



Associations of Knowledge and Hypertension Duration with Self-Care Management Among Patients at Puskesmas Pakuan Baru, Jambi City: A Cross-Sectional Study

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Abstract

Research Objective: To examine the associations of knowledge and hypertension duration with self-care management among patients with hypertension at Puskesmas Pakuan Baru, Jambi City. **Methodology:** This analytical cross-sectional study included 100 patients selected using convenience (accidental) sampling. Respondent characteristics, hypertension knowledge, duration of hypertension, and self-care management were assessed using questionnaires. Frequency distributions were used for descriptive analysis. Pearson chi-square tests were supplemented by Fisher–Freeman–Halton Monte Carlo exact tests because several expected cell counts were below five, and Cramér’s V was reported as the effect-size measure. **Results:** Most respondents were female (62%), had completed senior high school (48%), were homemakers (42%), had a family history of hypertension (64%), had experienced hypertension for 6–10 years (46%), had fair knowledge (71%), and had fair self-care management (70%). Knowledge was associated with self-care management (Pearson $\chi^2(4) = 40.52$, $p < 0.001$; exact $p < 0.001$; Cramér’s $V = 0.45$). Hypertension duration was also associated with self-care management (Pearson $\chi^2(4) = 10.22$, $p = 0.037$; exact $p = 0.025$; Cramér’s $V = 0.23$), but the pattern was non-linear: the 6–10-year group had the largest proportion with fair self-care management, whereas the >10-year group had the largest proportion with low self-care management. **Conclusion:** Knowledge and hypertension duration were associated with self-care management in this sample. The cross-sectional findings do not establish direction or causality, and longer disease duration should not be interpreted as necessarily producing better self-care. Education and follow-up should be tailored to patients’ knowledge and self-care needs across all duration groups.

Keywords: *Hypertension, Knowledge, Duration of Hypertension, Self-Care Management*

INTRODUCTION

Hypertension is a noncommunicable disease characterized by an increase in systolic blood pressure of ≥ 140 mmHg and/or diastolic blood pressure of ≥ 90 mmHg. This disease is a public health concern because it is chronic, often asymptomatic in its early stages (silent killer), and can lead to various serious complications such as heart disease, stroke, kidney failure, and vascular disorders if not properly managed (Sarumaha & Diana, 2018).

According to the World Health Organization (WHO), in 2024, approximately 1.4 billion adults aged 30–79 worldwide will have hypertension, with two-thirds of these cases occurring in low- and middle-income countries. As many as 44% of those affected are unaware of their condition, and only 23% have their blood pressure under control, making hypertension one of the leading causes of premature death worldwide and its control a global priority (WHO, 2024). In Indonesia, hypertension is also a growing public health problem. In 2018, the number of people with hypertension was estimated at 63.3 million, with 427,218 deaths attributed to hypertension (Rohmah et al., 2023). Meanwhile, the 2023 Indonesia Health Survey (SKI) shows that the prevalence of hypertension among adults is 34.11%, making Indonesia one of the countries with the highest burden of hypertension in the world (Badan Kebijakan Pembangunan Kesehatan, 2023).

The high prevalence of hypertension is influenced by nonmodifiable risk factors, such as age, sex, and genetics, as well as modifiable factors, such as obesity, physical inactivity, smoking, stress, alcohol consumption, and excessive salt intake. Uncontrolled hypertension can lead to serious complications, such as cardiovascular disease, kidney disease, stroke, and even death (Rohmah et al., 2023). Therefore, the practice of self-care management is crucial in helping patients control their blood pressure and prevent complications. The ability to practice self-care management is influenced by various factors, including age, gender, educational level, occupation, marital status, knowledge, family and social support, economic status, and the duration of hypertension (Putri & Faqih, 2025).

Self-care management is a key component of hypertension control. Self-care management refers to an individual's ability to manage their condition independently through adherence to medication, dietary management, physical activity, stress management, smoking cessation, limiting alcohol consumption, and regular blood pressure monitoring. Effective self-care management can help control blood pressure, prevent complications, and improve the quality of life for people with hypertension (Mutmainna et al., 2025).

The ability of people with hypertension to practice self-care management may be associated with both knowledge and the duration of illness. Knowledge can support informed decisions regarding medication, diet, physical activity, stress management, and monitoring. Hypertension duration may have a more complex relationship with self-care: accumulated experience may strengthen routines, whereas long-term treatment burden or fatigue may weaken some self-care behaviors. Therefore, duration should not be assumed to have a uniformly positive or linear association with self-care management.

Based on data from Dinas Kesehatan Jambi City in 2024, Puskesmas Pakuan Baru had the highest number of patients with hypertension in Jambi City, Indonesia, with a total of 10,877 cases recorded during the 2022–2024 period. Preliminary observations also indicated variations in the levels of knowledge, duration of hypertension, and self-care management among patients with hypertension at Puskesmas Pakuan Baru, Jambi City, Indonesia. These findings suggest that further research is needed to investigate the factors associated with self-care management among patients with hypertension at Puskesmas Pakuan Baru (Dinas Kesehatan Kota Jambi, 2024).

The research question was: Are knowledge level and hypertension duration associated with self-care management among patients with hypertension at Puskesmas Pakuan Baru, Jambi City? The hypotheses were non-directional: (1) knowledge level is associated with self-care management, and (2) hypertension duration is associated with self-care management.

The objective of this study was to describe respondents' knowledge, hypertension duration, and self-care management and to examine the associations of knowledge and hypertension duration with self-care management among patients with hypertension at Puskesmas Pakuan Baru, Jambi City.

METHODS

This study used an analytical cross-sectional design to examine associations of knowledge and hypertension duration with self-care management among patients with hypertension at Puskesmas Pakuan Baru, Jambi City. The cross-sectional design permits assessment of associations at one point in time but does not establish temporal direction or causality.

Data were collected using a respondent-characteristics form, a hypertension-knowledge questionnaire, and a self-care-management questionnaire. Hypertension duration was obtained from participant self-report and categorized as 1–5 years, 6–10 years, and >10 years. The authors should specify the name or source, number of items, response options, score range, category cutoffs, language-adaptation process, validity results, and reliability coefficient for each questionnaire. Eligible patients were approached at the study site, received an explanation of the study, and provided written informed consent before completing the questionnaires. Data were collected in a manner that protected participant

privacy and confidentiality. The authors should add who administered the questionnaires, where they were completed, the approximate completion time, and how incomplete responses were handled.

Data processing included editing, coding, entry, and cleaning. Univariate analysis used frequencies and percentages. Associations were initially evaluated using Pearson's chi-square test with a two-sided significance level of $p < 0.05$. For both 3×3 contingency tables, 4 of 9 expected cell counts (44.4%) were below five; therefore, the Fisher–Freeman–Halton exact test with Monte Carlo simulation (200,000 resamples) was used as a robustness check. Cramér's V was calculated to describe effect size. Statistical results are reported using the test statistic, degrees of freedom, p-value, exact p-value, and effect size. All 100 respondents had complete data for the variables included in the presented analyses.

RESULTS

Table 1. Respondent Characteristics

Characteristics	Frequency (f)	Percentage (%)
Age (years)		
26–65	100	100
Gender		
Male	38	38
Female	62	62
Education		
No School	0	0
Elementary School	8	8
Junior High School	24	24
Senior High School	48	48
College/University	20	20
Occupation		
Laborers	12	12
Teachers	6	6
Merchants	18	18
Private-sector employees	15	15
Civil Servant	7	7
Homemaker	42	42
Others	0	0
Family History of Hypertension		
Yes	64	64
No	36	36
Total	100	100

Table 1 shows that all respondents were 26–65 years old. Most were female (62%), had completed senior high school (48%), were homemakers (42%), and reported a family history of hypertension (64%).

Table 2. Distribution of Hypertension Knowledge Among Respondents

Knowledge	Frequency (f)	Percentage (%)
Good	25	25.0
Fair	71	71.0
Low	4	4.0
Total	100	100

As shown in Table 2, 71 respondents (71.0%) had fair knowledge, 25 (25.0%) had good knowledge, and 4 (4.0%) had low knowledge.

Table 3. Distribution of Hypertension Duration Among Respondents

Duration of Hypertension	Frequency (f)	Percentage (%)
1–5 Years	34	34.0
6–10 Years	46	46.0
>10 Years	20	20.0
Total	100	100

As shown in Table 3, 46 respondents (46.0%) had lived with hypertension for 6–10 years, 34 (34.0%) for 1–5 years, and 20 (20.0%) for more than 10 years.

Table 4. Distribution of Self-Care Management Among Respondents

Self-Care Management	Frequency (f)	Percentage (%)
Good	8	8.0
Fair	70	70.0
Low	22	22.0
Total	100	100

As shown in Table 4, 70 respondents (70.0%) had fair self-care management, 22 (22.0%) had low self-care management, and 8 (8.0%) had good self-care management.

Table 5. Association Between Knowledge and Self-Care Management

Knowledge	Self-Care Management								Exact p
	Good		Fair		Low		Total		
	f	%	f	%	f	%	f	%	
Good	8	32	14	56	3	12	25	100	<0.001
Fair	0	0	56	78.9	15	21.1	71	100	
Low	0	0	0	0	4	100	4	100	
Total	8	8	70	70	22	22	100	100	

Knowledge was associated with self-care management (Pearson $\chi^2(4) = 40.52$, $p < 0.001$). Because 4 of 9 expected cell counts were below five, the Fisher–Freeman–Halton Monte Carlo exact test was also examined and remained significant (exact $p < 0.001$). The effect size was Cramér’s $V = 0.45$. The cross-tabulation showed a graded pattern: 32.0% of respondents with good knowledge had good self-care management, compared with none in the fair- and low-knowledge groups; all respondents with low knowledge had low self-care management.

Table 6. Association Between Hypertension Duration and Self-Care Management

Hypertension Duration	Self-Care Management								Exact p
	Good		Fair		Low		Total		
	f	%	f	%	f	%	f	%	
1–5 Years	4	11.8	21	61.8	9	26.5	34	100	0.025
6–10 Years	2	4.3	39	84.8	5	10.9	46	100	
>10 Years	2	10	10	50	8	40	20	100	
Total	8	8	70	70	22	22	100	100	

Hypertension duration was associated with self-care management (Pearson $\chi^2(4) = 10.22$, $p = 0.037$). Because 4 of 9 expected cell counts were below five, the Fisher–Freeman–Halton Monte Carlo exact test was used as a robustness check and was significant (exact $p = 0.025$). The effect size was Cramér’s $V = 0.23$. The pattern was non-linear: fair self-care management was most frequent in the 6–10-year group (84.8%), whereas low self-care management was most frequent in the >10-year group (40.0%).

DISCUSSION

Relationship Between Knowledge and Self-Care Management Among Patients with Hypertension at Puskesmas Pakuan Baru, Jambi City

Knowledge was significantly associated with self-care management, with a moderate-to-large effect size (exact $p < 0.001$; Cramér’s $V = 0.45$). The distribution was consistent with a graded association: respondents with good knowledge were more frequently represented in the good self-care category, while all respondents with low knowledge were in the low self-care category. Nevertheless, the cross-sectional design does not demonstrate that knowledge caused the observed self-care pattern.

This finding is consistent with evidence that knowledge is related to patients’ understanding of hypertension and their capacity to make informed self-care decisions. Wibrata et al. (2023) emphasized the role of patients’ perceptions and understanding in adherence behavior, while Efriani et al. (2023) reported an association between knowledge and self-care management among patients with hypertension. These comparisons support the relevance of knowledge-focused education, although differences in instruments, settings, and participant characteristics should be considered.

Knowledge may support medication-taking, dietary management, physical activity, stress management, and routine monitoring by helping patients understand why these behaviors are recommended. However, the present study measured categorized knowledge and overall self-care management; it did not separately test which self-care dimensions were most strongly associated with knowledge.

The findings indicate that patients with low or fair knowledge may require additional assessment and tailored education. The study did not measure blood-pressure control, quality of life, or clinical complications; therefore, the association with self-care management should not be extended to claims about those outcomes.

From a practice perspective, education should be linked to the specific self-care behaviors that patients find difficult and should be reinforced during follow-up visits. Further longitudinal research is needed to determine whether improvements in knowledge precede and contribute to sustained changes in self-care management.

Relationship Between Duration of Hypertension and Self-Care Management Among Patients with Hypertension at Puskesmas Pakuan Baru, Jambi City

Hypertension duration was associated with self-care management (exact $p = 0.025$; Cramér’s $V = 0.23$), but the cross-tabulation did not show a monotonic pattern. The 6–10-year group had the highest proportion of fair self-care management (84.8%) and the lowest proportion of low self-care management (10.9%). In contrast, the >10-year group had the highest proportion of low self-care management (40.0%). Therefore, the results do not support the statement that progressively longer hypertension duration necessarily corresponds to better self-care management.

Kurnia et al. (2023) also identified duration of hypertension as a factor related to self-care management. Accumulated experience with treatment and health services may help some patients establish routines. However, the less favorable distribution in the >10-year group in the present study suggests that long-term treatment burden, reduced motivation, changing health status, or differences in

support may also be relevant. These possible explanations were not directly measured and should be treated as hypotheses rather than established mechanisms.

Self-care is learned and consciously performed to maintain health and well-being (Sari et al., 2021). Its relationship with illness duration may differ across behaviors; for example, medication routines, dietary practices, physical activity, stress management, and monitoring may not change in the same direction over time. Analysis using domain-specific self-care scores would help clarify this issue.

Rohmah et al. (2023) found that many patients with hypertension in Jambi City had adequate self-care management. The present findings add local evidence that both recently diagnosed and long-term patients may require continuing assessment rather than education based solely on duration of illness.

Self-care management remains an important component of long-term hypertension care. In this study, however, only self-reported self-care management was analyzed. Blood pressure, medication adherence verified through records, and complications were not measured; consequently, no conclusion can be drawn regarding clinical control or complication prevention.

Puskesmas Pakuan Baru should consider follow-up strategies for all duration groups, including orientation and skills support for newly diagnosed patients and reassessment of motivation, barriers, and treatment burden among long-term patients. The non-linear pattern indicates that duration alone is insufficient for identifying patients with strong or weak self-care management.

Study Limitations

This study has several limitations. Its cross-sectional design precludes conclusions about temporal direction or causality. Convenience sampling at a single community health center limits generalizability. Knowledge, illness duration, and self-care management were based on questionnaire or self-report data and may be affected by recall and social-desirability bias. Sparse cells in the contingency tables required exact-test verification, and the sample was not designed for detailed subgroup analysis. The study did not measure blood-pressure control, medication records, self-care subdomains, treatment fatigue, family support, or clinical complications.

CONCLUSION

Most respondents had fair knowledge and fair self-care management, and the largest hypertension-duration group was 6–10 years. Knowledge was associated with self-care management (exact $p < 0.001$; Cramér's $V = 0.45$), and hypertension duration was also associated with self-care management (exact $p = 0.025$; Cramér's $V = 0.23$). The duration pattern was non-linear, so longer duration should not be interpreted as necessarily producing better self-care. These cross-sectional findings support tailored education and follow-up based on patients' knowledge and identified self-care barriers across all duration groups. They do not demonstrate causality or effects on blood-pressure control and complications.

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Informed Consent Statement: Informed consent was obtained from all participants before data collection. All participants voluntarily agreed to participate in the study after receiving an explanation of the research objectives, procedures, benefits, and confidentiality of their personal information.

Data Availability Statement: The data presented in this study are available from the corresponding author upon reasonable request. The data are not publicly available to protect the privacy and confidentiality of the participants.

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Conflicts of Interest: The author declares no conflict of interest.

References

- Ariani, Y. E. (2026). Hubungan Motivasi Dengan Self-Care Management pada Lansia Hipertensi di Puskesmas Tenganan. *Journal of Holistics and Health Sciences*, 8(1), 150–163.
- Badan Kebijakan Pembangunan Kesehatan. (2023). *Survei Kesehatan Indonesia (SKI) dalam Angka Data Akurat Kebijakan tepat*.
- Dinas Kesehatan Kota Jambi. (2024). *Profil Kesehatan Kota Jambi Tahun 2024*. Dinas Kesehatan Kota Jambi.
- Efriani, L., Hadi, I., & Aisyah, N. (2023). Hubungan Tingkat Pengetahuan dan Kualitas Hidup Terhadap Self Care Management pada Pasien Hipertensi di Puskesmas Cangkol Kota Cirebon Tahun 2022. *Borneo Journal of Pharmascientech*, 7(1), 1–5.
- Kurnia, A. D., Hariyati, S., Melizza, N., Al Husna, C. H., Amatayakul, A., & Handoko, A. (2023). Personal Factors Related To Self-Care Management Among People With Hypertension At Primary Health Care A cross-sectional study. *Jurnal Keperawatan Padjadjaran*, 11(3), 203–213.
- Mutmainna, A., Isa, W. M. La, Ernawati, Sumi, S. S., Wijayaningsih, K. S., Mato, R., Muzakkir, & Darwis. (2025). *Self Management Hipertensi*. Eureka Media Aksara.
- Putri, B. M. F., & Faqih, M. U. (2025). The Relationship of Self Efficacy with Self Care Management in Hypertension Patients. *Journal of Pubnursing Sciences*, 3(1), 13–29.
- Roesardhyati, R., & Pitaloka, D. (2025). Optimalisasi Self-Management Homecare Pada Penderita Hipertensi Di Wilayah Kerja Puskesmas Wagir. *Geulayang: Jurnal Pengabdian Kepada Masyarakat*, 3(2), 68–73.
- Rohmah, M., Nurhusna, & Sari, P. I. (2023). Gambaran Self Care Management pada Pasien Hipertensi di Wilayah Kerja Puskesmas Putri Ayu Kota Jambi. *Jurnal Ners*, 7(2), 1894–1908.
- Sari, N. P. W. P., Andriani, D., & Putri, D. A. (2021). Pengaruh Kemampuan Merawat Diri Terhadap Kualitas Hidup Lansia Dengan Penyakit Kronis. *Jurnal Ners LENTERA*, 9(1), 1–13.
- Sarumaha, E., & Diana, V. (2018). Faktor Risiko Kejadian Hipertensi pada Usia Dewasa Muda di UPTD Puskesmas Perawatan Plus Teluk Dalam Kabupaten Nias Selatan. *Jurnal*

- Kesehatan Global*, 1(2), 70–77.
- WHO. (2024). *Global Report on Hypertension: The Race Against A Silent Killer*.
<https://www.who.int/publications/i/item/9789240081062>.
- Wibrata, D. A., Fadilah, N., Wijayanti, D., & Kholifah, S. N. (2023). Persepsi Tentang Faktor Yang Mempengaruhi Perilaku Kepatuhan Pada Klien Hipertensi. *Jl-KES (Jurnal Ilmu Kesehatan)*, 6(2), 135–140.