

Cross sectional study: health literacy towards adherence to medication for hypertension patients



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ABSTRACT

Background: Most people with hypertension feel healthy and energetic; this situation is dangerous and can cause death in the community. Non-compliance is a complex phenomenon often occurring in health care, especially in hypertensive patients. Medication adherence is very important so that complications do not occur, but many hypertensive patients still do not comply with medication. This study aimed to analyze the correlation between health literacy and adherence to medication for hypertension patients in the COVID-19 pandemic era at Private Hospital Surabaya.

Methods: This research design was correlative analytic with a cross-sectional approach. This study's population was hypertensive patients treated at Hospital D with a simple random sampling of 74 people. The instruments used in this study were Health Literacy Scale (HLS-EU-Q16) to measure health literacy and adherence to medication by using Morisky Medication Adherence Scale (MMAS-8). The Rank Spearman test used data analysis to measure health literacy with medication adherence.

Results: The results showed a relationship between health literacy and adherence to medication for hypertension patients at Private Hospital Surabaya with a level ($p=0.000$).

Conclusion: Findings from the study suggest that improving health literacy important for support to be more responsible in hypertension medication.

Keywords: health literacy, adherence to medication, hypertension patients.

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INTRODUCTION

Hypertension symptoms are often painless, making patients feel well, and complications occur to them suddenly and can cause death (the silent killer). Most people do not know if they have hypertension and are known when they have complications. Most people with hypertension feel healthy and energetic; this situation is dangerous and can cause death in the community.¹ Non-compliance is a complex phenomenon that often occurs in health care, especially in hypertensive patients adherence to medication is very important so that complications do not occur.

The third cause of death after stroke and tuberculosis in Indonesia is hypertension. Hypertension is a disorder in the circulation system that will increase blood pressure to an abnormal extent.² Data from the World Health Organization

(WHO) states that 50-70% of hypertensive patients do not comply with prescribed antihypertensive drugs.³ The Indonesian Basic Health Survey (IBHS) in 2018 shows that hypertension in Indonesia is 8.4% of the age over 18 years. In a survey conducted on hypertensive patients, 32.3% did not take regular medication, and 13.3% did not take antihypertensive medication.⁴

If hypertensive patients do not take medication regularly or do not take medication, they will experience a relapse. This recurrence of high blood pressure occurs because the patient is elderly, has a family history of hypertension, and obesity, they have lifestyle habits such as smoking and alcoholic beverages, lacks exercise, they consume a lot of fatty foods and high salt content.³ Therefore, someone with these risk factors must control blood pressure regularly and avoid trigger factors for hypertension.⁵

Treatment adherence is an important factor in hypertensive patients' health and well-being. Adherence is a prerequisite for the effectiveness of hypertension therapy, and the greatest potential for improvement in hypertension control lies in improving the behavior of these patients. Health literacy refers to the extent to which individuals can obtain, process, and understand basic health information and services needed to make informed health decisions on the treatment of hypertension.⁶ Low health literacy is associated with poor adherence, while other studies have found no significant association.⁷ This research aimed to determine the correlation between health literacy and adherence to antihypertensive medication in hypertensive patients who visited a private hospital in Surabaya, East Java, Indonesia.

METHODS

Materials

This research method was correlative analytic with cross sectional approach. The dependent variables in this study were health literacy. The independent variable was adherence to taking medication. This population was hypertension patients at Private Hospital Surabaya, with the inclusion criteria were patients with hypertension at least 1 year, 35-60 years old, conscious and can communicate well. The exclusion criteria were patients who refused to be the study participant. The sampling used simple random sampling. The time of the research was carried out in April – May 2022.

Data collection procedure

The instruments used in this study were the Health Literacy Scale (HLS-EU-Q16) to measure Health literacy, and to measure adherence to taking medication, we used MMAS-8 (Morisky, Medication Adherence Scale). Data collection began with informed consent and used anonymous names for respondents. The data was collected using the Google form.

Data analysis

The data analysis used to measure health literacy and adherence to taking medication was the Rank Spearman test.

RESULTS

There were 74 respondents included in this study (Table 1). Most respondents (52.7%) are women, and the rest (47.3%) are men. Most respondents are aged 49-60 (73%) and the rest (27%) are aged 35-48. Thirty-nine (52.7%) of respondents have middle education as their latest education. Most respondents have been diagnosed with hypertension for >10 years, as much as 60%. Seventy-three percent of the respondents have a family

history of hypertension. Sixty-one (82.4%) patients have high motivation in treating themselves for hypertension. Most of the respondents (77%) have high medication adherence.

Based on Table 2, analysis using Spearman's rank test to analyze the relationship between health literacy and medication adherence in patients with hypertension showed $p=0.000$. It is known that the level of health literacy in hypertensive patients shows that patients with a high level of health literacy are 82%, patients with a moderate level of health literacy are 6.75%, and those with a high level of health literacy are low 10.81%. It was known that the adherence to taking medication owned by respondents shows

that adherence to taking medication is high at 77%, while adherence to taking medication is moderate at 16%, while adherence to taking medication is low at 7%.

DISCUSSION

Based on Table 1, most respondents (52.7%) are women. This may be because women have a high susceptibility to hypertension. After all, women, especially those who have menopause, experience a decrease in the estrogen hormone, which protects blood vessels from damage, so they are at risk of increased blood pressure. While in men, hypertension can occur, especially if the man smokes. The

Table 1. Respondents' characteristics based on gender, age, education, duration of hypertension, health literacy and adherence to medication

Characteristics	Number of respondents (n=74)	Percentage (%)
Gender		
Male	35	47.3
Female	39	52.7
Age		
35-48 years	20	27
49-60 years	54	73
Education		
Basic Education	35	47.3
Middle Education	39	52.7
Duration of hypertension		
5-10 years	30	40
>10 years	44	60
Family history of hypertension		
Yes	19	28
No	55	74
Self-motivation		
High	61	82.4
Middle	5	6.8
Low	8	10.8
Adherence to medication		
High	57	77
Middle	12	16.2
Low	5	6.8

Table 2. The correlation between health literacy and adherence to medication

Variables	Adherence to medication			Σ	p
	High	Middle	Low		
Health literacy [n,(%)]					
High	53 (87%)	7 (12%)	1 (1%)	61 (100%)	0.000*
Middle	3 (60%)	2 (40%)	0	5 (100%)	
Low	1 (12.5%)	3 (37.5%)	4 (50%)	8 (100%)	

Note: * $p<0.05$

content of cigarettes, namely nicotine, can affect a person's blood pressure by forming atherosclerotic plaques. Nicotine also inhibits the hormones epinephrine and norepinephrine and, through the effect of CO, in increasing red blood cells.⁸ Meanwhile, in terms of adherence to taking medication, women are usually more obedient than men because women are more patient in carrying out daily medication routines, but this is not supported by stating that there was no significant difference between gender and anti-hypertensive adherence.⁹

Based on Table 1, most respondents were aged 49-60 years (73%). It showed that the prevalence of hypertension was high in the elderly. Mills, Katherine T, Stefanescu, Andrei He, and Jiang (2020) found a significant relationship between age and the incidence of hypertension. Aged 40 had 11.71 times the risk of developing hypertension than those aged < 40.¹⁰ In addition, research in the Thai region showed a relationship between age and hypertension and people aged > 40 years had a 4.2 times risk of developing hypertension compared to those under 40 years.¹¹ This happens because, with increasing age, the elasticity of blood vessels will shrink, causing less blood flow to the body, so the heart has to work hard to meet blood flow. It has an impact on hypertension.¹²

Based on Table 1, most respondents with the latest education were in secondary education, as many as 39 (52.7%) persons. Education is a process of activity, human effort, or behavior change that leads to maturity and the perfection of human life.¹³ The benchmark for a person's level of education can be seen from his knowledge and behavior. People with high levels of education usually have much health knowledge, and people with low education usually lack knowledge. By knowing, people will have the awareness to maintain health.

Table 1 shows that most respondents have been diagnosed with hypertension for > 10 years, as much as 60%. The cause of this situation is that respondents still cannot treat hypertension well at home and can only rely on medical treatment by medical personnel so that the respondent's condition has not disappeared. The

duration of being diagnosed as a hypertensive patient is related to medication adherence. Other research showed that the duration of diagnosis of hypertension sufferers had a significant value, namely $p = 0.002$ ($p < 0.05$), indicating that the duration of the diagnosis of medication adherence had significant.¹⁴ The longer a person suffers from hypertension, it can cause sufferers to feel bored or tired of seeking treatment.¹⁵ Bored people will stop repetitive activities temporarily or permanently; such tedious treatment can cause patients to fail to adhere to controls.¹⁵

Based on Table 1, it is known that most hypertensive patients have a family history of hypertension, amounting to 73%. Hereditary factors influence the occurrence of hypertension. This disease is not infectious, but the genetic one is very strong in the development of hypertension, but environmental factors also influence this. In addition, as long as an individual can maintain his/her diet and avoid other risk factors, she/he may have a lower risk of having hypertension. Stuart's research showed that people with a family history of hypertension are five times more have to develop hypertension than people without a family history of hypertension.¹⁶

Based on Table 2, research using Spearman's rank test to analyze the relationship between health literacy and medication adherence in patients with hypertension showed $p = 0.000$ ($p < 0.05$), meaning a significant correlation between health literacy and medication adherence. Health literacy is related to medication adherence in hypertensive patients.¹⁷ Health literacy is based on the interaction between personal skills and the education system, the health system, and socio-cultural aspects. These skills include reading, writing, counting, speaking, listening, culture and knowledge.

Based on Table 2, it is known that the level of health literacy in hypertensive patients shows that patients with a high level of health literacy are 82% while patients with a moderate level of health literacy are 6.75%, while those with a high level of health literacy are low 11.25%. A high literacy level indicates that the hypertensive patient has a good understanding of hypertension disease. Health literacy is an individual's ability to

access or obtain, process and understand information about health and health services needed to make the right decisions about health.¹⁸ Some aspects of health literacy are access to information and individual understanding of information obtained by individuals for daily life.¹⁹ Health literacy had able to influence the health behavior of the individual himself.²⁰ One of the health behaviors is how to comply with the treatment process of hypertension patients. Understanding sufficient information about hypertension will affect the patient's decision on how the treatment process should be carried out, namely patient compliance in taking medication because if the respondent stops taking medication, it can lead to complications such as heart disease, stroke or kidney failure. Factors that can affect health literacy are age, language, ethnicity, gender, education, employment, income, access to health services, and access to health information. In addition to this, self-motivation, family support and facilities around individuals can encourage a person's desire to be able to access health information. Cognitive abilities and social skills determine an individual's motivation and ability to gain access to, understand, and use information in a way that promotes and maintains good health. This indicates that cognitive ability is an important resource for improving literacy.

Based on Table 2, it was known that the adherence to taking medication owned by respondents shows that adherence to taking medication is high at 77%, while adherence to taking medication is moderate at 16%, while adherence to taking medication is low at 7%. Medication adherence is an effort to control blood pressure in hypertensive patients.²¹ Respondents with a low level of adherence stated that they forgot to take their medication; they felt bored taking it every day. This was in accordance with research which stated that several factors lead to non-adherence of patients with hypertension due to the busyness of the patient's activities or busyness with daily activities, forgetting to take medication and the feeling of laziness that arises as a result of taking medication.²² Respondents with a high level of medication adherence will desire that their blood pressure is

controlled and symptoms of hypertension not appear. Medication adherence was influenced by the knowledge and understanding of respondents about the disease they are suffering from and what treatment to take.²³ The level of knowledge will affect how a person adheres to treatment, where a lack of understanding about the seriousness of the disease and what will be obtained when carrying out treatment will cause low compliance. Understanding the disease can affect the patient's positive self-management regarding the treatment to be carried out.²⁴ Another factor that can affect adherence to taking medication is the availability and media of information from the hospital, television, and the internet, which can increase patient knowledge. By knowing from this information media, hypertensive patients will often see and hear about the importance of this hypertension treatment so that patients are more motivated to maintain stable blood pressure. The other factor related to medication adherence is social support (family).²⁵ This family support has an impact positively. They can help remind families who have hypertension to take medication. This is supported by previous research showing a correlation between family support and adherence to hypertension therapy ($p=0.006$). Good family support, as much as 66.7%, was included in the obedient category; conversely, low-income family support is 33.3%, which is included in the less obedient category. It was concluded in this study that family support was correlated with patient medication adherence ($p = 0,034$).²⁶

Based on Table 2 shows that there was a relationship between health literacy and adherence to taking medication in hypertensive patients. The test used, namely the spearman rank test, obtained a p-value of 0.000. Respondents with high health literacy will have a high will to understand the disease they are suffering from and will be able to make the right decisions in carrying out hypertension treatment. Individuals can have optimal health literacy when the health education they receive, either from the hospital through leaflets or banners or from social media, is received correctly and continuously so they do not easily forget. This study was in line with research in

Korea, which said that in a multivariable analysis, it was found that health literacy was the strongest predictor of medication adherence.²⁷ This was also supported by other studies which conclude that a high level of health literacy is directly proportional to the patient's ability to understand the drugs being consumed and medication adherence as well as improving the patient's quality of life.²⁸ The level of health literacy will affect how one knows about one's health; if the level of health literacy is low, then the level of one's knowledge will also be low; this will affect how one's health behavior is formed. Health literacy is a very important part of the context of health development. Low levels of health literacy can contribute to several health problems, such as inappropriate use of drugs, insufficient health services, poor management of chronic conditions, slow response to critical conditions, poor health conditions, low confidence and self-esteem, the drain on individual and societal finances and social discrimination.¹ This study has limitations, namely the limited number of samples taken because the data collection was still in a pandemic condition.

CONCLUSION

The study showed a correlation of health literacy with adherence to medicine. Improving health literacy by increasing health education can increase the behavior to adherence medication.

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AUTHOR CONTRIBUTION

All authors contributed to this research process, starting from the problems, concepts, research design, data collection, analysis and interpretation of data, and preparation of articles.

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CONFLICT OF INTEREST

There was no conflict of interest for this research.

ETHICAL CLEARANCE

It was declared ethically feasible by the Health Research Ethics Committee of Universitas Nahdlatul Ulama Surabaya, with certificate number No.009/020/IV/EC/KEP/Lemb.Candle/2022.

REFERENCES

- Hing M, Hoffman RM, Seleman J, Chibwana F, Kahn D, Moucheraud C. Blood pressure can kill you tomorrow, but HIV gives you time: Illness perceptions and treatment experiences among Malawian individuals living with HIV and hypertension. *Health Policy Plan.* 2019;34(Supplement_2):ii36–44.
- Siantar RL, Simanjuntak FM, Aritonang TR. Effectiveness of Celery (*Apium Graveolens*) on Hypertension in The Elderly. *Sci Midwifery.* 2021;9(2):360–5.
- Neupane D, Gao Y, Feng Y, Matsushita K, Appel LJ. Estimation of the Global Gap in Clinic Visits for Hypertension Care between Patient Need and Physician Capacity. *Hypertension.* 2021;(September):779–86.
- Kemenkes RI. Hasil Riset Kesehatan Dasar Tahun 2018. Kementrian Kesehat RI. 2018;53(9):1689–99.
- Sukmaningtyas W, Utami T. Risk Factors of Hypertension in the Elderly. 2020;20(Icch 2019):215–21.
- Du S, Zhou Y, Fu C, Wang Y, Du X, Xie R. Health literacy and health outcomes in hypertension: an integrative review. *Int J Nurs Sci.* 2018;5(3):301–9.
- Zhang NJ, Terry A, McHorney CA. Impact of Health Literacy on Medication Adherence: A Systematic Review and Meta-analysis. *Ann Pharmacother.* 2014;48(6):741–51.
- Song J-J, Ma Z, Wang J, Chen L-X, Zhong J-C. Gender differences in hypertension. *J Cardiovasc Transl Res.* 2020;13:47–54.
- Biffi A, Rea F, Iannaccone T, Filippelli A, Mancina G, Corrao G. Sex differences in the adherence of antihypertensive drugs: A systematic review with meta-analyses. *BMJ Open.* 2020;10(7).
- Mills KT, Stefanescu A, He J. The global epidemiology of hypertension. *Nat Rev Nephrol.* 2020;16(4):223–37. Available from: <http://dx.doi.org/10.1038/s41581-019-0244-2>
- Chantkran W, Chaisakul J, Rangsin R, Mungthin M, Sakboonyarat B. Prevalence of and factors associated with stroke in hypertensive patients in Thailand from 2014 to 2018: A nationwide cross-sectional study. *Sci Rep.* 2021;11(1):1–12.
- Rampengan SH, Sunarto HJ. Hypertensive emergency: an overview of heart as target organ damage. *Bali Med J.* 2020;9(3):903–6.

13. Baltabayeva M, Kodirova D. The need to provide the priority of spiritual and educational processes in the modern education system. *Acad An Int Multidiscip Res J*. 2022;12(1):423–7.
14. Pazoki R, Dehghan A, Evangelou E, Warren H, Gao H, Caulfield M, et al. Genetic predisposition to high blood pressure and lifestyle factors: Associations with midlife blood pressure levels and cardiovascular events. *Circulation*. 2018;137(7):653–61.
15. Akbarbegloo M, Sanaeefar M, Majid P, Mohammadzadeh M. Psychosocial care experiences of patients with COVID-19 at home in Iran: A qualitative study. *Health Soc Care Community*. 2022;30(1):264–74.
16. Stuart JJ, Tanz LJ, Missmer SA, Rimm EB, Spiegelman D, James-Todd TM, et al. Hypertensive disorders of pregnancy and maternal cardiovascular disease risk factor development: an observational cohort study. *Ann Intern Med*. 2018;169(4):224–32.
17. Lestari ND, Anisa VN. The relationship between self efficacy and medication adherence in elderly with hypertension. *Bali Med J*. 2022;11(3):1660–5.
18. Liu C, Wang D, Liu C, Jiang J, Wang X, Chen H, et al. What is the meaning of health literacy? A systematic review and qualitative synthesis. *Fam Med community Heal*. 2020;8(2).
19. Nutbeam D, Lloyd JE. Understanding and responding to health literacy as a social determinant of health. *Annu Rev Public Heal*. 2021;42(1):159–73.
20. Edyawati E, Asmaningrum N, Nur KRM. Relationship between the health literacy level with drug compliance among tuberculosis patients in Puskesmas of Ponorogo Regency. *Artik Penelit J Keperawatan Sriwij*. 2021;8(2):50–9.
21. Marquez Contreras E, Marquez Rivero S, Rodriguez Garcia E, López-García-Ramos L, Carlos Pastoriza Vilas J, Baldonado Suarez A, et al. Specific hypertension smartphone application to improve medication adherence in hypertension: a cluster-randomized trial. *Curr Med Res Opin*. 2019;35(1):167–73.
22. Roustaei N, Hosayni H, Joker S, Zinat motlagh F. Factors Related to Medication Adherence in Hypertensive Patients in the Iranian Population. *J Clin Care Ski*. 2022;3(1):13–8.
23. Al Zahrani S, Eid Alosaimi M, Alamrim AA, Alotaibi M, Almatar EA, Almanea BA. Association between knowledge and drug adherence in patients with hypertension in Saudi Arabia. *Arch Pharm Pr*. 2019;10(3):71–6.
24. Qu Z, Parry M, Liu F, Wen X, Li J, Zhang Y, et al. Self-management and blood pressure control in China: a community-based multicentre cross-sectional study. *BMJ Open*. 2019;9(3):e025819.
25. Harding BN, Hawley CN, Kalinowski J, Sims M, Muntner P, Young BA, et al. Relationship between social support and incident hypertension in the Jackson Heart Study: a cohort study. *BMJ Open*. 2022;12(3):e054812.
26. Maytasari S, Sartika RAD. Family, Social, and Health Workers Support with Compliance Behaviour to Patients with Hypertension in Bogor, Indonesia. *J PROMKES*. 2020;8(2):146.
27. Coskun S, Bagcivan G. Associated factors with treatment adherence of patients diagnosed with chronic disease: Relationship with health literacy. *Appl Nurs Res*. 2021;57(December 2019):151368.
28. Tavakoly Sany SB, Behzhad F, Ferns G, Peyman N. Communication skills training for physicians improves health literacy and medical outcomes among patients with hypertension: a randomized controlled trial. *BMC Health Serv Res*. 2020;20:1–10.



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