

The Relationship Between Characteristics of Hypertensive Patients and Length of Stay

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ABSTRACT

Background: Hypertension is a chronic and degenerative disease that is a public health problem in Indonesia. Survey results show that hypertension is among the top 10 5th-order diseases. The high prevalence of hypertension also has the potential to increase hospitalization rates and impact the length of patient care. **Objective:** The purpose of this study was to determine the relationship between the characteristics of hypertension patients and the length of stay. **Methods:** This type of research is analytical with a cross-sectional approach. The independent variables (age, gender, occupation, and hypertension status) and the dependent variable (length of stay). A sample of 269 patient cases was selected using saturated sampling techniques. Data analysis was performed using the Chi-Square and Fisher Exact statistical tests. **Results:** The results of the univariate analysis showed that the highest gender characteristics were in women (64%). The highest age characteristics were in the adult category, 15-64 years (61%). The highest occupational characteristics were in the working category (57%), and the highest hypertension status characteristics were hypertension as a secondary diagnosis (94%). The results of the bivariate analysis of the Chi-Square test showed that gender characteristics ($p = 0.541$) and occupational characteristics ($p = 0.167$). The results of the Fisher's exact test analysis showed that age characteristics ($p = 0.184$) and hypertension status characteristics ($p = 0.446$). **Conclusion:** The study concluded that age, gender, occupation, and hypertension status were not significantly associated with length of stay. It is recommended that medical personnel provide appropriate therapy and education regarding diet, lifestyle, and medication adherence to prevent complications that can prolong the length of stay.

Keywords: Characteristics; Hypertension; Length of stay

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INTRODUCTION

Hypertension (high blood pressure) is when the pressure in your blood vessels is too high (140/90 mmHg or higher). It is common, but can be serious if not treated. People with high blood pressure may not feel symptoms. The only way to know is to get your blood pressure checked. Things that increase the risk of having high blood pressure include: older age, genetics, being overweight or obese, not being physically active, a high-salt diet, and drinking too much alcohol (1). Hypertension is often called the silent killer because it often has no symptoms. Many people with hypertension feel healthy despite having high blood pressure (2). Hypertension is a major risk factor for cardiovascular disease and, if left untreated, can lead to kidney failure, stroke, dementia, heart failure, heart attack, vision loss, and other complications (3).

Two-thirds of adults aged 30–79 years who have hypertension live in low- and middle-income countries. Hypertension is a major cause of premature death worldwide. One of the global targets for noncommunicable diseases is to reduce the prevalence of uncontrolled hypertension by 25% between 2010 and 2025 (1). Data from the World Health Organization (WHO), in 2015, showed that around 1.13 billion people in the world suffer from hypertension, meaning that 1 in 3 people in the world are diagnosed with hypertension (4).

Patient characteristics are special characteristics that have specific traits according to certain representatives (5). The duration of suffering from hypertension is defined as the time span since the patient was first diagnosed with hypertension until the time blood pressure measurements are taken (6). This duration is an indicator of important matters related to damage to the structural components

of blood vessels, changes in arterial elasticity, and the progression of hypertension (7). The duration of hypertension affects blood pressure due to changes in the artery walls and loss of elasticity. As a result, systolic blood pressure tends to increase over time. In addition, resistance to the periphery also increases, which causes unstable blood pressure (8). Another factor that is related to high blood pressure is a comorbidity. Comorbidity is defined as the existence of one or more diseases in addition to accompanying hypertension, such as diabetes mellitus, dyslipidemia, or chronic kidney disease (9).

The results of the chi-square test comparing age characteristics with length of stay showed a significant value ($p = 0.002$; $p < 0.05$), while the comparison of gender characteristics with length of stay yielded a non-significant value ($p = 0.315$; $p > 0.05$). This indicates that there is a relationship between patient characteristics, specifically age, and length of stay, whereas no such relationship exists between patient characteristics, such as gender, and length of stay. Suggestion: It is better to immediately compile SOPs on efficient inpatient care using the Indonesian Ministry of Health standards (10).

METHODS

Analytical research method with a cross-sectional approach, the variables used are independent variables (age, gender, occupation, hypertension status) and dependent variables (length of stay). The population and sample in the study were 269 cases of inpatients with hypertension in January-August 2025, selected using saturated sampling techniques. Data sources are from the disease index. Data collection techniques are by interviews and observations. The instruments used are interview guidelines, observation guidelines, work tables, and SPSS applications. Data processing includes collecting, editing, tabulating, calculating, and presenting data. Data analysis was carried out using Chi-Square and Fisher's Exact statistical tests. The research location is at the Yogyakarta regional public hospital.

RESULTS

A. Data on Length of Stay for Inpatients with Hypertension

Table 1. Characteristics of Inpatients with Hypertension Based on the Variable of Length of Stay

No	Category	Number of Patients	Percentage (%)
1	Ideal (6-9 Days)	35	13
2	Not Ideal (<6 and >9 Days)	234	87
Amount		269	100

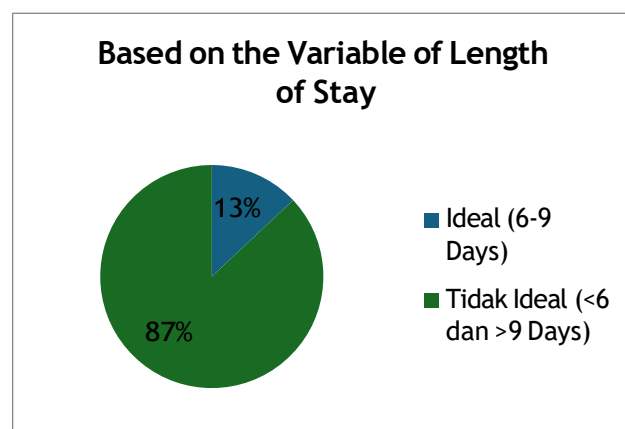


Figure 1. Diagram of Characteristics of Inpatients with Hypertension Based on the Variable of Length of Stay

B. Characteristics of Inpatients with Hypertension

1. Age

Table 2. Characteristics of Inpatients with Hypertension Based on Age Variable

No.	Category	Number of Patients	Percentage (%)
1	Young (0-14 Years)	1	0
2	Adults (15-64 Years)	164	61
3	Elderly (>65 Years)	104	39
Amount		269	100

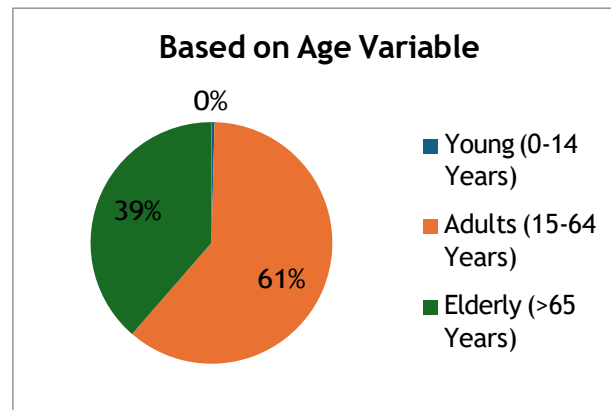


Figure 2. Diagram of Characteristics of Inpatients with Hypertension Based on Age Variable

2. Gender

Table 3. Characteristics of Inpatients with Hypertension Based on Gender Variable

No.	Category	Number of Patients	Percentage (%)
1	Man	97	36
2	Woman	172	64
Amount		269	100

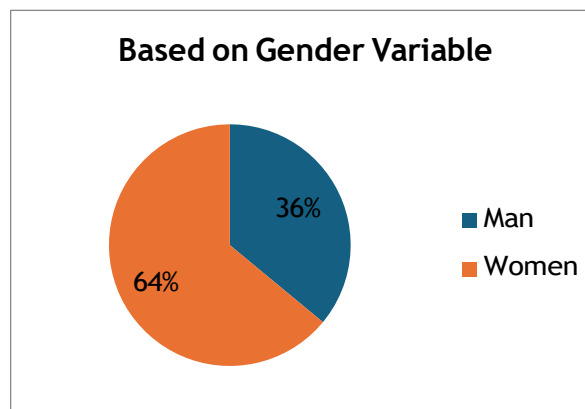


Figure 3. Diagram of Characteristics of Inpatients with Hypertension Based on Gender Variables

3. Occupational

Table 4. Characteristics of Inpatients with Hypertension Based on Occupational Variables

No.	Category	Number of Patients	Percentage (%)
1	Not Yet Working	117	43
2	Work	152	57
Amount		269	100

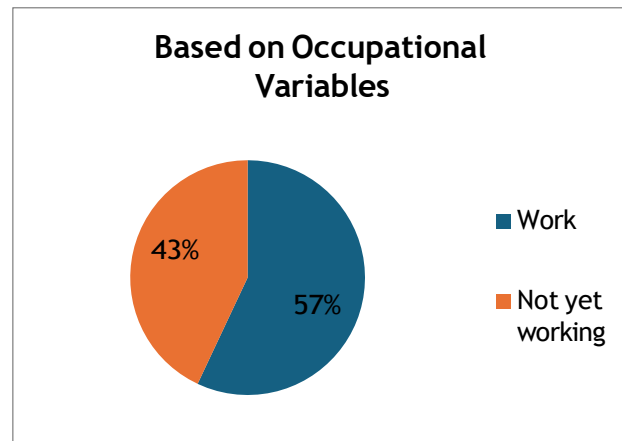


Figure 4. Diagram of Characteristics of Inpatients with Hypertension Based on Occupational Variables

4. Hypertension Status

Table 5. Characteristics of Inpatients with Hypertension Based on Hypertension Status Variables

No.	Category	Number of Patients	Percentage (%)
1	Primary Diagnosis	16	6
2	Secondary Diagnosis	253	94
Amount		269	100

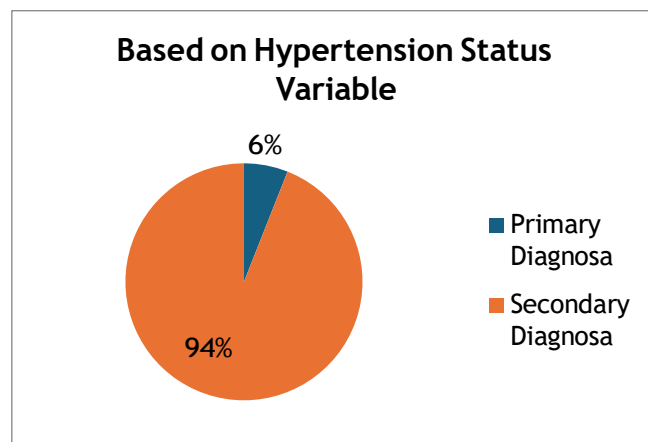


Figure 5. Diagram of Characteristics of Inpatients with Hypertension Based on Hypertension Status Variables

C. The Relationship between Characteristics of Hypertension Patients and Length of Stay

1. Relationship between Age Characteristics and Length of Stay

Table 6. Relationship between Age Characteristics and Length of Stay

Variables		Length of Stay		Total	<i>p.value exact sig.</i>
		Ideal	Not Ideal		
Age	Young (0-14 Years)	1	0	1	0.184
	Adults (15-64 Years)	21	143	164	
	Elderly (>65 Years)	13	91	104	
Total		35	234	269	

Based on Table 6, the exact *p-value* in the Fisher Exact test is ($p=0.184$). The result of $p>0.05$ means H_0 is accepted and H_a is rejected, meaning there is no relationship between age characteristics and the length of stay for inpatients with hypertension.

2. Relationship between Gender Characteristics and Length of Stay

Table 7. Relationship between Gender Characteristics and Length of Stay

Variables		Length of Stay		Total	<i>p.value</i>	OR	CI 95%	
		Ideal	Not Ideal				Lower	Upper
Gender	L	11	86	97	0.541	0.789	0.368	1,689
	P	24	148	172				
Total		35	234	269				

Based on Table 7, it is known that the Asymp. sig in the chi-square test is ($p=0.541$). The p result > 0.05 , then H_0 is accepted and H_a is rejected, meaning that there is no relationship between gender characteristics and the length of stay for inpatients with hypertension.

3. Relationship between Occupational Characteristics and Length of Stay

Based on Table 8, it is known that the Asymp. sig in the chi-square test is ($p=0.167$). The result of $p>0.05$ means H_0 is accepted and H_a is rejected, meaning there is no relationship between occupational characteristics and the length of stay for inpatients with hypertension.

Table 8. Relationship between Occupational Characteristics and Length of Stay

Variables		Length of Stay		Total	<i>p.value</i>	OR	CI 95%	
		Ideal	Not Ideal				Lower	Upper
Occupational	Not yet working	19	98	117	0.167	1,648	0.807	3,365
	Work	16	136	152				
Total		35	234	269				

4. Relationship between Hypertension Status Characteristics and Length of Stay

Table 9. Relationship between Hypertension Status Characteristics and Length of Stay

Variables		Length of Stay		Total	<i>p.value exact sig.</i>	OR	CI 95%	
		Ideal	Not Ideal				Lower	Upper
Hypertension Status	DU	3	13	16	0.446	1,594	0.430	5,901
	DS	32	221	253				
Total		35	234	269				

Based on Table 9, the exact p-value in the *Fisher Exact test* is ($p=0.446$). The result of $p > 0.05$ means H_0 is accepted and H_a is rejected, meaning that there is no relationship between the characteristics of hypertension status and the length of stay of inpatients with hypertension.

DISCUSSION

A. Characteristics of Inpatients with Hypertension

1. Length of Stay

The average length of stay for 269 cases was 4 days. The ideal length of stay for hypertension patients (6-9 days) was 35, representing 13%, and the non-ideal category (<6 days and >9 days) was 234, representing 87%. The ideal length of stay, based on the standards set by the Indonesian Ministry of Health, is 6-9 days. (11). The calculation of the length of hospital stay is done by calculating the difference between the date of hospital discharge (whether the patient goes home alive or dies) and the date of admission for inpatient care for each patient. (12). Length of Stay is an important indicator in hospital services because it reflects the quality of care and the efficiency of hospital resource use (13). Length of stay has a significant impact on hospital operational costs, patient satisfaction, and disease severity and mortality (14).

2. Age

The age characteristics of hypertension patients in 2025, the majority were in the adult age category (15-64 years) with 164 patients with a percentage of 61%, a high figure in accordance with the prevalence of age risk factors. The results of this study also show that the young age category (0-14 years) had 1 patient with a percentage of 0.4%, and the elderly age category (>65) had 104 patients with a percentage of 38.6%. The results of the study showed that the majority of hypertension patients in 2025 were above 49 years old, which proves that humans will experience a very rapid physiological decline after aging. Age is a very influential factor against hypertension, where the older a person is, the higher the risk of developing hypertension (15). Hypertension is a degenerative disease that arises due to changes in the function of cells in the body that affect organ function. Degenerative diseases can also arise due to changes in age (16).

3. Gender

Gender characteristics of hypertension sufferers in 2025, male as many as 97 patients with a percentage of 36%, and the number of female patients as many as 172 patients with a percentage of 64%. Gender is also closely related to the occurrence of hypertension, where in youth and middle age, hypertension is higher in women, and higher after the age of 55 years, when a woman experiences menopause (6). In line with previous research, women are more likely to suffer from hypertension, 72% (58 patients) compared to men, 28% (23 patients) (17).

4. Occupational

The occupational characteristics of hypertension sufferers in 2025 showed that the majority of patients were in the working category, namely 152 patients (57%), while patients in the unemployed/not working category numbered 117 patients (43%). These results indicate that more hypertensive patients who underwent hospitalization came from the working group compared to the unemployed or not working group. Working patients have indirect risk factors for hypertension and worsening health conditions. Excessive work can cause work stress. Stressful conditions cause the body to produce more adrenaline hormone, so the heart works harder and faster. Hypertension sufferers have an impact on increasing their blood pressure, which tends to remain stable or even increase, triggering their hypertension condition to become more severe (18). Occupational stress, or job strain, resulting from a lack of balance between job demands and job control, is considered one of the most frequent factors in the etiology of hypertension in modern society (19).

5. Hypertension Status

The characteristics of the status (primary and secondary diagnoses) of hypertension patients in 2025 show that the majority of patients were in the secondary diagnosis category, namely 253 patients (94%), while patients with the primary diagnosis category numbered 16 patients (6%). This shows that hypertension in the majority of inpatients in 2025 was not a primary diagnosis, but rather a comorbidity accompanying other disease conditions. The high proportion of hypertension as a secondary diagnosis illustrates that hypertension often occurs together with other diseases, especially chronic and degenerative diseases. The average blood pressure in hypertensive patients increased by approximately 2 mmHg for each additional comorbidity, regardless of the type of comorbidity. This explains that more patients with comorbidities had poor blood pressure control (20). Comorbidities are related to blood pressure in hypertensive patients, where the more comorbidities experienced by hypertensive patients, the higher the blood pressure (21).

B. Relationship between Characteristics of Inpatients with Hypertension

1. Relationship between Age Characteristics and Length of Stay

Based on the results of the study, the value ($p = 0.184$) was obtained, meaning that H_0 was accepted and H_a was rejected, so there was no significant relationship between the characteristics of age and the length of stay of inpatients with hypertension in 2025. This study is in line with previous research, which showed no correlation between age and length of stay with outcomes ($p = 0.426$) (5). Patient age is related to the clinical profile and the need for hospital care. Although age is often associated with risk profiles, data show that comorbid factors that accompany age are often the main determinants of the duration of hospital care (22) (23). Increasing age in a person increases the risk of hypertension. This can be caused by changes in the structure of large blood vessels and a decrease in immunity. Hypertension cannot be cured, but it can be minimized by changing lifestyles and reducing salt, exercising, losing weight, not smoking or drinking alcohol, and increasing consumption of fruits and vegetables (24).

2. Relationship between Gender Characteristics and Length of Stay

Based on the results of the study, the value ($p = 0.541$) was obtained, meaning that H_0 was accepted and H_a was rejected, so there was no significant relationship between the characteristics of gender and the length of stay of inpatients with hypertension in 2025. This study is in line with previous research, which showed no correlation between gender and length of stay, with the results ($p = 0.520$) (5). Researchers have analyzed that gender is one of the factors that influence the increase in blood pressure, which causes hypertension, because women who have gone through menopause experience a decrease in estrogen levels. Although postmenopausal women are theoretically at risk of developing hypertension due to decreased estrogen levels, gender may influence susceptibility to certain complications. For example, in women, a history of Myocardial Infarction (MI) is a significant independent predictor of increased length of stay, whereas in men, no statistically significant features were found to predict increased length of stay (25).

3. Relationship between Occupational Characteristics and Length of Stay

Based on the research results, the value obtained was ($p=0.167$), meaning that H_0 was accepted and H_a was rejected, so there was no significant relationship between job characteristics and length of stay. inpatients with hypertension in 2025. This study is in line with previous research, which showed no correlation between occupation and length of stay with outcomes ($p=0.666$) (5). Occupational factors were identified as one of the significant determining variables in influencing the use of hospital resources and duration of stay (26) (27).

4. Relationship between Hypertension Status Characteristics and Length of Stay

Based on the research results, the value obtained was ($p = 0.446$), meaning that H_0 was accepted and H_a was rejected, so there was no significant relationship between the

characteristics of hypertension status and duration. Inpatients with hypertension treated in 2025. Length of stay is more influenced by disease severity, complications, and comorbidities than by hypertension as a primary or secondary diagnosis. Hypertension, combined with comorbidities, is a major factor in prolonging Length of Stay (LOS). Patients with Heart Failure (HF), Chronic Kidney Disease (CKD), Diabetes Mellitus (DM), and obesity are consistently associated with longer hospital stays (22) (23).

The study results for all patient characteristics (such as age, gender, education, and hypertension status) showed no significant association with length of stay, as there are more specific characteristics, such as the presence or absence of acute complications. Inpatient management has been standardized and focuses on acute clinical severity. Whether young or old, male or female, if severe complications occur, the length of stay is longer. In line with this study, patients with complications (such as stroke or kidney failure) will be treated longer, regardless of age or gender. The severity of the length of stay is determined by the presence or absence of hypertensive crisis and comorbidities (28). Factors that accelerate patient discharge are compliance and the body's response to medication therapy, blood pressure can be stabilized by medication, which is often independent of gender and occupation. A specific factor influencing the duration of hospitalization is the Medical Standard Operating Procedure (SOP), which has a uniform target length of stay (3–5 days for hypertension stabilization) (17).

CONCLUSION

The results showed an average length of stay of 4 days. The highest gender characteristic was in women (64%). The highest age characteristic was in the adult category, 15-64 years (61%). The highest occupational characteristic was in the working category (57%), and the highest hypertension status characteristic was hypertension as a secondary diagnosis (94%). The results of statistical tests for age ($p=0.184$), gender ($p=0.541$), occupation ($p=0.167$), and hypertension status ($p=0.446$). Patient characteristics were not significantly related to length of stay. Medical personnel are expected to provide appropriate therapy and education regarding diet, lifestyle, and medication adherence to prevent complications that can prolong the length of stay.

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