

## Analysis of the Relationship between Self-Management Behavior and Blood Pressure Control in Adult Hypertension Patients in Faith-Based Communities

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Kata Kunci: Hipertensi, Penyakit tidak menular, Self-management behavior, Tekanan darah	Hipertensi merupakan kondisi medis kronis yang meningkatkan risiko komplikasi serius seperti serangan jantung, stroke, gagal ginjal, dan kematian. Faktor dalam pengendalian hipertensi adalah self-management behavior, karena perilaku ini dapat dimodifikasi. Penelitian ini bertujuan mengetahui hubungan antara self-management behavior dengan tekanan darah penderita hipertensi di komunitas yang didominasi usia dewasa hingga lanjut dengan risiko hipertensi tinggi. Penelitian menggunakan desain deskriptif kuantitatif dengan pendekatan cross sectional. Sampel sebanyak 93 responden diambil menggunakan teknik purposive sampling, dengan kriteria inklusi penderita hipertensi $\geq 6$ bulan, usia $\geq 20$ tahun, mampu berbahasa Indonesia, dan menjadi responden. Data dikumpulkan menggunakan kuesioner HSMBQ yang tervalidasi serta reliabel dalam versi Bahasa Indonesia dengan nilai Cronbach's alpha 0,949, dan pengukuran tekanan darah dengan sphygmomanometer digital. Analisis data dilakukan menggunakan uji chi-square. Hasil menunjukkan mayoritas responden berusia 41–60 tahun (58,1%), berjenis kelamin perempuan (63,4%), dan menderita hipertensi lebih dari 5 tahun (55,9%). Sebagian besar responden memiliki tekanan darah terkontrol (53,8%), mayoritas menunjukkan self-management behavior yang baik (61,3%). Uji statistik menunjukkan hubungan bermakna antara self-management behavior dan tekanan darah ( $p = 0,007$ ), di mana self-management yang baik berhubungan dengan tekanan darah yang terkontrol. Penelitian ini menegaskan pentingnya penguatan edukasi dan pendampingan manajemen hipertensi berbasis komunitas melalui kolaborasi tenaga kesehatan dan pemuka agama.
Keywords: Hypertension, non-communicable diseases, Self-management behavior, Blood pressure.	
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Date received: 15 February 2026	<i>Hypertension is a chronic medical condition associated with serious complications, including myocardial infarction, stroke, renal failure, and mortality. A key factor in hypertension control is self-management behavior, a modifiable variable. This study aimed to examine the relationship between self-management behavior and blood pressure among hypertensive patients in a community of adults and elderly individuals at high risk of hypertension. A descriptive quantitative cross-sectional design was employed. A total of 93 respondents were selected using purposive sampling based on inclusion criteria: diagnosed with hypertension for six months, aged 20 years or older, proficient in Indonesian, and willing to participate. Data were collected using the validated Indonesian version of the Hypertension Self-Management Behavior Questionnaire (HSMBQ) (Cronbach's alpha = 0.949) and blood pressure measurements obtained using digital sphygmomanometers. Data was analyzed using the Chi-square test. The results showed that most respondents were aged 41–60 years (58.1%), female (63.4%), and had hypertension for more than five years (55.9%). More than half of the respondents had controlled blood pressure (53.8%), and the majority demonstrated good self-management behavior (61.3%). Statistical analysis revealed a significant relationship between self-management behavior and blood pressure (<math>p = 0.007</math>), indicating that effective self-management is associated with controlled blood pressure. This study highlights the importance of strengthening community-based hypertension education through collaboration between healthcare providers and community leaders.</i>
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## Introduction

One of the most prevalent noncommunicable diseases and a major contributor to morbidity and mortality globally is hypertension. Heart attacks, strokes, kidney failure, and even death can result from uncontrolled hypertension. According to Ray & Jamdade, 2019, hypertension is also described as a condition that is a global risk factor for the burden and mortality of cardiovascular disease. According to the World Health Organization (WHO), between 1990 and 2019, the anticipated number of people aged 30-79 with hypertension increased from about 650 million to 1.28 billion. Globally, the prevalence of hypertension is rising annually (WHO, 2022).

According to the WHO, 22% of people worldwide have high blood pressure. Africa has the highest global prevalence of hypertension (27%), followed by the Eastern Mediterranean (26%), Southeast Asia (25%), Europe (23%), the Western Pacific (19%), and the Americas (18%) (WHO, 2022). One of the nation's having a high prevalence of hypertension is Indonesia. According to data gathered in 2019 by the Research and Development Agency of the Indonesian Ministry of Health, 34% of Indonesians have high blood pressure. The highest percentage of hypertensive individuals is found in South Kalimantan (44.13%), West Java province (39.60%), East Kalimantan (39.30%), Central Java (37.57%), and West Kalimantan (36.99%), while East Java stands at 36.3% (Badan Pusat Statistik, 2021).

The high prevalence of hypertension in East Java is reflected in the number of essential hypertension cases in Malang Regency, which reached 17,649 cases. This indicates that hypertension is one of the diseases with a high prevalence compared to other reported conditions, demonstrating that it remains a serious public health problem (Dinas Kesehatan Provinsi Jawa Timur, 2023). Hypertension can lead to various complications, including stroke, myocardial infarction, heart failure, and kidney failure. In cases of kidney failure, hypertension may cause benign nephrosclerosis and prolonged malignant nephrosclerosis, which involve the deposition of plasma fractions in blood vessels as part of the aging process, potentially reducing the permeability of blood vessel walls. In addition, hypertension can result in other complications such as angiopathy, dementia, peripheral vascular disease, and hypertensive retinopathy, which is characterized by changes in the retinal blood vessels (Kurnia, 2021). Within this context, the Tambakrejo GKJW Church represents a relevant community-based

setting for hypertension research, as it is predominantly composed of middle-aged to older adults who are at increased risk of hypertension and maintain strong social and religious engagement. These characteristics make the community a valuable case for examining self-management behaviors in hypertension, particularly in relation to the potential influence of social cohesion and faith-based support on blood pressure control.

Self-management in hypertensive patients includes adopting a healthy lifestyle, self-regulation in recognizing blood pressure symptoms, effective interaction with health workers, self-monitoring of blood pressure, and adherence to medication and regular check-ups to maintain stable blood pressure (Li et al., 2020). Self-Management Behavior is a learning and behavioral change approach that relies on individuals to take the initiative in controlling the change process (Black et al., 2019)(Sri Astutik Andayani, 2023). Previous studies have shown that there is a negative relationship between self-management and systolic blood pressure. If self-management is good, systolic blood pressure is lower, whereas if self-management is poor or inadequate, systolic blood pressure is higher in people with hypertension. Other studies have also shown that self-management behaviors can effectively increase patient satisfaction in living their lives, reduce treatment costs, increase patient confidence, and improve their quality of life (Lestari, 2017). In addition, similar studies have also stated that the results of the study show a relationship between self-management and blood pressure status in patients with hypertension (Prakoso et al., 2021).

Self-management behavior in patients with hypertension refers to an individual's ability to independently manage their health condition through behavioral regulation, decision-making, and the adoption of a healthy lifestyle. This concept encompasses both physical and psychosocial capacities in coping with chronic illness, with self-efficacy recognized as a key component in the success of self-management (Kurnia, 2021). Self-management behavior is also understood as a behavioral change process involving the systematic management of cues, cognitive processes, and behavioral consequences. In this process, individuals actively control and direct behavioral change (Black, 2019). Effective self-management aims to enhance problem-solving skills, address challenges in hypertension management, and develop sustainable care plans.

The main components of self-management behavior in patients with hypertension include self-integration into daily life through dietary regulation, physical activity, weight control, and stress management; self-regulation through monitoring symptoms and making appropriate decisions; effective interaction with healthcare providers; self-monitoring of blood pressure; and adherence to medication and routine follow-up care (Li et al., 2020). Good self-management behavior has been shown to improve life satisfaction, independence, self-confidence, and overall quality of life among patients with hypertension, while simultaneously reducing healthcare costs (Lestari et al., 2018). How a person with high blood pressure manages their condition can be influenced by several factors, including their positive attitude towards themselves. This attitude involves paying attention, understanding, and treating oneself kindly when facing problems or illness. A study by (Lasmaria Br Munthe et al., 2025) found that there is a significant connection between having a positive attitude towards oneself and engaging in blood pressure control behaviors. Factors in the environment and lifestyle also play a key role in managing high blood pressure. Unhealthy lifestyle habits, such as eating too much salt, sugar, and fat, along with not being physically active enough, play a big role in managing blood pressure (Tarisa et al., 2025).

Various factors are known to influence self-management behavior, including levels of knowledge and education, which play an important role in individuals' ability to understand health information and make appropriate health-related decisions (Gita & Indria, 2022; Irwan, 2018). In addition, beliefs regarding treatment effectiveness and self-efficacy significantly contribute to medication adherence and health behavior change (Djamaluddin et al., 2022; Sari et al., 2021). Social support from family and the surrounding environment, as well as effective communication with healthcare providers, have also been shown to strengthen self-management behavior and treatment adherence among patients with hypertension (Khomsatun & Sari, 2021; Pan et al., 2021; Ulfah et al., 2021). Conversely, the duration of hypertension may influence treatment behavior, as a longer disease duration has the potential to reduce adherence and increase the risk of complications (Cheristina & Hera Wati, 2021).

This research utilized a quantitative descriptive approach with a cross-sectional design to examine the connection between self-management behaviors and blood pressure among hypertensive patients at the Tambakrejo GKJW Church in Malang Regency, East Java. Data

were gathered using the Hypertension Self-Management Behavior Questionnaire (HSMBQ) and a blood pressure monitor, followed by analysis through the chi-square test. This phase was conducted to create an accurate summary of how each element of self-management contributes to the control of blood pressure. By employing this method, the research generated scientific information while also positively influencing initiatives to prevent complications of hypertension by educating and empowering patients. Given the information provided, the researcher aimed to examine how self-management behaviors influence blood pressure among individuals with hypertension in the GKJW Tambakrejo congregation located in Malang Regency, East Java. Self-management practices play a significant role in managing hypertension, highlighting the importance of this study.

Studies on self-management among patients with high blood pressure have been carried out widely, primarily concentrating on the general populace or individuals within healthcare settings. Research focused on self-management practices within religious communities remains quite limited. Indeed, religious organizations possess unique traits, including social connections, shared beliefs, and emotional and spiritual assistance, which can affect the health practices of their followers. This circumstance highlights a significant area for research, specifically the absence of scientific data that clarifies how self-management evolves within the framework of religious social support and its effects on blood pressure. This research introduces a new perspective by examining self-management behaviors among hypertensive individuals within church communities, which have distinct social dynamics compared to the general population. By utilizing the validated Hypertension Self-Management Behavior Questionnaire (HSMBQ) and direct blood pressure measurements, this study aims to generate deeper insights into self-management within religious communities, an area that remains underexplored.

Research on self-management in hypertensive patients has been conducted extensively, mostly focusing on the general population or patients in health facilities. Studies that specifically examine self-management behavior in religious communities are still very limited. In fact, religious groups have distinctive characteristics, such as social closeness, collective values, and emotional and spiritual support, which can influence the health behavior of their members. This situation indicates an important research gap, namely the lack of scientific evidence explaining how self-management develops in the context of religious social support and its impact on blood

pressure. Religious communities can influence hypertension management through regular social activities, religious teachings, and community support networks that encourage healthy behaviors and motivation for self-care. Engagement among members and encouragement from religious leaders may improve self-confidence, treatment adherence, and the adoption of healthy lifestyles. Thus, this research proposes that participation in a religious community aid in enhancing self-management practices and leads to more effective blood pressure regulation, emphasizing the originality of this study. This study provides a new element by observing the self-management behavior of hypertensive patients in church communities, which have different social dynamics from the general population.

Through the use of the validated Hypertension Self-Management Behavior Questionnaire (HSMBQ) instrument and direct blood pressure measurements, this study is expected to generate new and deeper insights into self-management in religious communities, which have been largely unexplored. The results of this study enhance theoretical understanding by expanding current health behavior models by incorporating religious and community-based social support as key factors influencing hypertension self-management. In practical terms, these findings indicate that health initiatives aimed at managing hypertension could achieve greater effectiveness if they are tailored to utilize religious community frameworks. This includes integrating health education into religious events and involving religious leaders in the role of health advocates. Additionally, this research underscores significant public health impacts by showing the potential benefits of incorporating faith-based and social support networks into community-focused hypertension management approaches to improve self-management practices and blood pressure regulation.

## **Method**

This study used a quantitative descriptive design with a cross-sectional approach to determine the relationship between self-management behavior and blood pressure in hypertensive patients at the Tambakrejo GKJW Church, Malang Regency, East Java. The study was conducted at the Tambakrejo GKJW Church from July to November 2025. The population consisted of all hypertensive patients in the congregation. Samples were taken using purposive sampling based on the following inclusion criteria: diagnosed with hypertension for  $\geq 6$  months,

aged  $\geq 20$  years, able to speak Indonesian, and willing to be a respondent. The exclusion criteria were cognitive/mental disorders, severe complications, failure to complete the study, or withdrawal. The sample size was calculated using G\*Power with a correlation of 0.30,  $\alpha=0.05$ , power=0.80, resulting in 84 respondents, plus a 10% dropout rate, for a total of 93 respondents. Data were collected using a respondent characteristic sheet, a self-management behavior questionnaire (HSMBQ) developed by Akhter (2010) and validated and reliable in Indonesian with a Cronbach's alpha value of 0.949, Self-management behavior was categorized as “good” or “poor” based on the median total questionnaire score. and a digital sphygmomanometer. Univariate and bivariate analyses were performed using the Chi-square test (Agil et al., 2025). All research procedures were reviewed and approved by the Research Ethics Committee of the Faculty of Medicine, Universitas Pelita Harapan, with Number: 235/K-LKJ/ETIK/VII/2025.

## Research Results

### Univariate Analysis

Table 1.1 Frequency distribution of respondent characteristics

Characteristics	Frequency	Percentage%
<b>Age</b>		
Middle adulthood	39	41.9
Early adulthood	54	58.1
<b>Sex</b>		
Male	34	36.6
Female	59	63.4
<b>Duration of Hypertension</b>		
$\geq 5$ Years	52	55.9
$< 5$ Years	41	44.1
<b>Blood Pressure Status</b>		
Uncontrolled hypertension	43	46.2
Controlled hypertension	50	53.8
<b>Self-Management Behavior</b>		
Poor	36	38.7
Good	57	61.3

Table 1.1 shows that respondents were predominantly middle-aged women. Most respondents had suffered from hypertension for a relatively long period of time and had relatively well-controlled blood pressure. However, the most notable finding is the high proportion of respondents with poor self-management behavior, indicating a gap between blood pressure control status and self-management behavior.

## Bivariate Analysis

Table 1.2 Relationship between Self-Management Behavior and Blood Pressure

Variable	Blood Pressure Status		Total	P- Value
	Uncontrolled hypertension	Controlled hypertension		
Self-Management Behavior				
Poor	23	13	36	0,007
Good	20	37	57	

Table 1.2 demonstrates variations in blood pressure status patterns according to levels of self-management behavior. Blood pressure was more likely to be under control in those who practiced good self-management, whereas it was more likely to be uncontrolled in those who practiced poor self-management. These results validate a strong correlation between blood pressure control status and self-management behavior.

**Discussion**

## Respondent Characteristics

The results of this study indicate that most respondents were middle-aged adults (41-60). This is in line with research conducted by (Meldy et al., 2022), which shows that there is a correlation with self-management abilities. Another similar study on the effect of self-management on diastolic blood pressure conducted in 2023 showed that the majority of respondents were over 45 years old. Blood pressure increases with age due to decreased blood vessel elasticity. In addition, the risk and prevalence of hypertension tend to increase with age, which is related to disturbances in the metabolic regulation process (Ifadah et al., 2024). Therefore, the dominance of middle-aged respondents shows a pattern that is consistent with the trend of increasing blood pressure in this age group.

Table 1.1 shows that more than half of the respondents were female. Research conducted by Syamsu et al., 2021 showed that the majority of respondents (51.54%) with hypertension were female. Another study entitled Sociodemographic Analysis of Hypertension Incidence describes that 55.8% of female respondents had hypertension (Taiso et al., 2020). Gender is a factor that influences the risk of hypertension. This is particularly evident in postmenopausal women, who experience a decrease in estrogen levels. This decrease in estrogen contributes to weight gain and increased blood pressure. In addition, women also often have a tendency to respond less healthily to stress, such as smoking, experiencing depression, and consuming alcohol or unhealthy foods, all of which can trigger hypertension (Gz et al., 2025).

The findings from the study show that most respondents had suffered from hypertension for more than 5 years. The high number of patients with a duration of more than five years reinforces the assumption that long-term treatment requires special attention. These results are consistent with previous studies which stated that the majority of respondents had suffered for more than 5 years (Sonia et al., 2023). Another study measuring the self-management of hypertensive patients conducted in 2024 by Fitriani et al. showed that the majority of respondents had suffered from hypertension for more than five years. Prolonged duration of hypertension can lead to progressive increases in blood pressure and trigger various harmful clinical complications (Cheristina & Hera Wati, 2021). The high proportion of respondents with a disease duration of more than five years is a fundamental characteristic for understanding the development and management of hypertension.

The results of the above study show that more than half of the respondents had controlled hypertension. Hypertension is considered controlled if the systolic blood pressure is <140 mmHg and the diastolic blood pressure is <90 mmHg. This study is in line with a previous study titled Factors Associated with Hypertension, which showed that 52.2% of respondents had controlled hypertension (Siregar et al., 2021). Similarly, a study conducted by Nurhayati & Ginting (2023) showed that 69.0% of hypertensive patients had controlled blood pressure. The results of this study convincingly show that controlled hypertension status is a dominant demographic characteristic and is most commonly found in the population of patients who were the study respondents. Although most respondents demonstrated good self-management behavior, there were still some respondents who had uncontrolled blood pressure. This can be explained by various factors that affect the success of blood pressure control, aside from just following the medication regimen. First, inaccurate or inappropriate treatment regimens, such as incorrect dosages, improper drug combinations, or insufficiently adjusted therapies, can result in persistently high blood pressure despite the patient's adherence to medication. This is often caused by the complexity of comorbid conditions or variations in individual responses to treatment, particularly in elderly patients or those with other conditions such as obesity and diabetes mellitus (Puspitasari et al., 2026).

### The Relationship Between Self-Management Behavior and Blood Pressure

The results of the bivariate analysis above show a significant relationship between self-management behavior and blood pressure ( $p=0.007$ ). This relationship can be explained through physiological and behavioral mechanisms. Self-management behavior includes adherence to medication, a low-salt and low-fat diet, regular physical activity, and self-monitoring of blood pressure. These behaviors play a direct role in reducing peripheral vascular resistance, decreasing sodium and fluid retention, and suppressing the activation of the sympathetic nervous system and the renin–angiotensin–aldosterone system, which are the main mechanisms in the pathophysiology of hypertension (Kurnia, 2021; Li et al., 2020). Thus, individuals with good self-management tend to have more optimal blood pressure control. However, a longer duration of hypertension can affect the effectiveness of blood pressure management even if self-management behaviors have been carried out properly. Long-term chronic hypertension can lead to structural changes in blood vessels, such as thickening of the vessel walls (atherosclerosis), which reduces the elasticity of the blood vessels and increases vascular resistance, making antihypertensive therapy less effective (Williams et al., 2018).

However, a unique finding in this study is the presence of respondents with self-management behaviors categorized as good but who still have uncontrolled blood pressure. This condition indicates that hypertension control is not entirely determined by self-management behaviors. Possible causes include inaccuracies in antihypertensive therapy regimens, individual variations in response to treatment, and psychological factors that may influence blood pressure measurement results. In addition, blood pressure measurements taken in certain situations can be affected by anxiety or momentary stress, known as white coat hypertension, so they do not always reflect daily blood pressure conditions (Kurnia, 2021). Stress can result from physical or psychological pressures, such as anger, fear, or excitement, which can increase cardiac output and cause arteriolar vasoconstriction through stimulation of the sympathetic nervous system. This is caused by the continuous release of additional adrenaline from the adrenal glands that are constantly stimulated (DeLalio et al., 2020; Spruill, 2010). In addition, some studies also show that self-efficacy, which is a person's belief in their ability to manage hypertension, plays an important role in controlling blood pressure (Ratnasari, 2020). The longer a person has hypertension, the more challenging it may be to manage blood pressure effectively,

even if they are following healthy self-management behaviors. Long-term chronic hypertension can cause structural changes in blood vessels, such as thickening of the vessel walls (atherosclerosis), which reduces the elasticity of the vessels and increases vascular resistance, making antihypertensive therapy less effective.

Other factors that could potentially influence blood pressure control but were not examined in this study include psychological stress levels, genetic factors, and the presence of comorbidities such as diabetes mellitus or dyslipidemia. Chronic stress can increase sympathetic nerve activity and stress hormone levels, which contribute to increased blood pressure, even in individuals who have implemented good self-management behaviors (Ifadah et al., 2024). Additionally, prolonged hypertension can also cause structural changes in blood vessels that reduce responsiveness to behavioral and pharmacological interventions (Cheristina & Hera Wati, 2021).

In the context of religious communities, particularly the Tambakrejo GKJW congregation, the church's social environment has the potential to play a dual role in controlling hypertension. Religious activities such as prayer groups and close social interaction can provide emotional and spiritual support, which contributes to reducing stress and increasing motivation to maintain health. Strong social support is known to reinforce self-management behaviors and improve the quality of life of people with hypertension (Lestari, 2017). However, on the other hand, church social activities that often involve eating together with menus high in salt or fat can be a challenge in implementing a hypertension diet. This condition shows that community-based hypertension management needs to pay attention to social and cultural aspects, not just changes in individual behavior. Social practices and cultural norms within religious communities often influence individual dietary behaviors, including the habit of consuming high-salt or high-fat foods during social gatherings or religious events. The influence of culture on food choices can worsen the management of hypertension, as food is often an integral part of traditions or symbols of respect within a community. This aligns with findings that indicate social culture and beliefs significantly influence dietary choices and health decisions within a community (Jayasinghe et al., 2025).

Previous studies have shown that there is a significant negative correlation between self-management behavior and systolic and diastolic blood pressure, whereby the better a person's

self-management behavior, the lower their blood pressure, reflecting more optimal blood pressure control (Sonia et al., 2023). Theoretically, self-management behavior is a process of systematically changing one's behavior through the management of cues, cognitive processes, and accompanying consequences. This concept is also understood as a learning and behavioral change approach that requires individuals to take the initiative in controlling the change process (Black et al., 2019). Thus, the results of this study further reinforce that self-management skills play an important role in blood pressure control, so that individuals with better self-management behavior tend to have more blood pressure controlled.

Overall, the results of this study reinforce previous findings that self-management behavior plays an important role in controlling blood pressure in people with hypertension (Prakoso et al., 2021; Sonia et al., 2023; Sri Astutik Andayani, 2023). However, the effectiveness of self-management is influenced by various biological, psychological, and social factors. Therefore, a comprehensive approach to community-based religious hypertension management needs to be developed by integrating health education, social support, and community behavior modification to promote sustainable healthy living behaviors.

### **Conclusion**

According to the aforementioned study's findings, the majority of respondents were middle-aged (58.1%), and women predominated in terms of gender (63.4%). Additionally, the majority of respondents had experienced hypertension for at least five years (55.9%). Controlled hypertension (53.8%) and good self-management behavior (61.3%) had the highest blood pressure among responders. The analysis's findings revealed a strong correlation ( $p = 0.007$ ) between the respondents' blood pressure status and their self-management practices. Compared to individuals with poor self-management, those with high self-management tended to have more controlled blood pressure.

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