

Section: General Nursing

Geriatric exercise program to reduce blood pressure in elderly with hypertension

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Abstract

Hypertension is a chronic clinical condition characterized by a persistent elevation in blood pressure beyond physiological norms, significantly increasing the risk of morbidity and mortality. Patients frequently present with symptomatic cephalgia (headache) and dizziness, which can severely impair daily functioning. The case study describes the clinical application of Geriatric exercise program (*Senam Lansia*) for Mrs. K, a patient diagnosed with hypertension at the Pandanrejo Community Health Center, Kaligesing District, Purworejo. Using a descriptive case study approach, the initial nursing assessment revealed a baseline blood pressure of 180/90 mmHg. The client reported persistent, throbbing headaches that interfered with her occupational productivity, leading to the prioritized nursing diagnosis of Acute Pain. The intervention—a structured elderly exercise program—was implemented consistently over a four-week period. At the evaluation stage, the client's blood pressure decreased to 150/80 mmHg, and she reported a significant reduction in discomfort, stating she felt more comfortable and capable of performing her daily activities. These results suggest that elderly exercise is an effective non-pharmacological strategy for managing hypertension and improving the quality of life in geriatric patients.

Keywords: Chronic illness, community care, geriatric exercise program, hypertension, symptom management

Introduction

Hypertension is a chronic clinical condition characterized by a persistent elevation in blood pressure beyond normal physiological limits, significantly increasing the risk of morbidity and mortality (Carey et al., 2022; Mills et al., 2020). The etiology of hypertension is multifactorial, with primary risk factors including obesity, physical inactivity, tobacco use, suboptimal dietary habits, excessive alcohol consumption, chronic stress, sleep apnea, and comorbidities such as diabetes mellitus (Meher et al., 2023). In Indonesia, the prevalence of hypertension continues to rise, largely driven by an increase in life expectancy (UHH). This demographic shift is reflected in the growing geriatric population, which currently accounts for 9.6% of the total population, or approximately 25.64 million people. Regional data from the Kaligesing Community Health Center corroborates this trend, recording 2,747 hypertensive patients in 2024, with 1,019 new cases already documented as of June 2025. To improve physical fitness and manage hypertension in the elderly, structured gymnastics—comprising strength training, balance movements, and stretching—is highly recommended (Alpsoy, 2020). Aerobic exercise specifically designed for the elderly is a low-impact physical activity that positively influences physical performance (Bai et al., 2022). Because it involves regular, directed, and planned movements, it is easily accessible for the geriatric population. These exercises help maintain overall fitness, neutralize free radicals, and stimulate optimal cardiac function.

Elderly exercise consists of a deliberate series of rhythmic movements synchronized with music to ensure continuity and appropriate duration (Zhang et al., 2025). Often referred to as "cardiovascular exercise," this intervention emphasizes the enhancement of the circulatory and respiratory systems. Continuous training of cardiovascular endurance involves rhythmic muscle contractions over a sustained period, which increases oxygen intake and improves systemic blood circulation (Kazeminia et al., 2020). Beyond reducing blood pressure, these exercises assist in weight management, caloric expenditure, and the overall enhancement of the patient's quality of life. At the Pandanrejo Subsidiary Community Health Center, a structured elderly exercise program has not yet been implemented. Currently, health-seeking behavior among local residents is reactive; patients typically visit the Pustu only when experiencing acute symptoms like dizziness or severe hypertension, while asymptomatic individuals remain untreated. This lack of preventive, non-pharmacological intervention highlights a critical gap in local healthcare delivery. Based on this context, the present case study was conducted to evaluate the application of elderly exercise as a primary intervention to lower blood pressure among hypertensive patients at the Pandanrejo Pustu, Kaligesing District, Purworejo Regency.

This case study is of critical importance because it addresses a significant gap in the healthcare delivery of the Pandanrejo Community Health Center, moving from a reactive, symptom-based treatment model toward a proactive,

non-pharmacological management strategy. In many rural or subsidiary health settings, elderly patients with hypertension often only seek medical attention when experiencing acute symptoms like severe cephalgia or dizziness, leaving their chronic condition unmanaged between crises. By documenting the impact of a structured geriatric exercise program, this study provides empirical evidence that low-impact, rhythmic aerobic activity can serve as a primary nursing intervention to naturally lower peripheral resistance and improve cardiovascular efficiency. Furthermore, the study is vital for promoting health independence among the aging population in Purworejo. Unlike pharmacological treatments that require continuous medical supervision and financial costs, elderly gymnastics (*senam lansia*) empower patients to take control of their own vascular health through simple, directed movements that can be performed at home (Abdul & Nurhayati, 2023; Purba et al., 2025). This case study demonstrates that a four-week intervention can successfully reduce blood pressure—in this instance from 180/90 mmHg to 150/80 mmHg—while simultaneously alleviating pain and increasing functional comfort. Ultimately, this research serves as a clinical justification for health centers to formalize exercise programs, thereby reducing long-term morbidity and mortality risks associated with uncontrolled hypertension in the elderly.

Case Description

A case study is a research design characterized by the intensive and in-depth examination of a single unit of analysis. In this study, the author utilized a descriptive case study design to document and analyze the application of elderly exercise (*senam lansia*) in lowering blood pressure among hypertensive patients. Unlike traditional quantitative research, case studies do not utilize a population or sample; instead, they focus on a case study subject. The subject of this study is an individual 60-year-old geriatric client, a demographic that carries a statistically significant 45.3% risk of developing hypertension. At the onset of the study, the subject presented with a clinical baseline blood pressure of 180/90 mmHg. Data collection was conducted through a multi-method approach, ensuring a comprehensive nursing assessment. This included Interviews to gather subjective data, Observation and Physical Examination for objective clinical findings, and a Documentation Study of the patient's medical history. The research instruments were categorized into primary and secondary tools. The primary instrument is the researcher themselves, as they facilitate the intervention and interaction. The supporting instruments included structured observation and interview guidelines, as well as standardized documentation formats: the patient data format, the nursing care plan format, the 13-domain NANDA (North American Nursing Diagnosis Association) assessment, and a calibrated sphygmomanometer for accurate vital sign monitoring.

Discussion

The clinical assessment was conducted on Thursday, May 29, 2025, at 07:30 WIB, focusing on Mrs. K, a 60-year-old female farmer from Purbowono Village, Purworejo. The patient presented with a primary complaint of persistent, throbbing headaches and dizziness that significantly hindered her occupational productivity. A pain assessment revealed a score of 6/10, accompanied by rapid physical fatigue. In analyzing this case, the author identified a notable discrepancy between theoretical literature and clinical findings. According to Manuntung (2018), typical hypertensive symptoms include epistaxis (nosebleeds), irritability, tinnitus (ringing in the ears), and blurred vision. However, Mrs. K did not exhibit these specific complications. Despite these absences, the case aligns with theory regarding the presence of persistent cephalgia and dizziness. The primary risk factors identified in Mrs. K were advanced age and an suboptimal diet. As noted by Infodatin (2020), the risk of hypertension increases with age due to the physiological decrease in blood vessel elasticity (arteriosclerosis), which naturally elevates peripheral resistance and systemic blood pressure. In accordance with the Indonesian Nursing Diagnosis Standards (SDKI), the patient's subjective reports of throbbing pain and objective clinical data were used to establish the prioritized nursing diagnosis. The author developed a structured nursing care plan centered on Elderly Exercise Therapy (*Senam Lansia*) to address the underlying hypertension and associated pain. The intervention was planned for a duration of four sessions (one hour each) over a four-week period. The expected outcomes (SLKI) included a reduction in pain complaints, decreased dizziness, and the stabilization of blood pressure, while the nursing interventions (SIKI) focused on teaching the patient the correct techniques for elderly exercise to promote independent health management.

The intervention was implemented once weekly every Thursday for four weeks. Each 60-minute session involved repetitive movements of large muscle groups in the extremities. Physiologically, these aerobic movements utilize oxygen to metabolize fat as a primary energy source, subsequently increasing respiratory and heart rates. According to Suhartini (2020), this process improves cardiovascular efficiency and leaves the body feeling rejuvenated and fit. Following the four-week implementation, the evaluation showed a significant clinical improvement. Mrs. K's blood pressure decreased to 150/80 mmHg, and she reported a marked increase in comfort during daily activities. The patient demonstrated the ability to perform the exercises correctly and independently. Furthermore, her anxiety regarding her health status dissipated as she appeared more relaxed. In this instance, the evaluation results perfectly mirrored the projected theoretical outcomes, confirming that elderly exercise is a highly effective non-pharmacological intervention for geriatric hypertension.

Conclusion

The implementation of a structured geriatric exercise program for elderly patients with hypertension serves as a highly effective non-pharmacological intervention for achieving systemic blood pressure reduction and symptomatic relief. As evidenced by the clinical outcomes of this case study, a consistent four-week regimen facilitated a significant decrease in blood pressure from an initial 180/90 mmHg to a more stable 150/80 mmHg, effectively alleviating the patient's primary complaint of acute, throbbing cephalgia. Physiologically, these rhythmic, low-impact movements enhance cardiovascular efficiency and promote vasodilation, which collectively lower peripheral resistance and improve oxygen delivery to cerebral tissues. Ultimately, this study concludes that elderly exercise not only stabilizes vital signs but also significantly enhances the patient's functional independence and quality of life, proving to be a sustainable and essential component of holistic nursing care in community health settings.

References

- Abdul, D.F. & Nurhayati. (2023). Penerapan Senam Hipertensi Pada Lansia Untuk Menurunkan Tekanan Darah di Wilayah Kerja Puskesmas Maccini Sawah Kota Makassar Tahun 2022. *Jurnal Mitrasedhat*, 12(2), 167-175. <https://doi.org/10.51171/jms.v12i2.343>
- Alpsoy, Ş. (2020). Exercise and Hypertension. *Advances in experimental medicine and biology*, 1228, 153–167. https://doi.org/10.1007/978-981-15-1792-1_10
- Bai, X., Soh, K. G., Omar Dev, R. D., Talib, O., Xiao, W., Soh, K. L., Ong, S. L., Zhao, C., Galeru, O., & Casaru, C. (2022). Aerobic Exercise Combination Intervention to Improve Physical Performance Among the Elderly: A Systematic Review. *Frontiers in physiology*, 12, 798068. <https://doi.org/10.3389/fphys.2021.798068>
- Carey, R. M., Moran, A. E., & Whelton, P. K. (2022). Treatment of Hypertension: A Review. *JAMA*, 328(18), 1849–1861. <https://doi.org/10.1001/jama.2022.19590>
- Kazeminia, M., Daneshkhah, A., Jalali, R., Vaisi-Raygani, A., Salari, N., & Mohammadi, M. (2020). The Effect of Exercise on the Older Adult's Blood Pressure Suffering Hypertension: Systematic Review and Meta-Analysis on Clinical Trial Studies. *International journal of hypertension*, 2020, 2786120. <https://doi.org/10.1155/2020/2786120>
- Meher, M., Pradhan, S., & Pradhan, S. R. (2023). Risk Factors Associated With Hypertension in Young Adults: A Systematic Review. *Cureus*, 15(4), e37467. <https://doi.org/10.7759/cureus.37467>
- Mills, K. T., Stefanescu, A., & He, J. (2020). The global epidemiology of hypertension. *Nature reviews. Nephrology*, 16(4), 223–237. <https://doi.org/10.1038/s41581-019-0244-2>
- Purba, D. S., Panggabean, D. S., Tanjung, N. U., Pane, J. M., Sa'adah, N., & Amanda, D. (2025). Pengaruh senam hipertensi terhadap penurunan tekanan darah masyarakat di desa kotalimbaru. *JUKEJ : Jurnal Kesehatan Jompa*, 4(4), 1244–1249. <https://doi.org/10.57218/jkj.Vol4.Iss4.1874>
- Zhang, B., Hu, H., Mi, Z., & Liu, H. (2025). The Impact of Aerobic Exercise on Health Management in Older Patients with Hypertension: A Systematic Review of Randomized Controlled Trials from the Past Decade. *International journal of general medicine*, 18, 2823–2838. <https://doi.org/10.2147/IJGM.S516371>