypertension cases occurred in the elderly, because the arterial walls thickened and the muscle layer had a buildup of collagen, causing stiffness and narrowness of the blood vessels. Based on Elvira's research (2019), this is because, especially in older adults and seniors, hypertension sufferers, before entering menopause, women begin to lose the estrogen hormone little by little and at that time the estrogen hormone must change according to the woman's age, starting around the age of 45. -55 years old.

In line with research by Santoso (2015), the results obtained before warm water foot soak therapy were carried out from 16 respondents, 9 respondents (56.25%) had grade I hypertension and 7 respondents (43.75) had grade II hypertension. Hypertension is a symptom of cardiovascular degenerative disease that is most often experienced by the elderly and the cause is not yet known with certainty. According to (Junaedi et al, 2013), the prevalence of hypertension increases with age. This is because natural changes in the heart, blood vessels, and hormone levels can increase blood pressure as we age. Hypertension can be caused by several factors, including age, hereditary history, gender, and environmental factors introduce my self I know you very well. (Huda & Kusuma, 2015). According to researchers' assumptions, hypertension can occur due to genetic or hereditary factors, as well as an unhealthy lifestyle. As people get older, hypertension can increase. Based on research by Prananda (2017), the results showed that after being given a warm water foot soak, the blood pressure of the respondents was at Grade I blood pressure for 14 respondents (50.0%). Salt is a collection of chemical compounds with the largest constituent being sodium chloride (NaCl). Normally the body can maintain a



balance of sodium outside the cells and potassium inside the cells if there is a high sodium level in the body.

The benefit of soaking your feet in warm water is the physical effect of heat or warmth which can cause liquids, solids and gases to expand in all directions and can increase chemical reactions and metabolism will occur in the tissues along with increased blood circulation. Physiologically, the body's response to heat causes blood vessels to widen, reduces blood viscosity, and can reduce muscle tension.

This is in line with research from Ferda Akyuz, not only in hypertensive patients but it was shown that warm salt water footbath can be an effective approach in enhancing fatigue related quality of life in cancer patients. (Akyuz Ozdemir & Can, 2021)

According to researchers, soaking your feet in warm water with salt is effective for lowering high blood pressure. Soaking your feet in warm water with salt is very effective and practical so that hypertension sufferers can do it independently at home.

Salt contains chemical compounds with the largest component being sodium chloride (NaCl), sodium functions to maintain the acid-base balance in the body by balancing substances that form acids and plays a role in nerve transmission and muscle contraction. Salt has functions including removing excess acidity from brain cells, a very strong natural antihistamine, anti-stress element, maintaining fitness and muscle strength, stabilizing an irregular heart rate, eliminating toxins in the body. (Nuraini, 2016) Based on research by Harnani & Axmalia (2017), warm water foot soak therapy can be used as an independent measure to reduce blood pressure in hypertension sufferers in addition to pharmacological therapy. The heart rates significantly decreased after foot care intervention compared with those pre-rest in all cases; heart rate increases with the tension of sympathetic nerves and decrease with the tension of parasympathetic nerves. (Kito & Suzuki, 2016). Pain in the body can be minimized with foot soak therapy. Because it is related to the patient's psychological condition. (vakilinia et al., 2020)

Researchers concluded that giving warm water foot soak therapy with salt resulted in a significant reduction in blood pressure, therefore warm water foot soak therapy with salt can be done independently at home.

CONCLUSION

Based on the research results, it can be concluded as follows:

1. The average age of respondents was 58.03 years with the oldest being 82 years and the youngest being 39 years. Most of the respondents were women, 23 respondents (59.0%).
2. Blood pressure before being given a warm water foot soak with salt was on average in the range of 140 -159 mmHg for 21 respondents (53.8%), blood pressure was in the range >160 mmHg for 18 respondents (46.2%).
3. Blood pressure after being given a warm water foot soak with salt was on average in the range of 140 -159 mmHg for 21 respondents (53.8%), blood pressure was in the range of 120 - 139 mmHg for 16 respondents (41.0%), and blood pressure in the range >160 mmHg for 2 respondents (5.1%).

4. There is an effect of warm water foot soaking with salt on blood pressure in hypertensive sufferers with the Wilcoxon test results before and after receiving warm water foot soaking treatment with salt obtained with a P-value of 0.000 ($p < 0.05$)

SUGGESTION

1. For Respondents

This research shows that soaking feet in warm water with salt can reduce blood pressure in hypertensive respondents. So the results of this study can be used as a reference for respondents to carry out independent interventions when experiencing hypertension.

2. For Village Group Administrator

The village administrator or village head and village midwife can provide facilities and infrastructure that support efforts to reduce high blood pressure in the Joho Village community. By reducing high blood pressure in the people of Joho Village, it can improve the health of the people in Joho Village.

3. For Further Researchers

Future researchers can use this research as a reference in conducting further research, such as using other interventions that are appropriate to the factors associated with reducing high blood pressure.

4. For Educational Institutions

It is hoped that the results of this research will increase information and reading as well as provide learning in the field of education, especially nursing, in providing nursing care for patients with hypertension.

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