

Foot Reflexology Massage for Hypertension in the Elderly: A Case Study

Riska Nursafitri^{1*}, Tantri Puspita², Eti Suliyawati³

^{1,2}Nursing Profession, Karsa Husada College of Health Sciences, Garut, West Java, Indonesia

³Nursing Diploma III, Karsa Husada College of Health Sciences, Garut, West Java, Indonesia

Abstract: Non-communicable diseases (NCDs) have become a public health problem. One of the diseases included in NCDs is hypertension. Hypertension is a condition in which systolic blood pressure increases to 140 mmHg or more and diastolic blood pressure increases to 90 mmHg or more based on two or more measurements. The global prevalence of hypertension is more than 30% of the world's total population. In Indonesia, hypertension also increased in 2018, namely from 34.11% of the total population. Based on the incidence rate, age is one of the causes of hypertension. With increasing age, organ function decreases, affecting sympathetic nerve function, increasing renin secretion, and increasing angiotensin II and aldosterone production. This case study aims to determine the effectiveness of foot reflexology massage therapy in elderly people with hypertension. The method used is a descriptive case study by conducting anamnesis, observation, physical examination, and medical records. The tool used was a sphygmomanometer. The study was conducted on Mrs. T, a 64-year-old female with hypertension. Providing regular foot reflexology massage to hypertensive patients affects the contraction of capillary walls so that vasodilation or widening of the capillary blood vessels and lymph vessels occurs, which results in a decrease in blood pressure from 175/85 mmHg to 150/85 mmHg. The flow of oxygen in the blood increases, the disposal of metabolic waste becomes smoother, thus stimulating the endorphin hormone which functions to provide a sense of comfort and reduce pain in Mrs. T. Regular foot reflexology massage techniques are effective in lowering blood pressure in the elderly with hypertension.

Keywords: Hypertension, foot reflexology massage therapy, elderly, nursing care

Received: 23 April 2026

Revised: 24 April 2026

Accepted: 26 April 2026

Published: 30 April 2026

Corresponding Author: Riska Nursafitri

Author Name*: Riska Nursafitri

Email*: riskanursafitri47@gmail.com

DOI: <https://doi.org/10.63166/4q1k6t07>

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Phone*: +6287778939632

Introduction

Hypertension is one of the non-communicable diseases that is still a major health problem in general. Hypertension is considered a silent killer because sufferers do not know that they have hypertension. Hypertension is also the third largest risk factor causing premature death because it can trigger congestive heart failure and cerebrovascular disease (Badan Penelitian dan Pengembangan Kesehatan, 2018).

According to the World Health Organization (2023), more than 30% of the adult population worldwide experiences hypertension. In 2000 there were 639 cases of hypertension, estimated to increase to 1.15 billion cases in 2025 (Ardiansyah, 2018). In Indonesia, the prevalence of hypertension in 2018 was 31.7% of the total population. Hypertension is one of the leading causes of death in urban and rural areas at the age of 55-64 years (Rosid, 2018).

How to Cite: Nursafitri, R., Puspita, T., & Suliyawati, E. (2026). Foot Reflexology Massage for Hypertension in the Elderly: A Case Study. *Nursing Case Insight Journal*, 4(1), 13-16. <https://doi.org/10.63166/4q1k6t07>

Based on the incidence rate, age is one of the causes of hypertension. With increasing age, organ function decreases, affecting the function of the sympathetic nerves that retain sodium, increasing renin secretion, thus increasing the production of angiotensin II and aldosterone, and can affect the stages of blood vessels, including small blood vessel disorders in the kidneys (Lindayani, 2022).

Therefore, non-pharmacological treatment can be used as a complement to obtain better treatment effects. Several studies have proven that non-pharmacological treatment is a mandatory intervention that must be performed in every hypertension treatment. Non-pharmacological treatment in this case, massage therapy, can be a good alternative choice in terms of benefits and safety. Applying foot reflexology massage helps in rebuilding body balance. It also helps in reducing pain, increasing blood flow, reducing blood pressure and cholesterol (Musyawirah, 2019).

Foot reflexology massage performed on the lower part of the foot, starting from massaging the foot ending on the sole of the foot, begins with rubbing the surface of the back of the foot, where repeated rubbing causes an increase in temperature in the rubbed area which activates foot nerve sensors, causing vasodilation of blood and lymph vessels which affects increased blood flow, blood circulation becomes smooth, oxygen supply to inflamed tissue becomes adequate, thereby reducing pain (Ariyanto et al., 2018).

Based on the description above, this case study aims to analyze the application of nursing care for hypertension in the elderly with foot reflexology massage therapy in reducing blood pressure.

Method

This study used a descriptive case study method by conducting anamnesis, observation, physical examination, and medical records. The study was conducted on Mrs. T, a 64-year-old female with hypertension in the work area of Tarogong Health Center, Garut Regency. Data collection included identity, chief complaint, history of present illness, past medical history, family history, physical examination, and vital signs measurement using a sphygmomanometer.

The nursing process included assessment, diagnosis, planning, implementation, and evaluation. The intervention provided was foot reflexology massage therapy performed for 30-40 minutes per session, repeated for three sessions. The massage technique included effleurage (stroking from the ankle to the toes), focusing pressure on the thumb, index and middle fingers, and pressing reflex points corresponding to the heart, liver, and kidneys on the soles of the feet.

The study was conducted over three meetings on June 4, 6, and 7, 2024. Blood pressure was measured before and after each intervention. The success of the intervention was measured by a decrease in systolic and diastolic blood pressure and a reduction in pain scale.

Result and Discussion

Mrs. T, a 64-year-old female, came with a chief complaint of headache radiating to the neck. The pain was described as feeling like being hit by a heavy object, intermittent, with a pain scale of 5 (0-10). Pain increased when thinking too much and decreased after taking medication. The patient had a history of hypertension for 3 months and had never regularly checked her blood pressure at health services. She only took amlodipine purchased from the pharmacy.

Physical Examination:

General condition: Good

Consciousness: Composmentis

Blood pressure: 175/85 mmHg

Pulse: 81 x/minute

Respiration: 21 x/minute

Temperature: 36.7°C

SpO2: 99%

The patient appeared to be grimacing due to pain. Sleep pattern: only 4-5 hours per night due to frequent awakening from headache. The patient had limited knowledge about hypertension and its management.

Based on the assessment, three nursing diagnoses were established: Acute pain related to physiological injury agents (headache radiating to neck); Disturbed sleep pattern related to lack of sleep control; Knowledge deficit related to lack of exposure to information

Table 1. Patient Progress Across Three Intervention Sessions

Day	BP pre-intervention	BP post-intervention	Pain Scale Pre	Pain Scale Post	Remarks
1 st	175/85	165/90	5	4	The patient appeared relaxed.
2 nd	165/90	155/85	4	4	The patient reported decreased headache.

Day	BP pre-intervention	BP post-intervention	Pain Scale Pre	Pain Scale Post	Remarks
3 rd	160/90	150/85	3	3	The patient reported significantly decreased headache, appeared more relaxed, and sleep improved to 5–6 hours per night.

This case study shows that foot reflexology massage therapy is effective in reducing blood pressure in elderly patients with hypertension. After three sessions of foot reflexology massage, Mrs. T's blood pressure decreased from 175/85 mmHg to 150/85 mmHg, and her pain scale decreased from 5 to 3.

These results are consistent with research by Arianto et al. (2018) which showed that foot reflexology massage affects changes in blood pressure in hypertensive patients. The massage stimulates contraction of capillary walls causing vasodilation or widening of capillary blood vessels and lymph vessels. Oxygen flow in the blood increases, disposal of metabolic waste becomes smoother, thus stimulating endorphin hormones that provide a sense of comfort and reduce pain.

Ratnawati et al. (2019) found that overall, foot reflexology therapy influences reducing blood pressure in hypertensive patients with systolic p -value 0.00 and diastolic p -value 0.00. Hartutik (2017) explained that there is a significant effect of foot reflexology massage on reducing blood pressure in the elderly, with the treatment group showing significant differences ($p < 0.05$).

Lukman et al. (2020) stated that foot reflexology massage is a complementary technique to improve blood flow. Compression on muscles stimulates venous blood flow in subcutaneous tissue and results in decreased blood retention in peripheral vessels and increased lymphatic drainage. It can also cause arterial widening that increases blood supply to the massaged area, improves muscle contraction effectiveness, and removes metabolic waste from muscles, thus helping

reduce muscle tension, stimulating relaxation and comfort.

The mechanism of blood pressure reduction through foot reflexology involves the stimulation of nerve endings in the feet that correspond to organs such as the heart, liver, and kidneys. Pressure on these reflex points sends signals to the central nervous system, which then triggers relaxation responses, reduces sympathetic nervous system activity, and decreases stress hormones such as cortisol. This leads to vasodilation and subsequent blood pressure reduction.

In this case study, the patient also received health education about hypertension management, including dietary modifications (reducing salt and fat intake), regular exercise (walking and elderly gymnastics), stress management, and medication adherence. This educational intervention successfully improved the patient's knowledge and compliance.

Conclusion

From the case study, the following conclusions can be drawn:

The assessment revealed that Mrs. T complained of headache radiating to the neck with a pain scale of 5, blood pressure 175/85 mmHg, sleep disturbances, and lack of knowledge about hypertension. Three nursing diagnoses were established: acute pain, disturbed sleep pattern, and knowledge deficit. Nursing interventions were planned according to the priority of problems, including foot reflexology massage therapy for acute pain.

Implementation of foot reflexology massage was carried out for three sessions with good cooperation from the patient. Evaluation showed that foot reflexology massage effectively reduced blood pressure from 175/85 mmHg to 150/85 mmHg and reduced pain scale from 5 to 3. The sleep pattern problem was resolved, and knowledge deficit was resolved after health education. Regular foot reflexology massage techniques are effective in lowering blood pressure in the elderly with hypertension.

Acknowledgments

The author expresses gratitude to Mrs. T for her cooperation, to the supervisor Tantri Puspita, MNS for guidance, and to all staff at Tarogong Health Center, Garut, for facilitating this case study.

Author Contributions

Conceptualization, R.N.; methodology, R.N.; validation, T.P.; formal analysis, R.N.; investigation, R.N.; resources, R.N.; data curation, R.N.; writing—original draft preparation, R.N.; writing—review and editing, R.N. and T.P.; visualization, R.N.; supervision,

T.P.; project administration, R.N. All authors have read and agreed to the published version of the manuscript.

Funding

This research received no external funding.

Conflicts of Interest

The authors declare no conflict of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript; or in the decision to publish the results.

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