

The Impact of Self-Care Management on Systolic Blood Pressure Control in Hypertensive Patients: A Cross-sectional Study

Moh. Ubaidillah Faqih^{*1}, Miftahul Munir¹, Lukman Hakim¹, Berlian Maharani Febrina Putri¹

¹Institut Ilmu Kesehatan Nahdlatul Ulama Tuban, Tuban

*Corresponding author: moh.ubaidillah.faqih@gmail.com

Article Info:

Received:
(2024-11-13)

Revised:
(2025-02-19)

Approved:
(2025-03-08)

Published:
(2025-03-21)

Abstract

Background: Systolic blood pressure is an important indicator in the diagnosis of hypertension and plays a significant role in heart disease, stroke, and kidney failure. Hypertension can be managed through a healthy lifestyle and medication; however, consistency in applying self-care is a major challenge. **Aims:** To determine the relationship between self-care management and systolic blood pressure in hypertensive patients. **Methods:** A descriptive correlational study design with a cross-sectional approach was conducted with 112 hypertensive respondents. Self-care management data were collected using the Hypertension Self Management Behavior Questionnaire, and systolic blood pressure was measured with a digital sphygmomanometer. The data were analyzed using the Spearman test. **Results:** The majority of hypertensive patient had self-care management in the "adequate" category (44.6%), with half having systolic blood pressure between 140-159 mmHg. The Spearman test showed a significant relationship between self-care management and systolic blood pressure ($\rho = 0.005$, $r = 0.262$), indicating that better self-care management leads to more controlled systolic blood pressure, although the influence is weak. **Conclusion:** Good self-care management, including medication adherence, maintaining a healthy low-sodium diet, engaging in regular physical activity, maintaining an ideal body weight, effectively managing stress, avoiding alcohol consumption and smoking, and regularly monitoring blood pressure, has a significant relationship with systolic blood pressure control, although its effect is weak. Health education and social support need to be strengthened to improve self-management quality in hypertensive patients.

Keywords: hypertension, systolic blood pressure, self-care management



This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License, which allows others to remix, tweak, and build upon the work non-commercially as long as the original work is properly cited. The new creations are not necessarily licensed under the identical terms

Introduction

Systolic blood pressure is one of the main components in blood pressure measurement and serves as an important indicator in the diagnosis of hypertension. Systolic blood pressure is the highest pressure that occurs when the heart pumps blood into the arteries for circulation throughout the body (Muntner et al., 2019; Sinaga et al., 2024). High systolic blood pressure places a greater burden on the heart and blood vessels, which can lead to various serious complications such as coronary heart disease, stroke, and chronic kidney disease (Lukitaningtyas & Cahyono, 2023). Hypertension can be managed; however, controlling systolic

blood pressure remains a major challenge, especially for patients who are inconsistent in adopting a healthy lifestyle or following the recommended treatment (Astuty et al., 2022).

Data obtained from WHO (2021) shows that approximately 1.28 billion adults aged 30–70 years worldwide suffer from hypertension. Based on the 2018 Basic Health Research, the prevalence of hypertension increased by approximately 8.3%, from 25.8% in 2013 to 34.1% in 2018. The prevalence of hypertension in East Java in 2020 was recorded at 14.10% (Kemenkes RI, 2019). According to data from the Tuban District Health Office, approximately 11.77% of the population

suffers from hypertension (Dinas Kesehatan Jawa Timur, 2023).

The prevalence of hypertension is 34.1%, indicating that 13.3% of diagnosed hypertension patients do not take medication, and 32.3% do not take it regularly. Additionally, among the population aged >18 years, a significant proportion refuse to have their blood pressure measured regularly compared to those who are willing to do so. About 12% of patients regularly monitor their blood pressure, while 41% do not (Kemenkes RI, 2023).

Hypertension is influenced by various internal and external factors, including self-care management, which refers to an individual's ability to manage their health through a healthy lifestyle and regular monitoring (Irawan, 2023). Self-care management includes: medication adherence, dietary management, physical activity, weight management, stress management, control of alcohol consumption and smoking, blood pressure monitoring, and visits to healthcare services (Widayanti & Soleman, 2023). Self-care management is crucial for individuals with hypertension as it helps control blood pressure, particularly systolic pressure. Awareness of hypertension and the need for blood pressure control encourages patients to be more proactive in detecting blood pressure changes, either through self-monitoring or regular visits to healthcare facilities (Dotulong & Karouw, 2022).

A low-sodium diet is one of the key components of self-care that effectively reduces systolic blood pressure (Pebriani, 2023). In addition, regular physical activity, such as jogging or aerobic exercise, helps maintain blood vessel elasticity and improves the heart's efficiency in pumping blood, ultimately stabilizing systolic pressure (Makawekes et al., 2020). A healthy lifestyle is recommended for individuals with hypertension as it reduces the risk of dangerous blood pressure spikes (Musliana & Meutia, 2022).

Self-care management also includes stress management and medication adherence. Stress can elevate systolic blood pressure, so stress management techniques, such as meditation and

breathing exercises, help stabilize blood pressure (Rainforth et al., 2007). Adherence to medication and routine monitoring supports the effectiveness of blood pressure management (Setyorini et al., 2022). By avoiding unhealthy habits such as smoking and alcohol consumption and maintaining self-monitoring, individuals with hypertension can take preventive and corrective actions. Therefore, self-care management plays a crucial role in optimizing systolic blood pressure control for long-term health (Fauziansyah et al., 2024).

Previous studies have highlighted the importance of self-care management in hypertension management, particularly in terms of medication adherence, healthy diet, physical activity, and blood pressure monitoring. However, existing research remains limited in examining the direct relationship between self-care management and systolic blood pressure. Therefore, the novelty of this study lies in its specific focus on analyzing the extent to which self-care management contributes to systolic blood pressure control, taking into account adherence factors and the habits of hypertension patients in the region. This study aims to examine the relationship between self-care management and systolic blood pressure in hypertensive patients at Puskesmas Wire, Semanding District, Tuban Regency.

Methods

This study employs a descriptive correlational design with a cross-sectional approach to examine the relationship between self-care management and systolic blood pressure in 155 hypertensive patients at Puskesmas Wire, Semanding District, Tuban Regency, with 112 selected respondents as the final sample. The sample was selected using the probability sampling technique of cluster sampling, with grouping based on residential areas. Several clusters were then randomly selected, and from those clusters, respondents were chosen until the required sample size was reached, with inclusion criteria such as active participation in PROLANIS or Posyandu Lansia and the ability to communicate well, as well as exclusion criteria such as hearing impairments or difficulty reading and writing. Data on self-care management were collected using the Hypertension Self-Management Behavior

Questionnaire (30 statements) (Han et al., 2014), while systolic blood pressure was measured using a digital sphygmomanometer, the classification of systolic blood pressure categories follows the American Heart Association (AHA) and JNC 8 guidelines. The study is scheduled for September 2024, and data analysis will be conducted using the Spearman test via SPSS software.

Results

1. Self-Care Management Among Hypertensive Patients

Based on Table 1, nearly half of the hypertensive patient at Puskesmas Wire had moderate self-care management (44.6%). Good self-care management includes several essential aspects, such as medication adherence, maintaining a healthy low-sodium diet, engaging in regular physical activity, maintaining an ideal body weight, effectively managing stress, avoiding alcohol consumption and smoking, and regularly monitoring blood pressure. The optimal implementation of self-care management is crucial in controlling blood pressure, particularly systolic blood pressure, thereby reducing the risk of hypertension complications.

Table 1 Frequency Distribution of Self-Care Management in Hypertensive Patients

Self Care Management	n	%
Poor	19	17,0%
Moderate	50	44,6%
Good	43	38,4%
Total	112	100%

Source: Primary Data, 2024

2. Systolic Blood Pressure in Hypertensive Patients

Based on Table 2, the systolic blood pressure of hypertensive patients at Puskesmas Wire ranged from 128 mmHg (minimum) to 185 mmHg (maximum). The median systolic blood pressure was 150 mmHg, indicating that half of the hypertensive patient had systolic blood pressure above 150 mmHg, suggesting a significant proportion of patients were in the hypertension stage 2 category.

Table 2 Frequency Distribution of Hypertensive patient Based on Systolic Blood Pressure in Hypertensive Patients

Min	Max	Mean
128 mmHg	185 mmHg	150 mmHg

Source: Primary Data, 2024

3. Analysis of the Relationship Between Self-Care Management and Systolic Blood Pressure in Hypertensive Patients

From Table 3, out of 112 hypertensive patient (100%), those with good self-care management were more likely to have controlled systolic blood pressure (<130 mmHg), with 4 hypertensive patient (9.3%), compared to those in the moderate and poor categories. Conversely, hypertensive patient with poor self-care management were more likely to have higher systolic blood pressure (>180 mmHg), with 5 hypertensive patient (26.3%), compared to the moderate and good categories.

The Spearman rank test showed a significant statistical relationship between self-care management and systolic blood pressure ($\rho = 0.005$). The correlation coefficient ($r = 0.262$) indicates a positive but weak relationship. This means that better self-care management is associated with more controlled systolic blood pressure, although the effect is not very strong.

Discussion

Based on the research findings, among 112 hypertensive patient, those with good self-care management were more likely to have controlled systolic blood pressure (<130 mmHg), with 4 hypertensive patient (9.3%). Conversely, hypertensive patient with poor self-care management tended to have higher blood pressure (>180 mmHg), with 5 hypertensive patient (26.3%). The Spearman rank test results showed a significant relationship between self-care management and systolic blood pressure ($\rho = 0.005$), with a weak positive correlation ($r = 0.262$). This suggests that self-care management influences systolic blood pressure control, although its effect is not very strong.

Table 3 Cross-Tabulation Between Self-Efficacy and Self-Care Management in Hypertensive Patients

Self Care Management	Systolic Blood Pressure (n/%)					Total (n/%)
	<130	131-139	140-159	160-179	> 180	
Good	4 (9,3)	3 (7)	17 (39,5)	19 (44,2)	0 (0)	43 (100)
Moderate	1 (2)	5 (10)	26 (52)	16 (32)	2 (4)	50 (100)
Poor	0 (0)	0 (0)	3 (15,8)	11 (57,9)	5 (26,3)	19 (100)
Total	5 (4,5)	8 (7,1)	46 (41,1)	46 (41,1)	3 (2,7)	112 (100)

Spearman rank test results: $\rho = 0,005$ dan $r = 0,262$

Hypertension is a global health issue that significantly contributes to morbidity and mortality. Data from WHO (2021) shows that 1.28 billion adults worldwide suffer from hypertension. Effective hypertension management requires medical treatment and active self-care management, including diet regulation, physical activity, medication adherence, and stress management (Lukitaningtyas & Cahyono, 2023).

Previous studies have demonstrated the impact of self-care management on blood pressure control. Aprilatutini et al. (2021) found that self-care improvement interventions can lower systolic blood pressure by 5-10 mmHg. Additionally, Astutik and Mariyam (2021) reported that medication adherence could reduce systolic blood pressure by 7 mmHg, while Niga (2021) showed that a low-sodium diet lowers the risk of severe hypertension by 30%.

Although self-care management plays a significant role in blood pressure control, other factors such as genetics, stress, poor diet, and medication non-adherence may have a greater influence on blood pressure regulation. The low percentage of hypertensive patient (9.3%) with controlled blood pressure in the good self-care management category suggests that the implementation of self-management strategies is not yet optimal.

Self-care management is a crucial aspect of chronic disease management, including hypertension. According to Orem's Self-Care Deficit Nursing Theory, a person's ability to meet self-care needs significantly determines their health

status. In the context of hypertension, good self-management includes medication adherence, a low-sodium diet, and regular blood pressure monitoring (Khademian et al., 2020).

Pender's Health Promotion Model emphasizes that intrinsic motivation and self-efficacy are essential in promoting healthy behaviors, which are fundamental to successful self-care management (Yuli et al., 2023). Martinez-Riera et al. (2022) found that health education improves medication adherence, while Saputro and Sugiarti (2021) highlighted that social support from family or peer groups enhances the adoption of a healthy lifestyle. Additionally, effective stress-coping abilities reduce the impact of stress on blood pressure.

Systolic blood pressure is influenced by internal and external factors, including self-care management, which refers to an individual's ability to manage their health through a healthy lifestyle and routine monitoring (Irawan, 2023). Self-care management includes a low-sodium diet, regular physical activity, stress management, and medication adherence, all of which contribute to blood pressure stabilization (Makawekes et al., 2020; Musliana & Meutia, 2022).

Stress is a known contributor to increased systolic blood pressure. Research by Rainforth et al. (2007) found that stress management techniques, such as meditation and breathing exercises, help stabilize blood pressure. Furthermore, Setyorini et al. (2022) emphasized that routine monitoring and medication adherence significantly impact blood pressure regulation.

The weak correlation ($r = 0.262$) between self-care management and systolic blood pressure suggests that other unexamined factors may have a more significant impact on blood pressure regulation. While self-care management is important, the low percentage of hypertensive patient (9.3%) with controlled blood pressure suggests that other lifestyle and medical interventions should be explored.

To strengthen the effectiveness of self-care management, community-based health education initiatives, including nutritional counseling, stress-coping training, and support groups, could be implemented. Moreover, digital health interventions, such as blood pressure monitoring apps and medication reminders, may provide additional support for hypertensive patients (Kolb, 2021).

Further research is needed to explore psychosocial and environmental factors affecting self-care management. Factors such as economic status, healthcare accessibility, and cultural beliefs may influence hypertension management practices. Understanding these aspects could lead to more effective, integrated interventions for hypertension control and improved patient outcomes (Riegel et al., 2024).

Conclusion

Good self-care management, including medication adherence, maintaining a healthy low-sodium diet, engaging in regular physical activity, maintaining an ideal body weight, effectively managing stress, avoiding alcohol consumption and smoking, and regularly monitoring blood pressure, has a significant relationship with systolic blood pressure control, although its effect is weak

Declaration of Conflicting Interest

The authors declare no conflict of interest.

Funding

This research did not receive external funding

Acknowledgment

We would like to express my deepest gratitude to the Rector of IIKNU Tuban for their unwavering support and guidance throughout this research process. My sincere thanks also go to the Head of Health Center in Tuban for their cooperation and assistance in making this study possible. Finally, I would like to extend my heartfelt appreciation to all

the respondents for their valuable time, willingness, and active participation, which were essential to the success of this research

Author's Contribution

MUF Conceptualization, Data Curation, Formal Analysis, Methodology, Validation, Visualization, Writing - Original Draft, Review & Editing; MM Conceptualization, Investigation, Methodology, Validation, and Writing - Original Draft, Review & Editing; LH Conceptualization, Investigation, and Writing - Original Draft, Review & Editing; BMFP Resources, Investigation, and Writing - Review & Editing.

Author's ORCID

Moh. Ubaidillah Faqih <https://orcid.org/0000-0002-1568-2740>

Ethical Consideration

The research has received ethical approval from the Health Research Ethics Commission, Institut Ilmu Kesehatan Nahdlatul Ulama Tuban, Tuban. Indonesia, based on ethical certificate 221/0084223523/LEPK.IIKNU/VIII/2024. During the research, the researcher pays attention to the ethical principles of information to consent, respect for human rights, beneficence and non-maleficence.

Data Availability Statement

All data generated or analyzed during this study are included in this published article.

Declaration of Use of AI in Academic Writing

The author used ChatGPT/Gemini in the writing process to improve readability and remove grammatical errors. However, he took full responsibility for the content.

References

- Aprilatutini, T., Sihotang, R., Utama, T. A., & Yustisia, N. (2021). Self Care Management Evaluation In Hypertension Patients. *Jurnal Vokasi Keperawatan (JVK)*, 3(2), 184-202. <https://doi.org/10.33369/JVK.V3I2.13935>
- Astutik, M. F., & Mariyam, M. (2021). Penurunan Tekanan Darah Pada Lansia Dengan Hipertensi Menggunakan Terapi Rendam Kaki Dengan Air Hangat. *Ners Muda*, 2(1), 54-60. <https://doi.org/10.26714/NM.V2I1.7347>
- Astuty, D. A., Sinaga, A. F., Syahlan, N., Siregar, S. M., Sofi, S., Zega, R. S., Annisa, A., & Dila, T. A. (2022). Faktor - Faktor Yang Menyebabkan Hipertensi Di Kelurahan Medan Tenggara. *Jurnal Kesehatan Masyarakat; Vol 10, No 2 (2022): MARETDO - 10.14710/Jkm.V10i2.32252*. <https://ejournal3.undip.ac.id/index.php/jkm/article/view/32252>
- Dinas Kesehatan Jawa Timur. (2023). *Profil Kesehatan Provinsi Jawa Timur Tahun 2022*. Dinas Kesehatan

- Jawa Timur.
- Dotulong, F., & Karouw, B. M. (2022). Pengaruh Edukasi Self-Care Management Terhadap Tekanan Darah Pasien Hipertensi. *Watson Journal Of Nursing*, 1(1), 22–29. <https://e-journal.stikesgunungmaria.ac.id/index.php/wjn/article/view/8>
- Fauziansyah, A., Arifin, M. F., Faqih, Moh. U., & Karyo, K. (2024). The Pemberian Edukasi Pencegahan Gagal Jantung Dalam Upaya Peningkatan Pengetahuan. *Service Quality (Jurnal Pengabdian Masyarakat)*, 1(2 SE-Articles), 50–56. <https://doi.org/10.33377/sqj.v1i2.213>
- Han, H. R., Lee, H., Commodore-Mensah, Y., & Kim, M. (2014). Development and Validation of the Hypertension Self-Care Profile: A Practical Tool to Measure Hypertension Self-Care. *The Journal of Cardiovascular Nursing*, 29(3), E11. <https://doi.org/10.1097/JCN.0B013E3182A3FD46>
- Irawan, B. (2023). *Gambaran Self Care Management Pada Pasien Hipertensi*.
- Kemendes RI. (2019). *Laporan Nasional RISKESDAS 2018*. Lembaga Penerbit BALITBANGKES.
- Kemendes RI. (2023). *Profil Kesehatan Indonesia 2019*. <https://www.kemkes.go.id/id/profil-kesehatan-indonesia-2019>
- Khademian, Z., Kazemi Ara, F., & Gholamzadeh, S. (2020). The Effect of Self Care Education Based on Orem's Nursing Theory on Quality of Life and Self-Efficacy in Patients with Hypertension: A Quasi-Experimental Study. *International Journal of Community Based Nursing and Midwifery*, 8(2), 140–149. <https://doi.org/10.30476/IJCBNM.2020.81690.0>
- Kolb, L. (2021). An Effective Model of Diabetes Care and Education: The ADCES7 Self-Care Behaviors™. *Science of Diabetes Self-Management and Care*, 47(1), 30–53. https://doi.org/10.1177/0145721720978154/ASSET/IMAGES/LARGE/10.1177_0145721720978154-FIG1.JPEG
- Lukitaningtyas, D., & Cahyono, E. A. (2023). Hipertensi; Artikel Review. *Pengembangan Ilmu Dan Praktik Kesehatan*, 2(2), 100–117. <https://doi.org/10.56586/PIPK.V2I2.272>
- Makawekes, E., Suling, L., & Kallo, V. (2020). Pengaruh Aktivitas Fisik Terhadap Tekanan Darah Pada Usia Lanjut 60-74 Tahun. *Jurnal Keperawatan*, 8(1), 83–90. <https://doi.org/10.35790/JKP.V8I1.28415>
- Martínez-Riera, J. R., Aviles Gonzalez, C. I., Zambrano Bermeo, R. N., Curcio, F., González Correa, J. A., Estrada González, C., Melo, P., & Galletta, M. (2022). Educational Strategies to Promote Adherence to Treatment in Patients with Cardiovascular Disease. *International Journal of Environmental Research and Public Health*, 19(16). <https://doi.org/10.3390/ijerph19169841>
- Muntner, P., Shimbo, D., Carey, R. M., Charleston, J. B., Gaillard, T., Misra, S., Myers, M. G., Ogedegbe, G., Schwartz, J. E., Townsend, R. R., Urbina, E. M., Viera, A. J., White, W. B., & Wright, J. T. (2019). Measurement of blood pressure in humans: A scientific statement from the american heart association. *Hypertension*, 73(5), E35–E66. <https://doi.org/10.1161/HYP.0000000000000087/ASSET/49581A30-D897-4C3C-A15E-036612BC38E4/ASSETS/IMAGES/LARGE/E35-FIG03.JPG>
- Musliana, & Meutia, N. (2022). Hubungan Faktor-Faktor Gaya Hidup Dengan Tekanan Darah Pada Penderita Hipertensi. *Ibnu Sina: Jurnal Kedokteran Dan Kesehatan - Fakultas Kedokteran Universitas Islam Sumatera Utara*, 21(1), 83–90. <https://doi.org/10.30743/IBNUSINA.V21I1.215>
- Niga, J. L. (2021). Hubungan Pola Diet Rendah Garam Dengan Perubahan Tekanan Darah Pada Pasien Hipertensi Jeckson Leba Niga 170914201569. <http://repositori.widyagamahusada.ac.id/>
- Pebriani, R. (2023). Pengaruh Diet Terhadap Penurunan Tekanan Darah Pada Penderita Hipertensi. *Jurnal Ilmiah Kesehatan Diagnosis*, 18(2), 1–7. <https://doi.org/10.35892/IJKD.V18I2.1371>
- Rainforth, M. V, Schneider, R. H., Nidich, S. L., Gaylord-King, C., Salerno, J. W., & Anderson, J. W. (2007). Stress reduction programs in patients with elevated blood pressure: a systematic review and meta-analysis. *Current Hypertension Reports*, 9(6), 520–528. <https://doi.org/10.1007/s11906-007-0094-3>
- Riegel, B., Barbaranelli, C., Stawnychy, M. A., Matus, A., & Hirschman, K. B. (2024). Does self-care improve coping or does coping improve self-care? A structural equation modeling study. *Applied Nursing Research*, 78, 151810. <https://doi.org/https://doi.org/10.1016/j.apnr.2024.151810>
- Saputro, Y. A., & Sugiarti, R. (2021). Pengaruh Dukungan sosial teman sebaya dan Konsep Diri terhadap Penyesuaian Diri pada Siswa SMA Kelas X. *PHILANTHROPY: Journal of Psychology*, 5(1), 59. <https://doi.org/10.26623/PHILANTHROPY.V5I1.3270>
- Setyorini, D. Y., Sudiana, I. K., & Bakar, A. (2022). Efektivitas kesehatan seluler untuk memantau kepatuhan pengobatan pada pasien hipertensi: A systematic review. *NURSCOPE: Jurnal Penelitian*

- Dan Pemikiran Ilmiah Keperawatan, 7(2), 132–140.
<https://doi.org/10.30659/NURSCOPE.7.2.132-140>
- Sinaga, F., Saputra, B., Malkis, Y., Rahayu, S. M., Wayunah, W., Santoso, D. A., Lestarina, N. N. W., Lusiani, E., Saputra, F. E., Sulidah, S., Herawati, A. T., Desrini, S., Faqih, Moh. U., Vitniawati, V., Achirman, A., Oktavianti, D. S., Suprapti, T., Sihombing, F., Djupri, D. R., ... Djajanti, C. W. (2024). Buku Ajar Keperawatan Dewasa Sistem Kardiovaskuler, Respiratori dan Hematologi (Berdasarkan Kurikulum Pendidikan Ners Indonesia Tahun 2021) (Buku I). In F. Sihombing (Ed.), *Eureka Media Aksara*. Eureka Media Aksara.
- WHO. (2021). *Hypertension*. <https://www.who.int/news-room/fact-sheets/detail/hypertension>
- Widayanti, R., & Soleman, S. R. (2023). Gambaran Pengetahuan Tentang Self-Care Management Pada Pasien Hipertensi Di Puskesmas Sragen. *Jurnal Ilmiah Kesehatan Mandira Cendikia*, 2(9), 349–367. <https://journal.mandiracendikia.com/index.php/IK-MC/article/view/559>
- Yuli, E., Patria, A., & Ika, M. D. (2023). *Falsafah Dan Teori Dalam Keperawatan*. Eureka Media Aksara.