



The Relationship between Self-Care Needs and Hypertension Control as a Means of Preventing Medical Emergencies in Patients with Chronic Kidney Disease

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Abstract

Background: Chronic kidney disease is often accompanied by hypertension and carries a risk of medical emergencies. Blood pressure control can be achieved through self-care practices, particularly dietary salt reduction. **Objective:** This study aims to determine the relationship between self-care requisites and blood pressure control in patients with chronic kidney disease. **Methods:** This cross-sectional study involved 109 respondents selected through accidental sampling. Data were collected using the Dietary Salt Reduction Self-Care Behavior (DSR-SCB) questionnaire and blood pressure measurements, then analyzed using the Chi-square test. **Results:** Most respondents had adequate self-care (45.0%), while 52.3% had uncontrolled blood pressure. The Chi-square test showed a significant association between self-care level and blood pressure control ($p < 0.001$), with better self-care correlating with improved blood pressure control. **Conclusion:** There is a significant association between self-care practices and blood pressure control among patients with chronic kidney disease. Enhanced patient education on self-care, particularly salt restriction, is essential to prevent complications.

Keywords

Chronic kidney disease, Self-care needs, Dietary salt reduction, Hypertension, Blood pressure management

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I. BACKGROUND

Hypertension is a clinical condition that affects the heart and blood vessels and is recognized as a global health issue that poses significant risks. Approximately 30–40% of adults have high blood pressure, which significantly increases the risk of heart disease and vascular problems

(Goorani et al., 2025). Persistent high blood pressure can accelerate the progression of chronic kidney disease, and a progressive decline in estimated glomerular filtration rate (eGFR) can, in turn, hinder the achievement of adequate blood pressure control for patients with impaired kidney function, hypertension

becomes increasingly complex due to disruptions in the renin-angiotensin-aldosterone system and issues with sodium excretion, which worsen kidney disease and increase the likelihood of hypertensive emergencies such as hypertensive crisis, severe pulmonary edema, acute kidney injury, and cerebrovascular complications (Georgianos & Agarwal, 2023). Therefore, it is crucial to manage blood pressure in patients with chronic kidney disease to prevent medical emergencies.

Hypertension is a global health issue with a steadily rising prevalence. The World Health Organization (WHO) states that approximately 1.4 billion adults worldwide have hypertension, and fewer than 20% of them can effectively manage their blood pressure, thereby increasing the risk of heart and kidney complications (WHO, 2025). In Indonesia, high blood pressure has a relatively high prevalence. According to the Indonesian Health Survey (SKI, 2023), 34.11% of the Indonesian population has hypertension. In Cianjur (Open Data Kabupaten Cianjur, 2024), data indicate a high number of hypertensive patients receiving treatment at community health centers (puskesmas), particularly in Cilaku (9,917 people) and Leles (6,083 people). The high number of hypertensive cases recorded at puskesmas

underscores the critical role of these centers in managing hypertension and preventing complications and medical emergencies.

Efforts to control blood pressure in patients with chronic kidney disease do not rely solely on pharmacological therapy. However, they are also significantly influenced by the patient's ability to practice self-care. Self-care requisites are crucial in addressing issues related to high blood pressure, particularly for individuals with chronic conditions. According to Orem's theory, Self-Care Requisites involve an individual's ability to perform simple activities, such as adopting a healthy lifestyle, maintaining a balanced diet to sustain a healthy weight, engaging in physical activity, reducing salt and alcohol intake, avoiding smoking, and similar actions (Tiksnadi, 2025). A low-sodium diet is a key component of self-care requisites that plays a direct role in blood pressure control; a study (Grillo et al., 2019) demonstrated that long-term reduction in sodium intake significantly lowers blood pressure in both hypertensive and normotensive individuals.

However, several studies indicate that the challenges faced by people with hypertension are often linked to poor self-care. (Augusto et al., 2022) Note that poor

self-care contributes to increased complications for patients with hypertension. At the same time, another study reveals that the majority of patients with chronic kidney disease have poor self-care skills (Sinurat et al., 2022). The inability to control hypertension in patients with declining kidney function also contributes to an increased risk of medical emergencies, higher healthcare costs, and a reduced quality of life for patients.

Despite growing evidence linking self-care to hypertension management, limited research has specifically examined how dietary salt reduction self-care operates within rural Indonesian primary care settings where CKD and hypertension coexist. Most existing studies focus on urban populations or hospital-based cohorts, leaving a gap in understanding community-level barriers, measurement validity, and the practical integration of Orem's theory in resource-limited settings. This study addresses that gap by evaluating the relationship between salt-reduction self-care and BP control among CKD patients in Sukasari Village, providing actionable data for community nursing and primary care program development.

This study aims to analyze self-care requirements for patients with

hypertension and chronic kidney disease in Sukasari Village, focusing on a low-sodium diet, and to investigate whether low sodium intake is associated with blood pressure control. It is hoped that the results of this study can serve as a guide for nurses in healthcare services to develop educational materials or use media such as leaflets or brochures on salt-free diets, teach self-care requisites to patients with kidney disorders more effectively, and strengthen the monitoring of self-care requisites as a means to prevent the dangers of high blood pressure in primary care.

2. METHODS

This study employed a quantitative research approach with a cross-sectional design. This design was chosen to examine the relationship between self-care needs and blood pressure control in patients with chronic kidney disease at a specific point in time. The study was conducted in the village of Sukasari.

The study population consisted of all patients with chronic kidney disease in Sukasari Village. The sample size was 109 respondents, determined based on inclusion criteria and selected using accidental sampling. Inclusion criteria included patients diagnosed with

hypertension or chronic kidney disease, residing in Sukasari Village within the health center's service area, aged ≥ 18 years, and willing to participate. Exclusion criteria included patients in a state of medical emergency and patients with cognitive impairment.

The sampling technique used is accidental sampling, based on the principle of spontaneity: anyone who happens to encounter the researcher and meets the specified criteria may be selected as a sample (respondent) (Sanulita et al., 2024).

The independent variable was the level of self-care requisites, measured using the Dietary Salt Reduction Self-Care Behavior (DSR-SCB) questionnaire. The instrument underwent validation and demonstrated good internal consistency (Cronbach's $\alpha = 0.86$). The dependent variable was hypertension control, defined as systolic/diastolic BP $<130/80$ mmHg, aligning with KDIGO (2021) guidelines for CKD patients. BP was measured using a calibrated digital sphygmomanometer following a standardized 5-minute seated rest protocol. Data collection involved face-to-face interviews using the DSR-SCB questionnaire and clinical BP measurement. Researchers provided standardized instructions to ensure respondent comprehension. Ethical approval was obtained from the

institutional review board, and all participants provided informed consent. Confidentiality was strictly maintained throughout the study. Data analysis was conducted using univariate and bivariate methods. Univariate analysis was used to describe the distribution of respondent characteristics and study variables. Bivariate analysis was performed using the Chi-square test to determine the relationship between the level of self-care requirements and hypertension control. A p-value of <0.05 was considered statistically significant.

This study has received ethical approval from Research Ethics Committee of STIKes Permata Nusantara (Approval No. 074/9.V/KEPK-PERNUS/II/2026). All participants were provided with an explanation of the study's objectives and gave their consent to participate through an informed consent form. The researchers also ensured the confidentiality of participants' identities and data throughout the study.

3. RESULTS

This study involved univariate and bivariate analyses. Univariate analysis was conducted to determine the characteristics of the respondents based on age, gender, level of self-care requirements, and hypertension control. Meanwhile,

bivariate analysis was conducted to determine the relationship between the level of self-care requirements and

hypertension control, which was analyzed using the chi-square test.

Table 1. Frequency Distribution of respondents by Characteristics (N=109)

Characteristics	Frequency (n)	Percentage (%)
Age (Years)		
18-25	1	0.9
26-35	29	26.6
36-45	30	27.5
46-55	22	20.2
56-65	16	14.7
66-75	10	9.2
86-95	1	0.9
Gender		
Male	32	29.4
Female	77	70.6

Table 1 shows the majority of respondents (30, 27.5%) were in the 36-45 age group. The 26-35 age group ranked second with 29 people (26.6%). 22 respondents (20.2%) were aged 46-55 years, and 16 respondents (14.7%) were aged 56-65 years. The 66-75 age group

consisted of 10 people (9.2%). Respondents aged 18-25 and 86-95 each numbered only 1 person (0.9%). Based on gender distribution, of the 109 respondents surveyed, the majority were female, totaling 77 people (70.6%). Meanwhile, there were 32 male respondents (29.4%).

Table 2. Frequency Distribution of Self-Care Requisites Level (N=109)

Level of Self- Care	Frequency (n)	Percentage (%)
Good	36	33.0
Fair	49	45.0
Poor	24	22.0

Table 2 shows the levels of self-care requirements obtained. The majority of respondents fell into the “adequate” category, totaling 49 people (45.0%). There

were 36 respondents (33.0%) in the “good” category, while 24 respondents (22.0%) fell into the “poor” category.

Table 3. Frequency Distribution of Hypertension Control (N=109)

Hypertension Control	Frequency (n)	Percentage (%)
Controlled	52	47,7
Uncontrolled	57	52,3

Table 3 shows that hypertension control, measured through blood pressure examinations, was achieved by 52 respondents (47.7%) in the controlled

blood pressure category, while 57 respondents (52.3%) were in the uncontrolled blood pressure category.

Table 4. The Relationship Between Self-Care Requisites Level and Blood Pressure Control

Self-Care	Hypertension Control				Total	p Value
	Controlled	%	Uncontrolled	%		
Good	32	88.9	4	11.1	36	0.000
Fair	18	36.7	31	63.3	49	
Poor	2	8.3	22	91.7	24	
Total	52	47.7	57	52.3	109	

Table 4 showed that among the 36 respondents with good self-care practices, the majority 32 (88.9%) had controlled blood pressure, while 4 (11.1%) had uncontrolled blood pressure. In the adequate self-care group, consisting of 49 respondents, 18 (36.7%) had controlled blood pressure, and 31 (63.3%) had uncontrolled blood pressure. Meanwhile, in the poor self-care group, consisting of 24 respondents, only 2 (8.3%) had controlled blood pressure, while the majority (22 people) (91.7%) had uncontrolled blood pressure

achieving blood pressure control among the respondents. In Winata et al. (2020), self-care for hypertensive patients includes reducing excessive salt intake and adherence to medication. This is also consistent with the study by Alqurain et al. (2026), which states that reducing sodium intake is one of the effective lifestyle interventions for lowering blood pressure and aiding in the management of hypertension in patients with chronic diseases.

4. DISCUSSION

Based on the results of the chi-square test, a p-value of 0.000 ($p < 0.05$) was obtained. These results indicate a significant association between self-care requirements and blood pressure control among patients with chronic kidney disease in Sukasari Village. This suggests that limiting salt intake plays a role in

Additionally, the study by Adi et al. (2025) explains that a low-salt diet is an important factor. Besides age, gender also influences attitudes toward seeking psychological help. Female adolescents tend to be more open in expressing emotions, whereas males are often influenced by masculine norms that hinder seeking help. These results align with the research by Hapsari and Krianto (2023), which found that males tend to view seeking help as a sign of weakness.

component of self-care for hypertensive patients, as it can help lower blood pressure and prevent cardiovascular complications. Similar findings were reported in a study (Shi et al., 2022), which found that limiting salt intake helps reduce fluid retention and lower blood pressure, particularly in patients with impaired kidney function.

However, this study found that some respondents with good self-care practices still had uncontrolled blood pressure. The study results showed that among respondents with good self-care (88.9%), 11.1% had uncontrolled blood pressure. This finding indicates that although self-care behaviors are considered beneficial, blood pressure control is not always optimal because factors beyond self-care continue to influence it. In patients with chronic kidney disease, physiological conditions such as impaired fluid and electrolyte regulation can make blood pressure more difficult to control, even if patients have attempted to limit salt intake and adopt a healthy lifestyle. Additionally, adherence to antihypertensive medication is a critical factor that can influence the success of blood pressure control. Some patients may have effectively implemented certain aspects of self-care but have not been fully consistent in adhering to their medical therapy. This aligns with research

indicating that blood pressure control success is significantly influenced by the combination of medication adherence and lifestyle changes (Anian et al., 2025).

Furthermore, research by Rachmawati et al. (2024) also confirms that regular pharmacological treatment plays a vital role in maintaining stable blood pressure, particularly in patients with chronic conditions such as kidney failure. Without good adherence, the full effectiveness of therapy cannot be achieved. These findings are further supported by a study (Artini et al., 2022), which notes that non-adherence to medication remains one of the primary causes of treatment failure in hypertension, even among patients who are already aware of the importance of self-care. These findings can be explained through the self-care theory proposed by Dorothea Orem in her book (Orem, 2026), which states that self-care is an individual's ability to meet their own care needs independently to maintain health. This theory explains that even if an individual possesses good self-care skills, outcomes are still influenced by other factors, such as physical and psychological conditions and environmental support. Thus, good self-care must still be balanced with consistency across all aspects of disease management, including medication, health

monitoring, and psychological factors. Without this balance, a patient's blood pressure may remain uncontrolled even if their self-care behaviors are generally considered good. This study also found that some respondents with poor self-care practices still had their blood pressure under control. The results showed that of the 24 respondents with poor self-care practices, 8.3% had controlled blood pressure. This finding suggests that factors other than self-care behaviors also play a role in blood pressure control. One such factor is age. Based on univariate data, some respondents were younger and had better blood vessel condition and bodily functions, making blood pressure easier to control even if self-care behavior is not yet optimal. Additionally, family support can also be an influential factor. Respondents with poor self-care can still maintain controlled blood pressure if there are family members who help remind them of dietary habits, physical activity, or health monitoring.

In line with research by Thuy et al. (2021), indicating that social support improves an individual's health, including blood pressure control, another factor that may also play a role is the duration of hypertension. Respondents who have had hypertension for a long time tend to have experience in recognizing their body's

condition, including the signs when blood pressure begins to rise. Although self-care levels are generally low, this experience can help individuals make certain adjustments independently to keep blood pressure within controlled limits. Research (Farisya et al., 2024) indicates that long-term experience in managing chronic diseases can influence an individual's ability to manage their condition, including maintaining stable blood pressure. Thus, the finding that 8.3% of respondents in this study had inadequate self-care yet maintained controlled blood pressure may be influenced by the duration of their hypertension, thereby indirectly aiding in maintaining blood pressure stability.

This study demonstrates a significant association between dietary salt reduction self-care and hypertension control among CKD patients in a rural community setting ($p < 0.001$). These findings align with global evidence emphasizing sodium restriction as a cornerstone of non-pharmacological BP management (Alqurain et al., 2026; Grillo et al., 2019). Limiting salt intake reduces extracellular fluid volume and mitigates RAAS overactivation, directly lowering BP in CKD populations (Shi et al., 2022).

Interpreting these results through Orem's Self-Care Deficit Theory, individuals with "good" self-care exhibit

higher self-care agency, effectively translating knowledge into consistent behavioral practices. However, 11.1% of respondents with "good" self-care still presented uncontrolled BP. This discrepancy can be explained by CKD-specific pathophysiological factors: progressive nephron loss impairs sodium and fluid homeostasis, rendering dietary modification insufficient without concurrent pharmacological optimization. Additionally, polypharmacy, suboptimal medication adherence, and undetected volume overload may decouple self-care efforts from clinical BP outcomes (Georgianos & Agarwal, 2023; Rachmawati et al., 2024). Orem's framework emphasizes that self-care outcomes depend not only on individual agency but also on therapeutic self-care demands and environmental support. When physiological demands exceed self-care capacity, a nursing system or multidisciplinary intervention becomes necessary.

Conversely, 8.3% of respondents with "poor" self-care maintained controlled BP. This may reflect compensatory factors such as younger age, preserved vascular elasticity, strong family support, or long-term adaptation to the disease (Farisyta et al., 2024; Thuy et al., 2021). Some patients may have developed intuitive BP

monitoring habits or benefit from consistent antihypertensive regimens despite poor dietary adherence. These exceptions highlight that self-care is one component of a broader ecological model of chronic disease management.

From a community nursing perspective, these findings underscore the need for structured, culturally adapted self-care programs in puskesmas settings. Integrating Orem's theory into routine care requires assessing self-care deficits, providing compensatory education, and leveraging family/community networks to sustain dietary changes. Regular BP monitoring, medication reconciliation, and salt-literacy counseling should be standardized in CKD management protocols.

5. CONCLUSION

Based on the research findings, it can be concluded that there is a significant association between the level of self-care practices and blood pressure control in patients with chronic kidney disease; specifically, the higher the level of self-care, the greater the likelihood that blood pressure will be well-controlled. These findings indicate that self-care behaviors play a crucial role in maintaining stable blood pressure, although factors beyond self-care also influence blood pressure

control. Therefore, it is recommended that healthcare providers enhance education and support for patients on the importance of consistently practicing self-care, particularly by limiting salt intake and maintaining a healthy lifestyle. Additionally, families are encouraged to support patients in their daily self-care practices, and patient groups should be established to facilitate peer support and shared meal planning. For future researchers, it is recommended to examine other factors that may influence blood pressure control and to use more complex research designs to obtain more in-depth results.

AUTHOR CONTRIBUTIONS

The first author was responsible for conceptualization, data collection, data analysis, and manuscript preparation. The second author supervised the research process, contributed to the methodological design, validated the research instruments, and critically revised the manuscript. The third author contributed to data interpretation and provided critical review and final approval of the manuscript.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest regarding the publication of this research.

DATA AVAILABILITY STATEMENT

The data data can be accessed from the corresponding author upon reasonable request.

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