ORIGINAL ARTICLE

International Journal of Biomedical Nursing Review 2025, Volume 4, Number 2: 22-26
P-ISSN: 2963-1556, E-ISSN: 2962-4703

Published by IJBNR

EFFECT OF COMBINATION WARM WATER FOOT SOAK THERAPY AND LEMON AROMATHERAPY ON BLOOD PRESSURE IN ELDERLY WITH HYPERTENSION: CASE STUDY

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Received: 22-11-2024
Approved: 20-02-2025
Published: 20-04-2025

ABSTRACT

Introduction: Hypertension is a condition where blood pressure increases abnormally on several examinations with systolic and diastolic blood pressure measurements ≥140/90 mmHg. The elderly are vulnerable to hypertension because old age is a phase where the body has experienced physiological decline so that it is more susceptible to disease. Hypertension can be treated pharmacologically and non-pharmacologically. Non-pharmacological therapy that can be given to patients with hypertension is a combination of warm water foot soak therapy and aromatherapy lemon. **Purpose**: This case study aims to determine the effect of a combination of warm water foot soak therapy and lemon aromatherapy on elderly people with hypertension. **Methods**: The method used in this research is a case study with 3 hypertensive elderly subjects. The focus of this study is the application of evidence-based practice in the form of a combination of warm water foot soak therapy and lemon aromatherapy for 3 consecutive days for 15 minutes. **Discussion**: The results of the study showed that warm water foot soak therapy and lemon aromatherapy could reduce blood pressure in elderly people with hypertension with an average decrease in systolic and diastolic blood pressure for the three clients, namely 15.1 mmHg and 8.5 mmHg. **Conclusion:** Warm water foot soak therapy and lemon aromatherapy have an effect on lowering blood pressure in elderly people with hypertension.

Keywords: aromatherapy lemon, blood pressure, hypertension, warm water foot soak

Citation: Triana, T., Alivian, G. N. & Kusumawardani, L. H. 2025. 'Effect of Combination of Warm Water Foot Soak Therapy and Lemon Aromatherapy on Reducing Blood Pressure in Elderly with Hypertension: Case Study'. *International Journal of Biomedical Nursing Review*. 4(2). p22-26. https://doi.org/10.20884/1.ijbnr.2025.4.2.13787

INTRODUCTION

Hypertension is a condition where blood pressure increases during several examinations, with systolic blood pressure measurements ≥140 mmHg and diastolic blood pressure measurements ≥90 mmHg (Unger et al., 2020; Wulandari & Atika Sari, 2023). The prevalence of hypertension according to the World Health Organization (2022) is 22% of the total world population. Meanwhile, in Indonesia, based on the Riskesdas 2018 data, the number of hypertension sufferers in the age group of 18-24 years is 13.2%, in the age group of 25-34 years is 20.1%, in the age group of 35-44 years is 31.6%, in the age group of 45-54 years the number of hypertension sufferers increases to 45.3%, in the age group of 55-64 years to 55.2%, while in the age group of 65-74 years it is 63.2%, and in the age group of 75 and above it is 69.5% of hypertension sufferers. (Riskesdas, 2018). The prevalence of hypertension in Central Java reaches 37.57%. Meanwhile, the prevalence of hypertension in women at 40.17% is higher than in men at 34.83% (Dinkes Jawa Tengah, 2021).

Based on the data above, it shows that the incidence of hypertension is highest among the elderly. The elderly are in the process of becoming older, reaching an age of 60 years and above. In the elderly, there will be physical, mental, and social decline. One example of physical decline in the elderly is their vulnerability to diseases, especially

degenerative diseases. One of the common degenerative diseases suffered by the elderly is hypertension. Hypertension is the leading cause of 45% of deaths from cardiovascular diseases. According to a WHO report, which contributes to the high incidence of morbidity and mortality among the elderly with 9.4 million deaths worldwide per year (Yunanto et al., 2019).

Hypertension can be treated with pharmacological therapy or non-pharmacological therapy. Pharmacological treatment, which involves the use of antihypertensive drugs, can lead to Drug Related Problems (DRP), which are undesirable conditions that have the potential to disrupt organ function, such as vision, cognitive function decline, and changes in pharmacodynamics. Non-pharmacological treatment of hypertension can be done through regular physical exercise, a low-fat and low-salt diet or the Dietary Approaches to Stop Hypertension (DASH), yoga, meditation, and can use a combination therapy of soaking feet in warm water and aromatherapy (Fuadi & Yanto, 2022; Iqbal & Sarah, 2022; LeMone et al., 2018; Yunanto et al., 2019).

Soaking feet in warm water is recommended for patients with severe or mild hypertension to prevent the occurrence of severe hypertension that can lead to a stroke. Warm water soaking can lower blood pressure, relieve joint pain, reduce muscle tension, dilate blood vessels, kill germs, eliminate odors, and improve sleep quality for the elderly (Sari & Aisah, 2022). Whereas aromatherapy aims to lower blood pressure in hypertensive patients. This is because, biologically, aromatherapy can provide a vasodilating effect, which ultimately improves blood circulation (Fitama, Haryanto & Makhfudli, 2021). Besides lowering blood pressure, lemon aromatherapy also reduces complaints of pain in the head and neck, which is an effect of the limonene content in it (Rofi'ah, Widatiningsih & Sukini, 2019).

Based on the background of the problem, the author is interested in implementing a combination of warm foot bath therapy and lemon aromatherapy to reduce blood pressure in the elderly with hypertension in Banteran Village RT 05 RW 07, Sumbang.

METHOD

The method used in this study is a case study with descriptive research. The case study was conducted to determine the effect of a combination of warm water immersion and lemon aromatherapy on blood pressure in elderly individuals with hypertension by examining the pretest and posttest blood pressure measurements. This case study was conducted in Banteran Village, RT 05 RW 07, Sumbang, with the implementation period starting from September 26 to September 28, 2024. The criteria for respondents in this study are elderly individuals with hypertension who are not currently taking medication. A case study was conducted on three elderly individuals with hypertension, namely Mrs. R (female), aged 64 years, Mrs. S (female), aged 70 years, and Mrs. N (female), aged 60 years.

The implementation of warm water soaking therapy and aromatherapy was given for 15 minutes with water temperatures of 39-40˚C, measured using a water thermometer, with the water level being 15 cm from the soles of the feet, measured using a ruler. To maintain the warmth of the water, the top of the basin is covered with a cloth. Meanwhile, lemon aromatherapy in the form of essential oil is administered through inhalation using a humidifier. Essential oil is given in 5 drops mixed into 20 ml of warm water. The intervention was administered simultaneously on the same day and time and given once in the evening (Fadlilah et al., 2021). Aromatherapy and warm foot soak interventions were administered for 15-20 minutes over three consecutive days, with blood pressure measurements taken before and after the intervention, specifically after three days of lemon aromatherapy and warm foot soaks (Anisa & Ayubbana, 2023; Handayani & Rohani, 2024).

The first thing the researcher does when administering warm foot soak therapy and lemon aromatherapy is to measure the patient's blood pressure first to determine whether the patient is hypertensive or not, as pretest data. If the patient has high blood pressure, the researcher will then explain the purpose and procedure of the warm foot soak and lemon aromatherapy. After the

intervention is completed, the researcher will measure the blood pressure again to determine the post-intervention blood pressure of the client.

RESULT

After the implementation for 3 days, the patient experienced a decrease in blood pressure, with the following results:

Table 1. Blood Pressure Measurement Results of Ms. R

Day	Measurement Result		Decrease	
	Pre	*Post*	Sys	Dis
1	184/99	161/78	23	28
2	183/89	155/82	28	7
3	150/79	145/70	5	9
Average Decrease			18.7	14.7

Based on the table above, after the intervention, Ms. R blood pressure decreased with an average daily reduction of 18.7 mmHg in systolic blood pressure and 14.7 mmHg in diastolic blood pressure.

Table 2. Blood Pressure Measurement Results of Ms. S

Day	Measurement Result		Decrease	
	Pre	*Post*	Sys	Dis
1	180/97	180/95	0	2
2	187/97	180/93	6	4
3	188/90	146/85	42	5
Average Decrease			16	3.6

Based on the table above, after the intervention, Ms. S blood pressure decreased with an average daily reduction of 16 mmHg in systolic blood pressure and 3.6 mmHg in diastolic blood pressure.

Table 3. Blood Pressure Measurement Results of Ms. N

Day	Measurement Result		Decrease	
	Pre	*Post*	Sys	Dis
1	170/118	160/110	10	8
2	160/120	150/100	10	10
3	162/102	150/98	12	4
Average Decrease			10.6	7.3

Based on the table above, after the intervention, Ms. R blood pressure decreased with an average daily reduction in systolic and diastolic blood pressure of 10.6 mmHg and 7.3 mmHg, respectively.

Table 4. Average Blood Pressure Reduction

Subject	Average Decrease	
	Sys	Dis
Ms. R	18.7	14.7
Ms. S	16	3.6
Ms. N	10.6	7.3
Average Decrease	15.1	8.5

Based on these results, it can be concluded that all patients experienced a decrease in blood pressure, with an average decrease in systolic and diastolic blood pressure of 15.1 mmHg and 8.5 mmHg in the three clients.

DISCUSSION

The combination of warm foot bath therapy and lemon aromatherapy, which has been conducted for 3 days, is effective in lowering the blood pressure of hypertensive patients. This is evidenced by the decrease in blood pressure in each client, with an average decrease in systolic and diastolic blood pressure of 15.1 mmHg and 8.5 mmHg, respectively, among the three clients. These results are in line with the study by Fadlilah et al. (2021), which explains that there is an effect of the combination of foot soaking in warm water and lemon aromatherapy on blood pressure, with an average difference in diastolic and systolic pressure of 8 mmHg.

In addition to the pretest and posttest blood pressure evaluations conducted daily, client response evaluations were also conducted daily both before and after the intervention. The evaluation after the intervention over 3 days related to complaints of dizziness and neck pain indicated that every client reported a reduction. Unlike the evaluation on the last day, client responses during the intervention varied. Client Ms. R responded positively, as evidenced by her cooperation and relaxed demeanor during the intervention. In the second client, Mrs. S, there were several factors that caused no decrease in her systolic blood pressure on the first day, namely

environmental factors that made the client less focused and relaxed. Meanwhile, in the case of Mrs. N, the patient was cooperative but appeared less relaxed.

Blood pressure in each client from the first day to the third day experienced a decrease in systolic pressure in the range of 6-42 mmHg, while the decrease in diastolic pressure was in the range of 2-14.7 mmHg. This decrease in blood pressure was due to the effect of soaking the feet in warm water at a temperature of 39-40°C combined with the inhalation of lemon aromatherapy using 5 drops of essential oil in 20 ml of hot water in a humidifier. This is in line with the research by Fadlilah et al. (2021), which states that soaking the feet in warm water at a temperature of 40°C for 15 minutes can improve blood circulation and strengthen muscles and ligaments. This occurs due to the transfer of warm water temperature to the body, causing blood vessels to undergo vasodilation and reducing muscle tension, thereby facilitating blood flow in the body. Meanwhile, lemon aromatherapy given for 15 minutes over three days is effective in lowering blood pressure because lemon aromatherapy contains linalool and can make the body relaxed, calm, and induce drowsiness and the desire to sleep. When the body is in a relaxed state, it produces endorphins, which can lower blood pressure (Anisa & Ayubbana, 2023; Saputra et al., 2018).

Lemon aromatherapy is more effective in lowering blood pressure compared to other aromatherapies, as proven in research Kartika (2018), which shows that lemon aromatherapy is more effective in lowering both systolic and diastolic blood pressure, whereas lavender aromatherapy only lowers systolic pressure without lowering diastolic pressure. This is because the content of linalyl acetate and linalool, which function as relaxants in lemon aromatherapy, is higher compared to lavender aromatherapy, which is 20-50%. The higher linalool content will increase relaxation or calmness when inhaled, thereby improving blood circulation and relieving the heart from blood vessel blockages.

In addition to lowering blood pressure, lemon aromatherapy can also reduce complaints in clients with hypertension. Lemon aromatherapy contains limonene, which inhibits the action of prostaglandins, thereby reducing pain (Rofi'ah, Widatiningsih & Sukini, 2019). This is evidenced by the client's response, stating that complaints of dizziness and neck pain decreased after therapy was administered.

CONCLUSION

The results of implementing the combination therapy of warm foot baths and lemon aromatherapy over three days showed a decrease in blood pressure in each client. The results of the pretest and posttest blood pressure measurements on the three clients showed an average reduction in systolic and diastolic blood pressure of 15.1 mmHg and 8.5 mmHg, respectively. Based on these results, it can be concluded that the combination of warm foot soak therapy and lemon aromatherapy has an effect on lowering blood pressure in elderly individuals with hypertension.

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