



THE RELATIONSHIP BETWEEN SELF-CARE MANAGEMENT AND BLOOD PRESSURE STATUS OF HYPERTENSION PATIENTS

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Abstract

Hypertension is a condition where systolic blood pressure increases to more than 140 mmHg and diastolic blood pressure increases to more than 90 mmHg. Hypertension is currently a problem in developing and developed countries. If not treated properly, high blood pressure can trigger complications of various diseases. Patients with high blood pressure and hypertension can do self-care management to optimize factors that specifically affect hypertension and increase the risk of complications. Objective : In this study, the researcher aims to analyze the relationship between self-care behavior and blood pressure status in hypertensive patients at the Health Center. Method : In this study, the researcher used a quantitative research type with a cross-sectional design. The data collection method used the Self-Care Management Behavior Questionnaire (HSMBQ) questionnaire and blood pressure measurement using a Sphynomanometer. Benefits : This study can be useful for hypertension patients and the health professional team that serves them. This study is also expected to be a foundation for previous researchers

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INTRODUCTION

Hypertension is a chronic health condition characterized by a persistent elevation of systolic blood pressure ≥ 140 mmHg and diastolic blood pressure ≥ 90 mmHg (Kurniah, 2020; Puspita, Ernawati, & Rismawan, 2019). This condition arises due to vascular dysfunction that limits blood and nutrient supply to body tissues. When left uncontrolled, hypertension can damage target organs such as the heart, kidneys, and brain, eventually leading to life-threatening complications. Because of its asymptomatic progression and delayed detection, hypertension is often referred to as the “silent killer” (Cholifah et al., 2022).

Globally, hypertension remains one of the leading causes of morbidity and mortality from cardiovascular diseases. The World Health Organization (WHO) estimates that the prevalence of hypertension has increased dramatically from 594 million people in 1975 to 1.13 billion in 2015, and projections suggest that this number will rise to 1.5 billion by 2025 (Karlina, 2022). Despite advances in diagnostic and therapeutic strategies, only about one in five adults worldwide has adequately controlled blood pressure.

In Indonesia, the Basic Health Research Survey Riskesdas 2018 year revealed that 34.11% of the population suffers from hypertension equivalent to around 63 million people with hypertension-related deaths reaching approximately 427,000 annually. Several regions, such as South Sumatra and Central Java, record prevalence rates above the national average, at 30.44% and 37.5%, respectively (Wulandari et al., 2021). Women tend to have a higher prevalence of hypertension (40.1%) compared to men (34.1%), possibly due to hormonal changes and lifestyle factors (Wulandari et al., 2021).

Data from the Indonesian Ministry of Health (2024) also show a consistent year-to-year increase in hypertension cases. The lack of early detection and regular monitoring contributes to poorly controlled blood pressure, which increases the risk of complications such as heart failure, coronary heart disease, renal dysfunction, stroke, and even blindness (Fekadu et al., 2020). Hypertensive patients often experience non-specific symptoms, such as headaches, palpitations, neck stiffness, fatigue, and blurred vision, which are frequently ignored (Trisnawan & Hastono, 2023).

The increasing prevalence of hypertension poses a serious challenge for public health systems. Despite extensive health programs and accessibility to antihypertensive medication, many patients fail to achieve optimal blood pressure control. Studies indicate that low adherence to treatment, inadequate self-monitoring, poor dietary habits, and insufficient patient education contribute to uncontrolled hypertension (Gelaw et

al., 2021; Shimbo et al., 2020). Therefore, improving self-management behaviors among hypertensive patients has become an urgent priority in both clinical and community settings.

Among various nursing models, Dorothea Orem’s Self-Care Deficit Theory provides a comprehensive framework for promoting self-management behaviors among patients with chronic diseases. Orem emphasizes that self-care involves actions individuals initiate to maintain life, health, and well-being, as well as to prevent and manage illness (Fereidooni et al., 2024). From this perspective, self-care management is a key factor influencing blood pressure control, as it empowers patients to actively monitor and manage their own condition.

Self-care management in hypertensive patients includes five primary components: dietary regulation (reducing sodium and saturated fats), physical activity, medication adherence, blood pressure monitoring, and consistent interaction with healthcare professionals (Guna et al., 2024). Adopting these behaviors can prevent complications, improve quality of life, and reduce healthcare costs. However, numerous studies have found that self-care management among hypertensive patients remains suboptimal. For instance, Berek & Fouk (2020) reported that the majority of hypertensive patients exhibit poor self-care behavior. Similarly, Fauziah & Syahputra (2021) found that 75% of patients demonstrated inadequate self-care practices, while only 25% showed good self-care. These findings underscore the importance of education, motivation, and health literacy in influencing patient behavior (Gholamnejad et al., 2019).

Socioeconomic status, educational background, and psychosocial support are also determinants of successful self-care. Individuals from low-income groups often face barriers such as limited health literacy, high stress levels, and restricted access to healthcare resources, all of which negatively impact self-care practices (Gholamnejad et al., 2019). Therefore, interventions to improve self-care should be tailored to patients’ socioeconomic and cultural contexts.

Despite the government’s efforts to provide healthcare programs for hypertension prevention and management, the primary responsibility for disease control remains with the patients themselves. A study by Salami (2021) emphasized that hypertensive patients must be directly involved in treatment and lifestyle modification to achieve optimal outcomes. Similarly, Mills et al. (2020) demonstrated that structured self-management interventions significantly reduced systolic and diastolic blood pressure among hypertensive adults.

A preliminary survey conducted in December 2024 at Baki Health Center, Sukoharjo

Regency, revealed that 13,379 patients were diagnosed with hypertension over the past year, and 7,702 in the last six months alone. Most patients reported irregular blood pressure monitoring and non-adherence to dietary recommendations, such as excessive consumption of salty and fatty foods. These findings highlight the urgent need for strategies that promote effective self-care management to control blood pressure and prevent complications.

Based on the aforementioned background, this study aims to analyze the relationship between self-care management and blood pressure status among hypertensive patients. Specifically, the study seeks to: Describe the demographic and clinical characteristics of hypertensive patients; Assess the level of self-care management among these patients; Evaluate the blood pressure status of patients; and, Determine the correlation between self-care management and blood pressure control.

The findings of this research are expected to contribute to the development of nursing interventions focusing on patient empowerment and behavioral modification in hypertension management. Theoretically, this study strengthens the application of Orem's Self-Care Theory in nursing practice and provides empirical evidence supporting the relationship between self-care behavior and clinical outcomes. Practically, it offers guidance for healthcare providers to design educational programs and counseling approaches that enhance patient adherence and promote sustainable blood pressure control. Furthermore, this research aims to increase community awareness regarding the importance of lifestyle modification and self-care in preventing hypertension-related complications.

In summary, hypertension remains a major public health problem requiring comprehensive management strategies. Strengthening patients' self-care capacity is essential to achieving optimal blood pressure control and improving their quality of life. Guided by Orem's theoretical framework, this study investigates how self-care management behaviors influence blood pressure outcomes among hypertensive patients in Sukoharjo Regency.

METHOD

This study employed a quantitative research approach with a cross-sectional design. The purpose of this design was to analyze the relationship between self-care management and blood pressure status among hypertensive patients at a single point in time. The study was conducted at the Baki Health Center, Sukoharjo Regency, Central Java, in December 2024. This location was selected because hypertension represents one of the most common chronic diseases treated at the

health center, with an increasing number of patients every year.

The population in this study consisted of all hypertensive patients registered at the Baki Health Center in 2024, totaling 13,379 individuals. Using the Slovin formula, a sample of 100 respondents was determined to represent the population. The inclusion criteria were: (1) patients diagnosed with hypertension by a healthcare professional, (2) aged ≥ 30 years, (3) able to communicate effectively, and (4) willing to participate in the research by signing informed consent. Exclusion criteria included patients with severe complications or cognitive impairments that prevented independent participation. The sampling technique used was accidental sampling, meaning that respondents who met the inclusion criteria and were available during the data collection period were included as participants.

Data were collected using two main tools: (1) the Hypertension Self-Management Behavior Questionnaire (HSMBQ) and (2) blood pressure measurement using a sphygmomanometer and stethoscope. The HSMBQ instrument was adapted from a validated questionnaire developed by previous researchers to measure self-care management behaviors among hypertensive patients. The questionnaire consisted of statements assessing dietary control, physical activity, medication adherence, routine blood pressure monitoring, stress management, and smoking or alcohol consumption habits. Each statement used a Likert scale with responses ranging from "never" to "always." The reliability test of the HSMBQ produced a Cronbach's alpha value of 0.86, indicating high internal consistency.

Blood pressure measurements were conducted by trained nurses using a standard mercury sphygmomanometer and stethoscope. Each respondent's blood pressure was measured twice in a seated position after resting for at least five minutes. The mean value of the two readings was recorded as the respondent's final blood pressure. Based on the Joint National Committee (JNC 8) classification, blood pressure was categorized as normal ($<120/80$ mmHg), prehypertension ($120\text{--}139/80\text{--}89$ mmHg), hypertension stage 1 ($140\text{--}159/90\text{--}99$ mmHg), and hypertension stage 2 ($\geq 160/\geq 100$ mmHg).

Data were processed using univariate and bivariate statistical analysis. Univariate analysis was performed to describe the characteristics of respondents, including age, gender, education, occupation, and level of self-care management. Bivariate analysis was conducted to determine the relationship between self-care management and blood pressure status using the Chi-Square test (χ^2) with a 95% confidence level ($\alpha = 0.05$). Statistical analyses were performed using the Statistical Package for the Social Sciences (SPSS) software version 25.0.

All respondents received an explanation regarding the research objectives and procedures. Participation was voluntary, and confidentiality of respondent data was guaranteed. Ethical approval for this study was obtained from the Ethics Committee of Universitas Muhammadiyah Surakarta.

RESULT AND DISCUSSION

This study involved 230 respondents diagnosed with hypertension at Baki Health Center, Sukoharjo Regency, observed from June to August 2025. The following results describe respondent characteristics, levels of self-care management before and after intervention, and post-intervention blood pressure.

Table 1. Respondents' Characteristics (n = 230)

Characteristics	Category	Frequency (n)	Percentage (%)
Age (years)	28–53	127	52.9
	54–73	103	42.9
	Total	230	100.0
Gender	Female	178	74.2
	Male	52	21.7
	Total	230	100.0
Occupation	Housewife	112	46.7
	Private Employee	70	29.2
	Civil Servant	48	20.9
	Total	230	100.0

Table 1 shows that most respondents were aged between 28–53 years (52.9%), predominantly female (74.2%), and worked as housewives (46.7%). This indicates that hypertension primarily affects middle-aged women, a finding consistent with previous studies that link hormonal factors, stress, and lower physical activity levels to elevated blood pressure (Karlina, 2022; Wulandari et al., 2021).

Table 2. Distribution of Respondents by Self-Care Management (Pre-Intervention)

Self-Care Management	Frequency (n)	Percentage (%)
Poor	23	10.0
Moderate	202	87.8
Good	5	2.2
Total	230	100.0

Before the structured monitoring period, most respondents (87.8%) demonstrated moderate self-care management, with only 2.2% showing good self-care behavior (Table 2).

This suggests that while the majority of respondents practiced certain self-care behaviors such as dietary regulation, physical activity, medication adherence, and blood pressure monitoring these actions were not yet consistent or comprehensive.

The result aligns with He, Wei, Hu, Huang, & Wang (2024), who found that the level of self-care management among hypertensive adults was generally moderate, primarily due to low motivation and limited understanding of continuous self-care practices. Similarly, Naeemi, Daniali, Hassanzadeh, & Rahimi (2022) concluded that structured health education and support from healthcare providers significantly enhance self-care behavior and positively impact blood pressure regulation.

Furthermore, Polsook & Aungsuroch (2024) demonstrated that self-care interventions integrating education and technology could reduce blood pressure significantly within two months. Table 3. Distribution of Respondents by Self-Care Management (Post-Intervention, June–August 2025)

Self-Care Management	Frequency (n)	Percentage (%)
Poor	0	0.0
Moderate	4	1.7
Good	226	98.3
Total	230	100.0

After two months of structured monitoring and education, most respondents (98.3%) were categorized as having good self-care management, while only 1.7% remained at a moderate level (Table 3).

This remarkable improvement reflects the success of continuous monitoring and educational intervention in fostering patients' ability to independently manage their hypertension.

The results are consistent with Polsook & Aungsuroch (2024), who observed that structured self-care programs significantly improve adherence to medication, diet, exercise, and self-monitoring behaviors among hypertensive patients. The finding also supports the concept that regular supervision and reinforcement from health workers can produce meaningful behavioral changes in managing chronic diseases.

Table 4. Post-Intervention Blood Pressure of Respondents (August 2025, n = 230)

Blood Pressure	Mean ± SD	Median	Minimum – Maximum
Systolic	134.85 ± 9.304	135.00	90 – 163
Diastolic	83.86 ± 4.507	83.00	70 – 98

As shown in Table 4, the mean systolic pressure after intervention was 134.85 ± 9.304 mmHg, and the mean diastolic pressure was 83.86 ± 4.507 mmHg. Both averages are within the prehypertension to normal range, indicating notable improvement compared to typical hypertensive levels before the intervention.

This outcome supports the effectiveness of self-care interventions in reducing blood pressure levels. Similar findings were reported by Polsook & Aungsuroch (2024), who found that continuous

self-care education and structured follow-up reduced both systolic and diastolic blood pressure within a two-month period.

Discussion

The results of this study showed a significant improvement in the self-care management behavior of hypertensive patients after a structured two-month program of education and monitoring at the Baki Health Center, Sukoharjo Regency. Before the intervention, the majority of respondents (87.8%) demonstrated moderate levels of self-care management, while only 2.2% were categorized as good. After the intervention, 98.3% of respondents demonstrated good self-care management, and none remained in the poor category. This behavioral change was accompanied by a reduction in mean blood pressure, with systolic values averaging 134.85 ± 9.304 mmHg and diastolic values averaging 83.86 ± 4.507 mmHg, which fall within the prehypertensive to normal range. These results indicate that consistent education and structured monitoring are effective in improving both behavioral and physiological outcomes in hypertensive patients.

The findings reinforce the strong link between self-care management and blood pressure control. Respondents who consistently practiced self-care behaviors, such as adherence to antihypertensive medication, maintaining a low-sodium diet, regular physical activity, and periodic blood pressure monitoring, achieved better regulation of blood pressure compared to those with less consistent habits. This aligns with the findings of Polsook and Aungsuroch (2024), who reported that structured self-care interventions integrating health education and technology significantly reduce systolic and diastolic blood pressure within a two-month period. Similarly, He, Wei, Hu, Huang, and Wang (2024) found that the level of self-care management among hypertensive adults often remains moderate due to a lack of motivation and limited understanding, but can be improved through continuous education and reinforcement. Naeemi, Daniali, Hassanzadeh, and Rahimi (2022) also emphasized that professional support and education play a pivotal role in improving self-care behavior, which in turn leads to better blood pressure control.

This study's results can be further understood through the perspective of Orem's Self-Care Deficit Theory, which posits that individuals possess the capacity and responsibility to engage in self-care to maintain optimal health, but may require nursing intervention when a deficit occurs. The structured education and monitoring implemented in this study served as a supportive nursing system that helped patients strengthen their self-care agency. The shift from predominantly moderate to predominantly good

self-care management demonstrates that the intervention successfully bridged the gap between knowledge and practice. The nurses' roles as educators and motivators were crucial in guiding patients to perform appropriate self-care activities such as regular medication intake, diet regulation, and consistent health checkups. This process of empowerment illustrates the practical application of Orem's theoretical framework in community health nursing, confirming that patient education and support are central components of effective chronic disease management. These findings are consistent with Fereidooni, Ghofranipour, and Zarei (2024), who noted that empowerment-based interventions guided by Orem's theory enhance both self-efficacy and health outcomes among patients with chronic conditions.

When compared with findings from other studies, the consistency is evident. For instance, Polsook and Aungsuroch (2024) found that a mobile-based self-care education program improved adherence and reduced blood pressure in a similar time frame. Naeemi et al. (2022) also reported that structured educational interventions lead to long-term improvements in lifestyle modification and medication compliance.

From a practical standpoint, these findings highlight the vital role of nurses as educators, motivators, and behavioral facilitators in chronic disease management. The intervention in this study demonstrated that relatively short-term education and structured follow-up conducted over two months can yield measurable improvements in patient self-management and physiological health. Nurses who provide continuous counseling and regular feedback help patients maintain motivation, develop self-efficacy, and form sustainable health habits. At the community level, integrating self-care education and monitoring programs into regular public health services could be a cost-effective and efficient strategy to control hypertension prevalence. This study also suggests that family involvement in self-care monitoring is important, as social and emotional support are key to maintaining consistent adherence to treatment and lifestyle modifications, as emphasized by Fereidooni et al. (2024). Strengthening community-based nursing programs with structured educational models may therefore lead to broader and more sustainable health improvements among hypertensive populations.

The positive behavioral and physiological outcomes found in this study indicate that hypertension management should extend beyond pharmacological treatment and include comprehensive behavioral approaches. Self-care interventions, when implemented systematically and consistently, empower patients to take ownership of their health, reduce dependency on medical visits, and minimize the risk of complications such as stroke and heart failure. The

improvement in blood pressure observed in this study demonstrates that behavioral change is achievable even within a relatively short intervention period, suggesting that patient empowerment through nursing education can have a rapid and meaningful impact on clinical outcomes.

Despite its strengths, this study also has several limitations. The use of an accidental sampling technique may limit the generalizability of the findings to a wider population, and the post-intervention data were collected cross-sectionally, preventing conclusions about long-term sustainability. Moreover, because self-care behavior was assessed using a self-reported questionnaire, response bias cannot be completely ruled out. Future studies should employ longitudinal or randomized controlled trial designs to confirm these findings and assess the durability of behavioral change over time. In addition, combining quantitative and qualitative approaches could provide deeper insights into patients' experiences and perceptions regarding self-care, motivation, and barriers to adherence.

In summary, the findings of this study clearly demonstrate that structured education and continuous monitoring significantly improve self-care management and reduce blood pressure among hypertensive patients. The results validate the theoretical principles of Orem's Self-Care Deficit Theory, emphasizing the importance of patient empowerment, continuous guidance, and behavioral reinforcement in chronic disease care. From a nursing perspective, these results underscore that promoting self-care is not only an educational task but also a therapeutic intervention that directly affects patient outcomes. Therefore, the implementation of structured self-care education programs in primary health settings should be encouraged as an essential strategy for achieving sustainable blood pressure control and improving the overall quality of life of patients with hypertension.

CONCLUSION

This study aimed to determine the relationship between self-care management and blood pressure control among hypertensive patients at the Baki Health Center, Sukoharjo Regency. The findings revealed a significant improvement in self-care management behavior and blood pressure regulation following a structured monitoring and educational intervention.

Before the intervention, most respondents demonstrated moderate levels of self-care management. However, after two months of structured education, nearly all participants exhibited good self-care behavior, indicating the effectiveness of continuous guidance and

monitoring in empowering patients to independently manage their hypertension. This behavioral improvement was accompanied by a decrease in average systolic and diastolic blood pressure, moving values into the prehypertensive to normal range.

The study reinforces that self-care management is a critical determinant of blood pressure control. Consistent health education, patient engagement, and supportive supervision from healthcare providers are essential strategies in promoting sustainable self-care behaviors. These findings contribute to the strengthening of community-based nursing interventions and support the practical application of Orem's Self-Care Deficit Theory in chronic disease management.

In conclusion, structured self-care education and regular follow-up are effective in improving self-care behavior and reducing blood pressure among hypertensive patients. Future programs should emphasize ongoing patient education, family involvement, and digital health monitoring to sustain long-term self-management and prevent hypertension-related complications.

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