Vol. 4 No. 2 Year 2023
jurnal.umj.ac.id/index.php/MMJ
mmjfkk@umj.ac.id
e-issn: 2721–317X

Muhammadiyah Medical Journal

Research Article

Level of Knowledge of Hypertension Patients and Compliance with Treatment at Sirnajaya Health Center

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ABSTRACT

Background: Uncontrolled hypertension is the most common and important risk factor for cardiovascular diseases, which can lead to complications or even death. Uncontrolled hypertension can be caused by noncompliance with hypertension medication instructions. One factor contributing to the disobedience of hypertension medication instructions is the level of knowledge on hypertension. **Purposes:** This study analyzed the correlation between patients' hypertension knowledge and hypertension medication compliance in Sirnajaya Health Center, Bekasi, West Java, Indonesia. **Methods**: A cross-sectional study was conducted among 62 hypertension patients in Sirnajaya Health Center in December 2022. They were asked to answer the Hypertension Knowledge-Level Scale (HK-LS) questionnaire and the Morisky Medication Adherence Scale-8 (MMAS-8) to assess their hypertension knowledge and compliance with the hypertension medication. The chi-squared test was used to determine the correlations between the variables. **Results**: There were 36 respondents (58.1%) with low knowledge and 39 respondents (62.9%) with low medication compliance. Analysis through the chi-squared test reveals a correlation between knowledge level and medication compliance ($p < 0.001$). **Conclusion**: There was a correlation between hypertension knowledge and compliance in consuming hypertension medication among the hypertension patients of Sirnajaya Health Center, Bekasi, West Java, Indonesia.

Keywords: cardiovascular disease, Hypertension Knowledge-level Scale (HK-LS), Hypertension therapy, Morisky Medication Adherence Scale-8 (MMAS-8)

INTRODUCTION

Hypertension is a significant risk factor for cardiovascular diseases (CVD). The incidents of CVD are caused mainly by a patient's failure to comply with hypertension medication and uncontrolled high blood pressure (1). Globally, 17 million deaths are caused by cardiovascular disease, 9.4 million of which are caused by complications due to hypertension (2). Additionally, 2 million cases of hemorrhagic stroke, 1.5 million cases of ischemic stroke, and 4.9 million cases of ischemic heart disease are caused by hypertension (3).

A person is diagnosed with hypertension if, when measured on two different days, the systolic blood pressure (BP) readings on both days is 140 mmHg or more and/or the diastolic BP is 90 mmHg or more and/or taking antihypertensive medication (4). By 2025, a significant increase in hypertension prevalence will occur; about 29% of adults will be diagnosed with hypertension (5). Due to the high morbidity and mortality of cardiovascular disease from

hypertension, prevention and medication of hypertension becomes essential (6). Medication can be used to control high blood pressure and prevent complications of hypertension. However, effective use of this medication relies on the patient complying with the guidelines laid out by the health staff (7).

One of the factors influencing the failure of hypertension medication is non-compliance to instructions for hypertension medication (8). Non-compliance to hypertension medication is influenced by several factors, such as knowledge of hypertension, symptoms, and the condition that causes hypertension (9). Knowledge has an important role in determining a person's behavior. If patients understand that taking medication according to the prescribed doses at the prescribed times will help manage the illness, they will be more inclined to abide by those instructions (10). Therefore, a patient's hypertension knowledge is an important factor influencing the success of hypertension medication (11).

A study by Mulyani on 83 patients with hypertension suggested that a patient's hypertension knowledge significantly affects the patient's compliance to hypertension medication. A patient with high hypertension knowledge will have high compliance with hypertension medication instructions (12). The aim of this study was to analyze the correlation between patients' hypertension knowledge and compliance to medication in Sirnajaya Health Center, Bekasi, West Java, Indonesia.

METHODS

This was an analytical observational study with a cross-sectional approach. The study was done in September–December 2022 in Sirnajaya Health Center, Bekasi, West Java. All the hypertension patients who came to the Health Center, whether for their routine control or new symptoms felt, were asked to be participants.

Respondents were asked to answer the Hypertension Knowledge-Level Scale (HK-LS) questionnaire to assess their knowledge about hypertension (13). The HK-LS questionnaire is a series of true-or-false questions where every correct answer is given 1 point, and every wrong answer is given 0 points. A patient's hypertension knowledge is classified as high if the final score is more than 18, while a patient's hypertension knowledge is classified as low if the final score is 17 or less. Compliance with hypertension medication is determined with the Morisky Medication Adherence Scale-8 (MMAS-8). The MMAS-8 questionnaire is a series of yes-or-no questions where every correct answer is given 1 point, and every wrong answer is given 0 points. A total score of 8 means a patient will be classified as having a high level of compliance, a score of 6-7 classifies them as having a medium level of compliance, and a score of less than six means they have a low level of compliance (14).

Univariate and bivariate analyses using chi-square tests were used to determine the correlation between the independent and dependent variables. Statistical analysis was performed using Statistical Program for Social Science ver.20 (IBM Corporation, Armonk, NY). The differences were considered significant when p values <0.05. This study has been approved by the Health Research Ethics Committee, Faculty of Medicine and Health, Universitas Muhammadiyah Jakarta (letter number 342/PE/KE/FKK-UMJ/XII/2022).

RESULTS

A total of 62 participants were included in the study and the respondent characteristics are as listed in Table 1.

Table 1. Respondent Characteristics

Variable	Frequency	(%)
Age		
17-25 years old	1	1.6
26-35 years old	6	9.7
36-45 years old	11	17.7
46-55 years old	22	35.5
56-64 years old	11	17.7
>65 years old	11	17.7
Gender		
Female	37	59.7
Male	25	40.3
Education		
Uneducated	4	6.5
Elementary School	19	30.6
Middle School	7	11.3
High School	13	21.0
College	19	30.6
Duration of hypertension		
≤ 5 Years	36	58.1
> 5 Years	26	41.9
Number of Hypertension Medicines		
1	55	88.7
2	5	8.1
>2	2	3.2

Table 1 shows that when divided by age, the 46-55 age group was the largest with 22 samples (35.5%), and the smallest group was the 17-25 age group with 1 sample (1.6%). The 36-45 years old, 56-64 years old and >65 years old age groups each had 11 samples (17.7%). The total sample consisted of 37 female (59.7%) and 25 male (40.3%) patients. When classified by level of education, 7 samples (11.3%) had a junior high school education, 19 samples (30.6%) had an elementary school education, 19 samples (30.6%) had a college degree, and 4 samples (6.5%) were uneducated. There were 36 samples (58.1%) who have had hypertension for less than 5 years and 26 samples (41.9%) who have had it for 5 years or more. Finally, Table 1 shows that 55 samples (88.7%) had to take only 1 hypertension medication, 5 respondents (8.1%) had to take 2, and 2 respondents (3.2%) had to take 3 or more.

The Patient's Knowledge on Hypertension

The patient's knowledge of hypertension can be seen in Table 2. It can be inferred that 26 respondents (41.9%) had a high level of knowledge on hypertension, while 36 respondents (58.1%) had a low level of hypertension knowledge.

Table 2. Level of Knowledge on Hypertension

Variable	Category	Frequency	(%)
Knowledge	High	26	41.9
	Low	36	58.1
	Total	62	100.0

The Patient's Compliance to Medication

It can be seen from Table 3 that of all the respondents, 11 (17.7%) had a high level of compliance to hypertension medication, 12 (19.4%) had a moderate level of compliance, and 39 (62.9%) had a low level of compliance.

Table 3. Compliance to Hypertension Medication

Variable	Category	Frequency	(%)
Compliance to Medication	High	11	17.7
	Moderate	12	19.4
	Low	39	62.9
	Total	62	100.0

The Correlation between Patient's Knowledge and Compliance to the Medication

The correlation between patient's knowledge and compliance with hypertension medication can be seen in Table 4. Statistical analysis done through the chi–squared test shows a correlation between a patient's knowledge of hypertension and their compliance with hypertension medication with a p-value of <0.001.

Table 4. Correlation between Patient's Knowledge on Hypertension and Compliance to Hypertension Medication

Knowledge on Hypertension	Compliance to Hypertension Medication			Total	*p*
	High	Moderate	Low		
High	9 (81.1%)	10 (83.3%)	7 (17.9%)	26 (41.9%)	
Low	2 (18.2%)	2 (16.7%)	32 (82.1%)	36 (58.1%)	<.001
Total	11 (100%)	12 (100%)	39 (100%)	62 (100%)	

DISCUSSION

Of all the respondents, 22 (35.5%) were in the 46-55 age group. This result aligns with a prior study by Sammulia et al., of the 96 respondents diagnosed with hypertension, 36 (37.5%) were in the 46-55-year-old group. As a person grows older, one's artery walls will begin to thicken and become less elastic, resulting in reduced cardiovascular ability to pump blood throughout the body, ultimately resulting in higher blood pressure (15). This thickening of artery walls and reduction of elasticity, which further causes an increase in arterial pressure, tends to begin at 45 years old (16).

Among the respondents, there was a majority of female patients at 37 people (59.7%), whereas there were only 25 male respondents (40.3%). This result aligns with the 2018 Riskesdas study, which showed that female hypertension prevalence was at 36.9%, a higher value than male hypertension prevalence at 31.3% (5). In a survey by Nilasari, of the 385 respondents, 273 (70.91%) were female, compared to 112 (29.09%) male (17). Women who underwent menopause tend to have a higher risk of hypertension due to their lowered estrogen production. This decreased estrogen causes a reduction of metabolism and maintenance of organs, including the heart. These factors contribute to an increased likelihood of cardiovascular diseases (18).

When classified by educational background, it can be seen that the most prominent groups were those with elementary school education (19 respondents, 30.6%) and those with college-level education (19 respondents, 30.6%). One's educational background may shape their overall level of knowledge. The higher the educational background, the more likely the person will have more knowledge and capacity to learn more (19). A higher level of knowledge may result in a higher ability to maintain and improve one's health conditions (20). Educational background can also influence a person's mental consciousness to prevent hypertension by living a healthy lifestyle. However, a person's mental consciousness to live a healthy lifestyle will also be influenced by a person's behaviors and daily habits (21).

There were 36 respondents (58.1%) who lived with hypertension for less than or equal to five years and there were 26 respondents (41.9%) who had been suffering from hypertension for more than five years. This finding aligns with a study done by Devi et al. which found 23 patients (60.5%) suffering from hypertension for less than or equal to five years and only 15 patients (39.5%) living with hypertension for more than five years in their sample (22).

The longer a person lives with hypertension, the lower the level of compliance to medication tends to be. This is due to weariness settling in from long-term medication with no significant effect (23). However, at the same time, long-term hypertension patients have a higher level of anxiety to hypertension which may improve the patient's consciousness to maintain their health by complying to medication instructions (24).

There were 55 respondents (88.7%) who consumed one hypertension medication, five respondents (8.1%) who consumed two hypertension medications, and 2 respondents (3.2%) who consumed more than 2 hypertension medications. This aligns with a study by Mika et al. which describes that from 328 respondents, 188 (57.3%) consume 1 hypertension medication (25). Adi wrote in his publication that the higher the number of hypertension medications to be consumed, the less compliance to medication the patient will demonstrate due to the larger list of medication schedules the patient has to keep track of (26).

Of the respondents, 26 (41.9%) had a high level of hypertension knowledge, and 36 (58.1%) had a low level of hypertension knowledge. This result aligns with a study by Farida et al., which stated that from their 85 respondents, 53 (62.35%) had a low level of knowledge of hypertension, the highest among other knowledge on other diseases (27). Knowledge is used as a basis to act. External and internal factors influence knowledge. External factors include environmental and internal factors include physiological and psychological elements (28). Knowledge is directly influenced by experience, educational background, and social background. Crucial knowledge on hypertension for hypertension patients includes an

overview of hypertension, risk factors, hypertension symptoms, healthy lifestyle, the importance of hypertension medication and the impact of hypertension medication (29).

A total of 39 respondents (62.9%) had a low level of compliance to hypertension medication, higher than 12 respondents (19.4%) with a moderate level of compliance, and 11 respondents (17.7%) with a high level of compliance to hypertension medications. This result aligns with a study by Nur Afifah, which described that of their 50 respondents, 38 (76%) had a low level of compliance with medication (26). Factors influencing a patient's noncompliance to medicine include the patient's background, symptoms experienced, socio-economic factors, communication with doctors, and therapy regimens. A few of the reasons stated by patients that led to noncompliance to medications include forgetfulness, not experiencing severe symptoms, and symptoms related to hypertension, which are hard to determine precisely (30).

There was a significant correlation between a patient's knowledge of hypertension and their compliance with hypertension medication. This result aligns with a study done by Noni Erika which found a similar result (31). A patient's knowledge on hypertension influences their compliance to hypertension medication (32). Hypertension patients with a high level of knowledge tend to be more compliant to medication than hypertension patients with a low level of knowledge. According to Lawrence Green's theory, compliance is influenced by predisposition factors such as the patient's knowledge (30). If a patient has a low level of knowledge of their illness and the medicine prescribed to them to tackle it, they might not understand why they have to take this medicine and not care to consume it according to the prescription (12).

A study done by Devita et al. showed similar results, showing a link between a patient's knowledge of hypertension medication and their compliance with medication instructions in Pasir Panjang Health Center, which describes a correlation between these variables (33). Failing to take medications according to their prescription may result in the treatment not taking place properly. This may prove disastrous for hypertension patients, since hypertension is a potentially fatal illness that may cause multiple complications. Therefore, hypertension patients must remember to take their medicine correctly lest their high blood pressure go uncontrolled and cause further issues such as stroke, kidney failure, and so on (28).

Suppose a hypertension patient has a high level of knowledge on hypertension including definition, medication, importance of medication compliance, healthy lifestyle, risk factors of hypertension, healthy diet and hypertension complications. In that case, this knowledge may improve the patient's compliance to hypertension medication instructions. This study has proven a significant correlation between hypertension knowledge and hypertension medication compliance.

CONCLUSION

This study shows that patients with a low level of knowledge of hypertension and a low level of compliance with hypertension medication had the highest total number of respondents, which was 32 respondents (82.1%). This study concludes a significant correlation between hypertension patients' knowledge and compliance with hypertension medication in Sirnajaya Health Center, Bekasi, West Java, Indonesia.

ACKNOWLEDGMENTS

The authors would like to convey gratitude to Sirnajaya Health Center, Bekasi, West Java, Indonesia for the opportunity to conduct research on hypertension patients.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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