Indonesian Journal of Medicine (2023), 08(03): 249-257
Masters Program in Public Health, Universitas Sebelas Maret

Research

Hypertension Self-Care Behavior and Its Associated Factors among Patients with Hypertension

Akhmad Azmiardi, Aris widiyanto, Joko Tri Atmojo, Hakim Anasulfalah, Ahmad Syauqi Mubarok, Sri Iswahyuni

School of Health Sciences of Mamba'ul 'Ulum, Surakarta, Central Java, Indonesia

ABSTRACT

Background: Hypertension is a chronic medical condition that affects millions of people worldwide and can lead to severe health complications. Hypertension self-care behavior is important in managing their condition and reducing their risk of complication. This study aimed to to determine factors that associated with self-care behavior among patients with hypertension.
Subjects and Method: This was cross-sectional study, conducted at Boyolali Regency, Central Java. A total of 122 participant are included in this study. The Independent variables were including age, sex, education level, income, and duration of hypertension. The dependent variable was Hypertension self-care behavior. The data of Hypertension self-care behavior were collected by Hypertension self-care behavior questionnaire (HSCBQ). Knowledge about hypertension was measured using a modified questionnaire of hypertension evaluation of lifestyle and management (HELM). The data were analyzed by multiple logistic regression.
Results: Age ≥ 50 years (AOR=3.76; 95%CI=1.30 to 10.50; p=0.014), higher level of education (AOR=6.06; 95%CI=1.91 to 22.85; p=0.003) higher income (AOR=2.89; 95%CI=1.07 to 7.80; p=0.035), longer duration of hypertension (AOR=3.35; 95%CI=1.13 to 9.93; p=0.029) and good knowledge of hypertension (AOR=10.56; 95%CI=3.51 to 31.71; p<0.001) were associated and statistically significant with Hypertension self-care behavior.
Conclusion: Older age, higher level of education, higher income, longer duration of hypertension and good knowledge had statistically significant association with good Hypertension self-care behavior.

Keywords: age, duration of hypertension, hypertension self-care behavior, income, knowledge, level of education.

Correspondence:
Akhmad Azmiardi. School of Health Science Mamba'ul 'Ulum Surakarta. Jln. Ringroad, Mojosongo, Jebres, Surakarta, Central Java, Indonesia. Email: aazmiardi@gmail.com. Mobile: +6285245412021.

Cite this as:
Azmiardi A, widiyanto A, Atmojo JT, Anasulfalah H, Mubarok AS, Iswahyuni S (2023). Hypertension Self-Care Behavior and Its Associated Factors among Patients with Hypertension. Indones J Med. 08(03): 249-257. https://doi.org/10.26911/theijmed.2023.08.03.02.

BACKGROUND

Hypertension, also known as high blood pressure, is a condition where the blood pressure is abnormally high, which can cause damage to the body's blood vessels and organs. According to the World Health Organization (WHO), hypertension is a major cause of premature death worldwide, with upwards of 1 in 4 men and 1 in 5 women having the condition (WHO, 2021). Hypertension is a primary risk factor for cardiovascular diseases, including stroke, heart attack, heart failure, and aneurysm (Khan, 2021).

Hypertension is a chronic condition that requires ongoing management and

monitoring. Hypertension is generally defined as a blood pressure reading of 130/80 mm Hg or higher, and is divided into four general categories by the American College of Cardiology and the American Heart Association (Dorans et al., 2018).

Hypertension is associated with cardiovascular diseases which results in significant morbidity and mortality. Hypertension for a long-term or chronic elevation of blood pressure causes organ damage, eventually. It can be divided into primary or essential hypertension which occurs in 95% of cases whereas; secondary hypertension occurs in 5% of the cases. There are several possible and interrelated factors that are involved in development of hypertension. Intake of sodium in diet, insulin resistance, genetics, and obesity are some of the non-modifiable risk factors for hypertension (Song, 2020).

Hypertension is a chronic medical condition that affects millions of people worldwide and can lead to severe health complications. One important aspect of hypertension management is self-care, which involves adopting and maintaining healthy behaviors such as exercise, healthy eating, and medication adherence. Hypertension self-care behavior is important because it empowers individuals to take an active role in managing their condition and reducing their risk of complications (Irwan et al., 2022).

Hypertension self-care behavior is a vital aspect of managing this condition, which involves a combination of lifestyle modifications and medication adherence. The goal of Hypertension self-care behavior is to manage blood pressure levels, reduce the risk of complications, and improve overall health outcomes (Sheppard et al., 2016). Hypertension, or high blood pressure, is a major global public health concern, affecting people of all ages and from all regions of the world. According to the World Health Organization (WHO), an estimated 1.28 billion adults aged 30-79 years worldwide have hypertension, with most (two-thirds) living in low- and middle-income countries (Mills et al., 2020). In Indonesia, a based on the basic health survey in 2018, the prevalence of hypertension in Indonesia was 34.1-%, this has increased compared to the prevalence of hypertension in 2013 of 25.8%. It is estimated that only 1/3 of cases of hypertension in Indonesia are diagnosed, the rest are not diagnosed. furthermore, the prevalence in Central Java Province was 37.57 percent and Boyolali Regency was 36.63% (RISKESDAS, 2018).

Hypertension self-care behavior involves lifestyle modifications that can include healthy eating, regular physical activity, maintaining a healthy weight, reducing alcohol consumption, and quitting smoking. These lifestyle changes have been shown to reduce blood pressure and improve overall health outcomes (Riegel et al., 2017). For example, a diet rich in fruits, vegetables, whole grains, and low-fat dairy products, and low in saturated and total fats, has been shown to help reduce blood pressure levels. Regular physical activity, such as brisk walking or cycling, can also help to lower blood pressure levels (Bosworth et al., 2010).

Previous studies are reported that there are several factors that may affect Hypertension self-care behavior including demographic and psychosocial factors such as age, education, marital status. income, history, and duration of hypertension, (Ademe et al., 2019; Gebremichael et al., 2019; Salim et al., 2019) as well as factors related to social support, knowledge, and self-efficacy, are factors that may influencing Hypertension self-care behavior (Ajani et al., 2021; AlHadlaq et al., 2019; Pahria et al., 2022).

To the researchers' knowledge, research on factors related to Hypertension self-care behavior in Indonesia is still limited, self-care in hypertensive patients is needed to prevent more severe complications of hypertension. The importance of identifying and addressing factors associated with Hypertension self-care behavior for healthcare providers tailoring interventions to the specific needs of individuals. This study aimed to determine factors that associated with self-care behavior among patients with hypertension.

SUBJECTS AND METHOD

1. Study Design

This was cross-sectional study, conducted at Boyolali Regency, Central Java. Participants were recruited from community health center, Ngemplak District, Boyolali regency, Central Java, Indonesia. The data were collected from July to September 2021.

2. Population and Sample

A total 112 participants were recruited. The participants were adults registered in community health center in Ngemplak District, Boyolali regency, Central Java, Indonesia. Participants that included in this study when meet the criteria for were as follows: (1) aged more than equal to 18 years; (2) diagnosed with hypertension by a physician; (3) diagnosis of hypertension for more than 6 months, (4) no cognitive and mental disorders; and (5) agreed to participation in the study.

3. Study Variables

The Independent variables were including age, sex, education level, income, duration of hypertension and knowledge. The dependent variable was Hypertension self-care behavior.

4. Operational definition of variables

The demographic and clinical characteristics questionnaire was self-developed and chosen as study variables, including age, sex, education level, income, and duration of hypertension.

Knowledge about hypertension was measured using a modified questionnaire of hypertension evaluation of lifestyle and management (HELM) scale. The patient was considered to have adequate knowledge about hypertension when she/he scored above the mean with 10 scale questions (true/false).

The Hypertension self-care behavior questionnaire was developed based on the Chinese Hypertension Management Guideline. It consisted of 30 items classifying six dimensions: BP monitor (3 items), medication (9 items), dietary (7 items), physical activity (4 items), smoking and alcohol management (3 items), and weight management (4 items). It had a 4-point scale ranging from 1 (not at all) to 4 (all the time). Higher scores of HSCBQ represent better self-care behaviors.

5. Study Instruments

Knowledge about hypertension was measured using a modified questionnaire of hypertension evaluation of lifestyle and management (HELM).

6. Data analysis

The data were analyzed using the Statistical Package for Social Sciences (SPSS) version 23.0 (SPSS Inc., Armonk, New York, USA). Results are expressed as numbers and percentages for categorical variables. Bivariate analysis used Chi-square and Odd ratio. Chi-square test was performed to find out the significant association between categorical variables. Odd ratios used for measure the effect size of association. Multivariate analysis used multiple logistic regression.

RESULTS

1. Sample Characteristics

A total 122 patients with hypertension participated in this study. There were 43 (35.2%) male and 79 (68.4%) female. There were 85

(69.7%) of participants aged < 50 years and 37 (30.3%) aged ≥ 50 years. Majority (82%) of participant had low level of educations. More than half (59.9%) had low income. Duration of disease was ≥ 4 years in 65% of the participants. More than half (63.1%) had poor knowledge of hypertension care and 62.3% were had poor self-care behavior in hypertension (table 1).

Table 1. Sample characteristics (continous data)

Variables	Category	n	(%)
Age	< 50 years	85	69.7
	≥ 50 years	37	30.3
Sex	Male	43	35.2
	Female	79	64.8
Level of education	Low (less than or equal High School)	100	82
	High (University)	22	18
Income	Low (below minimum wage/month)	67	54.9
	High (≥minimum wage/month)	55	45.1
Duration of hypertension	< 4 years	42	34.4
	≥ 4 years	80	65.6
Knowledge	Poor	77	63.1
	Good	45	36.9
Self-care behavior	Poor	76	62.3
	Good	46	37.7

2. Bivariate Analysis

Table 2 show the result of bivariate analysis. The bivariable analysis showed that variables including age (OR=3.15; p=0.004), level of education (OR= 4.77; p=0.001), income (OR=2.10; p=0.048), duration of hypertension (OR= 3.15; p=0.007) and knowledge about hypertension (OR=4.57; p<0.001) were significantly associated with good self-care practice. Predictors with p<0.25 were included in our multivariable.

3. Multivariate Analysis

In multiple logistic regression analysis variables including older age (≥ 50 years), higher level of education (High/university), higher income (High/ ≥ min wage/month), longer duration of hypertension (≥ 4 years) and good knowledge (Good) had statistically significant association with Hypertension self-care behavior (Table 3). Accordingly, participants with age ≥ 50 years were 3.76 times more likely to have good self-care of hypertension compared to those who had younger age (AOR=3.76; 95%CI=1.30 to 10.50; p=0.014). Participants with higher level of education were 6.06 times more likely to have good self-care of hypertension compared to those who had lower level of education (aOR=6.06; 95%CI=1.91 to 22.85; p=0.003).

Participants who had higher income were 2.89 times more likely to have good self-care of hypertension compared to those who had lower income (aOR= 2.89; 95% CI=1.07 to 7.80; p=0.035). Participants who had longer duration of hypertension were 3.35 times more likely to have good self-care of hypertension compared to those who had shorter duration of hypertension (aOR= 3.35; 95% CI=1.13 to 9.93; p=0.029). Finally, participants with good knowledge of hypertension were 10.56 times more likely to have good self-care of hypertension compared to those who had poor knowledge of hypertension (aOR= 10.56; 95%CI=3.51 to 31.71; p<0.001).

Table 2. Bivariate Analysis

Independent Variables	Self-care behavior				OR	CI (95%)		p
	Poor		Good					
	n	(%)	n	(%)		Lower Limit	Upper Limit	
Age								
< 50 years	60	70.6	25	29.4	3.15	1.41 to	7.01	0.004
≥ 50 years	16	43.2	21	56.8				
Level of education								
Low (≤High School)	69	69.0	31	31.0	4.77	1.76	12.86	0.001
High (University)	7	31.8	15	68.2				
Income								
Low (below min wage/ month)	47	70.1	20	29.9	2.10	1.00	4.43	0.048
High (More than or equal min wage/month)	29	52.7	26	47.3				
Duration of hypertension								
< 4 years	33	78.6	9	21.4	3.15	1.33	7.44	0.007
≥ 4 years	43	53.8	37	46.3				
Knowledge								
Poor	58	75.3	19	24.7	4.57	2.07	10.08	<0.001
Good	18	40.0	27	60.0				

Table 3. Multiple logistic regression

Independent Variables	aOR	95%CI		p
		Lower Limit	Upper Limit	
Age (≥ 50 years)	3.76	1.30	10.50	0.014
Level of education (High/university)	6.06	1.91	22.85	0.003
Income (High/ ≥ min wage/month)	2.89	1.07	7.80	0.035
Duration of hypertension (≥ 4 years)	3.35	1.13	9.93	0.029
Knowledge (Good)	10.56	3.51	31.71	<0.001

DISCUSSION

This study aims to investigate factors related to self-care practices among hypertensive patients in Boyolaly regency, Central Java, Indonesia. The results of this study indicated that of the total participants, 37% had good Hypertension self-care behavior practices. Previous study reported a high prevalence of good Hypertension self-care behavior practices in Indonesia (Pahria et al., 2022). This difference could be due to differences in methodology. For example, research conducted in Cilacap City measuring self-care practice using Hypertension self-care behavior profile. Poor Hypertension self-care behavior may lead bigger problem such as cardiovascular diseases which results in significant morbidity and mortality.

There is relationship between age and self-care of hypertension. Participants with older age (≥ 50 years) were 3.76 times more likely to have good self-care of hypertension compared to those who had younger age. According to recent studies, older patients with hypertension tend to have better self-care behavior compared to younger patients. One study found that elderly hypertensive patients had higher levels of self-care behavior and self-efficacy, knowledge of hypertension management, family support, and

perceived severity of hypertension, as well as lower levels of depression (Lee & Park, 2017). Another study found that elderly hypertensive patients with higher age had better self-care outcomes (Zhang et al., 2020). The high prevalence of hypertension in older adults may have contributed to their better self-care behavior. It was noted that approximately 75% of adults 65 years old and older have hypertension (Muntner et al., 2018). As a result, older adults may be more aware of the importance of managing their condition and have more experience with self-care practices.

There is relationship between level of education and self-care of hypertension. Participants with higher level of education were 6.06 times more likely to have good self-care of hypertension compared to those who had lower level of education. This result is in line with previous studies. According to recent studies, higher levels of education are associated with better self-care behaviors among patients with hypertension. One study found that patients with higher levels of education had better hypertension knowledge, which was associated with improved self-care behavior (Ajani et al., 2021). Similarly, another study found that patients with higher levels of education has ability to manage hypertension and were more likely to engage in self-care behaviors such as monitoring their blood pressure and taking their medications as prescribed (Hussen et al., 2020). Additionally, patients with higher levels of education may have better health literacy, which is the ability to understand and apply health information to make informed decisions about one's health. This can lead to better management of hypertension through effective self-care behaviors (Nam & Yoon, 2021).

Income also associated with hypertension self-care. Participants who had higher income were 2.89 times more likely to have good self-care of hypertension compared to those who had lower income. This result in line with prior studies. A study conducted in Pakistan found that patients with lower income had lower levels of self-care behavior, which was measured using the Hypertension self-care Activity level Effects (H-SCALE) instrument (Ajani et al., 2021). Additionally, another study found that patients with hypertension and complications who reported a higher income were more likely to engage in self-care behaviors (Pahria et al., 2022). In a separate study conducted in the United States, low socioeconomic status, as indicated by household income, was associated with worse blood pressure control and an increased risk of hypertension-related outcomes (Anstey et al., 2019). The relationship between income and self-care behavior may be explained by several factors. For instance, patients with a higher income level may have greater access to resources, including healthcare services, medication, and education, which can facilitate self-care behaviors. Moreover, financial stability may also provide patients with more opportunities for healthy lifestyle choices, such as engaging in physical activity and consuming a healthy diet. On the other hand, patients with a lower income level may experience greater financial strain and stress, which may negatively impact their ability to prioritize self-care behaviors.

The duration of hypertension is one of the factors that associated with self-care behavior among patients with hypertension. Participants who had longer duration of hypertension were 3.35 times more likely to have good self-care of hypertension compared to those who had shorter duration of hypertension. This result is in line with previous study that showed patients with longer disease duration had good life-style modification practice (Gebremichael et al., 2019). Another study have shown that the

duration of hypertension can positively affect self-care behavior among hypertensive patients, especially when the duration is long (Buda et al., 2017). Patients with longer disease duration may have a better understanding of their condition and the self-care behaviors necessary to manage it. Patients with longer disease duration also may have developed self-care skills and habits over time, which can positively impact their self-care behavior.

Knowledge of hypertension is positively associated with their self-care behavior. This result is supported by previous studies. According to recent studies patients' knowledge of hypertension is positively associated with their self-care behavior (Pahria et al., 2022). Patients with hypertension who have higher levels of knowledge about their condition are more likely to engage in self-care behaviors that are beneficial for their health outcomes (Ajani et al., 2021). Another study found that knowledge was positively associated with self-care behavior. Patients who had higher levels of knowledge about hypertension were more likely to engage in self-care behaviors (Gebremichael et al., 2019). Knowledge is an essential component of self-care behavior among patients with hypertension. Patients with better knowledge may be more confident and motivated to engage in self-care activities such as monitoring their blood pressure, adhering to medication regimens, and making lifestyle changes, which are essential for hypertension management.

The limitations of this study are the first this study used cross-sectional design. This study had a relatively small sample size of 112 participants, which may limit the generalizability of the findings to the wider population and finally the data were collected using a self-report questionnaire that relied on participants' honesty and memory, which may lead to bias in the responses given.

In conclusion participants with older age, higher level of education, higher income, longer duration of hypertension and good knowledge had statistically significant association with good Hypertension self-care behavior. Future studies should aim to have a larger sample size to improve the generalizability of the findings. Researchers could consider conducting a multicenter study with participants from multiple community health centers.

AUTHOR CONTRIBUTION

all researchers contributed to this study.

ACKNOWLEGDEMENT

The researchers would like to thank the School of Health Science Mamba'ul 'Ulum Surakarta.

FINANCIAL AND SPONSORSHIP

None.

CONFLICT OF INTEREST

There is no conflict of Interest in this study.

REFERENCE

Ademe S, Aga F, Gela D (2019). Hypertension self-care behavior practice and associated factors among patients in public health facilities of Dessie town, Ethiopia. BMC Health Serv. Res. 19(1): 1–9. Doi: 10.1186/S12913019-3880-0-/TABLES/3.

Ajani K, Gowani A, Gul R, Petrucka P (2021). Levels and Predictors of Self-Care Among Patients with Hypertension in Pakistan. Int J Gen Med. 14: 1023. Doi: 10.2147/IJGM.S297770

AlHadlaq RK, Swarelzahab MM, AlSaad SZ, AlHadlaq AK, Almasari SM, Alsuwayt SS, Alomari NA (2019). Factors affecting self-management of hypertensive

patients attending family medicine clinics in Riyadh, Saudi Arabia. Fam Med Prim Care Rev. 8(12): 4003. Doi: 10.-4103/JFMPC.JFMPC_752_19.

Anstey DE, Christian J, Shimbo D (2019). Income Inequality and Hypertension Control. J Am Heart Assoc. 8(15): 2023. Doi: 10.1161/JAHA.119.013636.

Bosworth HB, Powers BJ, Oddone EZ (2010). Patient Self-Management Support: Novel Strategies in Hypertension and Heart Disease. Cardiol Clin. 28(4): 655. Doi: 10.1016/J.CCL.2010-.07.003.

Buda ES, Hanfore LK, Fite RO, Buda AS (2017). Lifestyle modification practice and associated factors among diagnosed hypertensive patients in selected hospitals, South Ethiopia. Clin. Hypertens. 23(1). Doi: 10.1186/S40885-017-0081-1.

Dorans KS, Mills KT, Liu Y, He J (2018). Trends in prevalence and control of hypertension according to the 2017 American College of Cardiology/American Heart Association (ACC/AHA) guideline. J Am Heart Assoc. 7(11): Doi: 10.1161/JAHA.118.008888.

Gebremichael GB, Berhe KK, Beyene BG, Gebrekidan KB (2019). Self-care practices and associated factors among adult hypertensive patients in Ayder Comprehensive Specialized Hospital, Tigray, Ethiopia, 2018. BMC Res. Notes. 12(1). Doi: 10.1186/S13104-019-4-502-Y

Hussen FM, Adem HA, Roba HS, Mengistie, B, Assefa N (2020). Self-care practice and associated factors among hypertensive patients in public health facilities in Harar Town, Eastern Ethiopia: A cross-sectional study. SAGE Open Med. 8: 205031212097414. Doi: 10.11-77/2050312120974145.

Irwan AM, Potempa K, Abikusno N, Syahrul S (2022). Self-Care Management for Hypertension in Southeast Asia: A Scoping Review. J Multidiscip Healthc. 15: 2015. Doi: 10.2147/JMDH.S3676-38.

Khan SA (2021). Hypertension: A suffiecient risk factor for cardiovascular diseases. Pak. Armed Forces med. j. 71(3): 1103–1106. Doi: 10.51253/pafmj.v71i3-.4021.

Lee EJ, Park E (2017). Self-care behavior and related factors in older patients with uncontrolled hypertension. Contemp Nurse. 53(6): 607–621. Doi: 10.-1080/10376178.2017.1368401.

Mills KT, Stefanescu A, He J (2020). The global epidemiology of hypertension. Nat Rev Nephrol. 16(4): 223–237. Doi: 10.1038/S41581-019-0244-2.

Muntner P, Carey RM, Gidding S, Jones D W, Taler SJ, Wright JT, Whelton PK (2018). Potential US Population Impact of the 2017 ACC/AHA High Blood Pressure Guideline. Circ. 137(2): 109–118. Doi: 10.1161/CIRCULATI-ONAHA.117.032582.

Nam HJ, Yoon JY (2021). Linking Health Literacy to Self-Care in Hypertensive Patients with Physical Disabilities: A Path Analysis Using a Multi-Mediation Model. Int. J. Environ. Res. Public Health. 18(7): 3363. Doi: 10.3390/IJERP-H18073363.

Pahria T, Nugroho C, Yani DI (2022). Factors Influencing Self-Care Behaviors in Hypertension Patients With Complications. Vasc Health Risk Manag 18: 463. Doi: 10.2147/VHRM.S366811.

Riegel B, Moser DK, Buck HG, VaughanDickson V, B.Dunbar S, Lee CS, Lennie TA, et al. (2017). Self-Care for the Prevention and Management of Cardiovascular Disease and Stroke: A Scientific Statement for Healthcare Professionals From the American Heart

Association. J Am Heart Assoc. 6(9). Doi: 10.1161/JAHA.117.006997.

RISKESDAS (2018). Riset Kesehatan Dasar 2018. Kementrian Kesehatan Republik Indonesia.

Salim H, Lee PY, Sazlina SG, Ching SM, Mawardi M, Shamsuddin NH, Ali H., et al. (2019). The self-care profiles and its determinants among adults with hypertension in primary health care clinics in Selangor, Malaysia. PloS One. 14(11). Doi: 10.1371/JOURNAL.-PONE.0224649.

Sheppard JP, Schwartz CL, Tucker KL, McManus RJ (2016). Modern Management and Diagnosis of Hypertension in

the United Kingdom: Home Care and Self-care. Ann Glob Health. 82(2): 274–287). Doi: 10.1016/j.aogh.2016.02.0-05.

Song YH (2020). Hypertension in children and adolescents. J Korean Med Assoc. 63(7): 404–429. Doi: 10.5124/jkma.2020-.63.7.404.

WHO (2021). Hypertension WHO. In Hypertension. 12–14. https://www.who.-int/news/item/25-08-2021-more-than-700-million-people-with-untreated-hypertension.

Zhang XN, Qiu C, Zheng YZ, Zang XY, Zhao Y (2020). Self-management Among Elderly Patients With Hypertension and Its Association With Individual and Social Environmental Factors in China. J Cardiovasc Nurs. 35(1): 45–53. Doi: 10.1097/JCN.00000000000-00608.

Zainiyah Z, Susanti E (2020). Anxiety in pregnant women during coronavirus (COVID-19) pandemic in East Java, Indonesia. Majalah Kedokteran Bandung. 52(3): 149-153. Doi: 10.15395/-mkb.v52n3.2043.

Zhang Z (2016). Univariate description and bivariate statistical inference: The first step delving into data. Ann Transl Med. 4(5). Doi: 10.21037/atm.2016.0-2.11.