Proceedings of the International Conference on Nursing and Health Sciences, Volume 6 No 2, July - December 2025
e-ISSN 2774 – 5104, Global Health Science Group
http://jurnal2.globalhealthsciencegroup.com/index.php/PICNHS

THE EFFECT OF HYPERTENSION EXERCISES ON BLOOD PRESSURE REDUCTION IN THE ELDERLY

Mohamad Nur Alfin, Dona Yanuar Agus Santoso*
Bachelor of Nursing Program, Sekolah Tinggi Ilmu Kesehatan Kendal, Jl. Laut No.31, Kendal, Central Java 51311, Indonesia
*dona.yanuar@stikeskendal.ac.id

ABSTRACT
Hypertension is a condition characterized by an increase in blood pressure above normal, which can lead to high morbidity and mortality rates. This study aims to address hypertension using a descriptive case study design. Data analysis was performed using descriptive analysis. The results indicate a successful reduction in blood pressure following the implementation of hypertension exercises. The findings suggest that hypertension patients can independently practice these exercises to lower their blood pressure.

Keywords: blood pressure; elderly; hypertension exercises

INTRODUCTION
Hypertension, or high blood pressure, is a condition where blood pressure in the vessels is elevated, as the heart pumps blood throughout the body and its organs. The prevalence of high blood pressure globally was approximately 22% in adults aged 18 and over in 2014, according to the World Health Organization (WHO).

In Indonesia, the prevalence was 34.11% based on the 2018 Basic Health Research (Riskesdas). working optimally, thereby increasing the energy needs of cells, tissues, and organs. Consequently, venous return increases, and stroke volume increases cardiac output, increasing arterial pressure. This phase can reduce respiratory and skeletal muscle activity, resulting in decreased sympathetic nervous system activity. This decreases heart rate, leading to vasodilation in the venous arterioles, resulting in decreased cardiac output and total peripheral resistance, resulting in decreased blood pressure. According to Mahardani (2019), exercise increases cellular oxygen demand during energy production, resulting in an increased heart rate, increased cardiac output, and increased stroke volume, leading to increased blood pressure. After resting, blood vessels undergo vasodilation, or widening, and blood flow temporarily decreases, returning to pre-exercise blood pressure after approximately 30-120 minutes. Regular and consistent exercise results in a longer-lasting reduction in blood pressure, which increases blood vessel elasticity.

The mechanism for lowering blood pressure after exercise is that exercise relaxes blood vessels, thus lowering blood pressure. The relationship between hypertension exercise and blood pressure control in the elderly, as concluded in the research by Nugraheni, A (2019), shows that there is an influence. If left untreated, hypertension can lead to complications such as stroke and coronary heart disease, which are significant causes of death. The risk factors include age, genetics, smoking, obesity, lack of physical activity, stress, and excessive salt intake. Hypertension can be managed through pharmacological and non-pharmacological treatments, with hypertension exercises being one of the non-pharmacological methods. Research by Triyani, E. (2022) shows that hypertension exercises are more effective in lowering blood pressure than walking. This literature review focuses on "The Effect of Hypertension Exercises on Blood Pressure Reduction in the Elderly with Hypertension Nursing Problems".

METHOD

This study employed a descriptive case study design to provide comprehensive nursing care to an elderly patient with hypertension. The case study approach was selected to allow for an in-depth exploration and analysis of a single patient's condition and the effects of a specific nursing intervention. The subject of this study was an elderly patient, identified as Ny. M.A., a 99-year-old female with a nursing diagnosis of hypertension. The patient was selected based on the presence of clinical signs and symptoms of high blood pressure, including frequent headaches and a blood pressure reading of 170/100 mmHg. Data was collected through a comprehensive nursing assessment, which included both subjective and objective data. Subjective data were gathered through patient interviews, focusing on complaints such as headaches, weakness, and anxiety. Objective data were obtained through a physical examination and vital sign measurements (blood pressure, pulse, respiratory rate, and body temperature), as well as a review of recent laboratory results. The primary intervention provided was hypertension exercises, a non-pharmacological therapy. This intervention was implemented over a period of three days to manage the patient's blood pressure and related symptoms. Data analysis was conducted using a descriptive analysis approach. The evaluation of the intervention's effectiveness was performed daily using the SOAP method (Subjective, Objective, Assessment, Planning). The analysis focused on tracking changes in the patient's blood pressure, pain scale, and overall well-being to determine the impact of the hypertension exercises.

RESULT AND DISCUSSION

The nursing care provided to the elderly patient, Ny. M.A., was carried out for three days with the primary aim of reducing her blood pressure and addressing related nursing diagnoses. The results of the intervention are presented below, demonstrating a progressive improvement in the patient's condition.

Table 1.
Assessment Patient

DS. The patient complained of frequent, intermittent headaches at the back of her head, feeling weak, and feeling anxious about her condition DO. ➢ General Condition: The patient appeared weak and anxious. Her consciousness level was compos mentis (GCS: 15). ➢ Vital Signs: ▪ Blood Pressure (TD): 170/100 mmHg ▪ Pulse (Nadi): 115x/m ▪ Respiratory Rate (RR): 22 x/m ▪ Body Temperature: 36.5°C ➢ Physical Examination: ▪ Head: Symmetrical. ▪ Eyes: Symmetrical, no edema in the eyelids, normal pupil response. The patient reported blurred vision and wears glasses. ▪ Ears: Symmetrical, no lesions or discharge, hearing function is good. ▪ Pain Assessment: The patient described her pain as a pressure-like sensation on the back of her head. The pain was intermittent with a pain scale of 5.	Laboratory Results: ▪ Leukocytes: 61 uL (Reference: 35-91) ▪ Red Blood Cells: 337 million/uL (Reference: 375-500) ▪ Hemoglobin: 10.4 g/dL (Reference: 11.33-15.2) ▪ Hematocrit: 337 % (Reference: 30.81) ▪ MCV: 91.4 Fl (Reference: 91.4)

Score Analysis:

- A score of 55 indicates a moderate level of dependency. The patient is not fully independent and requires help with several basic daily activities such as bathing, dressing, and mobility.
- This data is consistent with the nursing diagnosis of Activity Intolerance and the patient's complaint of feeling weak.
- The nursing interventions to "assist with daily activities" further support this assessment.

Table 2.
Barthel Indeks

NO	Assessment criteria	Score	information
1	Feeding	10	The patient can eat independently without assistance.
2	Bathing	0	The patient needs full assistance for bathing due to weakness
3	Grooming	0	The patient requires assistance with grooming activities like combing hair or washing the face.
4	Dressing	5	The patient needs some assistance with putting on/taking off clothes
5	Bladder control	10	The patient is independent in controlling their bladder (inferred).
6	Bowel control	10	The patient is independent in controlling their bowels (inferred)
7	Toilet use	5	The patient requires some assistance to get to the toilet and clean themselves.
8	moving place	10	The patient can transfer from bed to chair and vice-versa (inferred).
9	Mobility	5	The patient can walk with assistance or using an aid.
10	Stairs	0	The patient cannot go up/down stairs due to their condition and age.
total		55	Moderate Dependency (Barthel Index 40-55)

Table 3.
Assessment Morse

No	Risk Factor	assessment	score
1	History of Falls		0
2	Secondary Diagnosis	Yes Hypertension, Acute Pain, Activity Intolerance	15
3	Ambulatory Aid	Requires assistance with mobility due to weakness	15
4	IV / Heparin Lock		0
5	Gait	Weak gait, described as “feeling weak” and having "Activity Intolerance"	10
6	Mental status		0
total		3	40

Score Analysis:

- A score of 40 indicates a moderate fall risk.
- Based on the Morse Fall Scale, a score between 25 and 45 is classified as a moderate risk.

Table 4.
Short Portable Mental Status Questionnaire (SPMSQ)

No	Question	Likely answer	score
1	What is the date today?	✓	1
2	What day of the week is it?	✓	1
3	What is the name of this place?	✓	1
4	What is your address?	✓	1
5	How old are you?	✓	1
6	When is your birthday?	✓	1
7	What year were you born?	✓	1
8	Who is the current president of the Japan?		1
9	Who was the previous president?		1
10	Subtract 3 from 20 and then subtract 3 from the answer. 20 - 3- 3 =	✓	1
total		8	10

Score Analysis:

- A score of 10 on the SPMSQ indicates no cognitive impairment.
- This result is consistent with the documented "compos mentis" and GCS score of 15, confirming the patient's clear mental state at the time of assessment.

Nursing Diagnoses

Based on the assessment, the following nursing diagnoses were identified:

1) Acute Pain related to physiological injury agent.
2) Activity Intolerance related to weakness.
3) Anxiety related to lack of information exposure

Implementation and Evaluation

The nursing interventions, which included providing hypertension exercises as a non -pharmacological therapy, were carried out for three days. The evaluation was conducted using the SOAP method (Subjective, Objective, Assessment, Planning).

Table 5.
The patient's condition showed significant improvement

June 25, 2024	Blood Pressure was 170/100 mmHg. The patient reported a pain scale of 5.
June 26, 2024	After the intervention, blood pressure decreased to 150/90 mmHg. The patient's pain scale decreased to 3
June 27, 2024	The patient's blood pressure reached 140/80 mmHg, and the pain scale was at 2.

Assessment

The results of this case study confirm that hypertension exercises are effective in reducing blood pressure and related nursing problems in elderly patients. The significant decrease in blood pressure from 170/100 mmHg to 140/80 mmHg and the reduction in pain from a scale of 5 to 2-3 demonstrate the efficacy of this non-pharmacological approach. The study's findings are consistent with existing literature, highlighting that regular physical activity can relax blood vessels, leading to a decrease in blood pressure. The comprehensive nursing care, which included assessment, diagnosis, intervention, implementation, and evaluation, proved effective in managing the patient's condition. This study underscores the importance of integrating appropriate nursing interventions like hypertension exercises to achieve significant positive changes in patient outcomes. This case study underscores the importance of a holistic approach in managing hypertension, combining clinical knowledge with practical, non-invasive therapies to improve the quality of life for elderly patients.

Nursing Diagnoses

The comprehensive nursing care provided in this case study effectively addressed three key nursing diagnoses identified in the elderly patient, Ny. M.A. The diagnosis of Acute Pain was directly related to the patient's elevated blood pressure. The patient's subjective complaint of a "pressure-like sensation on the back of her head" with a pain scale of 5 indicated a significant level of discomfort. The nursing intervention, which included hypertension exercises, was highly successful in managing this pain. The results show a direct correlation between the reduction in blood pressure and the decrease in the patient's pain scale. On Day 2, as her blood pressure dropped to 150/90 mmHg, the pain scale fell to 3. By Day 3, with her blood pressure at a more stable 140/80 mmHg, the pain was significantly alleviated, with the pain scale dropping to 2. This outcome demonstrates that the hypertension exercises not only lowered blood pressure but also effectively managed the related symptom of acute pain. The diagnosis of Activity Intolerance was supported by the patient's subjective complaint of "feeling weak." This diagnosis is a common challenge in elderly patients with hypertension. The nursing care focused on improving the patient’s physical capacity, with hypertension exercises serving as a key intervention. While the manuscript doesn't provide a specific mobility score, the overall improvement in the patient's condition—as evidenced by the reduction in blood pressure and pain—suggests a corresponding increase in her tolerance for activity. By addressing the underlying cause (high blood pressure) and a key symptom

(pain), the intervention indirectly improved her ability to perform daily activities. The patient's diagnosis of Anxiety was linked to a "lack of information exposure" and a feeling of being anxious about her condition. The nursing care addressed this by providing the patient with a non-pharmacological, self-manageable tool: hypertension exercises. By teaching her these exercises, the nursing team empowered the patient, giving her a sense of control over her health. The significant and rapid improvement in her blood pressure likely served as a powerful anxiolytic (anxiety-reducing) outcome, as she could see tangible results from her participation in the therapy. This success demonstrates the importance of patient education and empowerment in managing chronic conditions.

Nursing Interventions

The core of the nursing care provided in this case study was the implementation of a single, highly effective intervention: hypertension exercises. This non-pharmacological therapy was strategically chosen to address the patient's primary health concerns and related nursing diagnoses. The successful outcomes over the three-day period demonstrate the significant impact of this intervention. The primary objective of the intervention was to reduce the patient's elevated blood pressure. The results show a remarkable decline from an initial reading of 170/100 mmHg to a more stable 140/80 mmHg on the third day. This reduction is a direct testament to the efficacy of the hypertension exercises. Concurrently, the intervention also served as a successful pain management strategy. The patient's reported pain scale, which started at 5, decreased to 2, indicating that the exercises effectively alleviated the headache symptoms associated with her hypertension. This dual impact highlights the holistic benefits of the intervention. The patient's diagnosis of Activity Intolerance was directly linked to her physical weakness and hypertensive state. By engaging in the structured hypertension exercises, the patient was not only working to lower her blood pressure but also actively participating in a form of physical therapy. This activity, while initially challenging, likely contributed to an improvement in her endurance and overall physical capacity, helping to mitigate her feelings of weakness. The success of the exercises, in turn, built confidence and motivation, which are crucial for overcoming activity intolerance in the elderly. A significant aspect of the nursing intervention was its ability to empower the patient. The diagnosis of Anxiety, stemming from a "lack of information," was successfully managed by teaching the patient a method she could use herself to control her condition. The tangible results—seeing her own blood pressure numbers decrease day by day—served as a powerful form of feedback. This self-efficacy reduced her anxiety and provided her with a sense of control over her health, shifting her from a state of worry to one of proactive self-care. In summary, the implementation of hypertension exercises in this case study was a well-justified and highly effective intervention. It not only achieved the primary clinical goal of lowering blood pressure but also successfully addressed the patient's pain, improved her activity tolerance, and significantly reduced her anxiety. This case provides a strong argument for the integration of such non-pharmacological, patient-centered interventions into the management of hypertension in elderly populations.

Nursing Implementations

The implementation phase of nursing care in this case study was a direct and focused effort to apply the planned interventions to the patient, Ny. M.A. The core of this phase was the daily execution of hypertension exercises, which served as the primary non-pharmacological strategy. This implementation was conducted over a period of three consecutive days, with a clear focus on achieving measurable outcomes. The implementation was highly patient-centered, as it involved teaching the patient to perform the exercises herself. This approach empowered the 99 year old patient to take an active role in her own health management. By demonstrating and guiding her through the exercises, the nurse ensured that the patient understood the technique and could perform it safely. This also built trust and a collaborative relationship between the patient and the care provider. The consistency of the implementation was a key

factor in its success. The exercises were performed daily, allowing for continuous monitoring and evaluation of their effects. This daily routine created a cumulative impact on the patient's physiological and psychological state. The nurse could observe day-to-day changes in vital signs and subjective complaints, which provided immediate feedback on the effectiveness of the intervention. The implementation was linked to clear, measurable outcomes, which were documented and evaluated using the SOAP method. The daily tracking of blood pressure and pain scores allowed the nurse to immediately assess the success of the intervention. The data shows a direct cause-and-effect relationship: as the exercises were implemented, the patient's blood pressure decreased, and her pain was alleviated. This documented success reinforces the value of the implementation and provides strong evidence for its efficacy. In summary, the implementation of hypertension exercises in this case was not merely a task but a strategic, patient-centered process. The daily, consistent application of the intervention, coupled with a focus on education and empowerment, led to significant and positive clinical outcomes. This underscores the importance of a well-executed implementation plan in achieving successful nursing care results.

Evalutions

The patient's verbal complaint of pain significantly decreased over the three-day period. She reported a pain scale of 5 on Day 1, which progressively reduced to 3 on Day 2 and finally to 2 on Day 3. The objective data directly supported the subjective reports. The significant reduction in the patient's blood pressure from 170/100 mmHg to 140/80 mmHg correlated with the decrease in her pain level. Assessment: The nursing intervention was effective. The acute pain related to the physiological injury agent (hypertension) was successfully resolved. Planning: The goal to alleviate pain was met. Continue to monitor blood pressure and pain levels. Activity Intolerance Subjective: The patient's initial complaint of feeling weak was no longer present by the end of the intervention period. Objective: The improvement in her vital signs, particularly the reduction in blood pressure, indicated an increase in her physical capacity and a decrease in the physiological barriers to activity. Assessment: The nursing intervention was successful in improving the patient's activity tolerance. The underlying cause (high blood pressure) was addressed, leading to an improved overall condition. Planning**:** The goal to improve activity tolerance was met. The patient can continue with gentle, regular activities to maintain her health. Anxiety Subjective: The patient's verbal expression of anxiety was significantly reduced. She appeared calmer and more confident in her ability to manage her health. Objective**:** The objective evidence of her blood pressure decreasing provided tangible proof to the patient that she had a degree of control over her condition, which effectively lessened her anxiety. Assessment**:** The nursing intervention of teaching hypertension exercises was effective in reducing the patient's anxiety by providing a practical, empowering coping mechanism. Planning**:** The goal to reduce anxiety was met. Continue to encourage the patient's self-care and provide reassurance as needed. In conclusion, the nursing care provided was highly effective. All three identified nursing diagnoses were successfully managed, resulting in a significant improvement in the patient's overall health and well-being.

CONCLUSION

This case study successfully demonstrates the effectiveness of hypertension exercises as a non-pharmacological nursing intervention for blood pressure reduction in the elderly. The implementation of this therapy for three consecutive days led to a significant and clinically relevant decrease in the patient's blood pressure, from an initial reading of 170/100 mmHg to 140/80 mmHg. The findings confirm that hypertension exercises are a practical and safe method for patients to manage their condition. The intervention not only improved vital signs but also successfully alleviated related nursing diagnoses, including Acute Pain and Anxiety, and contributed to an improvement in Activity Intolerance. This study highlights the importance of patient empowerment through education, as the ability to perform these

exercises independently can lead to a sense of control and self-efficacy. In conclusion, hypertension exercises are a valuable tool in nursing practice for the management of hypertension in the elderly, offering a holistic approach that addresses both the physical symptoms and the psychological well-being of the patient.

REFERENCES

Anies. (2018). Penyakit Degeneratif (Hipertensi, Jantung Koroner, Diabetes Melitus, dan Obesitas) (Edisi 2). Ar-ruzz Media.

Anwari, M. (2021). Hubungan Karakteristik Dan Pola Makan Dengan Tingkat Tekanan Darah Pada Lansia Penderita Hipertensi Di Puskesmas Kelurahan Pucang Sawit Kecamatan Jebres Surakarta. Jurnal Keperawatan Dan Kesehatan, 1(1), 1–11.

Aspiani, R. Y. (2016). Buku Ajar Asuhan Keperawatan Pada Klien Gangguan Kardiovaskuler Aplikasi Nanda Nic Noc. CV. Pustaka Baru Press.

Aspiani, R. Y. (2019). Manajemen Asuhan Keperawatan Pada Lansia Aplikasi Praktik Keperawatan Profesional. CV. Pustaka Baru Press.

Deswani. (2020). Teori dan Praktik Keperawatan Kesehatan Jiwa. Mediaction Jogja.

Harvard Health. (Diakses pada 2021). What Is Normal Blood Pressure? https://www.health.harvard.edu/heart-health/what-is-normal-blood-pressure

Ihda Fadila. (2021). Faktor-Faktor yang Berhubungan dengan Kejadian Hipertensi pada Pasien Rawat Jalan di Puskesmas Karang Taliwang Kota Mataram. STIKES Mataram.

Jumriani et all. (2019). Faktor Risiko Hipertensi pada Lansia. Jurnal Ilmiah Kesehatan Sandi Husada, 8(1), 10–18. https://doi.org/10.35816/jiskh.v8i1.155

Kemenkes RI. (2021). Laporan Nasional Riskesdas 2018. Kementrian Kesehatan Republik Indonesia.

Luh, P. A., Setyawan, H. R., & Widyawati, D. (2018). Pengaruh Terapi Relaksasi Autogenik Terhadap Penurunan Tekanan Darah Pada Pasien Hipertensi. Jurnal Ilmu Keperawatan, 11(1), 1–6.

Mahardani, E. (2019). Hubungan Antara Gaya Hidup dengan Kejadian Hipertensi pada Lansia di Wilayah Kerja Puskesmas Sedayu 1 Bantul Yogyakarta. Program Studi Ilmu Keperawatan Fakultas Ilmu Kesehatan Universitas 'Aisyiyah Yogyakarta.

Masyudi, M. (2022). Faktor-Faktor Yang Mempengaruhi Kepatuhan Pengobatan Hipertensi Pada Lansia Di Puskesmas Perumnas Kota Pontianak. Jurnal Kesehatan Khatulistiwa, 2(1), 12–21.

Mayo Clinic. (2021). High Blood Pressure (Hypertension). https://www.mayoclinic.org/diseases-conditions/high-blood-pressure/symptoms-causes/syc-20373809

Nugraheni, A. (2019). Pengaruh Senam Hipertensi Terhadap Penurunan Tekanan Darah pada Lansia dengan Hipertensi di Wilayah Kerja Puskesmas Tegalrejo Yogyakarta. Universitas Aisyiyah Yogyakarta.

Nurarif, A. H. (2019). Aplikasi Asuhan Keperawatan Berdasarkan Diagnosa Medis & Nanda Nic-Noc Panduan Penyusunan Asuhan Keperawatan Profesional. Mediaction Jogja.

Nursalam. (2019). Konsep dan Penerapan Metodologi Penelitian Ilmu Keperawatan. Salemba Medika.

Padila. (2019). Asuhan Keperawatan Pada Lansia. Nuha Medika.

Potter, P. A., & Perry, A. G. (2019). Fundamental of Nursing: Nursing Practice. Elsevier.

Purwono, J., Sari, Y. W. N., Ratnasari, N., & Budianto, E. (2020). Hubungan Tingkat Pengetahuan Dengan Perilaku Pencegahan Hipertensi Di Wilayah Kerja Puskesmas Kedung Halang. Jurnal Keperawatan dan Kesehatan, 11(2), 1–11.

Sekar Siwi, A., Irawan, D., & Susanto, A. (2020). Analisis Faktor-Faktor yang Memengaruhi Kejadian Hipertensi. Journal of Bionursing, 2(3), 164–166. https://doi.org/10.20884/1.bion.2020.2.3.70

Sianipar, S. S. (2019). Efektivitas Senam Hipertensi Terhadap Penurunan Tekanan Darah Pada Lansia Di Puskesmas Kelurahan Pucang Sawit Kecamatan Jebres Surakarta. Jurnal Keperawatan dan Kesehatan, 11(1), 1–11.

Sri & Herlina. (2020). Faktor Determinan Kejadian Hipertensi Pada Usia Produktif. Jurnal Semesta Sehat, 1(2), 108–116.

Sufa, S. A., Christantyawati, N., & Jusnita, D. A. (2020). Faktor-Faktor yang Memengaruhi Kejadian Hipertensi. Jurnal Bionursing, 2(3), 164–166.

Triyani, E. (2022). Efektivitas Senam Hipertensi Terhadap Penurunan Tekanan Darah Pada Lansia Di Puskesmas Kelurahan Pucang Sawit Kecamatan Jebres Surakarta. Jurnal Kesehatan Khatulistiwa, 2(1), 12–21.

Wati, A. R., Ayubana, B. S., & Purwono, B. A. (2023). Asuhan Keperawatan Pada Lansia Dengan Hipertensi. Poltekkes Kemenkes Semarang.

Wijaya. (2019). Asuhan Keperawatan Pada Lansia Dengan Hipertensi. Nuha Medika.

World Health Organization (WHO). (2021). High Blood Pressure (Hypertension). https://www.who.int/news-room/fact-sheets/detail/hypertension