Research Article

EFFECT OF FOOT REFLEXOLOGY THERAPY ON LOWERING BLOOD PRESSURE IN PATIENTS WITH HYPERTENSIVE EMERGENCY AND CARDIOMEGALY: CASE STUDY

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Abstract

Background Behind: Globally, about 7.5 million deaths are attributed to Hypertension each year, accounting for about 12.8% of the total death rate worldwide. A nonpharmacological intervention to help maintain blood pressure is foot reflexology therapy.

Objective: Provide nursing care to a client with hypertension urgency and Cardiomegaly through a foot reflexology therapy intervention to lower blood pressure and increase oxygen saturation in a client in Sungai Kitano village. **Method Study:** The method used is a case study of nursing care for managed clients, carried out for 6 consecutive days by doing foot reflexology therapy. **Conclusion:** Foot reflexology therapy affects lowering blood pressure and increasing oxygen saturation.

Keyword: *Hypertension, Reflexology, Case Studies*

Introduction

Cardiovascular disease is defined as all diseases of the circulatory system, including coronary heart disease, stroke, and heart failure (Lim *et al.*, 2024). The disease involves the cardiovascular system. This cardiovascular system includes blood pumps and their channels (up to micro-size), better known as the cardiovascular system. This system carries food and oxygen in the blood throughout the body, and blood oxygen levels play an essential role in maintaining healthy tissue conditions (Crystal and Pagel, 2020). Cardiovascular disease is defined as all diseases of the circulatory system, including coronary heart disease, stroke, and heart failure (Lim *et al.*, 2024). Cardiovascular disease is mainly associated with behavioral and lifestyle risk factors such as inadequate physical activity, unhealthy diet, tobacco use, and high alcohol consumption (Islam *et al*., 2025). Cardiovascular diseases, which include coronary heart disease (CHD) and stroke, account for about 32% of global deaths, making it a significant health problem in both developed and developing countries (Yang *et al.*, 2024).

Globally, about 7.5 million deaths are attributed to Hypertension each year, accounting for about 12.8% of the total death rate (WHO, 2024). Based on data from the 2023 Indonesian Health Survey, heart disease in Indonesia itself found that there were 0.85% of incidents or around 877,531 events diagnosed by doctors. In South Kalimantan alone, heart disease is diagnosed in 0.66% of cases, or 13,299 heart diseases diagnosed by doctors (Ministry of Health of the Republic of Indonesia, 2023). The prevalence of heart disease makes this disease not to be underestimated.

Hypertension, often referred to as the "silent killer" in everyday life, is a condition that frequently causes no symptoms and is rarely noticed. Usually, Hypertension is only detected after serious complications appear (Chang *et al.*, 2023). Hypertension emergency (HE) is a condition in which systolic blood pressure ≥180 mmHg and/or diastolic blood pressure ≥120 mmHg leading to end organ damage (Giani *et al.*, 2024). Hypertension is a significant risk factor for coronary heart disease, as well as ischemic and hemorrhagic strokes (Alhawari *et al.*, 2024). This shows the importance of awareness of blood pressure and the need for regular check-ups to diagnose and manage this condition early to prevent potentially fatal complications (Ernawati *et al.*, 2023).

Hypertension is a common chronic medical disease that affects people all over the world. Globally, about 7.5 million deaths are attributed to Hypertension each year, accounting for about 12.8% of the total death rate worldwide (WHO, 2024). The prevalence of Hypertension in Indonesia that year reached 34.10%, or around 85,048,110 people, with the province of South Kalimantan in 2018 recording the highest figure of 44.10%

(Rahmi and Nasution, 2023). Hypertension ranks first out of ten non-communicable diseases in Banjar Regency. The latest data obtained in 2021 recorded that the number of hypertension sufferers in Banjar Regency reached 15,288 people (Banjar Regency Health Profile, 2021).

Nonpharmacological interventions are health efforts carried out without using drugs, aiming to inhibit the progression of a disease (CDC, 2022). According to the Joint National Committee (JNC) guideline 8, nonpharmacological interventions are recommended to lower blood pressure in individuals with Hypertension (Sari, 2020). Growing research suggests that some nonpharmacological interventions can help reduce the need for antihypertensive medications and prevent the development of high blood pressure (Zhou *et al.*, 2020). Based on the literature analysis, it was found that there are many alternative therapy options to reduce Hypertension, which can be divided into five alternative groups of nonpharmacological intervention options, one of which is massage (Li'wuliyya, 2024).

Self-care actions that can be done in hypertensive patients in nonpharmacological therapy are foot reflexology with manual methods. Reflexology is a nonpharmacological intervention that involves applying pressure to the reflex zones on the feet or hands with special thumb, finger, and hand techniques to improve the health of the appropriate body structures, organs, or glands. The positive effects of reflexology have been found in various health conditions, such as reducing pain, anxiety, sleep disturbances, mood disorders, and quality of life (Allahbakhhsian *et al.*, 2020). Based on the results of Maria's (2021) research, it was found that foot reflexology can lower blood pressure in hypertensive patients from >150/>90 to <130/<90 mmHg.

From the assessment of hypertension patients in the Sungai Kitano Village area, data was obtained on an 84-year-old patient with blood pressure classified as hypertensive emergency with a pressure of 190/123 on November 22, 2024, and *Cardiomegaly* with complaints of rapid fatigue and 90% SpO2 data were obtained. This patient has a peculiarity because he is more than 80 years old and has a case of complications. Researchers are interested in finding out if complementary foot reflexology therapy affects the decrease in blood pressure and increase in SpO2 in these patients.

Method

This case study employs Gordon's pattern assessment through interviews, observations, and physical examinations. Nursing care is provided through data collection, assessment, data analysis, and nursing planning, which involves formulating nursing diagnoses. The implementation of nursing care and evaluation follows this. Formulating diagnoses, outcomes, and nursing interventions is based on NANDA-I, NOC (Nursing Outcome Classification), and NIC (Nursing Intervention Classification).

Nursing care is implemented in the form of foot reflexology therapy for 6 consecutive days for the patients. Before the implementation, patients will be given informed consent to perform foot reflexology therapy. Before the treatment, patients will first have their blood pressure and SpO2 levels checked. After the treatment, blood pressure and SpO2 measurements will be retaken to assess any changes in the patient's condition.

Results And Discussion

Blood pressure can be controlled with pharmacological and nonpharmacological therapies. Nonpharmacological therapies that can be done to maintain blood pressure levels are divided into five groups, namely cupping, massage, drink/juice consumption, relaxation, and physical activity (Li'wuliyya, 2024). One of the nonpharmacological therapies provided is foot reflexology therapy, which is given for 6 consecutive days from December 3 – 8, 2024. Massage on the soles of the feet helps to improve blood flow and body fluids so that nutrients and oxygen are well channeled, providing relaxation and freshness to the body (Sihotang, 2021). Reflection points that help lower blood pressure include the big toe, points 1-5, and all toes, points 2. The following reflection points are the 33 heart point, the 18 liver point, and the 22 kidney point located at the bottom of the foot, starting from the toe to the heel (Fandizal, Astuti, and Sani, 2020).

	Pre-Intervention BP Systolic	Post-Intervention BP Systolic	Pre-Intervention BP Diastolic	Post-Intervention BP Diastolic
Day				
1	140	130	90	90
2	160	140	100	90
3	150	130	100	90
4	140	130	100	90
5	130	120	100	90
6	120	110	90	90

Table 1. Blood pressure before and after the intervention

Table 1 shows a decrease in both systolic and diastolic blood pressure from before to after foot reflexology therapy. The average decline in systolic blood pressure was 13.34 mmHg, and the average decrease in diastolic blood pressure was 6.67 mmHg. The effectiveness of foot reflexology therapy in reducing systolic blood pressure successfully lowered the client's systolic blood pressure from 160 mmHg to 110 mmHg, representing a reduction of 31.25%. Meanwhile, foot reflexology therapy effectively lowered diastolic blood pressure, reducing it from 100 mmHg to 90 mmHg, a decrease of 10%. The reduction in blood pressure after foot reflexology therapy is attributed to the therapy's stimulation, which helps facilitate blood flow and body fluids (Sihotang, 2021).

The decrease in blood pressure after the foot reflexology intervention was consistent with the results of a study by Arifah (2024), which was conducted on 30 respondents divided into treatment and control groups. The results showed that 15 respondents who received foot reflexology therapy experienced a more significant blood pressure reduction than the control group (Arifah *et al.*, 2024). This foot reflexology therapy is further supported by a study involving 6 hypertensive patients, conducted over 6 days using a one-group pre-posttest research method, which found a decrease in both systolic and diastolic blood pressure before and after the intervention (Fandizal, Astuti, and Sani, 2020).

	Pre-Intervention SpO2	Post-Intervention SpO2
Day		
1	90	92
2	92	93
3	93	94
4	94	96
5	95	97
6	95	97

Table 2. Oxygen Saturation Before and After the Intervention

Table 2 shows an increase in oxygen saturation before and after foot reflexology therapy. The average increase in oxygen saturation was 1.67% from before to after the intervention. Overall, this therapy effectively increased oxygen saturation by up to 7.78%. Massage therapy is a method aimed at improving blood circulation throughout the body. With smooth blood flow, oxygen can be optimally distributed throughout the body (Fatikasari, Erika Dewi Noorratri, and Natsir, 2024).

Foot reflexology offers various health benefits for the human body, including helping to lower blood pressure and increase oxygen saturation. It helps reduce tension, improve circulation, and enhance the body's organs' natural functioning by applying pressure on specific points (Lutvitaningsih, Maryoto, and Apriliyani, 2021). The decrease in blood pressure after foot reflexology is caused by the apparent relaxation effect, making blood vessels that initially experience vasoconstriction dilate (Hakiki and Rakhmawati, 2023). Therapy that is carried out regularly can relax muscle tissue. In hypertensive patients, muscle tension can inhibit the flow of energy. When this tension is reduced, the energy flow becomes smooth, so the risk of increased blood pressure can decrease (Fatikasari, Erika Dewi Noorratri, and Natsir, 2024).

Reflexology effectively works by stimulating the release of various chemicals and endorphins, thanks to applying pressure and massage to reflex points (Kapıkıran and Özkan, 2021). Reflection point 2 functions to provide a calming effect. Reflection point 18 is the point to help the function of the liver organ, which functions as a filter and a storehouse in our body; almost all cells depend on the function of the liver. Reflection point 22 is a point that helps the kidney organs secrete fluid and maintain the balance of electrolytes in the body. Point 33 is the point that plays a role in supporting the function of the heart organ to maintain blood circulation to even the smallest vessels (Hendro and Ariyani, 2015).

Conclusion

During the 6-day evaluation period, foot reflexology was given, and it was found that there was a decrease in blood pressure after the intervention was provided with an average reduction in systole blood pressure of 13.34 mmHg and an average decrease in diastole blood pressure of 6.67 mmHg. This therapy successfully lowered the client's systolic blood pressure by up to 31.25% and diastolic blood pressure by up to 10%. Also, the increase in SpO2 was an average of 1.67%, and the overall effective increase was 7.78%.

Suggestion

It is hoped that the client's family can independently provide foot reflexology therapy and help the client reduce unhealthy lifestyle habits. This is expected to help prevent the

possibility of complications related to Hypertension. In addition, by lowering unhealthy lifestyles, such as excessive consumption of foods high in saturated fat and salt, and increasing regular physical activity, patients can effectively control risk factors that can worsen Hypertension. Thus, clients are expected to obtain a better quality of life and reduce the possibility of complications related to hypertension conditions.

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