



Research Article

The relationship between level of knowledge and medication adherence in hypertensive patients at Pal Tiga Pontianak Health Center

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ARTICLE INFO

Article History

Submitted June 4, 2024

Revised October 28, 2024

Accepted, October 28, 2024

Published, November 30, 2024

Keywords

Hypertension

Knowledge

Adherence

Outpatients

DOI:

10.22219/farmasains.v9i2.34030.

ABSTRACT

Patient non-adherence to medication use is one of the barriers to successful treatment of hypertension. One of the factors that can affect adherence is knowledge. This study aims to analyze the relationship between knowledge level and medication adherence in outpatient hypertensive patients at the Pal Tiga Pontianak Health Center. This research method is an analytic observational study using a cross-sectional research design. This research was conducted during January-February 2024 with a total of 112 respondents. Data collection used the Hypertension Knowledge-Level Scale (HK-LS) and Adherence to Refill and Medication Scale (ARMS) questionnaire. The results showed that the characteristics of outpatients at Pal Tiga Pontianak Health Center tended to be female (61.6%), aged >45 years (93.8%), not working (72.3%), minimum education level of high school (58.9%), have a high level of knowledge (76.8%) and high level of adherence (56.3%). Chi-square analysis showed no significant relationship between gender ($p=0.243$), age ($p=0.465$), and occupation ($p=1.000$). Meanwhile, there was a significant relationship between the education level (0.012) and the adherence level with the use of antihypertensive drugs. The relationship obtained between the level of knowledge and adherence of hypertensive patients is $p=0.044$ ($p<0.05$). The conclusion of this study is that there is a significant relationship between the knowledge level and the adherence level of hypertensive patients at the Pal Tiga Pontianak Health Center.

1. Introduction

Hypertension is one of the diseases whose prevalence continues to increase and is the biggest cause of death in the world. Data from the World Health Organization (WHO) in 2015 showed that around 1.13 billion people in the world have hypertension (WHO, 2015). According to Riset Kesehatan Dasar (Riskesdas) data, the prevalence of hypertension has increased from 25.8% in 2015 to 34.1% in 2018. West Kalimantan is one of the provinces whose hypertension prevalence rate is above the national average, which is 36.99% (Kemenkes RI, 2018). The Health Office stated that hypertension was the most common disease in Pontianak City in 2023 with 77,079 cases (Dinkes Kota Pontianak, 2023).

The effectiveness of antihypertensive drugs has been proven to be able to control the patient's blood pressure and prevent complications. Clinical research proves that the use of antihypertensive drugs can reduce the incidence of stroke by 35-40%, heart attack by 20-25%, and heart failure by >50% (Kemenkes RI, 2013). However, WHO data states that there are 50%-70% of patients who are not compliant with the use of prescribed antihypertensive drugs. This shows that the level of adherence among hypertensive patients is still low, potentially becoming a barrier to achieving controlled blood pressure (WHO, 2015).

Adherence to taking medication in patients with hypertension is very important. However, the use of antihypertensives alone has been shown to be insufficient to produce long-term blood pressure control effects, if not supported by adherence to taking these antihypertensives (Rahayu, 2021). The questionnaire used to measure adherence in hypertensive patients is the Adherence Refill Medication Scale (ARMS). One of the factors that influences medication adherence is knowledge. Indonesian people's knowledge about the disease and the benefits of hypertension treatment is still low. The measurement of knowledge about hypertension and treatment is important. An instrument that can be used to measure the level of knowledge of hypertensive patients is the Hypertension Knowledge-Level Scale (HK-LS) instrument (Wiyati, 2023).

The Pontianak City Health Office report in 2016 stated that the highest incidence of hypertension in Pontianak City occurred in Pal Tiga Health Center as many as 3,758 cases (Dinkes Kota Pontianak, 2016). According to the results of the preliminary study, hypertension was included in the top 10 most common diseases in Pal Tiga Pontianak Health Center with a total of 4.471 people from January-July 2023. Some of the above explanations make researchers interested in analyzing the relationship between knowledge level and adherence to taking medication for hypertensive patients at Pal Tiga Pontianak Health Center.

2. Materials and Methods

This study is included in analytical observational research using a cross sectional research design. This research has passed the ethical review by the ethics committee of the Faculty of Medicine, Tanjungpura University with ethical code number 9281/UN22.9/PG/2023. This study was conducted on outpatients at the Pal Tiga Pontianak Health Center. This study used purposive sampling technique with inclusion criteria, namely patients aged ≥ 18 years and hypertensive patients who visited the Pal Tiga Health Center at least three times. This research was conducted during January-February 2024 with a total of 112 respondents. The data obtained came from the results of filling out the HK-LS and ARMS questionnaires. The data were processed using an analysis application in the form of SPSS to see the relationship between the level of knowledge and adherence with taking medication for hypertensive patients at the Pal Tiga Pontianak Health Center.

3. Results and Discussions

Distribution of Research Respondents Characteristics

The following are the results of research related to the characteristics of respondents involved in the study. The characteristics used in this study include gender, age, occupation, and education level. The results of the data on the characteristics of respondents in this study can be seen in **Table 1**.

Table 1. Frequency Distribution Based on Respondents Characteristics

Variable	Total (n)	Percentage (%)
1. Gender		
a. Man	43	38.4
b. Woman	69	61.6
2. Age		
a. ≤ 45 years old	7	6.3
b. > 45 years old	105	93.7
3. Profession		
a. Working	31	27.7
b. Not working	81	72.3
4. Last Education		
a. <Highschool	46	41.1
b. ≥Highschool	66	58.9

Based on Table 1, the gender characteristics of respondents with hypertension were obtained by 69 female respondents (61.6%). The results of this study are in line with those conducted by Yunus, which found that women (59.7%) suffer more hypertension than men (40.3%) (Yunus, 2021). This is due to the menopausal events experienced by women so women are more at risk of increased blood pressure. During menopause there has been a decrease in the hormone estrogen and even a lost in quantity. The hormone is known to function to protect blood vessels from the formation of atherosclerosis (Apriliyani, 2020).

Age characteristics in hypertensive patients at Pal Tiga Health Center can be concluded that most are the age of > 45 years, namely 105 respondents (93.8%). These results are in line with Rasyid's research that more patients >45 years old were 39 respondents (95.1%) (Rasyid, 2022). At an advanced age, there is thickening of the arterial wall so that blood vessels tend to become stiff, and their elasticity is reduced (Mayefis, 2020). Sahadewa explained that respondents who are more mature have a high desire to live a healthy life. Respondents with adult age still have a longer life expectancy than the elderly (Sahadewa, 2019).

The results of the educational characteristics of hypertensive patients at the Pal Tiga Pontianak Health Center were dominated by patients with education ≥highschool as many as 66 respondents (58.9%). Dhirisma's research states that of the 70 respondents who experienced the most hypertension, 43 respondents (61.4%) were high school graduates (Dhirisma, 2022). Maulana states that information from mass media and from other people will be easily obtained with higher education (Maulana, 2009). The more useful information, the more knowledge about health will also be obtained.

The results of the characteristic data based on the level of work at the Pal Tiga Health Center show that respondents who suffer from hypertension mostly dont work as much as 72.3% (81 respondents). In line with Pebrisiana's research, the study showed more patients who did not work (77.8%) (Pebrisiana, 2022). A person who does not work has the possibility of developing hypertension due to a lack of physical

or light physical activity (Maulidina, 2019). This increases the risk of being overweight and tends to have a higher heart rate frequency. This condition can cause the heart muscle to work harder with each contraction (Mayefis, 2022).

Knowledge Level of Hypertension Patients

Knowledge is the result of “knowing” and this occurs after people perceive a certain object. Knowledge or cognition is very important for the formation of a person's actions (Rachmasati, 2019). Knowledge will develop further because humans have the ability to think and have high curiosity. Increased knowledge will also increase the degree of health in individuals based on individual awareness and willingness to prevent a disease (Sulastri, 2021). The level of knowledge is measured by the correct answer value of the respondent on the Hypertension Knowledge Level Scale (HK-LS) questionnaire. Respondents' knowledge is categorized as high if the value achieved is > 17, and low if the value achieved is ≤ 17 (Dhrik, 2023). The results of the distribution of respondents' knowledge level in this study can be seen in Table 2.

Table 2. Distribution of Knowledge Level of Hypertension Patients

Knowledge Level	Total (n)	Percentage (%)
High	86	76.8
Low	26	23.2
Total	112	100.0

Table 2 shows that out of 112 respondents, 86 respondents (76.8%) had high knowledge and 26 respondents (23.2%) had low knowledge. These results show that most hypertensive patients at Pal Tiga Health Center have a good level of knowledge (76.8%) about hypertension. The results of this study are in accordance with research conducted by Sahadewa showing that the level of knowledge of hypertensive patients at the Krian Health Center, Sidoarjo Regency about hypertension is classified as good (73.3%) (Sahadewa, 2019). There are differences in the results of research by Wijayanto at the Tembok Dukuh Health Center which shows that the level of knowledge of hypertensive patients is low (62.5%) (Wijayanto, 2014).

These differences can be caused by factors that influence knowledge, namely internal factors and external factors. Internal factors are maturity, age, previous experience, education, physical and mental health status. External factors are information, family, environment as well as socio-cultural, and economic factors. In addition, the lack of interest and curiosity of patients to seek information related to hypertension by utilizing existing information media can also affect the patient's level of knowledge (Christiyani, 2023).

Hypertensive patients at Pal Tiga Health Center are given education through the Prolanis (Chronic Disease Management Program) program which is held once a month. This is also one of the factors that can lead to a high level of knowledge among respondents. The implementation of Prolanis is expected to improve the quality of life of people with chronic diseases. The knowledge of Prolanis participants is the output of the services received, including hypertension related to their health conditions (Istiqomah, 2022).

A factor that can also affect a person's level of knowledge is education. Respondents with higher education level will have broader knowledge compared to respondents with lower education levels, so they are easier to absorb and receive information and can participate actively in overcoming health problems for themselves and their families (Sahadewa, 2019). Furthermore, the source of information

can also affect a person's knowledge. Credible sources of information through health information media that are routinely received can have an impact on increasing the knowledge of sufferers. Juniarti's research explains that people with hypertension gain knowledge about hypertension treatment during routine visits when taking medicine at the Elderly Posyandu in Talang Jawa Village (Juniarti, 2023).

Adherence Level of Taking Medication for Hypertension Patients

Adherence and understanding of good therapy can affect blood pressure and gradually prevent complications (Rasyid, 2022). Patients who undergo regular therapy are more likely to achieve normal blood pressure targets in the long term. Better hypertension control and greater adherence may be associated with higher quality of life (Emiliana, 2021). The level of patient adherence with drug use was measured using the ARMS (Adherence of Refill Medication Scale) questionnaire. The respondent's level of adherence was categorized as high if the value achieved was <18, and low if the value achieved was ≥18 (Smith, 2023). The results of the distribution of respondents' adherence levels in this study can be seen in Table 3.

Table 3. Distribution of Adherence Level of Hypertension Patients

Adherence Level	Total (n)	Percentage (%)
High	63	56.3
Low	49	43.7
Total	112	100.0

Table 3 shows that out of 112 respondents, 63 respondents (56.3%) had high adherence and 49 respondents (43.7%) had low adherence. The results of this study are in accordance with research conducted by Hernanda showing that the level of adherence of hypertension patients at Wonogiri Health Center regarding hypertension is classified as good as 69 people (83.1%) (Hernanda, 2024). In contrast, the results of Toar's research at the Rurukan Health Center in Tomohon City showed that the level of compliance of hypertensive patients was low, namely 56 respondents (70%) (Toar, 2023).

This is due to the lack of public attention to hypertension treatment. Patients do not care about their treatment when they no longer feel the pain and symptoms of hypertension, economic problems, forgetting factors, and living environment far from health services (Toar, 2023). On the other hand, respondents who were not compliant with undergoing treatment because the respondents felt bored to take medicine every day, felt healthy, so the medicine did not need to be taken anymore, respondents often forgot to take medicine because they were busy with daily activities (Nurdin, 2022).

Juniarti's research found that hypertension patients' treatment adherence was influenced by family support. The results of interviews with several patients found that the form of family support given to hypertensive patients such as being taken to the health center, financed, and given proper treatment. In addition, adherence can also be influenced by motivation. Theoretically, motivation can encourage someone to act. This hope is a good motivation to consume antihypertensive drugs (Juniarti, 2023). High motivation can be formed due to the relationship between needs, encouragement and goals, with the need to recover, hypertensive patients will be encouraged to be compliant in undergoing treatment (Hanum, 2019).

Analysis of the Relationship between Knowledge Level and Medication Adherence

It appears in Table 3 that of the 86 respondents with high knowledge, 53 respondents (61.6%) had high adherence and 33 respondents (38.4%) had low adherence. Meanwhile, of the 26 respondents with low knowledge, 10 respondents (38.5%) had high adherence and 16 respondents (61.5%) had low adherence.

Table 3. Results of Analysis of the Relationship Between Knowledge Level and Adherence Level

Knowledge Level	Adherence Level				p-value	OR*
	Total (n)	High Percentage (%)	Low Total (n)	Low Percentage (%)		
High	53	84.1	33	67.3	.044	2.570
Low	10	15.9	16	32.7		

*OR = Odds Ratio

Based on the analysis using the chi-square statistical test which looks at the relationship between knowledge and adherence with taking medication in hypertensive patients at the Pal Tiga Pontianak Health Center, a significant value of 0.044 (<0.05) was obtained, which means there is a relationship between knowledge and adherence in hypertensive patients at the Pal Tiga Pontianak Health Center. The OR value = 2.570 was also obtained, which means that someone with less knowledge has a 2.570 greater risk of not being compliant with taking antihypertensive medication compared to someone with good knowledge.

This study is in line with research conducted by Fauziah, where the p value = 0.008 < α (0.05) was obtained. That is, there is a significant relationship between the level of knowledge and adherence of hypertensive patients in the working area of the Tes Health Center, Lebong Regency, also obtained an OR value = 3.781. This means that someone with less knowledge has a risk of 3.781 times not being obedient to take medicine compared to someone with good knowledge (Fauziah, 2022).

As shown in Table 3, 33 respondents (67.3%) had high knowledge, but low adherence. Respondents who have good knowledge, but are not compliant in carrying out blood pressure control can occur due to the indifferent and ignorant attitude of each individual about health (Nurdin, 2022). When someone feels unsure about their treatment, they tend to be non-compliant in undergoing therapy (Arrang, 2023). Table 3 shows that there are 10 respondents (15.9%) who have low knowledge but have high adherence. Based on Oktaviani's research, high hypertension patient treatment adherence is caused by family support. The family provides information to patients about the conditions experienced by patients and always reminds patients to routinely take medicine and accompany control to the doctor (Oktaviani, 2021).

This study shows the results that the level of knowledge has a significant influence on adherence with drug use. The higher the patient's level of knowledge, the more compliant the patient is in using medication (Fauziah, 2022). A person who has good knowledge about the disease he is suffering from will be more obedient to taking medicine because he knows the risks that will occur if he does not take medicine regularly (Indriana, 2020). The existence of such adherence is very important in the treatment of chronic diseases such as hypertension because the use of compliant antihypertensive drugs is needed to produce long-term blood pressure control effects and prevention of various complications that can be caused (Dhrik, 2023).

These results are also reinforced by Green's theory that adherence behavior can be influenced by knowledge (Green, 2020). Good knowledge related to drug adherence in hypertensive patients will form good behavior as well. The better a person's level of knowledge, it can increase various individual potentials so that they can maintain their health optimally. Good patient knowledge affects patient adherence to treatment thereby improving the patient's quality of life (Juniarti, 2023).

Analysis of the Relationship between Characteristics and Adherence Level

Table 4. Results of Analysis of the Relationship Between Respondent Characteristics and Adherence

Variable	High Adherence		Low Adherence		p-value
	Total (n)	Percentage (%)	Total (n)	Percentage (%)	
Gender					
Male	21	33.3	22	44.9	0,243
Woman	42	66.7	27	55.1	
Age					
≤45 years old	5	7.9	2	4.1	0,465
>45 years old	58	92.1	47	95.9	
Last Education					
<Highschool	19	30.2	27	55.1	0,012
≥Highschool	44	69.8	22	44.9	
Profession					
Working	17	27	14	28.6	1,000
Not Working	46	73	35	71.4	

The statistical test results in Table 4 regarding the relationship between gender and the level of adherence to taking medication in hypertensive patients obtained a significant value of 0.243 (>0.05). These results indicate that there is no significant relationship between gender and the level of adherence. This is in line with research conducted by Prihatin which states that there is no relationship between gender and the level of adherence in hypertension therapy (p=0.366) (Prihatin, 2020). In terms of maintaining health, women usually pay more attention to their health than men. This can be attributed to the availability of time and opportunities for women to come to the health center more than men. However, currently women do not always have the time to come to the health center because many women also work/have busy lives. Women and men both have awareness in the use of antihypertensive drugs (Rasajati, 2015).

The statistical test results in Table 4 regarding the relationship between age and the level of adherence to taking medication in hypertensive patients obtained a significant value of 0.465 (>0.05). This means that there is no significant relationship between age and the level of adherence. This is in line with research conducted by Tambuwun who said that there was no significant relationship between age and adherence to treatment for hypertension patients (p = 0.000) (Tambuwun, 2021). Liberty explains that age is not the only factor in not being obedient to treatment. Access to health services can also be difficult for hypertensive patients in the elderly age group, most of whom are physically unable to come to health services compared to the adult age group who are still physically strong. However, it does not rule out the possibility for the adult age group to be compliant in undergoing treatment because adulthood is a productive age to carry out daily activities in meeting their needs so that there is no time to check their health at available health facilities (Liberty, 2017).

The statistical test results in Table 4 regarding the relationship between education and the level of adherence with taking medication in hypertensive patients obtained a significant value of 0.012 (<0.05). The statistical test results show that there is a significant relationship between education level and adherence level. This is in line with research conducted by Mayefis, it is said that there is a relationship between the level of education of hypertensive patients and adherence with taking anti-hypertensive drugs at Meral Karimun Health Center, Regency ($p = 0.015$). Education can improve adherence to health (Mayefis, 2020). The level of education can affect a person's ability and knowledge in implementing healthy living behaviors, especially preventing hypertension. The higher the level of education, the higher a person's ability to maintain a healthy lifestyle (Asikin, 2021).

The statistical test results in Table 4 regarding the relationship between occupation and the level of adherence with taking medication in hypertensive patients obtained a significant value of 1.000 (>0.05). The results showed that there was no significant relationship between occupation and the level of adherence. In Handayani's research, a significant value of 0.934 (>0.05) was obtained (Handayani, 2019). This study strengthens the statement that there is no relationship between occupation and patient adherence in taking antihypertensive drugs. Respondents who do not work (retirees and housewives) for the level of adherence with taking their medicine are not all good. Most patients often forget to bring medicine when traveling and forget to take medicine because no one reminds them (Indriana, 2020). Busyness, which is often the reason patients forget to take their medicine, is also not a barrier for someone to come and check their health to the nearest health service (Mayefis, 2020).

4. Conclusions

The results of this study found that the knowledge level of respondents was mostly high, namely 86 respondents (76.8%). The results of the analysis of the adherence level in respondents were also classified as high, namely 63 respondents (56.3%). Then, there is a significant relationship between the level of knowledge and the level of adherence for hypertensive patients at the Pal Tiga Pontianak Health Center.

Measurement of adherence for future research is expected to be carried out more broadly regarding other variables (such as economic factors, motivation, health worker support, and length of suffering) that have a relationship with adherence to taking hypertension patients' medication in several other health facilities such as Health Center, Hospitals, or Clinics in the Pontianak City area.

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