Relationship Between Education Level, Disease Duration, Self-Efficacy, and Knowledge in Managing Hypertension: A Cross-Sectional Study

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Abstract

Objective: This study investigates the factors influencing knowledge of self-care management in hypertension, focusing on education level, duration of hypertension, and self-efficacy

Method: Using secondary data from a previous cross-sectional study conducted in the working area of Puskesmas Pasundan, Indonesia, the study explores the relationship between these factors and patients' knowledge and behaviors regarding hypertension management

Results: The results revealed that education level and self-efficacy were significantly correlated with knowledge of hypertension self-care, while duration of hypertension was not significantly related to knowledge. A positive and significant correlation was found between education level and knowledge ($r = 0.301$, $p = 0.003$), and self-efficacy and knowledge ($r = 0.275$, $p = 0.006$), suggesting that individuals with higher education levels and stronger self-efficacy tend to have better knowledge of managing hypertension.

Conclusion: These findings highlight the importance of addressing self-efficacy and providing tailored health education as key components of hypertension management interventions. The study suggests that interventions focused on improving self-efficacy and health literacy could enhance hypertension management, particularly in underserved communities. Future research should focus on developing strategies that integrate these factors into practical, community-based healthcare programs.

Keywords: Education, disease duration, self-efficacy, knowledge in managing hypertension

INTRODUCTION

Hypertension, or high blood pressure, is one of the most prevalent and chronic medical conditions affecting millions of people worldwide. It is a major risk factor for severe health complications such as cardiovascular diseases, stroke, kidney failure, and cognitive decline (Fuchs & Whelton, 2020; World Health Organization (WHO), 2024). WHO estimates that hypertension affects over 1 billion people globally and is one of the leading causes of preventable morbidity and mortality (WHO, 2023). Despite its widespread prevalence, many individuals remain unaware of their hypertensive status, or fail to manage their condition effectively, which contributes to the growing global burden of non-communicable diseases (Interventions, 2018; Kassa & Grace,

2022; WHO, 2023a). This underscores the urgent need for effective management strategies to prevent the escalation of this condition, particularly in underserved populations (Carey et al., 2018).

Effective hypertension management is primarily reliant on self-care practices, which include behaviors such as maintaining a healthy diet, engaging in regular physical activity, reducing stress, monitoring blood pressure, and adhering to prescribed medications (Konlan & Shin, 2023; Sarfika et al., 2023). Self-care plays a crucial role in controlling blood pressure and preventing complications such as heart failure and stroke. Despite the established benefits of self-care, many hypertensive patients struggle with consistently implementing these practices. Barriers such as lack of motivation, insufficient knowledge, and inadequate access to healthcare contribute to poor adherence to self-care behaviors (Berek et al., 2023; Hans et al., 2024). Addressing these barriers is essential for improving the long-term management of hypertension, particularly given the rising prevalence of the condition globally.

Several factors critically influence how individuals manage their hypertension, including the duration of hypertension, education level, and self-efficacy. The duration of hypertension plays an important role in shaping self-care behaviors. Long-term hypertensive patients may experience treatment fatigue, which can result in reduced adherence to prescribed behaviors (Pahria et al., 2022; Sarfika et al., 2023). In contrast, individuals who have recently been diagnosed with hypertension are often highly motivated to engage in self-care due to a heightened awareness of their health status and potential risks (Burnier & Egan, 2019). Research has shown that newly diagnosed patients often exhibit increased attention to lifestyle changes, such as adopting a healthy diet and exercise routine, because of the heightened awareness of their health status and the associated risks (Espinosa-Salas & Gonzalez-Arias, 2023). This heightened awareness may be especially true in populations with limited health literacy, where health education initiatives play a critical role in improving management behaviors.

Education level is another key determinant in the effective management of hypertension. Individuals with higher education levels are more likely to have a better understanding of the disease and its management, leading to more effective self-care practices. Higher education is often associated with better health literacy, which improves an individual's ability to comprehend medical information, understand the need for lifestyle changes, and adhere to treatment plans (Beigi et al., 2014; Sun et al., 2022). However, education alone does not guarantee effective self-care. Other factors such as access to healthcare, socioeconomic status, and the availability of social support also play critical roles in influencing self-care behaviors (McMaughan et al., 2020). The individuals from lower socioeconomic backgrounds or with lower education levels are more likely to face barriers in accessing the information or resources necessary to manage their condition effectively (Centers, 2023; Psychological, 2015). This highlights the need for targeted health interventions that consider both educational and social factors in their design.

Self-efficacy, which refers to an individual’s belief in their ability to successfully manage their health, is another important factor that significantly impacts the success of self-care practices in hypertension Research consistently shows that patients with higher self-efficacy are more likely to adhere to prescribed treatments, regularly monitor their blood pressure, and make necessary lifestyle changes (Tan et al., 2021). High self-efficacy increases individuals’ confidence in their ability to manage hypertension and motivates them to engage in proactive health behaviors. This belief in one’s ability to manage health can be enhanced through targeted interventions that build confidence, such as self-management training programs, behavioral reinforcement, and goal-setting strategies (Tan et al., 2021; Ma et al., 2024).

The interaction between knowledge, self-efficacy, and self-care behaviors is critical in

managing hypertension effectively. While knowledge about hypertension management is necessary, the motivation to act on that knowledge depends largely on self-efficacy. Those with higher self-efficacy are more likely to act on the health information available to them, which leads to better health outcomes (Adiyasa & Cruz, 2020; Kurdi et al., 2024). The relationship between self-efficacy and self-care behaviors is particularly important in culturally diverse populations, where beliefs and attitudes toward health management may vary (Alyafei & Easton-Carr, 2024; Kalantzi et al., 2024).

Despite extensive research on these individual factors, there is limited research examining how disease duration, education level, and self-efficacy simultaneously influence both knowledge and self-care behaviors in hypertension. This study aims to fill this gap by exploring how these variables interact and influence both knowledge and self-care behaviors in hypertensive patients. By understanding these relationships, healthcare providers can design more effective and personalized interventions that consider these factors, which may improve self-care adherence and health outcomes for hypertensive individuals (Pahria et al., 2022;Alyafei & Easton-Carr, 2024; Putri et al., 2022)

Given the growing burden of hypertension worldwide, this research is crucial for identifying strategies to enhance patient education, self-efficacy, and the management of long-term hypertension. Targeted interventions that address these factors can lead to improved hypertension management and better health outcomes for individuals living with hypertension. Furthermore, Chelak & Chakole, 2023 and Kruk et al., (2018) explained that understanding the role of social determinants such as education and socioeconomic status in shaping hypertension self-care can guide policymakers and healthcare providers in developing inclusive healthcare systems that cater to the needs of vulnerable populations.

METHODS

Study Design

This study employed a secondary data analysis approach using data derived from a cross-sectional study previously conducted in the working area of Puskesmas Pasundan. The original study aimed to assess factors influencing knowledge and self-efficacy related to hypertension self-care. This design allowed the current researchers to explore associations between key variables without initiating new data collection, making efficient use of existing resources.

Sample

The study sample consisted of individuals diagnosed with hypertension for at least one month and without any documented comorbid conditions. Participants were selected using a random sampling technique in the original study to ensure representativeness and minimize selection bias. This sampling method helped to generalize the findings to the broader hypertensive population served by Puskesmas Pasundan.

Instruments

Data collection in the original study utilized validated and structured questionnaires. These instruments included sections for demographic characteristics (such as age, gender, and educational background), a knowledge questionnaire related to hypertension self-care management, and a self-efficacy scale assessing patients' confidence in managing their condition. The instruments were either interviewer-administered or self-administered, depending on the participant's preference and literacy level.

Data Collection

Data were collected through house-to-house visits by trained data collectors. This community-based approach enhanced participation, particularly among individuals who might face barriers to attending health facilities. Respondents were informed about the purpose of the study, and data were gathered either via structured interviews or self-completed questionnaires, depending on the respondent's preference and ability. This flexible approach helped ensure data quality and inclusiveness across different educational levels.

Data Analysis

In the current secondary analysis, data were first reviewed for completeness and then coded for statistical processing. Descriptive statistics were used to summarize participant demographics, including age, gender, education level, and hypertension duration. To explore the associations between variables, Spearman's rank correlation tests were conducted, examining the relationships between education level, self-efficacy, duration of hypertension, and knowledge of self-care management. A significance level of $p < 0.05$ was used to determine statistical significance.

Ethical Considerations

The original study received ethical approval from the Ethics Committee of STIKes Karsa Husada Garut under approval number 001439/KEP STIKes Karsa Husada Garut/2024. All participants provided informed consent, ensuring that they fully understood the study objectives, their rights to confidentiality, and their freedom to withdraw at any time without repercussions. Since this study is a secondary analysis of anonymized data, no additional ethical clearance was required, provided that the original research adhered to accepted ethical standards and guidelines. Participant privacy and data confidentiality were maintained throughout the research process.

RESULTS

Tables 1 and 2 below present demographic data and the results of a bivariate test examining the relationship between various variables and self-care management knowledge in hypertension. Table 1 provides an overview of participant characteristics, including education level, duration of hypertension, self-efficacy, and knowledge of self-care management. Meanwhile, Table 2 shows the results of correlation tests between the duration of hypertension, education level, self-efficacy, and knowledge of self-care management

Table 1: Demography and variables of the participants (n=97)

Items		N	%
Education level			
	No formal education	6	6.2
	Elementary school	54	55.7
	Junior High School	16	16.5
	Senior high school	18	18.6
	University	3	3.1
Duration of Hypertension (year)			
	< 1	7	7.22
	1-5	79	81.44
	6-10	10	10.31
	>10	1	1.03
Self-Efficacy			
	Good	74	76.3
	Moderate	20	20.6
	Poor	3	3.1
Knowledge			
	Good	49	50.5
	Moderate	34	35.1
	Poor	14	14.4

This table shows the demographic characteristics and variables related to the participants. Among the 97 participants, the majority had low educational levels, with 55.7% having elementary school education and only 3.1% having a university degree. Most participants had hypertension duration between 1 to 5 years (81.4%), with only 1.03% experiencing hypertension for over 10 years. Regarding self-efficacy,

most participants (76.3%) reported good self-efficacy in managing hypertension, while only 3.1% reported poor self-efficacy. In terms of knowledge about self-care management, nearly half of the participants (50.5%) had good knowledge, while most of the rest (35.1%) had moderate knowledge.

Table 2. Bivariate test relationship between variables and knowledge of self-care management of hypertension

	Duration Of Hypertension	Education level	Self-efficacy
Correlation Coefficient	-.004	.301	.275
Sig (2-tailed)	0.971	.003	.006
N	97	97	97

. Correlation is significant at the 0.01 level (2-tailed)
. Correlation is significant at the 0.05 level (2-tailed)

Table 2 presents the results of the bivariate correlation test to explore the relationships between duration of hypertension, education level, self-efficacy, and knowledge of self-care management. The results indicate no significant relationship between duration of hypertension and knowledge of self-care management, with a correlation coefficient of -0.004 and a p-value of 0.971, which is greater than 0.05, indicating no significant relationship. On the other hand, there is a significant positive relationship between education level and knowledge of self-care management (correlation coefficient 0.301, p-value 0.003), suggesting that participants with higher education levels tend to have better knowledge of self-care management. Additionally, self-efficacy also shows a positive and significant relationship with knowledge of self-care management (correlation coefficient 0.275, p-value 0.006), indicating that participants with higher self-efficacy are more likely to have better knowledge of managing their hypertension through self-care.

DISCUSSION

The results from Table 1 and Table 2 provide valuable insights into the relationship between participants' demographic characteristics, education level, self-efficacy, and knowledge of self-care management for hypertension. These findings contribute to a deeper understanding of the factors that influence hypertension management and highlight the importance of targeted interventions to improve self-care behaviors in hypertensive individuals. Table 1 indicates that a significant portion of participants had relatively low education levels, with 55.7% having only completed elementary school. Despite this, half of the participants (50.5%) exhibited good knowledge of managing hypertension. This suggests that while education level is generally correlated with better health knowledge, other factors may contribute significantly to participants' understanding of hypertension management. For instance, health literacy has been shown to be a key factor of individuals' ability to understand and apply health information, which is crucial for effective hypertension management. It is highlighted that individuals with low health literacy often struggle to manage chronic conditions, including hypertension, due to difficulties in understanding medical instructions and treatment plans. Furthermore, access to health information plays a vital role in improving hypertension knowledge, as it ensures individuals are equipped with the necessary tools to make informed health decisions (Cangussú et al., 2022; Coughlin et al., 2020; Kadar, 2024). Kurnia et al., (2020), emphasized that health education programs tailored to rural populations can significantly enhance knowledge and attitudes towards hypertension, even among those with limited formal education. In addition, community health education programs are pivotal in bridging gaps in health knowledge, especially in

underserved areas. Programs designed to improve health literacy, such as the Health Education and Health Empowerment Program, have been effective in empowering individuals to take charge of their health, demonstrating positive effects on managing chronic conditions like hypertension (Stepanian et al., 2023; Purwanta et al., 2023). Similarly, studies by Purwanta et al. (2023) and Stepanian et al. (2023) underline the importance of community-based education initiatives in improving health literacy, particularly in populations with lower educational attainment. These factors collectively contribute to better hypertension management, demonstrating that education alone may not be enough to ensure effective self-care without additional support systems in place.

The positive and significant correlation between education level and knowledge of self-care management ($r = 0.301$, $p = 0.003$) in Table 2 confirms that higher education is associated with better knowledge about managing hypertension. This aligns with the findings of Kadar (2024), which demonstrated that individuals with higher education levels tend to have better health literacy, enabling them to understand medical information more effectively. Education improves the capacity to make informed decisions, and individuals with more education are likely to have better access to healthcare resources. This is particularly important in the context of hypertension, where patient understanding of disease management is crucial to preventing complications. Therefore, healthcare interventions must consider health literacy programs tailored to individuals with lower education levels to bridge this gap and improve hypertension management (Magnani et al., 2018; Health, 2014).

The duration of hypertension did not show a significant correlation with knowledge of self-care management (correlation coefficient of -0.004, $p = 0.971$). This finding suggests that the length of time a person has been living with hypertension does not necessarily lead to a better understanding or improved management of the disease. The idea that individuals with long-term hypertension would naturally gain more knowledge about their condition and improve their management practices is not supported by the data. This result indicates that knowledge alone does not guarantee effective self-care practices (WHO, 2024; Martínez et al., 2021; Rikmasari et al., 2024). Studies have shown that treatment fatigue or complacency can develop in individuals who have been managing a chronic condition for a long time, leading to a decline in their engagement with self-care behaviors. For example, research by Konlan & Shin (2023a) demonstrated that patients with chronic hypertension often experience a decrease in their adherence to prescribed self-care practices over time, possibly due to the absence of immediate symptoms or the normalization of the condition. Additionally, Pagès-Puigdemont et al. (2016), found that individuals with long-term health conditions may develop a sense of resignation toward their treatment regimen, especially if they do not perceive their health outcomes as improving significantly. This suggests that health beliefs, such as personal motivation and perceptions of disease severity, may be more influential in determining self-care behaviors than the sheer duration of hypertension itself. Furthermore, access to healthcare resources and support networks are critical in fostering effective management. The individuals with greater access to medical support and education were better able to manage their conditions, regardless of the duration of their illness. Chronic exposure to hypertension might lead to complacency, especially if the symptoms are not perceived as severe or if there is limited access to healthcare support (WHO, 2020; Raghupathi & Raghupathi, 2020; Grady & Gough, 2014). Previous research highlighted that long-term hypertensive patients may become less engaged with their treatment regimen as they adapt to the condition, leading to lower

adherence to recommended lifestyle changes and medication. On the other hand, newly diagnosed patients may exhibit higher motivation to engage in self-care practices due to heightened awareness of their health condition (Ma et al., 2024; Ojangba et al., 2023). This finding suggests that effective interventions targeting newly diagnosed hypertensive patients may have a more significant impact, as they are likely to be more receptive to information and motivated to implement self-care behaviors.

The significant positive relationship between self-efficacy and knowledge of self-care management (correlation coefficient of 0.275, $p = 0.006$) highlights the role of self-confidence in managing hypertension. Participants with higher self-efficacy were more likely to have good knowledge of how to manage their hypertension, which aligns with self-efficacy theory by Bandura (Tan et al., 2021). According to this theory, individuals who believe they can control their health are more likely to engage in behaviors that promote better health outcomes. In the context of hypertension, individuals with high self-efficacy are more likely to follow prescribed treatments, make lifestyle changes, and manage their health actively. Self-efficacy is a crucial factor in chronic disease management because it empowers individuals to take control over their health behaviors. Alyafei & Easton-Carr (2024), suggested that people with higher self-efficacy are better at setting and achieving health-related goals, such as adhering to medication regimens and maintaining a healthy lifestyle. Additionally, Kalantzi et al. (2024) and Mega (2024) explained that self-efficacy is associated with improved health outcomes, as individuals with strong beliefs in their ability to manage their conditions are more likely to engage in positive health behaviors like regular physical activity and dietary modifications.

Recent studies have also reinforced the importance of self-efficacy in managing chronic conditions like hypertension. For instance, Arbuckle et al. (2020) and (Kang & Kim, 2021), demonstrated that patients with greater self-efficacy had better adherence to treatment protocols and experienced better control over their blood pressure. Furthermore, Arbuckle et al. (2020) and Kang & Kim (2021). argued that interventions aimed at enhancing self-efficacy, such as motivational interviewing and cognitive-behavioral strategies, can significantly improve health behaviors and health outcomes. These findings underscore the critical role of self-efficacy in managing hypertension effectively and suggest that interventions targeting self-confidence can be instrumental in improving patient outcomes.

The findings of this study emphasize the importance of addressing key factors such as education level, self-efficacy, and the duration of hypertension when designing interventions to improve hypertension management. Interventions that improve health literacy and self-efficacy should be prioritized to help hypertensive patients take ownership of their health and make informed decisions. Health education programs should focus on practical, actionable advice that can be easily understood and implemented, especially for individuals with lower levels of education (Rizvi, 2018; Birch & Auld, 2019). Furthermore, given the positive relationship between self-efficacy and knowledge, interventions that build patients' confidence in their ability to manage their hypertension should also be a key component of hypertension management strategies (Rikmasari et al., 2024).

CONCLUSIONS

The findings from this study suggest that education level and self-efficacy play important roles in enhancing knowledge of hypertension self-care. Although the duration of hypertension was not significantly associated with knowledge, the importance of self-efficacy and education underscores the need for tailored interventions to improve health outcomes in hypertensive patients. By addressing these factors in healthcare

programs, particularly in community settings like Puskesmas, we can improve the management of hypertension and reduce the risk of complications associated with the condition

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