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The Correlation between Degree of Hypertension and Recurrence Frequency in Hypertension Patients

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Abstract:
Hypertension or high blood pressure is one of the significant health problems worldwide as it can cause deadly heart disease and stroke that often go unnoticed. Controlling blood pressure is important to prevent the recurrence of hypertension and minimize the occurrence of complications resulting from the condition. This study aims to determine the relationship between hypertension severity and recurrence frequency in hypertensive patients at Senduro Health Center. This study is survey research with a correlational design, utilizing a cross-sectional approach with a population of 80 hypertensive patients in the working area of Senduro Health Center. The sampling technique used was purposive sampling, with a sample size of 65 participants. Data was collected using a sphygmomanometer and a questionnaire on the frequency of recurrence, and data analysis was done using the Spearman Rank test. The study results showed that the most common severity of hypertension was stage 1 hypertension, with 27 respondents (41.5%), and the most common frequency of recurrence was rare recurrence, with 32 respondents (49.2%). There was a significant correlation between the severity of hypertension and the frequency of recurrence in hypertensive patients, with a p-value of 0.000 < α=0.05. The higher the severity of hypertension, the more frequent the recurrence in hypertensive patients at Senduro Health Center. It is hoped that the community can control their blood pressure to minimize recurrence and reduce the risk of complications.

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INTRODUCTION

Hypertension or high blood pressure is one of the significant health issues in every country because it can lead to life-threatening heart disease and stroke. Hypertension is also still considered a serious problem because it often goes unnoticed. This condition can worsen without being realized, and if it reaches a life-threatening level and is uncontrolled, it can endanger the patient (Wiersinga et al., 2024; Kim & Han, 2024; Albillos et al., 2024). Hypertension is usually characterized by headaches in the back of the head or neck, neck stiffness, frequent fatigue, nausea, and blurred vision due to damage to the brain, eyes, heart, and kidneys. Most cases of hypertension do not present symptoms. Complications from high blood pressure can lead to various diseases such as heart disease, stroke, vision problems, heart failure, and other complications (Lin et al., 2024; Afkarina et al., 2024; Wu et al., 2024).

According to WHO, the global prevalence of hypertension is 22%, and less than one-fifth of sufferers make efforts to control their blood pressure. Africa has the highest prevalence at 27%, followed by Southeast Asia with 25% of global cases. It is estimated that 1 in 5 women worldwide

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suffers from hypertension, a higher proportion compared to men, with 1 in 4 men affected (Arisandi et al., 2020). The prevalence of hypertension in Indonesia, according to the 2018 Riskesdas survey, based on measurements of the population aged ≥ 18 years, was 34.1%. The highest prevalence was in South Kalimantan (44.1%), and the lowest was in Papua (22.2%) (Alkhusari et al., 2023). In East Java Province in 2019, the estimated number of hypertension patients aged ≥ 15 years was around 11,952,694 people, with 48% male and 52% female. Of these, 40.1%, or 4,792,862 people, received health services for hypertension (Dessy & Handayani, 2025).

Hypertension in an individual is closely related to systolic and diastolic pressure, or both, continuously. Systolic pressure refers to the high pressure in the arteries when the heart contracts, while diastolic pressure refers to the pressure in the arteries when the heart relaxes between beats (Rasdini et al., 2023; Septrivinta et al., 2024; Akbar et al., 2020). Hypertension is classified into several categories: optimal with blood pressure <120/80 mmHg, normal 120-129/80-84 mmHg, high-normal 130-139/85-89 mmHg, grade 1 hypertension 140-159/90-99 mmHg, grade 2 hypertension 160-179/100-109 mmHg, grade 3 hypertension ≥180/≥110 mmHg, and isolated systolic hypertension ≥140/<90 mmHg (Wu, et al., 2024; Kraft et al., 2024; Filippou et al., 2024).

Hypertension recurrence is often caused by a rise in blood pressure influenced by several factors, such as not regularly monitoring blood pressure, not following a healthy lifestyle (e.g., regular exercise, proper diet, quitting smoking, avoiding alcohol and caffeine, and reducing stress) (Alex et al., 2021; Takatsuka et al., 2021; Nudotor et al., 2021). One of the most challenging recommendations to follow is living without stress. Stress is an unpleasant state where individuals perceive demands that exceed their coping ability (Tuna et al., 2025; Rondhianto et al., 2024; Kurniyawan et al., 2024).

METHOD

This study is survey research with a correlational design using a cross-sectional approach, as the researcher aims to determine the relationship between the independent variable, namely the degree of hypertension, and the dependent variable, the frequency of recurrence in hypertensive patients at the Senduro Health Center. The data will be measured once at a single point in time. The study population consists of all hypertensive patients in the working area of Senduro Health Center, totaling 80 individuals. The sampling technique used is purposive sampling, with a sample size of 65 participants. The inclusion criteria for this study are patients in the Senduro village area who have hypertension, patients with grade 1, 2, 3, or 4 hypertension or isolated systolic hypertension, patients who are not newly diagnosed with hypertension, aged between 30 and 60 years, and both male and female patients.

The research instruments include a control schedule, a hypertension recurrence questionnaire, and a sphygmomanometer to measure respondents' blood pressure. The testing tool in this study utilizes SPSS software, with the analysis conducted using the Spearman Rank method. This research received ethical approval from the Faculty of Health Sciences, Hafshawaty Zainul Hasan University, in 2024

RESULT

This study was conducted at the Posbindu PTM (Integrated Service Post for Non-Communicable Diseases) in the working area of the Senduro Health Center, Senduro District, Lumajang Regency, from August 5 to August 10, 2024.

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Characteristics of Respondents

Table 1. Characteristics of Respondents

Characteristics	Frequency	Percentage (%)
Age		
30-40 years	9	13.8
41-50 years	23	35.4
51-60 years	33	50.8
Gender		
Male	6	9.2
Female	59	90.8
Education		
Primary School	0	0
Middle School	31	47.7
High School	34	52.3
Higher Education	0	0

The frequency distribution in the table above shows that most respondents were aged 51-60, with 33 respondents (50.8%). The most common gender was female, with 59 respondents (90.8%), and the majority of respondents had a junior high school (SMP) education level, with 34 respondents (52.3%).

Degree of Hypertension

Table 2. Frequency Distribution of Respondents Based on Degree of Hypertension in Hypertensive Patients at Senduro Health Center, 2024

Degree of Hypertension	Frequency (f)	Percentage (%)
Degree 1	27	41.5
Degree 2	25	38.5
Degree 3	10	15.4
Degree 4	3	4.6
Total	65	100

The frequency distribution based on the degree of hypertension shows that most respondents were classified as Degree 1, with 27 respondents (41.5%).

Frequency of Recurrence

Table 3. Frequency Distribution of Respondents Based on Recurrence Frequency in Hypertensive Patients at Senduro Health Center, 2024

Frequency of Recurrence	Frequency (f)	Percentage (%)
Never	3	4.6
Rarely Recurs	32	49.2
Frequently Recurs	30	46.2
Total	65	100

The frequency distribution based on recurrence shows that most respondents, 32 (49.2%), experienced rare recurrence.

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Relationship Between Degree of Hypertension and Recurrence Frequency in Hypertensive Patients at Senduro Health Center

Table 4. Relationship Between Degree of Hypertension and Recurrence Frequency in Hypertensive Patients at Senduro Health Center, 2024

		Frequency of Recurrence			Total
		Never	Rarely Recurs	Frequently Recurs	
Degree of Hypertension	Degree 1	2 (7.4%)	14 (51.9%)	11 (40.7%)	27 (100%)
	Degree 2	0 (0%)	13 (52%)	12 (48%)	25 (100%)
	Degree 3	1 (10%)	4 (40%)	5 (50%)	10 (100%)
	Degree 4	0 (0%)	1 (10%)	2 (66.7%)	3 (100%)
Total		3 (4.6%)	32 (49.2%)	30 (46.2%)	65
Correlation Coefficient		0.560**			
Sig. (2-tailed) Spearman Rank		0.000 < 0.05			

The results of the analysis of the relationship between the degree of hypertension and the frequency of recurrence in hypertensive patients at Senduro Health Center show that most respondents with Degree 1 hypertension experienced rare recurrence, with 14 respondents (51.9%). In Degree 2, most respondents also experienced rare recurrence, with 13 respondents (52%). For Degree 3 hypertension, most respondents experienced frequent recurrence, with five respondents (50%). Among those with Degree 4 hypertension, the majority experienced rare recurrence, with two respondents (66.7%).

Spearman Rank analysis test was conducted, and the p-value or significance (2-tailed) result was 0.000 < 0.05, indicating a significant relationship between the degree of hypertension and the frequency of recurrence in hypertensive patients at the Senduro Health Center.

DISCUSSION

Degree of Hypertension

Hypertension is a condition where the blood pressure in the arteries increases abnormally and continuously. It can result in the disruption of oxygen and nutrients carried by the blood from reaching the tissues that need them, leading to ongoing symptoms in target organs, potentially causing severe damage or even death (Lan et al., 2024; Drakopoulou et al., 2024; Pan et al., 2024)

Based on the research results, the majority of respondents suffered from grade 1 hypertension, where the diastolic pressure was 140-159 mmHg or the systolic pressure was 90-99 mmHg. The degree of hypertension experienced by the respondents may increase or remain the same, influenced by various factors that could impact the frequency of recurrence. Factors contributing to hypertension include age, gender, and genetic predisposition. Among all the respondents who completed the research questionnaire, it was shown that the majority of hypertensive patients were between the ages of 51-60 years, with 33 respondents (50.8%). This is likely due to the increased risk of hypertension as a person ages, caused by changes in the structure of large blood vessels, leading to narrowed blood vessels and stiffened artery walls, which result in elevated systolic blood pressure. However, hypertension can also occur in individuals under 20 years of age, often due to high levels of physical or mental stress.

In addition, the study found that the majority of hypertensive patients were women, with 59 respondents (90.8%). This may be because women are generally more enthusiastic about participating in activities that increase their knowledge and pay more attention to their health than men, especially older men, who are often busy with work and other commitments. From the

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questionnaire responses, most respondents regularly check their blood pressure every month at healthcare facilities like health centers, village health posts, and sub-health posts.

This indicates that they are aware of the importance of regular check-ups to prevent their condition from worsening, which could lead to complications or death. It is common for individuals who have suffered from hypertension for a long time to have lower compliance with treatment. Aside from the respondents' ability to manage their hypertension, other contributing factors that trigger hypertension include stress, an unhealthy lifestyle, lack of physical activity, and obesity.

Frequency of Recurrence

Recurrence refers to the reappearance of severe symptoms that significantly disrupt daily activities, requiring inpatient or outpatient treatment for an extended period. The recurrence of hypertension, or a return of elevated blood pressure, is influenced by several factors. These include not regularly monitoring blood pressure, failing to maintain a healthy lifestyle, exercising, following a proper diet, quitting smoking, avoiding alcohol and caffeine, and reducing stress. Among these, managing stress is often the most challenging (Fish et al., 2024; Takano et al., 2024).

The results of this study showed that most respondents experienced a rare recurrence of their hypertension symptoms, with only a tiny number never experiencing a recurrence. Although the majority of respondents reported rare recurrence of their hypertension, the relatively high number of respondents who frequently experienced recurrence is noteworthy. This suggests the presence of multiple triggers for hypertensive relapse. Hypertensive patients can improve their overall health by avoiding these triggers and adopting a healthy lifestyle.

Additionally, if the frequency of hypertension recurrence continues to increase, it can eventually lead to various complications, which are undoubtedly undesirable for the patient. Therefore, controlling the recurrence of hypertension through lifestyle changes and regular monitoring is essential for preventing long-term damage and improving patient outcomes.

Relationship Between Degree of Hypertension and Recurrence Frequency in Hypertensive Patients at Senduro Health Center

The recurrence of hypertension, or the return of elevated blood pressure, is influenced by several factors, such as failure to monitor blood pressure, not following a healthy lifestyle, lack of physical activity or exercise, smoking, alcohol consumption, and stress. The most difficult recommendation to follow is living without stress. Stress is an uncomfortable situation because individuals perceive the demands of the situation as overwhelming or beyond their ability to cope (Barthel et al., 2025; Furlan et al., 2024; Fitria et al., 2023).

The relationship between the degree of hypertension and the frequency of recurrence can occur because respondents with higher degrees of hypertension are more susceptible to triggers, leading to more frequent hypertension relapses, mainly due to stress. Individuals with more severe hypertension are more likely to experience blood pressure spikes in stressful situations, especially if they have poor coping mechanisms.

The Spearman rank analysis test in Table 5.6 shows a positive correlation coefficient of 0.560, indicating a direct relationship between the degree of hypertension and the frequency of recurrence in hypertensive patients at the Puskesmas Senduro. This means that as the degree of hypertension increases, the frequency of recurrence also increases. As shown in Table 5.6, respondents with grade 1 hypertension had a recurrence frequency of "rarely recurring" for 14 respondents (51.9%). Grade 2 hypertension had a recurrence frequency of "rarely recurring" for 13 respondents (52%), grade 3 hypertension had a recurrence frequency of "frequently recurring" for five respondents

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(50%), and grade 4 hypertension had a recurrence frequency of "frequently recurring" for two respondents (66.7%).

This data emphasizes that those with higher degrees of hypertension are more likely to experience frequent recurrences, highlighting the importance of managing triggers such as stress and adopting coping mechanisms to manage their condition better.

CONCLUSION

The study concludes a significant positive relationship between the degree of hypertension and the frequency of recurrence in hypertensive patients at the Senduro Health Center, as indicated by a Spearman correlation coefficient of 0.560. Patients with higher degrees of hypertension were more likely to experience frequent recurrences, mainly due to triggers such as stress, unhealthy lifestyles, and inadequate coping mechanisms. This finding underscores the importance of regular monitoring, lifestyle modifications, and effective stress management to prevent frequent relapses and improve patient outcomes.

These findings can be applied in real-world settings by designing targeted intervention programs to help hypertensive patients manage their condition more effectively. Healthcare facilities can implement regular blood pressure monitoring programs and provide education on adopting a healthy lifestyle, such as maintaining a balanced diet, engaging in regular physical activity, and avoiding smoking and excessive alcohol consumption. Stress management workshops and counseling sessions can also be introduced to teach patients coping strategies to handle stress effectively. Furthermore, prioritizing outreach efforts for at-risk groups, such as older adults and individuals with higher degrees of hypertension, can enhance early detection and prevention of recurrences. By integrating these practices into routine healthcare services, the frequency of hypertension recurrences can be reduced, improving overall patient health outcomes.

RECOMMENDATIONS

1. Regular Monitoring
   Patients need to monitor their blood pressure to manage hypertension effectively and regularly.
2. Lifestyle Modifications
   Encouraging patients to adopt a healthy lifestyle, including regular exercise, a balanced diet, and stress management techniques, can significantly impact their overall health and help reduce the frequency of recurrence.
3. Educational Programs
   Implementing educational programs focused on hypertension management and routine check-ups' importance may increase patient awareness, leading to better health outcomes.
4. Support Systems
   Establishing support groups for hypertensive patients can provide them with the necessary emotional and psychological support to cope with stress and adhere to their treatment plans.

These recommendations aim to improve the management of hypertension and reduce the frequency of recurrences among patients at Puskesmas Senduro.

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