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Literature review

The Influence of Self-Care Management on Blood Pressure Control in Hypertensive Patients: A Literature Review

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ABSTRAK

Background: Hypertension, often referred to as the "silent killer," is a chronic condition characterized by systolic blood pressure ≥140 mmHg and diastolic blood pressure ≥90 mmHg. It is a major contributor to cardiovascular morbidity and mortality. One key factor affecting blood pressure control is adherence to antihypertensive medication, which is closely linked to self-care management. **Objective:** This literature review aims to analyze the influence of self-care management on blood pressure control in patients with hypertension. **Methods:** An integrative literature review was conducted by collecting references from electronic databases. Six journal articles that met the inclusion criteria were analyzed using descriptive analysis techniques. **Results:** The review found a strong correlation between effective self-care management and improved blood pressure control. Various factors were identified as influencing self-care capacity, including age, duration of illness, presence of comorbidities, self-efficacy, perception, and health literacy. These factors play a critical role in determining a patient's ability to manage their condition. **Conclusion:** Self-care management is essential in supporting medication adherence and achieving blood pressure control in hypertensive patients. Both intrinsic and extrinsic factors contribute to the effectiveness of self-care strategies and should be considered in hypertension management programs.

Introduction

High blood pressure or hypertension is a condition in the blood vessels characterized by high blood flow pressure when the systolic blood pressure is ≥140 mmHg and the diastolic is ≥90 mmHg[1]. Hypertension is considered a chronic condition known as a *silent killer* because individuals with hypertension are often unaware of their condition, which can eventually lead to complications and even death[2]. Globally, according to a study by the Global Burden of Disease, hypertension ranks among the top 15 causes of death, with an annual mortality rate reaching 9.4 million people and 212 million people losing healthy life quality[3,4]. Based on a report released by WHO in the *Global Report on Hypertension*, the number of adults with hypertension increased from 650 million in 1990 to 1.3 billion in 2019. It is even projected that by 2025, the number of people with hypertension will rise to 1.5 billion, and out of the 1.4 billion people with hypertension, only 14% have their blood pressure under control. The prevalence of hypertension cases based on the Indonesian Health Survey in 2023 was 30.8% [5–7].

Hypertensive patients who do not control their blood pressure may develop complications, resulting in an increased healthcare expenditure burden by 10% and accounting for 30% of global inpatient cases[8,9]. Therefore, hypertension requires various efforts to reduce the negative impacts associated with its progressive development

through promotive, preventive, curative, and rehabilitative measures. Treatment components may include both pharmacological and non-pharmacological approaches. Pharmacological treatment includes drug therapies such as ACE Inhibitors, ARBs, or the potential of traditional herbal extracts, all of which require adherence to medication[10].

Medication adherence refers to the patient's actions in following procedures as recommended by healthcare professionals, including complying with the agreed-upon frequency, timing, dosage, and type of medication to be taken, and not discontinuing the treatment process without a doctor's instruction. Additionally, when the medication runs out, the patient is expected to obtain a new supply according to the predetermined schedule [11]. Globally, including in Indonesia, medication adherence remains very low, with less than 25% of women and less than 20% of men being adherent[3]. Non-adherence to medication causes significant losses, increasing medical treatment costs by up to 100 billion dollars annually costs that could have been avoided and contributing to 100,000 deaths[12].

Adherence to taking antihypertensive medication remained low in 2023, with several reported reasons including laziness, forgetfulness, and boredom (19.3%), as well as the belief that one is already healthy (62.8%). These reasons are components of self-care management that contribute to non-adherence, with 36.4% of patients reported taking medication irregularly despite 65.8% having received education on hypertension treatment[7]. Low levels of self-care management are often due to boredom and laziness related to the obligation of taking medication daily, as well as a belief in being healthy because symptoms are no longer felt, which leads to non-adherence in medication intake and failure to monitor blood pressure findings that align with previous research, which reported that 50% of respondents admitted to feeling lazy about taking medication daily[13]. The main issue for many patients with chronic hypertension is their difficulty in adhering to daily medication, even when experiencing high blood pressure and despite receiving strong support through health education and family assistance. This is largely due to their inadequate ability to apply self-care management as an intrinsic factor. In the context of hypertension being among the top 15 global causes of death, this lack of intrinsic motivation leaves patients unable to overcome feelings of laziness and boredom some of the leading reasons for medication non-adherence[13].

The forms of treatment consist of both pharmacological and non-pharmacological approaches. One of the non-pharmacological treatments that can influence the success of antihypertensive drug therapy is self-care management. Self-care management has a significant impact on a patient's health condition, both physically and psychologically[14]. Hypertensive patients who exhibit good self-care management tend to have better blood pressure control, improved quality of life, stronger motivation to adhere to medication, and a lower risk of developing hypertension-related complications[15]. With effective self-care management, patients can independently and consciously adopt behaviors through components such as self-regulation and integration, monitoring blood pressure levels, adhering to prescribed medication regimens, and engaging with healthcare providers and others[16]. Based on these reasons, it is necessary to further identify and evaluate the influence of self-care management on blood pressure control.

Self-care management serves as an effort to manage chronic diseases, including hypertension, through actions that regulate and monitor behavior to achieve positive changes based on previous outcomes. These actions include maintaining a healthy diet, managing stress, engaging in physical activity, quitting

smoking, reducing alcohol consumption, and monitoring blood pressure at home or in nearby healthcare facilities[17]. In line with this, several studies have shown that self-care management has a significant impact on hypertension control. Previous research indicated that patients with good self-care management had a high level of medication adherence (45%), whereas only 5% of patients with good self-care management showed low adherence to medication[18].

Similarly, this finding is supported by other studies showing that control groups receiving self-care management interventions experienced a significant reduction in blood pressure compared to groups that did not receive such interventions. This indicates that self-care management interventions have a significant impact, particularly among hypertensive patients[19]. On average, previous studies have demonstrated a strong and significant relationship between self-care management and blood pressure control in hypertensive patients. However, some studies have reported that self-care management does not have a significant effect on blood pressure control. This discrepancy is often attributed to confounding factors that vary between individuals, such as stress levels, which can influence both self-care management and medication adherence, ultimately affecting blood pressure control[20].

There are inconsistencies in research findings on the effect of self-care management on blood pressure control. Therefore, this literature review aims to explore the impact of self-care management on blood pressure control in hypertensive patients.

Materials and Methods

Research Design

This study uses a literature review method with an integrative review design. This design aims to identify, evaluate, and thoroughly analyze relevant literature based on previous research, focusing on a specific topic to gain a comprehensive understanding.

Sample

The sample of this study consists of 1,726 articles that were successfully selected. These articles were chosen based on the following inclusion criteria: (1) articles written in either Indonesian or English, (2) studies published between January 2019 and December 2024, (3) using either quantitative or qualitative research methods, (4) research subjects being patients with hypertension, and (5) articles available in full-text format. The exclusion criteria included literature that was not freely available in full-text form.

Data Collection Technique

Data were collected through a literature search using electronic databases, namely Google Scholar and PubMed. The keywords used included “Self-Care Management,” “Blood Pressure Control,” “Hypertension,” and “Medication Adherence.” The literature search process is illustrated in a flowchart diagram.

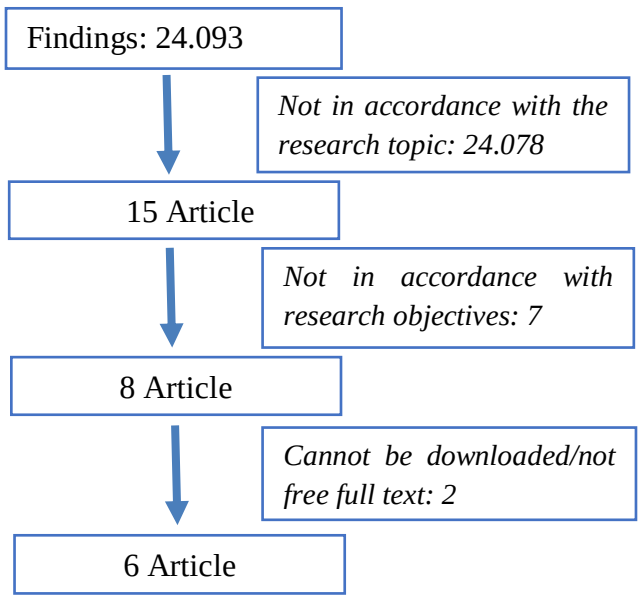

Figure 1. Literature Search Results Chart

Data Analysis Techniques

Data analysis was conducted using the Descriptive Analysis technique. This technique involves summarizing the findings from the

selected literature and presenting an overview to explain the relationships between variables relevant to the research focus.

Ethical Consideration

As a literature review study, this research does not require ethical approval because it does not involve direct human subjects. However, the literature used was still selected based on research ethics principles by ensuring that the sources were valid and credible.

Results

The initial literature search yielded 24,093 articles that matched the keywords. A total of 24,078 articles were excluded because their content was not relevant to the research topic, resulting in 15 research articles being included in the first screening stage. Of these, 7 articles were excluded for not aligning with the research objectives. From the remaining 8 articles that met the research objectives, 6 articles were available for free in full-text format and were included in the final analysis. The findings from these research articles are presented in Table 1.

Table 1. Summary of Reviewed Articles on Self-Management and Blood Pressure Control in Hypertensive Patients

No	Title	Authors and Year	Objective	Research Method	Participants	Findings
1	Self-Management Among Elderly Patients with Hypertension and Its Association With Individual and Social Environmental Factors in China	Xiao Nan Zhang, Chen Qiu, Yu Zhi Zheng, Xiao Ying Zang, Yue Zhao (2019)	To identify the level of self-management in elderly hypertensive patients and its relationship with social environmental factors using a social ecological model	Quantitative, cross-sectional design with primary data collection using questionnaires on demographic distribution, wellbeing index, APGAR index, social support questionnaire, and self-management behavior assessment	301 elderly hypertensive patients	The highest level of self-management was in medication (82.08%) and the lowest in physical activity (58.36%). Multiple linear regression showed a positive correlation between self-care management and factors such as wellbeing (0.229), family function (0.182), gender (0.146), education level (0.116), and age (0.108), indicating these as important factors in individual self-management.
2	Factors Affecting Self-Management of Hypertensive Patients Attending Family Medicine Clinics in Riyadh, Saudi Arabia	Razan K. AlHadlaq et al. (2019)	To identify the prevalence of self-care management and explore influential factors in hypertensive patients	Quantitative, cross-sectional design using primary data from the Hypertension Self-Care Profile (HBPSCP) and Hill-Bone compliance scale	187 patients aged 18 and above	Self-care levels were low due to low motivation and confidence. The highest behavior was regular consultation (85%). Only 81 (43.3%) regularly monitored BP. Forgetting to take medication was the main reason for nonadherence (46.5%). Significant relationships were found between behavior and gender, BMI, age,

No	Title	Authors and Year	Objective	Research Method	Participants	Findings
						hypertension duration, and comorbidities ($p<0.001$).
3	Analysis of Self-Management and Blood Pressure Control in Hypertensive Patients During the COVID-19 Pandemic at Lima Puluh Health Center, Pekanbaru	Desti Puswati, Novi Yanti, Dekriani Yuzela (2021)	To analyze self-management and blood pressure control in hypertensive patients at Lima Puluh Health Center, Pekanbaru	Quantitative, probability sampling, descriptive design using HSMBQ and BP measurements over the past month	66 hypertensive patients aged 20 and above	Most patients had moderate self-management (66.7%), while 68.2% had uncontrolled BP. COVID-19 anxiety reduced patient willingness to attend consultations, affecting BP control.
4	Relationship Between Self-Management and Blood Pressure in Elderly Hypertensive Patients at Kartasura Health Center	Ikhlash Alkautsar, Kartinah (2023)	To examine the relationship between self-management and BP levels in elderly hypertensive patients	Quantitative, cross-sectional, proportional random sampling using HSMBQ, digital sphygmomanometer, and observation sheet	94 elderly hypertensive patients	Self-management was good in 51% of patients, and BP was controlled in 51%. There was a strong and significant correlation between self-management and BP control ($p=0.000$, $r=0.803$).
5	The Effects of Self-Management Education Tailored to Health Literacy on Medication Adherence and Blood Pressure Control Among Elderly People With Primary Hypertension: A Randomized Controlled Trial	Farzaneh Delavar, Shahzad Pashaeypoor, Reza Negarandeh (2019)	To evaluate the impact of health-literacy-based self-management education on medication adherence and BP control	Randomized controlled trial using MMAS-8 for medication adherence and mercury sphygmomanometer for BP measurement	118 elderly hypertensive patients	Post-intervention results showed significant BP reduction: systolic BP ($p=0.004$), diastolic BP ($p=0.023$), indicating that health literacy interventions significantly improved BP control.
6	Effect of Values Affirmation on Reducing Racial Differences in Adherence to Hypertension Medication: The HYVALUE Randomized Clinical Trial	Stacie L. Daugherty et al. (2021)	To assess the effect of writing affirmations at each consultation in reducing racial disparities in hypertension medication adherence	Intervention group assigned to write affirmations; data collected using PDC adherence scale, BP data from secondary records, analysis using SAS 9.4	960 hypertensive patients (Black and White races)	Black patients had higher BP and lower medication adherence than White patients (54.9% vs. 68.5%). In the intervention group, adherence improved significantly at 3 months ($p=0.03$) and 6 months ($p=0.02$). No significant improvement was observed in the control group.

Discussion

Self-care management is a form of action that regulates and monitors behavior to produce changes based on previous achievements, such as maintaining a healthy diet, managing stress, engaging in physical activity, quitting smoking, reducing alcohol consumption, and monitoring blood pressure either at home or at nearby health facilities[17]. Several studies have shown that self-care management is beneficial in managing various chronic diseases, one of which is hypertension. The first reviewed

article involved 301 elderly patients with hypertension. The second article included 187 respondents aged 18 years and older. The third article involved 66 patients aged between 20 and 60 years. The fourth article included 94 elderly patients. The fifth article involved 118 elderly patients with hypertension, and the sixth article included 960 patients with hypertension from both Black and White racial backgrounds[21–26].

The prevalence occurs in both productive age and elderly groups. The productive age group has poor lifestyle habits with a percentage of 29.6%, and the risk of hypertension is especially 2.5 times higher in the 30–40-year-old group. This is accompanied by an abnormal body mass index, which increases the risk of hypertension by 3 times [27]. In the elderly, the incidence of hypertension increases due to arterial blood vessels becoming stiffer caused by inflammation and necrotic reactions in the smooth muscle of blood vessels. Systolic blood pressure continuously increases starting from age 50 and above due to the increasing stiffness of the arteries, while diastolic blood pressure reaches its peak at age 50 and then begins to decline[28].

In the first article studying hypertensive patients in China, it was found that the lowest component was self-care management related to physical activity, with a percentage of 58.36%. Aerobic exercise is very necessary to control blood pressure values because exercising for 45 minutes, especially aerobic exercise done three times per week at moderate intensity, can have an antidepressant effect that correlates with blood pressure[29].

Self-care management is influenced by several factors. For example, education level—where higher education levels have a positive relationship with better self-care management due to increased knowledge about managing self-care[21]. Another factor is social support, which includes subjective support such as emotional support from people around, and objective support such as relationships with others. Social support with high family function shows a percentage of 78.1%, and the ability to utilize support reaches 66.39%. This considers factors from individual intrapersonal to interpersonal with the surrounding environment such as welfare with a p-value = 0.229, family function p = 0.182, gender p = 0.146, education level p = 0.116, and age p = 0.108, indicating significant and positive correlations with self-care management in hypertensive patients. This means that if these factors increase, the self-care management of hypertensive patients will also improve[21]. External factors require support from healthcare workers, including the need for service standards with coordination and participation[30].

In the second research article, it was found that blood pressure control was only achieved by 81 people, categorized as "sometimes" controlled[22]. Based on medication adherence measured using the Hill-Bone scale, the highest reason for non-adherence was forgetting to take medication (46.5%), difficulty obtaining repeat prescriptions (14.4%), fear of side effects (8.6%), lack of trust in the treatment (7.5%), and long distance from home to health facilities (2.1%)[22]. Based on this, medication adherence is still very low, even though non-adherence causes substantial losses by increasing medical care costs by 100 billion dollars per year that could be prevented and causing 100,000 deaths due to hypertension progressing into complications[12].

Regarding self-care management behavior, it is known that the highest percentage of patients regularly consult a doctor, with a rate of 85%, while the lowest percentage is related to engaging in regular physical activity, which is only 12.8%[22]. Other factors influencing self-care management relate to gender, where women tend to manage self-care better than men due to more frequent health risk behaviors among men, such as poor weight management

and habitual smoking. However, hypertension cases can also be high in women, particularly related to hormonal factors, especially the decline of estrogen and progesterone associated with vasoconstriction, leading to a higher prevalence of hypertension among women during menopause[31].

The next factors are from research findings on body mass index (BMI) and marital status, where patients with lower BMI and those who are married tend to perform better self-care management, have higher self-efficacy, and possess greater motivation to control their blood pressure effectively[32].

Self-efficacy has a direct relationship with medication adherence because individuals with high motivation and hope for successful therapy are more likely to comply with treatment. Among patients with good self-efficacy, 63% show medication adherence rates of 35.2%, indicating a positive correlation between self-efficacy and medication adherence[33]. Another factor relates to the duration of hypertension, where patients who have had hypertension for a longer period tend to have lower medication adherence ($p = 0.005$). Additionally, as age increases, the ability to control blood pressure decreases or becomes uncontrolled, often accompanied by difficulties in understanding treatment instructions and swallowing oral medications[22].

In the third journal, it was found that hypertensive patients mostly had moderate levels of self-care management, with 44 patients representing 66.7%. The low category of self-care management and blood pressure control was still inadequate, influenced by fear during the pandemic period to attend health consultations, causing uncontrolled blood pressure. This was evidenced by cases in Japan during the COVID-19 pandemic, where systolic blood pressure increased by 1–2 mmHg and diastolic by 0.5–1 mmHg[34]. In the fourth journal, it was found that the level of self-management among hypertensive patients was mostly good, with 48 patients or 51%. This was because the hypertensive patients sampled in the study followed the DASH diet to reduce high sodium intake, resulting in better blood pressure control, also in the good category at 51%. This was supported by a correlation test showing $p < 0.05$ with an r value of 0.803[24].

The fifth journal revealed that the control group received interventions for self-care management based on health literacy[25]. Good health literacy was significantly associated with hypertensive patients' knowledge ($p = 0.002$) and their ability to manage self-care, especially in interacting with healthcare providers ($p = 0.002$), showing a significant relationship[35]. In the sixth journal, among 960 patients sampled from both Black and White racial groups, medication adherence was lower in White patients at 68.5% compared to 54.9% in Black patients. Additionally, blood pressure values were much higher in Black patients than White patients, related to adherence levels[26].

Factors influencing this include discrimination, which can reduce active participation in the treatment process[26]. Patient perception plays a key role in treatment because it reflects the belief in understanding their illness[36]. In the control group, blood pressure measurements showed significant improvement with an intervention involving writing affirmation words, with $p = 0.03$ at 3 months and $p = 0.02$ at 6 months[26].

Based on the above explanation, self-care management and its influencing factors both intrinsic and extrinsic through healthcare provider interventions can support better blood pressure control. Further research is needed to examine other factors that contribute to the effectiveness of self-care management in improving adherence and blood pressure control, especially among patients with hypertension. In addition, it is important to develop tailored self-care programs that consider individual patient characteristics, cultural contexts, and barriers to compliance in

order to maximize clinical outcomes and long-term blood pressure management.

Conclusion

Self-care management, influenced by both intrinsic and extrinsic factors such as healthcare provider interventions and social support can shape effective self-care practices that significantly impact patients' medication adherence and contribute to better blood pressure control.

Future research is needed to explore additional factors affecting self-care management in relation to the effectiveness of blood pressure control in hypertensive patients, using varied research designs. Moreover, more intensive education from healthcare providers is essential, particularly for patients with long-standing or chronic hypertension.

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