Article

Bridging the Gap: How Family Support and Health Literacy Shape Self-Care in Elderly Hypertension Management

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Theme: Processes and practices of care

Contribution to the fields: This study contributes to the field by highlighting the critical role of family support and health literacy in promoting effective self-care management among older adults with hypertension, particularly in low- and middle-income settings like Indonesia. Demonstrating a strong positive relationship between family support and self-care behaviors and identifying a modest yet significant link with health literacy highlights the need for integrated, culturally sensitive interventions that utilize familial involvement and enhance individuals' capacity to understand and act on health information. These insights offer valuable guidance for healthcare practitioners and policymakers to design more effective community-based strategies to manage chronic conditions in aging populations.

Abstract

Introduction: Hypertension is a common chronic condition among older adults that negatively affects quality of life and requires effective self-care. Family support and health literacy are key factors influencing self-care behaviors, yet most studies have examined these factors separately and in high-income countries. This study explores their combined impact in a low- to middle-income setting. **Objective:** To examine the relationship between family support, health literacy, and self-care management among elderly individuals with hypertension. **Materials and Methods:** This quantitative, cross-sectional study involved 90 purposively selected participants aged ≥ 60 years with medically diagnosed hypertension from the Prolanis Community Health Center, Kedungmundu, Semarang, Indonesia. Inclusion criteria included the ability to communicate and willingness to participate. Data were collected using validated instruments: the House's Family Support Questionnaire, the HLS-EU-Q16 for health literacy, and the HSMBQ for self-care. Data analysis used Spearman's rho test with a significance level of 0.05. **Results:** A strong positive correlation was found between family support and self-care management ($p = 0.000$, $r = 0.689$). A weaker but statistically significant correlation was observed between health literacy and self-care ($p = 0.045$, $r = 0.212$). **Conclusion:** Family support plays a critical role in promoting self-care management among older adults with hypertension. While health literacy also contributes, its influence is comparatively weaker. These findings highlight the need for culturally appropriate interventions that strengthen family involvement and improve health literacy to enhance chronic disease management in aging populations.

Keywords (Source: DeCS)
Hypertension; elderly; self-care; family support; health literacy.

Tender puentes entre los abismos: Cómo el apoyo familiar y la alfabetización en salud modelan el autocuidado en adultos mayores con hipertensión

Resumen

Introducción: La hipertensión es una condición crónica común entre adultos mayores que afecta negativamente su calidad de vida y requiere un autocuidado eficiente. El apoyo familiar y la alfabetización en salud son factores clave que influyen en los comportamientos de autocuidado, pero la mayoría de los estudios han examinado estos factores por separado y en países con ingresos altos. Este estudio explora su impacto combinado en contextos de bajos y medianos ingresos. **Objetivo:** Examinar la relación entre el apoyo de la familia, la alfabetización en salud y el autocuidado entre adultos mayores con hipertensión. **Materiales y métodos:** Este estudio cuantitativo, transversal involucró a 90 participantes escogidos intencionalmente de ≥ 60 años, diagnosticados con hipertensión, del Prolanis Community Health Center, Kedungmundu, Semarang, Indonesia. Los criterios de inclusión incluyeron habilidades de comunicación e interés por participar. Los datos se recolectaron usando instrumentos validados: el Cuestionario de Apoyo Familiar de House; el Cuestionario Europeo de Alfabetización en Salud-Q16 (HLS-EU-Q16), para la alfabetización en salud, y el Cuestionario de Comportamientos de Automanejo de la Hipertensión (HSMBQ, por sus siglas en inglés), para el autocuidado. Para el análisis de datos se usó la rho de Spearman con un nivel de significancia de 0,05. **Resultados:** Se encontró una correlación fuerte y robusta entre apoyo familiar y autocuidado (p = 0,000, r = 0,689). Una correlación débil, pero estadísticamente significativa, se encontró entre alfabetización en salud y autocuidado (p = 0,045, r = 0,212). **Conclusiones:** El apoyo familiar juega un papel crítico en la promoción del autocuidado en adultos mayores con hipertensión. Aunque la alfabetización en salud también contribuye, su influencia es comparativamente más débil. Estos hallazgos resaltan la necesidad de intervenciones apropiadas culturalmente que fortalezcan la participación de la familia y mejoren la alfabetización en salud para mejorar el tratamiento de las enfermedades crónicas en la población mayor.

Palabras clave (Fuente DeCS)
Hipertensión; adulto mayor; autocuidado; apoyo familiar; alfabetización en salud.

Construindo pontes sobre os abismos: como o apoio familiar e a alfabetização em saúde moldam o autocuidado em pessoas idosas com hipertensão

Resumo

Introdução: A hipertensão é uma condição crônica comum entre pessoas idosas, que afeta negativamente sua qualidade de vida e requer práticas eficazes de autocuidado. O apoio familiar e a alfabetização em saúde são fatores-chave que influenciam os comportamentos de autocuidado, mas a maioria dos estudos examinou esses fatores separadamente e em países de alta renda. Este estudo explora seu impacto combinado em contextos de baixa e média renda. **Objetivo:** examinar a relação entre apoio familiar, alfabetização em saúde e autocuidado em pessoas idosas com hipertensão. **Materiais e método:** Este estudo quantitativo, de corte transversal, envolveu 90 participantes de ≥ 60 anos selecionados intencionalmente, diagnosticados com hipertensão, atendidos no Prolanis Community Health Center, Kedungmundu, Semarang, Indonésia. Foram incluídas pessoas com capacidade de comunicação e interesse em participar do estudo. Os dados foram coletados por meio de instrumentos validados: o Questionário de Apoio Familiar de House (House Family Support Questionnaire [HFSQ]); o Questionário Europeu de Literacia em Saúde-Q16 (European Health Literacy Survey Questionnaire – 16 items [HLS-EU-Q16]), para alfabetização em saúde, e o Questionário de Comportamentos de Autogestão da Hipertensão (Hypertension Self-Management Behavior Questionnaire [HSMBQ]), para autocuidado. Para a análise de dados, utilizou-se o coeficiente rho de Spearman, com nível de significância de 0,05. **Resultados:** Foi observada correlação forte entre apoio familiar e autocuidado (p = 0,000, r = 0,689). Foi constatada correlação fraca, porém estatisticamente significativa, entre alfabetização em saúde e autocuidado (p = 0,045, r = 0,212). **Conclusões:** O apoio familiar desempenha um papel fundamental na promoção do autocuidado em pessoas idosas com hipertensão. Embora a alfabetização em saúde também contribua, sua influência é comparativamente mais fraca. Esses achados ressaltam a necessidade de intervenções culturalmente adequadas que fortaleçam o engajamento familiar e melhorem a alfabetização em saúde para aprimorar o manejo das doenças crônicas na população idosa.

Palavras-chave (Fonte DeCS)
Hipertensão; idoso; autocuidado; apoio familiar; alfabetização em saúde.

Introduction

The aging process is the accumulation of cellular and molecular-level damage that occurs over a long period and is often associated with non-communicable diseases (1, 2). Hypertension is a risk factor for cardiovascular disease that increases with lifestyle changes, prolonged stress, and age (3). Hypertension is a degenerative and chronic disease that can affect a person's quality of life and productivity (4). Based on data from the World Health Organization (WHO), it is estimated that 1.28 billion adults aged 30-79 years worldwide suffer from hypertension. About 46% of adults do not realize that they are hypertensive (5). Meanwhile, the prevalence of hypertension in Indonesia was 34.1% in 2018, and the prevalence of hypertension in Central Java alone reached 37.5% (6). The WHO states that one of the global targets for non-communicable diseases is reducing hypertension prevalence by 33% between 2010 and 2030 (5).

Hypertension is a common disease characterized by increased arterial pressure. It is a significant risk factor for common causes of morbidity, including stroke, myocardial infarction, congestive heart failure, and end-stage renal disease (7). Hypertension can be controlled by changing lifestyle, increasing physical activity, maintaining a healthy weight, and eating a good diet. So, it requires good self-management (8). In addition to controlling and overcoming hypertension in older people, self-care management needs to be implemented. Self-care management is a behavioral process to prevent severity and involves a decision-making process where people with hypertension can assess and overcome disease symptoms when the disease occurs (9).

If self-care management is not done properly by people with hypertension, it will increase the risk of complications (10). One of the factors that exacerbates hypertension in older people is the lack of support from family, friends, community, or neighbors, which leads to self-care management not being done correctly by older people. Support from good family members is essential in healthcare efforts (11). The family is a support system for older people with hypertension so that the elderly condition does not worsen and prevents complications due to hypertension. Family support significantly impacts older people, so their self-care management can be done properly. This support can increase the enthusiasm of older people to control hypertension by coming to the integrated service center (Posyandu) independently (12). In addition, self-management behavior can be implemented optimally if health information is received correctly. The information absorbed depends on each person's ability in health literacy (13). Health literacy is the ability of individuals to understand health information and the steps needed to make informed decisions related to their health (14).

Family support plays a pivotal role in shaping health outcomes among older adults, as family members often provide emotional

encouragement, assist with medical tasks, and offer reminders to follow lifestyle recommendations (15). Research by Jariyasakulwong et al. (2025) found that elderly hypertensive patients with strong family support were 2.23 times more likely to adhere to prescribed self-care practices compared to those with limited support (16). However, the quality and impact of this support can vary widely depending on factors such as family structure, socioeconomic status, and cultural norms.

Equally important is health literacy, defined as an individual's capacity to access, understand, and apply health-related information to make informed decisions. Low health literacy has been consistently associated with poor hypertension control, increased hospitalization, and higher mortality rates (14). Cognitive decline, lower educational attainment, and limited access to reliable health information contribute to this challenge among older adults. In Indonesia, a health literacy level of 33% was problematic and 16.2% inadequate, which is closely linked to poor engagement in hypertension self-care behaviors (17).

Although previous studies have identified the importance of family support and health literacy in chronic disease management, most have examined these factors in isolation and within clinical or high-income settings, leaving a critical gap in understanding their combined influence on self-care behaviors among elderly individuals with hypertension, particularly in low- and middle-income countries like Indonesia. Existing research often overlooks the complex interplay between socio-relational dynamics and cognitive capacities that shape daily self-care practices such as medication adherence, diet, physical activity, and blood pressure monitoring. This study addresses that gap by offering a novel approach that simultaneously explores the roles of family support and health literacy as integrated determinants of hypertension self-care in older adults. Doing so provides new insights into how culturally sensitive, family-centered, and literacy-informed strategies can enhance chronic disease management and improve health outcomes in aging populations. This study explores the influence of family support and health literacy on self-care management among older adults with hypertension, providing insights into pathways for improved chronic disease management.

Design and Methods

Design

This study used a quantitative approach, a descriptive correlational design, and a cross-sectional design to analyze the relationship between family support, health literacy, and self-care management in elderly hypertension.

Data and Sample

This study was conducted from May to September 2024 at Prolanis Puskesmas Kedungmundu, Semarang City, Indonesia. The population in this study was older people registered as participants in the Chronic Disease Management Program (Prolanis) at the Kedungmundu Health Center. The study sample comprised 90 respondents selected using a purposive sampling technique with inclusion criteria, namely elderly aged ≥ 60 years, suffering from hypertension as evidenced by medical records, able to communicate well, and willing to become respondents by signing an informed consent sheet. Exclusion criteria were elderly with severe cognitive impairment or medical conditions that hindered the ability to complete the questionnaire independently.

Measures

Data were collected by distributing a structured questionnaire that included three main instruments. Family support variables were measured using a questionnaire based on House's theory, including emotional, informational, instrumental, and appreciative support. The validity test results showed that the r-count values (ranging from 0.354 to 0.772) were greater than the r-table value (0.349), indicating valid items. The reliability test produced a Cronbach's alpha of 0.802, which exceeds the acceptable threshold 0.6, demonstrating good internal consistency.

Health literacy was measured using the Indonesian version of the European Health Literacy Survey Questionnaire (HLS-EU-Q16), which was translated from the Health Literacy Study-Asia (HLS-Asia) and is part of the broader European Health Literacy Survey (HLS-EU) project; AHLA Indonesia has tested this questionnaire for validity and reliability. The validity and reliability test results showed a Cronbach's *r* alpha of 0.77 with 16 question items having a corrected item-total correlation ranging from 0.432-0.640 *r* alpha value > 0.3, which indicates the HLS-EU-16Q questionnaire can be declared valid and reliable.

Hypertension self-care management variables were measured using the Hypertension Self-Management Behaviour Questionnaire (HSMBQ), an adaptation of the Diabetes self-care instrument developed by Lin et al. in 2008 and modified by Akhter (2010) in hypertensive patients (18, 19). The validity test results showed *r*-values ranging from 0.375 to 0.781, while the reliability test demonstrated a high level of consistency with a Cronbach's alpha of 0.949. Data collection was conducted directly with the help of trained enumerators while maintaining the confidentiality and comfort of respondents during the questionnaire filling process.

Analytic Approach

Data analysis in this study was conducted using the IBM SPSS Statistics software version 29.0. Data analysis consisted of two stages—

univariate and bivariate analysis. The univariate analysis was used to describe the demographic characteristics of respondents and the data distribution of each research variable—family support, health literacy, and self-care management in elderly hypertension. Meanwhile, the bivariate analysis examined the relationship between the independent variables (family support and health literacy) and the dependent variables (self-care management). The statistical test used was the Spearman Rank (*rho*) because the data was on an ordinal scale and did not fulfill the assumption of normal distribution. The analysis results were presented as a correlation coefficient and significance value (*p*-value), with the significance level set at $\alpha = 0.05$.

Result

Characteristics of Respondents

Table 1 shows that 90 elderly hypertensive patients participated in this study. Most respondents were in the elderly age category (60-74 years - 98.9%), while only 1.1% were classified as old (75-90 years). Based on gender, most respondents were female (70%), while only 30% were male. In terms of education, the majority had a secondary education level—high school/equivalent (33.3%), followed by elementary education (SD) as much as 26.7%, junior high school / equivalent 24.4%, and college 15.6%.

In terms of the hypertension category, most respondents (72.2%) were in the category of grade 1 hypertension (140-159 mmHg), while 27.8% had grade 2 hypertension (>160 mmHg).

Table 1. Characteristics of Respondents (N=90)

No.	Characteristics	n	%
1	**Age**		
	Elderly (60-74 years)	89	98.9
	Old (75-90 years)	1	1.1
2	**Gender**		
	Male	27	30
	Female	63	70
3	**Education**		
	Elementary school	24	26.7
	Junior high school/equivalent	22	24.4
	High school/equivalent	30	33.3
	Higher Education	14	15.6
4	**Hypertension Category**		
	Grade 1 Hypertension (140 - 159 mmHg)	65	72.2
	Grade 2 Hypertension (> 160 mmHg)	25	27.8

No.	Characteristics	n	%
5	**Family Support**		
	Emotional Support		
	Less	5	5.6
	Enough	38	42.2
	Good	47	52.2
	Assessment Support		
	Less	4	4.4
	Enough	58	64.4
	Good	28	31.1
	Instrumental Support		
	Less	1	1
	Enough	49	54.4
	Good	40	44:4
	Informational Support		
	Less	22	24.4
	Enough	46	51.1
	Good	22	24.4
6	**Health literacy**		
	Low	23	25.6
	Moderate	43	47.8
	High	24	26.7
7	**Self-Care Management**		
	Self-integration		
	Less	2	2.2
	Fair	21	23.3
	Good	67	74.4
	Self-regulation		
	Less	7	7.8
	Enough	35	38.9
	Good	48	53.3
	Interaction with relevant health workers		
	Less	12	13.3
	Enough	30	33.3
	Good	48	53.3
	Blood pressure monitoring (self-monitoring)		
	Less	9	51.1
	Enough	35	38.9
	Good	46	51.1

No.	Characteristics	n	%
7	**Adherence to the rules that health workers have recommended**		
	Less	0	0
	Enough	42	46.7
	Good	48	53.3

Source: Prepared by the authors.

Family Support

Family support was analyzed in four dimensions: Emotional, appraisal, instrumental, and informational. In the emotional support dimension, most respondents reported receiving support in the good category (52.2%), followed by enough (42.2%); only 5.6% reported less support. The majority (64.4%) were in the moderate category for appraisal support, while 31.1% were good and 4.4% were deficient. The instrumental support dimension showed that most respondents received enough (54.4%) and good (44.4%) support, with only 1% reporting deficient support. Informational support showed a relatively balanced distribution between the moderate (51.1%) and good (24.4%) categories, but still, 24.4% of respondents reported insufficient informational support.

Health Literacy

Health literacy levels were mainly in the moderate category (47.8%), followed by high (26.7%) and low (25.6%). This finding indicates that most older people have a moderate ability to understand and use health information to support hypertension management.

Self-Care Management

Self-care management was analyzed in five indicators. Regarding self-integration, most respondents were in the good category (74.4%), followed by 23. 3 in the moderate, and only 2.2% were in the lacking one. Regarding self-regulation, 53.3% of respondents showed good ability, 38.9% mild, and 7.8% deficient. Interaction with health professionals was also relatively high, with 53.3% of respondents in the good category; only 13.3% showed poor interaction. For self-monitoring of blood pressure, the highest distribution was in the good (51.1%) and fair (38.9%) categories; only 10% were in the poor category. As for adherence to health professional recommendations, more than half of the respondents (53.3%) showed good adherence, while the rest were in the moderate category (46.7%); none were in the lacking category.

The Role of Family Support on Self-Care Management in the Elderly with Hypertension

Table 2 shows a significant relationship between the level of family support and the level of self-care management in older people with hypertension. Of the total respondents, most older people who received family support in the good category (36.7%) showed good self-care management, 7.8% were in the enough category, and none were in the less category. In contrast, among older adults who only received family support in the poor category, most (5.6%) had a low level of self-care management, with only 2.2% in the enough category and none showing good self-care.

Table 2. The Role of Family Support on Self-Care Management in Older People with Hypertension

Variable	Self-care management						Nilai *p*	Nilai *r*
	Less		Enough		Good			
	n	%	n	%	n	%		
Family support								
Less	5	5.6	2	2.2	0	0.0		
Enough	4	4.4	24	26.7	15	16.7	0.000	0.689
Good	0	0.0	7	7.8	33	36.7		

Source: Prepare by the authors.

In the elderly group with enough family support, 26.7% showed self-care management in the moderate category, 16.7% in the good category, and 4.4% were still in the less category. Statistical test results using Spearman's Rank (*rho*) showed a significance value (*p*-value) of 0.000 (<0.05), which means there is a significant relationship between family support and self-care management. In addition, the correlation coefficient (*r*) value of 0.689 shows that the strength of the relationship is relatively strong and positive. This indicates that the higher the family support received by older people, the better their level of self-care in managing hypertension.

This finding confirms the crucial role of the family as the central support system in helping older adults with self-care practices, such as medication adherence, blood pressure monitoring, and healthy lifestyle changes. Thus, family-based interventions could be an effective strategy in hypertension management programs in the elderly population.

The Role of Health Literacy on Self-Care Management in the Elderly with Hypertension

Table 3 illustrates the role of health literacy in self-care management in the elderly suffering from hypertension. The results show that older adults with high health literacy levels tend to have better

self-care management. Of those with high health literacy, 16.7% showed good self-care, while 8.9% were in the enough category, and 1.1% were in the less category.

Table 3. The role of health literacy in self-care management in older people with hypertension

Variable	Self-care management						Nilai *p*	Nilai *r*
	Less		Enough		Good			
	n	%	n	%	n	%		
Health literacy								
Less	6	6.7	10	11.1	7	7.8		
Moderate	2	2.2	15	16.7	26	28.9	0.045	0.212
High	1	1.1	8	8.9	15	16.7		

Source: Prepared by the authors.

In the group with moderate health literacy, most (28.9%) were in the good self-care category, 16.7% were fair, and 2.2% were poor. In contrast, respondents with low health literacy had a less favorable distribution, with 6.7% showing low self-care, 11.1% fair, and only 7.8% showing good self-care.

The Spearman rank statistical test yielded a *p*-value of 0.045 (<0.05), indicating a significant association between health literacy and self-care management. However, the correlation coefficient (*r*) of 0.212 indicates that the relationship is weak, although still positive.

This finding indicates that health literacy is essential in supporting older adults to understand and take self-care actions for managing hypertension, such as medication adherence, self-measurement of blood pressure, and making appropriate healthcare decisions. Although the relationship found is relatively weak, this result still emphasizes the importance of health literacy improvement interventions as one of the strategies to strengthen the self-care practices of older people with hypertension.

Discussion

Self-Care Management in the Elderly with Hypertension

The results of this study indicate that most of the hypertensive older people at Prolanis Puskesmas Kedungmundu Semarang have good self-care management skills, especially self-integrity. Self-integrity is the foundation for maintaining balance and well-being (18), as it helps hypertensive elderly to live a more organized life, minimize stress, and improve self-confidence and the quality of social relationships so that hypertensive elderly

are better able to meet personal needs sustainably and become the best version of themselves. Self-integrity is very important in self-care management because it reflects a person's ability to be consistent with individual values, commitments, and principles in self-care (19). Self-integrity in self-care management ensures that self-care actions become an integral part of the person's lifestyle, improving quality of life on an ongoing basis. Hypertensive patients with good self-care management skills can manage their disease more effectively and beneficially (20). Factors contributing to good self-care management are knowledge, education level, social support, self-efficacy, and duration of hypertensive disease (21).

This study also aligns with research conducted by de Santana Silva et al. (2024), where older people who routinely seek treatment at health services have better self-care management—they make efforts to control risky behaviors that could worsen their conditions, such as unhealthy diets, lack of fruits and vegetables consumption, sugar consumption, excess salt, lack of physical activity, and inadequate stress management (22). Hypertension is a chronic disease requiring continuous care, for which patients must be fully responsible for managing themselves (self-management) to reduce the risk of complications (23). Self-management in patients with hypertension includes controlling blood pressure and medication, improving lifestyle, and preventing complications (24).

The Role of Family Support on Self-Care Management

This study's results indicate a significant relationship between family support and self-care management in older people with hypertension ($p = 0.000$; $r = 0.689$). This finding strengthens the evidence that family support is one of the determinants for improving the ability of older people to manage their health conditions independently.

Family support includes various dimensions, such as emotional, appraisal, instrumental, and informational support, all of which contribute to increasing the motivation and capacity of older people to implement self-care practices (25, 26). Older people who receive consistent emotional support from family members tend to feel more motivated to maintain a healthy lifestyle, follow their medication, and monitor blood pressure regularly (27, 28). Family emotional support contributes significantly to self-care adherence in elderly patients with chronic diseases (29).

A similar study by Jariyasakulwong et al. (2025) showed that older people with hypertension who received optimal family support were 2.23 times more likely to show good self-care behavior than those who received limited support (16). Family support also helps overcome cognitive and emotional barriers, such as fear of complications, uncertainty in medication use, and loneliness, which is often experienced by the elderly.

Furthermore, in the context of Indonesian culture, which firmly upholds family values, the presence and active role of the family is a significant instrument in successfully managing chronic diseases. Older people in a supportive family environment significantly improved adherence to diet, physical activity, and blood pressure control (30, 31). Thus, the results of this study not only support previous findings but also provide an essential foundation for the development of family-based interventions in elderly hypertension management programs. Nursing interventions involving families, such as family education about hypertension, blood pressure monitoring training, and empowerment in health decision-making, can potentially improve the effectiveness of self-care management in older people.

The Role of Health Literacy in Self-Care Management

The results of this study indicate a significant relationship between health literacy and self-care management in older people with hypertension, although the strength of the correlation is weak ($p = 0.045$; $r = 0.212$). This finding confirms that health literacy remains an essential factor in determining the extent to which older people can perform effective self-care in managing their hypertension condition.

Health literacy refers to the ability of individuals to obtain, understand, and use health information to make informed decisions about their health (17). In the context of older people, adequate health literacy allows them to understand the importance of blood pressure control, follow treatment recommendations, recognize early symptoms of complications, and make consistent lifestyle changes, such as a low-salt diet, moderate exercise, and stress management (32).

Research by Mahato et al. (2025) states that low health literacy in older adults is associated with poor blood pressure control, increased hospitalization rates, and decreased medication adherence (33). In Indonesia, data from the Ministry of Health in 2022 revealed that more than 60% of older people have low levels of health literacy, which significantly contributes to the low engagement of older people in daily self-care practices (34).

This study showed that more older people with high health literacy levels were in the good self-care category (16.7%) than those in the low health literacy group. This indicates that the higher the ability of older people to understand health information, the more likely they are to manage hypertension independently. In addition, previous studies, such as the one conducted by Tandilangi et al. (2024), have also shown that interventions to improve health literacy in older adults, visual education, simple verbal approaches, and assistance by family can enhance self-efficacy and adherence to medication and chronic disease management (35).

These findings align with evidence reported in several regions globally. In Latin America, studies on hypertension management among older adults have highlighted that limited health literacy significantly reduces the ability of patients to interpret medical instructions, adhere to medication schedules, and maintain healthy lifestyle behaviors (36, 37). Community-based nursing interventions in countries such as Brazil, Colombia, and Mexico emphasize culturally sensitive education strategies and family involvement to overcome these barriers (38). Similarly, research in Sub-Saharan Africa shows that older adults with higher health literacy demonstrate better treatment adherence and improved blood pressure control, particularly when health information is delivered through community health workers and family networks (39). In several Asian contexts, including Indonesia, Thailand, and China, health literacy is increasingly recognized as a critical determinant of chronic disease self-management, particularly in rapidly ageing populations where hypertension prevalence continues to increase (40).

Thus, the results of this study support the importance of strengthening health literacy as an effective health promotion strategy. Nurses, health workers, and families are expected to provide health information more straightforwardly, repetitively, and considering the cognitive abilities of older people. Community-based education programs such as Prolanis can be an effective means to improve health literacy and support successful self-care management in the elderly population with hypertension.

The scientific uniqueness of this study lies in positioning family support as a contextual mechanism that amplifies the effectiveness of health literacy in shaping self-care behavior. Rather than treating health literacy as an isolated individual attribute, this study conceptualizes it as part of a relational process occurring within family environments. This integrated perspective aligns with the principles of family-centered nursing, which emphasize collaborative partnerships between patients, families, and healthcare professionals. By demonstrating that higher health literacy levels combined with supportive family involvement are associated with better self-care outcomes, this study provides empirical support for the development of family-based health literacy interventions in hypertension management.

Conclusion

This study shows that family support and health literacy are significantly related to self-care management in older people with hypertension. Family support, especially in emotional, instrumental, appraisal, and information, is essential in increasing the elderly's adherence to medication, self-monitoring blood pressure, and positive interactions with health workers. Higher levels of health literacy are positively associated with older adults' ability to comprehend and effectively implement appropriate self-care practices. Thus, in-

terventions to improve self-care management in hypertensive elderly should consider active family involvement and strengthening elderly health literacy through appropriate educational approaches. This strategy is expected to enhance the quality of life of older people and prevent long-term complications due to hypertension.

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Declarations of conflict of interest

The authors have no conflict of interest to declare.

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Ethics approval and consent to participate

This study has obtained ethical approval from the Health Research Ethics Commission of the Faculty of Nursing and Health Sciences, Muhammadiyah University of Semarang, with ethical certificate number 531/KE/2024. All research procedures have followed ethical principles, including written informed consent, guarantee of data confidentiality, and protection of respondents' rights and comfort during the research process.

References

1. Ahmad A, Braden A, Khan S, Xiao J, Khan MM. Crosstalk between the DNA damage response and cellular senescence drives aging and age-related diseases. Semin Immunopathol 2024;46:10. https://doi.org/10.1007/s00281-024-01016-7
2. Prasetyo YB, Ramadan SW, Wardojo SSI, Dewi YS, Huriah T. Understanding enablers and barriers in Indonesia's noncommunicable disease program: A qualitative study from nurses' perspectives. Int J Noncommunicable Dis 2024;9:166-75. https://doi.org/10.4103/jncd.jncd_78_24
3. Kurnia AD, Melizza N, Ruhyanudin F, Masruroh NL, Prasetyo YB, Setyowati CI, et al. The Effect of Educational Program on Hypertension Management Toward Knowledge and Attitude Among Uncontrolled Hypertension Patients in Rural Area of Indonesia. Community Heal Equity Res Policy 2022;42:181-8. https://doi.org/10.1177/0272684X20972846
4. Neyazi A, Mohammadi AQ, Neyazi M, Timilsina S, Padhi BK, Griffiths MD. Hypertension, depression, and health-related quality of life among hospitalized patients in Afghanistan. J Hum Hypertens 2024;38:529-37. https://doi.org/10.1038/s41371-024-00914-5
5. WHO. Hypertension. World Heal Organ 2023. https://www.who.int/news-room/fact-sheets/detail/hypertension (accessed April 24, 2025).
6. Kementerian Kesehatan. Laporan nasional Riskesdas 2018. Jakarta: Badan Penelitian dan Pengembangan Kesehatan, Departemen Kesehatan RI; 2019.
7. Shen Z, Ding S, Shi S, Zhong Z. Association between social support and medication literacy in older adults with hypertension. Front Public Heal 2022;10:987526. https://doi.org/10.3389/fpubh.2022.987526

8. Mengjiao L, Xujie Z, Ping J, Liwen H, Yuping N, Yangjing Z, et al. Self-management assessment tools for people with hypertension: a scoping review. BMC Nephrol 2025;26:219. https://doi.org/10.1186/s12882-025-04134-y

9. Rantepadang A, Hadibrata BES. Self-Efficacy Dan Self-Care Management Pada Penderita Hipertensi. Klabat J Nurs 2023;5:67. https://doi.org/10.37771/kjn.v5i1.913

10. Yang J, Zeng Y, Yang L, Khan N, Singh S, Walker RL, et al. Identifying personalized barriers for hypertension self-management from TASKS framework. BMC Res Notes 2024;17:224. https://doi.org/10.1186/s13104-024-06893-7

11. Kurnia AD, Hariyati S, Melizza N, Husna CH Al, Amatayakul A, Handoko A. Personal factors related to self-care management among people with hypertension at primary health care: A cross-sectional study. J Keperawatan Padjadjaran 2023;11:203-13. https://doi.org/10.24198/jkp.v11i3.2340

12. Morrissey EC, O'Grady L, Murphy PJ, Byrne M, Casey M, Doheny H, et al. Supporting GPs and people with hypertension to maximise medication use to control blood pressure: a pilot cluster RCT of the MIAMI intervention. BMC Prim Care 2024;25:394. https://doi.org/10.1186/s12875-024-02635-7

13. Sukcharoen P, Sakunpong N, Polruk J, Chumdaeng S. Impact of a transformative health literacy model for Thai older adults with hypertension. BMC Res Notes 2024;17:278. https://doi.org/10.1186/s13104-024-06782-z

14. Darabi F, Ziapour A, Janjani P, Motevaseli S, Rostami F. A cross-sectional study of the relationship between health literacy and health-promoting lifestyles in patients with hypertension in northwest Iran. BMC Prim Care 2025;26:117. https://doi.org/10.1186/s12875-025-02819-9

15. Ali SH, Nayak A, Qi X, Misra S, DiClemente RJ. How do Asian American young adults influence the health of family members? Structural equation modeling of age, acculturation, interactivity, and closeness. Discov Soc Sci Heal 2024;4:66. https://doi.org/10.1007/s44155-024-00128-7

16. Jariyasakulwong P, Wattanakitkrileart D, Pongthavornkamol K, Piaseu N, Roubsanthisuk W. Factors Influencing Self-Care Practices and Blood Pressure Among Individuals with Uncontrolled Hypertension: A Cross-Sectional Study. Patient Prefer Adherence 2025;Volume 19:1-17. https://doi.org/10.2147/PPA.S497555

17. Malini H, Efendi F, Kadar KS, Lenggogeni DP, Sari YP. Health literacy and associated factors among patients with chronic diseases in Indonesia. J Public Health (Bangkok) 2025;33:591-8. https://doi.org/10.1007/s10389-023-02035-8

18. Sibarani BE. Exploring the role of self-awareness, self-integrity, self-regulation, and ethics education in the student's ethics compliance: evidence from Indonesia. Int J Ethics Educ 2024;9:283-305. https://doi.org/10.1007/s40889-024-00188-y

19. Song W, Deng J, Zhang F, Peng X, Jin X. Activating employee pro-environmental behavior in the workplace: the effects of environmental self-identity and behavioral integrity. Environ Dev Sustain 2023;26:1-27. https://doi.org/10.1007/s10668-023-03549-7

20. Heydari H, Sadeghi R, Jamshidi E, Rahimiforoushani A, Nikbakht HA, Mashhadsari MRA. Effectiveness of community-based intervention using PATCH on disease perception, empowerment, and self-care in hypertension: a community trial protocol. Trials 2025;26:91. https://doi.org/10.1186/s13063-025-08743-8

21. Erden Y, Yıldız GN, Çiftçi B, Avşar G, Özek S, Özbek E, et al. The effect of self-management program with tele-nursing based on the Roper-Logan-Tierney model on self-care of hypertensive patients: a randomized controlled trial. BMC Nurs 2025;24:313. https://doi.org/10.1186/s12912-025-02854-y

22. de Santana Silva JP, Cruz HRA, Silva GAG, Gualdi LP, Lima ÍNDF. Illness perception and self-care in hypertension treatment: a scoping review of current literature. BMC Health Serv Res 2024;24:1529. https://doi.org/10.1186/s12913-024-12001-z

23. Esen K, Kolcu M. The relationship between health literacy and self-care management in patients with hypertension attending primary healthcare centers. J Public Health (Bangkok) 2024;32:175-83. https://doi.org/10.1007/s10389-022-01801-4

24. He R, Wei F, Hu Z, Huang A, Wang Y. Self-management in young and middle-aged patients with hypertension: a systematic review and meta-synthesis of qualitative studies. Syst Rev 2024;13:254. https://doi.org/10.1186/s13643-024-02665-3

25. Cheung PLA. Resilience and Adaptation to Changing Family Support Among Older People in Urban China. Soc Indic Res 2023;170:465-83. https://doi.org/10.1007/s11205-023-03208-4

26. Tajvar M, Grundy E, Fletcher A, Allen E, Karami B. Role of family factors in provision and perception of social support for older people in Iran: a cross-sectional survey. BMC Prim Care 2023;24:279. https://doi.org/10.1186/s12875-023-02236-w

27. Nurannisa D, Febtrina R, 'Irfan MZ, Kharisna D. Family Support Increases the Hypertension Medication Adherence in the elderly at Public Health Center of Simpang Tiga Pekanbaru. Sci Midwifery 2022;10:4246-53. https://doi.org/10.35335/midwifery.v10i5.1010

28. Surani V, Lilik Pranata, Teresia Erina Sestiyowati, Dini Anggraini, Sindi Ernawati. Relationship between Family Support and Self-Care in Hypertension Patients. Formosa J Multidiscip Res 2022;1:1447-58. https://doi.org/10.55927/fjmr.v1i7.1784

29. Babygeetha A, Devineni D. Social support and adherence to self-care behavior among patients with coronary heart disease and heart failure: A systematic review. Eur J Psychol 2024;20:63-77. https://doi.org/10.5964/ejop.12131

30. Ojangba T, Boamah S, Miao Y, Guo X, Fen Y, Agboyibor C, et al. Comprehensive effects of lifestyle reform, adherence, and related factors on hypertension control: A review. J Clin Hypertens 2023;25:509-20. https://doi.org/10.1111/jch.14653

31. Anggeraeni A, Asiah N, Lontaan A, Akib A, Susilo C. The influence of motivation on the activeness of elderly people with hypertension in prolanis gymnastics activities. J Edukasi Ilm Kesehat 2024;2:1-6. https://doi.org/10.61099/junedik.v2i1.28

32. Sohrabi M, Karami M, Mirmoeini RS, Cheraghi Z. The Relationship between Health Literacy and Hypertension Control: A Cross-Sectional Study. J Tehran Univ Hear Cent 2023;17:243-8. https://doi.org/10.18502/jthc.v17i4.11614

33. Mahato RK, Myint Htun SS, Htike KM, Nawawonganun R, Sornlorm K. Development of health literacy tool for hypertension and determinants of limited health literacy in rural Myanmar: Implications for targeted public health interventions. Clin Epidemiol Glob Heal 2025;33:102018. https://doi.org/10.1016/j.cegh.2025.102018

34. Suriastinil NW, Wijayanti IY, Oktarina D. Older People's Capacity to Work in Indonesia. Asian Dev Rev 2024;41:69-94. https://doi.org/10.1142/S011611052440002X

35. Tandilangi TP, Rekawati E, Eriska W. Improving Functional Status of Older Adults Through Health Literacy Media: A Systematic Review. J Ber Ilmu Keperawatan 2024;17:218-26. https://doi.org/10.23917/bik.v17i2.5063

36. Beyna AT, Mengesha AK, Ayele HS, Dajane FM, Mule AH, Asrie AB, et al. Impact of health literacy and medication adherence on achieving blood pressure goals among hypertensive patients at the University of Gondar Comprehensive Specialized Referral Hospital, Northwest Ethiopia. PLoS One 2026;21:e0341140. https://doi.org/10.1371/journal.pone.0341140

37. Lima EL de, Brasil VV, Moraes KL, Mendonça LM, Vila V da SC, Sampaio HA de C, et al. Health literacy evaluation in Latin America and the Caribbean: a scoping review. Heal Lit Commun Open 2025;3. https://doi.org/10.1080/28355245.2025.2545788

38. Tardelli NR, Fukushima FB, van der Steen JT, Rodríguez MIC, Mikelyte R, Forte DN, et al. Mapping advance care planning and advance directives in Latin America. BMC Palliat Care 2025;24:226. https://doi.org/10.1186/s12904-025-01849-5

39. Manirambona E, Khan NE, Ogungbe O, Irakoze S, Li J, Uwiringiyimana E, et al. Association between e-health literacy and perceived importance of future pandemic preparedness in sub-saharan Africa. Sci Rep 2024;14:30734. https://doi.org/10.1038/s41598-024-80121-x

40. Shibuya F, Usami M, Santillan MD, Warnaini C, Gregorio E, Satake N, et al. Comparative study on school-based mental health literacy in three Asian countries. Trop Med Health 2025;53:86. https://doi.org/10.1186/s41182-025-00697-6