

The association between self-management and blood pressure among patients with hypertension: A cross-sectional study at Gading primary health center, Surabaya, Indonesia

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International Journal of Science and Research Archive, 2026, 20(02), 071–076

Publication history: Received on 22 June 2026; revised on 01 August 2026; accepted on 03 August 2026

Article DOI: <https://doi.org/10.30574/ijrsra.2026.20.2.1580>

Abstract

This study aimed to examine the association between self-management and blood pressure among patients with hypertension. A correlational analytic study with a cross-sectional design was conducted among 78 patients with hypertension selected through simple random sampling. Self-management was assessed using the 40-item Hypertension Self-Management Behavior Questionnaire (HSMBQ). Blood pressure was measured directly and classified according to hypertension severity. Data were analyzed using Spearman's rank correlation test at a significance level of $\alpha = 0.05$. Most participants demonstrated poor self-management (61.5%), and 47.4% were classified as having severe hypertension. Spearman's rank correlation analysis revealed a significant negative association between self-management and hypertension severity ($r_s = -0.343$, $p = 0.024$), indicating that better self-management was associated with lower hypertension severity. These findings underscore the importance of strengthening self-management through health education, medication adherence, dietary modification, physical activity, regular blood pressure monitoring, and family involvement to support effective blood pressure control among patients with hypertension.

Keywords: Blood Pressure; Hypertension; Primary Healthcare; Self-Management

1. Introduction

Hypertension is one of the leading noncommunicable diseases and a major contributor to morbidity and mortality worldwide. The World Health Organization estimates that approximately 1.28 billion adults aged 30–79 years are living with hypertension, with most cases occurring in low- and middle-income countries^{1, 2}. Uncontrolled hypertension increases the risk of serious complications, including coronary heart disease, stroke, heart failure, chronic kidney disease, and premature death. Despite the availability of effective pharmacological treatments, the proportion of patients who achieve recommended blood pressure targets remains suboptimal. This indicates that effective hypertension control cannot rely solely on pharmacological therapy but also requires patients' active engagement in managing their condition.

Indonesia faces a substantial burden of hypertension. According to the 2018 Indonesia Basic Health Research (*Riset Kesehatan Dasar*), the prevalence of hypertension among adults aged ≥ 18 years was 34.11%. In East Java Province, the prevalence increased from 26.2% in 2013 to 36.2% in 2018³. The increasing prevalence of hypertension is associated with several factors, including excessive salt intake, physical inactivity, obesity, psychological stress, smoking, and poor adherence to antihypertensive treatment. In addition to increasing the risk of complications, uncontrolled hypertension places a substantial burden on healthcare systems and adversely affects patients' quality of life.

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Effective hypertension control requires patients to consistently engage in self-management. Self-management refers to an individual's ability to manage symptoms, treatment, lifestyle modifications, and the physical and psychosocial consequences of a chronic condition in daily life. Among patients with hypertension, self-management encompasses adherence to antihypertensive medication, adoption of a low-sodium diet, regular physical activity, weight management, smoking cessation, stress management, blood pressure monitoring, and appropriate use of healthcare services. Consistent engagement in these behaviors can help patients achieve and maintain optimal blood pressure control ^{4,5}.

However, self-management practices among patients with hypertension often remain suboptimal. Some patients do not take their medications regularly because of adverse effects, perceived improvement in their condition, treatment fatigue associated with long-term therapy, financial constraints, or limited understanding of the importance of sustained treatment. Other barriers include inadequate family support, limited access to healthcare services, low health literacy, and difficulties maintaining lifestyle modifications. Poor self-management may result in treatment nonadherence, failure to achieve target blood pressure levels, and an increased risk of hypertension-related complications ^{6,7}.

Several studies have demonstrated that better self-management is associated with more effective blood pressure control. Nevertheless, previous findings have not been entirely consistent. Many studies have focused primarily on medication adherence as a single component rather than comprehensively evaluating self-management, including dietary modification, physical activity, blood pressure monitoring, stress management, and engagement with healthcare services. Furthermore, evidence regarding the association between self-management and blood pressure among patients with hypertension attending primary healthcare facilities in Indonesia, particularly in the urban context of Surabaya, remains limited. Variations in social and cultural characteristics, health literacy, family support, and access to healthcare services may influence patients' ability to manage hypertension effectively ⁸⁻¹⁰.

Service data from Gading Primary Health Center, Surabaya, showed that the number of patients with hypertension increased from 287 in March 2023 to 302 in May 2023. This increase highlights the need to evaluate factors associated with blood pressure control. Self-management is an important factor to investigate because it is potentially modifiable through health education, family support, counseling, and healthcare professional-led support programs.

Examining the association between self-management and blood pressure is essential for identifying the specific components of self-care that should be strengthened within primary hypertension care. The findings are expected to inform the development of self-management interventions tailored to patients' characteristics and the local healthcare context. Therefore, this study aimed to examine the association between self-management and blood pressure among patients with hypertension attending Gading Primary Health Center in Surabaya, Indonesia. This study is expected to provide context-specific evidence regarding the role of self-management in blood pressure control and to support the development of patient-centered hypertension care.

2. Materials and Methods

2.1. Study Design and Participants

This study employed a cross-sectional correlational design to examine the association between self-management as the independent variable and blood pressure as the dependent variable among older adults with hypertension. All data were collected concurrently at a single time point. The study sample comprised 78 patients with hypertension attending Gading Primary Health Center, Surabaya, Indonesia.

Participants were eligible if they had been diagnosed with hypertension, were receiving antihypertensive medication at Gading Primary Health Center, and agreed to participate in the study by providing written informed consent and completing all study procedures. Participants were selected using simple random sampling. Each eligible individual in the sampling frame was assigned a unique numerical code, after which 78 participants were selected randomly.

2.2. Research Instruments and Measurements

Self-management behavior was assessed using the validated Hypertension Self-Management Behavior Questionnaire (HSMBQ) developed by Akhter (2010). The HSMBQ comprises 40 items across five domains: self-integration (13 items), self-regulation (9 items), interaction with healthcare professionals and significant others (9 items), self-monitoring (4 items), and adherence to antihypertensive medication (5 items).

Participants were asked to indicate how frequently they performed each self-management behavior. Each item was rated on a four-point Likert scale: 1 (*never*), 2 (*rarely*), 3 (*sometimes*), and 4 (*always*). Higher scores indicated better hypertension self-management. Blood pressure was measured directly using a blood pressure measurement device and subsequently classified according to hypertension severity.

2.3. Statistical Analysis

Descriptive statistics were used to summarize participants' self-management and blood pressure characteristics. The association between self-management and blood pressure severity was examined using Spearman's rank correlation test. Statistical significance was set at $\alpha = 0.05$.

3. Results and Discussion

Table 1 Participant's characteristics (n = 78)

Variable	n	%
Age (year)		
41-45	3	3.8
46-50	5	6.4
51-55	6	7.7
56-60	12	15.4
61-65	23	29.5
66-70	16	20.5
71-75	13	16.7
Gender		
Male	29	37.2
Female	49	62.8
Level of Education		
Elementary School	29	37.2
Junior High School	20	25.6
Senior High School	29	37.2
Self Management		
Poor	48	61.5
Satisfactory	19	24.4
Good	11	14.1
Bood Pressure		
Mild	12	15.4
Moderate	29	37.2
Severe	37	47.4

As presented in Table 1, among the 78 participants, the largest age group was 61–65 years, comprising 23 participants (29.5%), whereas the smallest was 41–45 years, comprising three participants (3.8%).

Most participants were female (n = 49, 62.8%), while 29 (37.2%) were male. Regarding educational attainment, primary school and senior high school were the most frequently reported levels, each comprising 29 participants (37.2%). Junior high school was the least frequently reported level, comprising 20 participants (25.6%). Regarding self-management,

48 participants (61.5%) demonstrated poor self-management, whereas 11 (14.1%) demonstrated good self-management. In terms of blood pressure classification, 37 participants (47.4%) were categorized as having severe hypertension, whereas 12 (15.4%) were categorized as having mild hypertension.

Table 2 Association Between Self-Management and Blood Pressure Among Patients with Hypertension at Gading Primary Health Center, Surabaya, Indonesia (N = 78)

Variable	Bood Pressure						<i>p-value*</i>
Self Management	Mild		Moderate		Severe		0.024
	n	%	n	%	n	%	
Poor	5	6.4	18	23.1	25	32.1	
Satisfactory	1	1.3	6	7.7	12	15.4	
Good	6	7.7	5	6.4	0	0.0	
Koef. Korelasi (r) : - 0.343							

Table 2 shows that 78 respondents participated in the study. Among them, 48 respondents (61.5%) demonstrated poor self-management associated with elevated blood pressure, whereas 11 respondents (14.1%) demonstrated good self-management despite experiencing elevated blood pressure.

Spearman's rank correlation analysis revealed a correlation coefficient of -0.343 with a p -value of 0.024 . As the p -value was below the predetermined significance threshold of 0.05 , a statistically significant negative correlation was identified between self-management and elevated blood pressure. This finding indicates that poorer self-management was associated with a greater increase in blood pressure among patients with hypertension.

The findings of this study, conducted at Gading Primary Health Care Center in Surabaya, demonstrated an association between self-management and blood pressure among the 78 respondents. Specifically, 48 respondents (61.5%) were classified as having poor self-management and elevated blood pressure, whereas 11 respondents (14.1%) were classified as having good self-management and elevated blood pressure.

Spearman's rank correlation analysis yielded a correlation coefficient of -0.343 and a p -value of 0.024 . Because the p -value was below 0.05 , the results confirmed a statistically significant negative correlation between self-management and elevated blood pressure. Thus, poorer self-management was significantly associated with more severe elevations in blood pressure. However, given the correlational nature of the analysis, this finding should not be interpreted as establishing a causal relationship.

Self-management refers to an individual's ability to engage in self-care activities aimed at sustaining life and improving and maintaining health and well-being. It encompasses activities undertaken by individuals to monitor and control symptoms, manage treatment, cope with physical and psychological conditions, and modify lifestyle behaviors according to the health condition experienced. The primary goal of self-management is to enable patients to manage their health effectively and continuously, particularly those living with chronic conditions.^{8, 11, 12}

The researchers contend that family support plays a crucial role in the management of hypertension, as family members' attitudes and actions may influence patients' health-related behaviors. Adequate family support can enhance patients' motivation, strengthen their self-confidence, and improve their readiness to make informed decisions concerning their health and daily lives. Therefore, supportive family involvement may contribute to better hypertension self-management. Conversely, insufficient family support may be associated with poorer self-management practices among patients with hypertension^{7, 13-15}.

Self-management encompasses adherence to antihypertensive medication, dietary sodium restriction, adoption of a healthy diet, regular physical activity, stress management, smoking cessation, and routine blood pressure monitoring. Conversely, inadequate self-management may contribute to uncontrolled blood pressure and increase the risk of complications, including stroke, cardiovascular disease, and renal impairment.

These findings also have important implications for primary healthcare practice. Primary health care centers should develop structured self-management support programs comprising continuous health education, individualized

counseling, medication adherence monitoring, and active family involvement in patient care. Healthcare professionals should also identify barriers experienced by patients, such as limited health literacy, low motivation, medication-related adverse effects, financial constraints, and inadequate social support. Interventions tailored to each patient's needs are expected to enhance self-management capacity and facilitate sustained blood pressure control.

Nevertheless, these findings should be interpreted cautiously. The cross-sectional design demonstrates an association but cannot establish that inadequate self-management directly causes elevated blood pressure. Blood pressure may also be influenced by other factors, including age, duration of hypertension, comorbidities, body mass index, dietary patterns, stress levels, and medication adherence. Future studies should therefore employ longitudinal or interventional designs, recruit larger and more diverse samples, and adjust for potential confounding factors to provide more robust evidence regarding the effect of self-management on long-term blood pressure control.

4. Conclusion

This study demonstrated that most patients with hypertension at Gading Primary Health Care Center, Surabaya, had poor self-management and were classified as having severely elevated blood pressure. A statistically significant negative correlation was identified between self-management and blood pressure levels ($r = -0.343$, $p = 0.024$), indicating that better self-management was associated with lower blood pressure levels. Therefore, primary healthcare professionals should strengthen patients' self-management through continuous education, improved medication adherence, the adoption of healthy lifestyle behaviors, regular self-monitoring of blood pressure, and active family involvement. Longitudinal studies involving larger and more diverse samples are warranted to confirm the direction and potential causal relationship between self-management and blood pressure control.

Compliance with ethical standards

Acknowledgments

The authors would like to express their gratitude to the Surabaya City Government for providing the educational and research facilities that enabled this study to be conducted and completed within the specified timeframe.

Disclosure of conflict of interest

The authors declare no conflict of interest

Statement of informed consent

Written informed consent was obtained from all participants before their enrollment in the study. Participants received comprehensive information regarding the study objectives, procedures, potential risks and benefits, confidentiality, and their right to withdraw from the study at any time without penalty or any consequences for the services they received. All participants voluntarily agreed to participate, and their personal information was anonymized to ensure privacy and confidentiality.

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