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The Relationship between Knowledge Level and Medication Adherence Among Hypertensive Patients in Pekuncen Village

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ABSTRACT

Hypertension is a non-communicable disease that is sometimes encountered in healthcare services and can cause problems in the health sector. A common problem is non-adherence of patients to taking medications due to a lack of knowledge. The purpose of this study was to determine the relationship between knowledge level and medication adherence among hypertensive patients in Pekuncen Village. This quantitative study utilized a correlational research design with a cross sectional approach and purposive sampling technique with a sample of 71 hypertensive patients. Data was collected using a knowledge questionnaire and the MMAS-8. This study showed that the knowledge level was moderately adequate (45.1%) and medication adherence was moderate (40.8%). Analysis using the Spearman rank statistical test resulted in an r value of 0.661 indicating a strong relationship between the two variables. The p value was <0.001, meaning there is a relationship between knowledge level and medication adherence among hypertensive patients in Pekuncen Village.

Keywords: hypertension, knowledge, medication adherence

1. INTRODUCTION

Hypertension can occur when blood pressure rises to ≥140 mmHg systolic and ≥90 mmHg diastolic as measured at rest across two readings taken 5 minutes apart. Hypertension is a non-communicable disease that can cause problems in healthcare and is often encountered in health facilities. According to the Global Burden of Disease (2019), hypertension is a risk factor for mortality from non-communicable diseases like stroke, kidney failure, and heart disease in Indonesia (Lena, 2022).

According to 2021 world data from the World Health Organization (WHO), 1.13 billion people have been diagnosed with hypertension. This means 1 in 3 people worldwide will have hypertension. The number of hypertensive patients increases every year. It is predicted that in 2025, 1.5 billion people will be diagnosed with hypertension and complications from hypertension will cause 10.44 million deaths per year (Ministry of Health, 2021).

According to the Indonesian Ministry of Health in 2021, the prevalence of hypertension in people >18 years old in Indonesia is 34.1%. Results from the 2021 National Basic Health Survey (Riskesdas) stated a hypertension prevalence of 37.57% in Central Java Province. The prevalence in men (34.83%) was slightly

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lower than in women (40.17%). The prevalence was also lower in rural areas (37.01%) than urban areas (38.11%) and increases with age (Central Java Health Office, 2021). Based on the 2021 Banyumas Regency Health Profile from the Indonesian Ministry of Health, it is estimated that 212,321 people ≥15 years old have hypertension, comprising 86,204 men and 126,117 women. Of those, 191,118 people (90.01%) received health services (Banyumas Health Office, 2021).

Knowledge is an important requirement in preventing complications from hypertension and increasing healthy behaviors. Behaviors to prevent hypertension complications are influenced by poor knowledge and lifestyle changes, high-fat food consumption, smoking, and excessive anxiety (Yanti et al., 2020). Complications from hypertension progress yearly, starting with cerebrovascular (brain), vascular (blood vessels), cardiac (heart), and renal (kidney) diseases. Diseases caused by hypertension include stroke, peripheral vascular disease, heart failure, and kidney failure. In addition, coronary blood vessels in the heart can develop atherosclerotic plaque buildup, which can block blood vessels and cause a heart attack (Dewi et al., 2018).

Complications from hypertension can be prevented through pharmacological and non-pharmacological treatments. Non-pharmacological treatments like regularly monitoring blood pressure, regulating diet, and eating healthy can reduce blood pressure. Pharmacological treatments involve taking antihypertensive medication (Cahyati, 2021). Hypertension cannot be cured and must always be controlled to prevent mortality from complications. Thus, treatment adherence is very important for hypertensive patients. Factors influencing adherence include knowledge, age, attitude, and patient actions (Mangendai et al., 2018).

Treatment outcomes depend on patient adherence and non-adherence. Adherence can lead to treatment effectiveness and improved quality of life. Non-adherence increases the risk of organ damage to the brain, heart, and kidneys, which can cause treatment failure and increase the risk of cardiovascular complications (Harahap et al., 2019). According to prior research by Harahap et al. (2019), all aspects of knowledge influence medication adherence. The higher the knowledge level, the more adherent hypertensive patients are to medication. Conversely, lower knowledge levels correlate with lower medication adherence (Hasibuan, 2022).

A preliminary survey of 10 hypertensive patients in Pekuncen Village, Pekuncen Subdistrict, Banyumas Regency found 60% of patients had insufficient knowledge about hypertension, including causes, signs/symptoms, the importance of regular medication, and dangers of non-adherence. This lack of knowledge caused patients to inconsistently take their medication. This can lead to poor medication adherence among hypertensive patients in Pekuncen Village, Pekuncen Subdistrict, Banyumas Regency. Based on this background, the objective of this study was to determine the relationship between knowledge level and medication adherence among hypertensive patients. This has motivated the researcher to conduct a study entitled "The Relationship Between Knowledge Level and Medication Adherence Among Hypertensive Patients in Pekuncen Village".

2. RESEARCH METHODOLOGY

This quantitative correlational cross-sectional study had a population of all 242 hypertensive patients in Pekuncen Village. Using purposive sampling, the sample comprised 71 hypertensive patients. Hypertensive patients in Pekuncen Village were identified as respondents based on health center data, then the sample was calculated using the Slovin formula. Researchers randomly selected respondents meeting the inclusion criteria of: willingness to participate, age >18 years, current or prior hypertension treatment and medication use. Exclusion criteria were illiteracy, pregnancy, and other comorbidities. Respondents completed questionnaires by ticking each question, assisted by researchers for clarification. Prior informed consent was obtained.

The independent variable was knowledge level about hypertension. The dependent variable was medication adherence. Data

collection instruments were a hypertension knowledge questionnaire and the MMAS-8 medication adherence questionnaire. Analysis required univariate and bivariate tests. The Spearman rank statistical test analyzed the data. Ethical clearance was obtained from the Harapan Bangsa University Health Research Ethics Committee No. B.LPPM-UHB/1858/05/2023.

3. RESULTS AND DISCUSSION

3.1 Respondent Characteristics Based on Gender, Age, Last Education Level, and Duration of Hypertension in Hypertensive Patients in Pekuncen Village

Table 1. Characteristics of respondents based on gender, age, latest education, and duration of hypertension in hypertensive patients in Pekuncen Village

Respondent Characteristics	*f*	%
Gender		
Male	25	35,2
Female	46	64,8
Total	**71**	**100**
Age		
Late Adolescent	1	1,4
Early Adulthood	6	8,5
Late Adulthood	14	19,7
Early Elderly	17	23,9
Late Elderly	23	32,4
Seniors	10	14,1
Total	**71**	**100**
Last Education		
Primary Education	51	71,8
Secondary Education	17	23,9
Higher Education	3	4,2
Total	**71**	**100**
Duration of Hypertension		
<5	42	59,2
>5	29	40,8
Total	**71**	**100**

Source: Data primer (2023)

Table 1 shows that most hypertensive patients with female gender are 46 respondents (64.8%), fall into the late elderly age category as many as 23 respondents (32.4%), with the last education including primary education level as many as 51 respondents (71.8%), and long suffering from hypertension <5 years as many as 42 respondents (59.2%).

Fewer hypertensive patients were male than female, totaling 46 respondents (64.8%). This means that men are at less risk of developing hypertension than women. The incidence of hypertension has increased sharply especially in women of menopausal age and are at very high risk of suffering from hypertension than premenopausal women. Post-menopausal women over the age of 45 years have an increased risk of developing hypertension. This is because menopause in women is when estrogen production stops and results in the body's inability to maintain vasodilation (dilation of blood vessels) which can control blood pressure (Riyadina, 2019).

Hypertensive patients with the late elderly age category were 23 respondents (32.4%). The late elderly age category consists of ages 56 - 65 years, including in an age group that can potentially experience decreased endurance and can be exposed to various diseases, one of which is hypertension. Hypertension is influenced by various risk factors, one of which is age. So that the more age increases, the higher the risk of developing hypertension. The emergence of health problems is an impact of the increasing number of elderly people and hypertension is the most common disease found (Jatmika *et al*., 2018).

The education level of respondents in the basic education category consisting of elementary / MI and junior high school / MTs education was 51 respondents (71.8%). According to Riskesdas (2018), people with hypertension are often experienced by people with low levels of education so that in undergoing treatment they are more at risk of being non-compliant. This occurs due to lack of knowledge about health and hypertension so that when the health problem is controlled it will experience difficulties. Respondents who have a low level of education will have a major impact on high blood pressure, because of the lack of effective ways of thinking in responding and communicating their health problems due to lack of knowledge related to health. (Suciana *et al*., 2020).

Hypertension experienced by patients in the short-term category and included in new cases, namely suffering from hypertension for <5 years, 42 respondents (59.2%). These new cases

arise due to various risk factors for hypertension such as genetics or heredity, unhealthy diet, smoking, stress, and lack of physical activity such as exercise (Rahmadhani, 2021).

Genetic factors are related to the regulation of renin and salt metabolism in cell membranes through genes and have a role in sodium homeostasis in the kidneys which causes cardiac output to increase then arterial pressure to increase which results in hypertension. Another risk factor for hypertension is an unhealthy diet, such as excessive consumption of salty foods and less consumption of vegetables and fruits. This occurs due to a lack of knowledge about a healthy diet in hypertensive patients (Ayu *et al*., 2022).

Most hypertensive patients assume that smoking has nothing to do with hypertension, but it turns out that smoking is a risk factor for hypertension. In small blood vessels the lungs will absorb nicotine contained in cigarettes, then the brain will spread it. Epinephrine (adrenaline) will be released when the adrenal glands are signaled when nicotine along with the brain into action. The adrenaline hormone will make blood vessels narrow with the heart forced to work harder than usual resulting in hypertension. Hypertensive patients can also experience stress so that for a while blood pressure can increase and after the stress decreases it will return to normal. This condition is due to the body's excess of the hormone adrenaline so that the heart will work faster and stronger than usual. However, this condition will result in various problems both in psychological and other health problems such as hypertension if this condition occurs repeatedly (Ansar *et al*., 2019).

Hypertensive patients are sometimes lazy and afraid to do physical activities such as exercise, especially in old age. This happens because they have a sense of worry that if they get tired of exercising it will worsen the hypertension they experience. Whereas regular exercise is very necessary for hypertensive patients. This is because stiff blood vessels can be reduced, endurance increases in the heart and lungs, therefore blood pressure can decrease. In addition, the work and function of blood vessels, lungs, and heart have increased. This is characterized by a decreased resting pulse, increased HDL cholesterol, and decreased atherosclerosis (Rahmadhani, 2021).

3.2 Knowledge Levels in Hypertensive Patients in Pekuncen Village

Tabel 2. Frequency distribution of knowledge levels in hypertensive patients in Pekuncen Village

Category	*f*	%
Poor	11	1.,5
Adequate	32	45.1
Good	28	39.4
Total	**71**	**100**

Source: Primary data (2023)

Table 2 shows that the majority of hypertensive patients in Pekuncen Village had adequate knowledge levels, comprising 32 respondents (45.1%), while the minority had poor knowledge levels, comprising 11 respondents (15.5%). Based on these results, most patients had adequate knowledge levels. The knowledge acquired by respondents has a substantial impact on preventing and maintaining health against hypertension. Influencing factors on knowledge levels include age, education, environment, occupation, and sociocultural aspects (Maulana, 2018).

The adequate knowledge levels indicate patients had prior information about hypertension acquired through counseling. However, having only adequate knowledge meant the obtained information was not explored in depth or self-pursued to learn more about the disease. Thus, further improvement in hypertension knowledge is necessary. Hypertension can be better managed and understood when community capability to access quality information is enhanced (Zai, 2021).

Aligning with the present study, Wahyuni et al. (2021) also found 46% of respondents (49 out of 106) had adequate or moderate knowledge levels. Education influences individual knowledge levels. According to Notoatmodjo in Wahyuni et al. (2021), planned education is more successful than unplanned. More acquired information produces higher education attainment (Wahyuni et al., 2021).

3.3 Medication Adherence Among Hypertensive Patients in Pekuncen Village

Tabel 3. Frequency distribution of medication adherence among hypertensive patients in Pekuncen Village

Category	*f*	%
Low	15	21.1
Moderate	29	40.8
High	27	38.0
Total	**71**	**100**

Source: Primary data (2023)

Table 3 shows that the majority of hypertensive patients in Pekuncen Village had moderate medication adherence, comprising 29 respondents (40.8%), while the minority had poor adherence, comprising 15 respondents (21.1%).

Based on these results, most respondents had moderate adherence. Knowledge influences this adherence level. Achieving good adherence is difficult with poor treatment-related knowledge. Poor adherence leaves blood pressure uncontrolled, elevating hypertension complications risk. Some patients stop treatment when feeling better, not realizing hypertension is lifelong (Tumundo et al., 2021).

Healthcare providers are the main source of patient information on hypertension and medications. Their role is thus vital for patient adherence. According to prior research by Nuratiqa et al. (2020), healthcare provider support is crucial for hypertensive patient adherence. Ongoing provider supervision of patients also improves adherence (Imanda et al., 2021).

Concurring with the present study, Anwar & Masnina (2019) stated that 34 out of 83 respondents (41.0%) had moderate adherence.

Some respondents recognized uncontrolled pressure could impair functioning and required monitoring. However, forgetfulness in elderly respondents hindered full adherence. Fully adherent behavior is difficult for these patients (Anwar et al., 2019).

3.4 Relationship Between Knowledge Level and Medication Adherence Among Hypertensive Patients in Pekuncen Village

Tabel 4. Cross tabulation of the relationship between knowledge level and medication adherence among hypertensive patients in Pekuncen Village

Knowledge level	Medication adherence								*P value*	Correlation coefficient
	Low		Moderate		High		Total			
	f	%	*f*	%	*f*	%	*f*	%		
Good	0	0.0	7	9.9	21	29.6	28	39.4	0.000	0.661
Adequate	9	12.7	17	23.9	6	8.5	32	45.1		
Poor	6	8.5	5	7.0	0	0.0	11	15.5		
Total	**15**	**21.1**	**29**	**40.8**	**27**	**38.0**	**71**	**100**		

Source: Primary data (2023)

Table 4 shows that 29.6% of hypertensive patients in Pekuncen Village had good knowledge levels and high medication adherence.

Spearman rank correlation analysis yielded a p-value of 0.000 < 0.05, hence the null hypothesis is rejected and the alternative hypothesis is accepted, indicating an association between knowledge level and medication adherence among hypertensive patients in Pekuncen Village. The correlation coefficient of 0.661 signifies that the strength of the relationship is strong. The results also demonstrate a positive relationship direction, meaning that the two variables have a unidirectional relationship whereby better knowledge levels correlate with higher medication adherence.

According to prior research by Katimenta et al. (2023), there is a significant association between knowledge levels and medication adherence. Knowledge can influence patient prevention of hypertension recurrence. Higher adherence relates to better knowledge levels. Conversely, poorer knowledge associates with lower adherence. Other influencing factors

include age, education, environment, occupation and sociocultural aspects (Katimenta et al., 2023).

Knowledge represents the patient's compliant behavior towards medication adherence as guided by physician or provider instructions. Adherence can improve if patients simultaneously enhance knowledge about their condition, management, and treatment compliance (Nurhanani, 2020).

The most important factor for patient self-management of blood pressure is medication adherence. Non-adherence is the major cause of treatment failure. Consistently high blood pressure leads to complications like stroke, heart failure, and kidney failure. Apart from knowledge, other factors influencing adherence include attitude, occupation, geography, religion, family support, and provider support (Fauziah, 2019). This study has some limitations and weaknesses. Respondents required time to recall details about medication-taking. Sampling methodology was not determined so sampling ended up non-proportional unlike proportionate random sampling.

4. CONCLUSION

The characteristics of the 71 respondents showed that the majority of hypertensive patients were female, in the late elderly age category, with most having basic education as their last level of education attained, and the largest proportion had suffered from hypertension for <5 years. Hypertensive patients in Pekuncen Village had adequate levels of knowledge and moderate medication adherence. With a significance level of 0.000, there is a relationship between knowledge level and medication adherence among hypertensive patients in Pekuncen Village. The correlation coefficient value of 0.661 indicates that the strength of the relationship is strong and the direction of the relationship is positive. In conclusion, there is a relationship between knowledge level and medication adherence among hypertensive patients in Pekuncen Village, with the strength of the relationship being strong and the direction being positive, which means unidirectional.

5. RECOMMENDATIONS

For hypertensive patients, it is recommended that these results serve as a benchmark for improving knowledge about hypertension, and medication adherence is crucial for preventing complications. For Pekuncen Village, especially health workers, it is advisable to further enhance periodic monitoring and evaluation, which could also be done through home visits to hypertensive patients to improve their knowledge levels thereby increasing medication adherence. For future researchers, it is recommended that further studies be conducted on other factors that could influence medication adherence among hypertensive patients such as attitude, occupation, geographical factors, religious beliefs, family support, and provider support.

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