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The Relationship between Compliance with Medication and Blood Pressure in Hypertension Sufferers

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Abstract:
Hypertension is a chronic medical condition that requires long-term management through medication and lifestyle changes. Adherence to the treatment regimen is a key factor in controlling blood pressure and preventing potentially fatal complications. This study aims to evaluate the relationship between adherence to medication consumption and blood pressure in hypertension sufferers. This study used a cross-sectional design involving 40 respondents who were diagnosed with hypertension at several health centers in Nganjuk City. Data was collected through a questionnaire that measured the patient's level of compliance with taking antihypertensive drugs and blood pressure checks carried out by medical personnel. The results of the analysis showed that there was a significant relationship between the level of adherence to taking medication and the level of blood pressure control ($p < 0.05$). Patients who have a high level of compliance tend to have better controlled blood pressure compared to patients who are not compliant. These findings emphasize the importance of improving adherence to treatment in hypertension management to achieve optimal health outcomes.

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INTRODUCTION

Hypertension, or high blood pressure, is a major health problem that contributes to increased global morbidity and mortality. The World Health Organization (WHO) notes that around 1.13 billion people worldwide suffer from hypertension, and this figure is expected to continue to increase along with changes in lifestyle and unhealthy eating patterns (WHO, 2020). In Indonesia, hypertension is also a significant health problem. Data from Basic Health Research (Riskesdas) shows that hypertension in adults in Indonesia reached 34.1% in 2018 (Riskesdas, 2018). Hypertension is often referred to as the "silent killer" because many sufferers are not aware that they have this condition until serious complications occur, such as stroke, coronary heart disease, and kidney failure. All of these diseases can cause a decrease in a person's quality of life and can cause a decrease in everyone's health status (Afandi & Kurniyawan, 2017; Putri & Afandi, 2022)

One of the challenges in treating hypertension is ensuring patient compliance in taking antihypertensive drugs regularly. Low adherence to treatment is one of the factors that cause poor blood pressure control in hypertension sufferers (Rikmasari et al., 2020; Kurniyawan et al., 2023). WHO states that in developing countries, only around 50% of people with chronic diseases such as hypertension are compliant with taking medication (WHO, 2020). As a result, many hypertension sufferers do not reach the expected blood pressure targets, so they are at risk of experiencing severe complications. Therefore, the main problem that needs to be studied is the

relationship between adherence to medication and blood pressure control in hypertensive sufferers.

Globally, hypertension is one of the leading causes of cardiovascular disease burden. According to the American Heart Association (AHA), hypertension contributes to more than 10 million deaths per year worldwide, primarily through cardiovascular complications such as heart disease and stroke (AHA, 2021). In Indonesia, hypertension is also the leading cause of visits to health facilities, especially in the elderly group. The Indonesian Ministry of Health reports that 63.6% of the population aged 60 years and over have hypertension (Indonesian Ministry of Health, 2019). The high prevalence of hypertension and low level of patient compliance in taking medication raises serious public health problems. If left untreated, this health problem can cause a decrease in the sufferer's quality of life (Al Rasyid et al., 2022; Afandi et al., 2021; Putri et al., 2024)

Compliance with taking antihypertensive drugs is very important to prevent complications. However, various factors can influence patient compliance, including knowledge about the disease, awareness of the importance of treatment, side effects of drugs, and social and economic support (Mulyani, 2022). In several studies, it was found that patients who adhere to treatment tend to have better controlled blood pressure than patients who do not comply (Akri et al., 2022). Therefore, understanding the extent to which medication adherence affects blood pressure control in people with hypertension is very important to improve management strategies for this disease.

Research on the relationship between medication adherence and clinical outcomes, including blood pressure in people with hypertension, has been carried out for a long time. Initially, many studies focused on the pharmacological aspects of hypertension treatment and the effectiveness of various antihypertensive drugs (Maimunah et al., 2023). However, along with increasing awareness of the importance of aspects of patient behavior, greater attention is being paid to the factors influencing patient compliance in taking medication (Handayani et al., 2019). The WHO report states that individual, social, and health service system factors strongly influence patient compliance with treating chronic diseases, including hypertension (WHO, 2020). In the 2010s, research revealed more evidence about the importance of compliance in managing blood pressure in hypertensive patients (Azhimah et al., 2022). Research conducted by Assyfa et al. (2024) found that lack of compliance with antihypertensive treatment was one of the main reasons behind the failure to control blood pressure in hypertensive patients. This research also highlights the importance of ongoing patient support, such as health education, family involvement, and regular blood pressure monitoring, to improve compliance (Pitaloka et al., 2022; Azkiya et al., 2024).

Research in Indonesia also shows similar findings. A survey conducted by the Indonesian Ministry of Health (2019) found that 48.6% of hypertension sufferers in Indonesia do not take medication regularly, which has an impact on increasing the prevalence of hypertension-related complications. Factors contributing to low compliance include lack of awareness about the importance of long-term treatment, cost of treatment, and lack of access to health facilities (Padmaningsih et al., 2023). Based on these findings, it is increasingly clear that efforts to increase treatment adherence are one of the key strategies in controlling hypertension and preventing severe complications (Laili et al., 2022; Khoiroh et al., 2020).

Given the scale and impact of hypertension, the importance of adherence to antihypertensive medication cannot be ignored. This research focuses on the relationship between adherence to taking medication and blood pressure in hypertension sufferers, with the hope of providing stronger scientific evidence about the importance of adherence in achieving optimal blood pressure control. Based on previous research findings, it is assumed that there is a significant relationship between

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the level of adherence to taking medication and blood pressure in hypertension sufferers. Thus, the results of this research can contribute to the development of educational and intervention programs aimed at increasing patient compliance and, ultimately, reducing the burden of disease due to hypertension in society.

METHOD

This research is a quantitative study with a cross-sectional design. This design was chosen because it allows researchers to see the relationship between medication adherence variables and blood pressure at one measurement time. This design is suitable for assessing relationships between variables in specific populations without intervention, such as people with hypertension. The population in this study were all hypertension sufferers who underwent treatment at Health Facilities in Nganjuk Regency in 2023. Based on the data, around 200 hypertension patients were recorded during the last year. The sample used in this research was 40 respondents selected from the population. Samples were selected based on predetermined inclusion and exclusion criteria. Inclusion Criteria: Patients who have been diagnosed with hypertension by medical personnel; Patients who are undergoing antihypertensive treatment for at least 6 months; Patients who are willing to become respondents and sign informed consent. The Exclusion Criteria: Patients with severe complications requiring intensive care and patients who have communication or cognitive disorders that hinder the interview process.

Sampling was carried out using a purposive sampling technique, namely a sampling technique based on specific considerations or criteria that are relevant to the research objectives. This technique was chosen because not all hypertension sufferers meet the predetermined inclusion criteria. The selected sample was expected to represent variations in levels of compliance and blood pressure control. The instruments used in this research are a questionnaire and demographic data sheets. The instrument researchers use to assess or classify adherence to medication consumption in hypertension sufferers is good, adequate, and poor by providing a questionnaire. Meanwhile, to determine blood pressure, researchers made observations by measuring blood pressure and documenting the measurement results on a sheet questionnaire adherence to medication.

RESULT

Results are presented through numerical data in the form of tables. The following is a table of data on the characteristics of research respondents, distribution of compliance with drug consumption, blood pressure data, and a cross-tabulation of data on compliance with medication consumption and blood pressure.

Table 1. Data on Respondent Characteristics

Respondents' Characteristics	Frequency (f)	Percentage (%)
Gender		
Man	4	10
Woman	36	90
Age		
40-45 Years	25	62
46 -50 Years	6	15
51-55 Years	5	13
>55 Years	4	10

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Respondents' Characteristics	Frequency (f)	Percentage (%)
Education		
No school	3	8
Elementary school	17	47
Junior High School	9	25
Senior High School	5	14
College	2	6
Work		
Farmer	10	25
Trader	3	7
State Civil Apparatus	1	3
Others	26	65
Reexamination		
Yes	23	57
No	17	43
Routine Checks		
Yes	16	40
No	24	60

Table 2. Compliance with medication consumption in hypertension sufferers

No	Knowledge Level	Frequency (f)	Percentage (%)
1	Good	11	27,5
2	Pretty good	11	27,5
3	Less Good	18	45
	Total	40	100

Table 3. Data on blood pressure stages in hypertension sufferers

No	Category	Frequency (f)	Percentage (%)
1	Stadium 1	20	50
2	Stadium 2	9	22,5
3	Stadium 3	11	27,5
4	Stadium 4	0	0
	Total	40	100

Table 4. Cross tabulation of medication adherence with blood pressure in hypertension sufferers

Compliance Consume	Blood Pressure								Total	
	Stadium 1		Stadium 2		Stadium 3		Stadium 4			
Drug	f	%	f	%	f	%	f	%	n	%
Good	7	17.5	3	7.5	1	2.5	0	0	18	45
Enough	7	17.5	2	5	2	5	0	0	11	27.5
Not enough	6	15	4	10	8	20	0	0	11	27.5
Total	20	50	9	22.5	11	27.5	0	0	40	100
p-value = 0.034; coefficient correlation = 0.337										
α = 0.05										

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DISCUSSION

In this discussion, researchers will present a discussion that includes the relationship between adherence to taking medication and blood pressure in hypertension sufferers in Nganjuk Regency.

Drug Consumption Compliance

The research data in Table 2 shows that 45% (18 respondents) adhere to medication in the poor category. Based on the results of tabulation and statistical tests from 40 respondents, it was found that 57.5% (23 respondents) performed a re-examination with p-value = 0.000. As many as 60% (24 respondents) did not carry out routine checks with p-value = 0.000. p-value ≤ α, then Ho is rejected, and Ha is accepted, so it can be concluded that there is a relationship between re-examination and routine examination with adherence to taking medication in hypertension sufferers.

Several factors support patient compliance, including education, accommodation, modification of environmental and social factors, changes in therapy models, professional interactions, social and economic factors, health system factors, condition factors, therapy factors, and client factors also influence compliance (Yuli et al., 2021). In Hannan's (2013) research, an indicator of the complexity of treatment is the frequency of treatment that must be carried out by the patient himself, for example, the frequency of taking medication in a day and re-examination when the medication is finished. Patients will be more compliant with doses given once a day than more frequently, for example, three times a day. Generally, the more complex the treatment regimen, the less likely the patient will adhere to medication adherence therapy.

In this study, repeated examinations and routine examinations influenced adherence to medication consumption in hypertension sufferers. This is proven by p value ≤ α. The importance of repeated and routine examinations is useful for establishing a better attitude of treatment compliance because of professional health personnel monitoring. Re-examinations and routine examinations are closely related, where this is a form of attitude or behavior of hypertension sufferers in the process of improving their health level. The benefit of re-examinations and routine examinations is knowing the level of progress of the disease you are suffering from and being able to obtain medication as needed.

Blood Pressure Stage

From the results of the research data in Table 3, it is known that 50% (20 respondents) blood pressure is in the stage 1 category. Based on the tabulation of demographic data with blood pressure from 40 respondents, it was found that most were 62.5% (25 respondents) aged 40-45 years. Nearly half, 42.5% (17 respondents) had elementary school education. Almost 90% (36 respondents) were female. Most of the 65% (26 respondents) have other jobs as housewives. The majority, 57.5% (23 respondents), carried out a re-examination. Most of the 60% (24 respondents) carry out routine checks.

Blood pressure is categorized into systolic and diastolic; for example, the doctor says that the blood pressure is 120/80, which means the systolic pressure is 120 mmHg and the diastolic pressure is 80 mmHg. Readings from these categories can help measure blood pressure and show the blood pressure's condition. Blood pressure conditions can be categorized as usual, hypertension, and orthostatic hypotension. A person is said to have hypertension if his blood pressure always reads above 140/90 mmHg. According to Andayani (2023), blood pressure in adults over 18 is classified as having stage I hypertension if the systolic pressure is 140-159

mmHg and the diastolic pressure is 90-99 mmHg. Classified as having stage II hypertension if the systolic pressure is more than 160 mmHg and the diastolic pressure is more than 100 mmHg, while stage III hypertension is if the systolic pressure is more than 180 mmHg and the diastolic pressure is more than 116 mmHg. This is because there are risk factors for hypertension, some of which can be controlled and which cannot be controlled, including risk factors that can be controlled, namely obesity, lack of exercise, suffering from diabetes mellitus, consuming excess salt, drinking alcohol, dieting, birth control pills, stress, and others. -other (Hutagulung, 2021). The risk factors that cannot be controlled are age, gender, and genetics. The factors that can be controlled are generally related to lifestyle and eating patterns, which include obesity, lack of exercise, stress, alcohol and smoking consumption, and excessive salt consumption (Muflih & Halimizami, 2021; Dewanti et al., 2023).

In this study, demographic data did not affect blood pressure. Hypertension has many causes, including factors that cannot be controlled and factors that can be controlled. Being overweight (obesity), having an inactive lifestyle (lazy to exercise), stress, and alcohol or salt in food can trigger hypertension in people who have inherited sensitivity. Meanwhile, factors that cannot be controlled tend to increase blood pressure because the predisposing factors are very strong compared to factors that can be controlled.

Relationship between Medication Adherence and Blood Pressure in Hypertension Patients

Based on the data in Table 4 obtained from 40 respondents, 8 (20%) respondents adhere to medication in the low category and blood pressure in the stage 3 category. Where there is a relationship between compliance with medication consumption and blood pressure in hypertension sufferers based on the results of the Spearman rank statistical test value p value = 0.034 ≤ α (0.05), which means H0 is rejected, and Ha is accepted with a close relationship r = 0.337 which means the level of relationship between adherence to taking medication and blood pressure in hypertension sufferers in Berbek District, Nganjuk Regency is low.

Agustine & Mbakurawang (2016) stated that therapy compliance is the behavior of patients who take medication prescribed by health workers in the right amount, time, and frequency. Compliance with therapy is a condition where the patient complies with the treatment based on his awareness, not just because he obeys the doctor's orders. This is important because it is hoped that it will further increase the level of compliance with taking medication. Compliance with taking anti-hypertension medication is very important for hypertensive patients. One type of drug given is a diuretic (hydrochlorothiazide or HCT, lasix or furosemide), and a beta-blocker (atenolol or tenorim, capoten or captopril). These types of drugs are commonly given by doctors to hypertension sufferers because the prices are more affordable. Consuming medication regularly can control blood pressure to be stable and have the effect of reducing blood pressure significantly.

Compliance with taking medication is closely related to blood pressure in hypertensive sufferers. This is proven by the existence of this research, which shows a p-value (0.034) ≤ α (0.05). The importance of compliance with taking medication in the management of hypertension is very necessary for stabilizing blood pressure. Pharmacological treatment is very necessary for hypertension sufferers because fluctuating blood pressure can change at any time. By increasing compliance with taking hypertension medication, you can reduce the risk of complications and reduce blood pressure in hypertension sufferers.

CONCLUSION

The analysis results showed a significant relationship between the level of adherence to taking medication and the level of blood pressure control ($p < 0.05$). Patients with a high level of compliance tend to have better-controlled blood pressure than patients who are not compliant. These findings emphasize the importance of improving adherence to treatment in hypertension management to achieve optimal health outcomes.

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