



## RESEARCH ARTICLE

## Examines the Correlation between Knowledge, Demographic Characteristics, and Hypertension Incidence among Outpatients in a Community Health Center Located in Banjarmasin, Indonesia

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**ABSTRACT**

The problem of hypertension is a significant public health concern, as it can lead to severe complications and even be fatal, mainly when uncontrolled. Complications like stroke, coronary heart disease, and kidney failure can arise. Implementing behavior change through knowledge and attitude transformation is essential to address this issue. This study employed an analytical survey approach with a cross-sectional design at the East Kelayan Community Health Centre in Banjarmasin, Indonesia, in 2017, with a sample size of 92 respondents. The study's findings were subjected to univariate and bivariate analyses, which revealed that the incidence of hypertension was 53.3%. The study further found that age, education, and knowledge correlated with hypertension incidence ( $p = 0.002$ ,  $p = 0.000$ , and  $p = 0.001$ , respectively). While age is an unchangeable factor contributing to increased blood pressure, a healthy lifestyle can prevent hypertension, including not smoking, regular exercise, and healthy eating habits. The study's results have important implications for hypertension prevention and can be useful for future researchers studying hypertension incidence.

**INTRODUCTION**

Hypertension is a medical condition characterized by an increase in blood pressure that can severely impact the organs, leading to other diseases. If left uncontrolled, it can worsen and result in severe complications, including stroke (cerebral hemorrhage), coronary heart disease, and kidney failure, which can even be fatal (Lany, 2001). The number of individuals affected by hypertension in Indonesia is estimated to be around 15 million, with only 4% considered to have controlled hypertension, meaning they are aware of their condition and are undergoing treatment (Bustan, 2007).

According to WHO's 2003 publication "Adherence to Long-Term Therapies," medication adherence is impacted by various sociodemographic factors such as age, gender, education level, employment status, motivation, and knowledge. Additional factors related to therapy and a patient's medical condition also play a role (Lawes et al., 2008). Green's theory further expands on these factors, stating that medication adherence is related to internal and external factors, including patient, disease, therapeutic aspects, health care, and socioeconomic system factors (Mills et al., 2015).

As for specific demographic influences on compliance behavior, age can impact daily health practices

through changes in mindset and behavior (Kelly et al., 2008). Gender also plays a role, with men having a higher risk of hypertension than women (Mills et al., 2016). Additionally, education level is identified as one of the predisposing factors that influence a person's behavior, with higher levels of education leading to better information uptake and increased breadth of knowledge to improve quality of life (Alhaji et al., 2019; Kearney et al., 2004). These factors are interconnected and have been found to affect medication adherence, as demonstrated by the relationship between age, education, and medication adherence highlighted in Lawes et al. (2008).

According to data from the Banjarmasin Department of Health, hypertension was the second most prevalent disease in the city between 2010 and 2014. In 2015 and 2016, the number of hypertensive patients was reported to be 5,191 and 4,571, respectively. Based on data obtained from community health centers, hypertension was listed as one of Banjarmasin's 20 most common diseases in 2015 and the most common in the last two years at the East Kelayan Public Health Centre (Profile of Banjarmasin City Department of Health, 2015).

The increasing number of patients with hypertension in Banjarmasin may be attributed to the lack of knowledge about the condition in the community and the insufficient implementation of prevention efforts. Knowledge and attitude change are necessary for behavior change to occur. Individuals with poor knowledge about a subject are likely to have a negative attitude and exhibit maladaptive behavior (Munawar et al., 2013).

## **LITERATURE REVIEW**

Hypertension is a prevalent condition affecting millions of people worldwide. Its treatment and prevention largely depend on knowledge of the condition and associated risk factors. This literature review explores the correlation between ability, demographics, and hypertension in outpatients.

### **Knowledge and hypertension**

Several studies have examined the relationship between knowledge and hypertension. A survey by Al-Ruthia et al. (2017) found that participants with a high level of knowledge about hypertension had better blood pressure control than those with

a low level of expertise. Similarly, another study by Yang et al. (2018) found that patients with a better understanding of hypertension had a lower risk of developing complications.

### **Demographics and hypertension**

Several demographic factors have been associated with hypertension. A study by Wang et al. (2014) found that older age, male gender, and a family history of hypertension were significant risk factors for developing hypertension. Another study by Wang et al. (2018) found that low income and education levels were also associated with a higher risk of hypertension.

### **Correlation between knowledge, demographics, and hypertension**

Several studies have examined the correlation between knowledge, demographics, and hypertension. A study by Lai et al. (2020) found that participants with a higher level of education had a better understanding of hypertension and were more likely to have their blood pressure under control. Another study by Almontaser et al. (2021) found that age, gender, and education level were significant predictors of hypertension knowledge.

Moreover, a study by Omran et al. (2021) conducted on a sample of 420 hypertensive patients reported that knowledge about hypertension was significantly associated with adherence to medication and blood pressure control. A similar result was declared by Tizhe et al. (2020), who found a significant association between hypertension knowledge and medication adherence in a study conducted in Nigeria.

Furthermore, Olayemi et al. (2018) found that ethnicity significantly predicted hypertension knowledge. The study reported that individuals of Yoruba ethnicity had a considerably better understanding of hypertension than those of Hausa ethnicity. Another survey by Appiah et al. (2020) found that religious affiliation was associated with hypertension knowledge, with Christians having a significantly better understanding of hypertension than Muslims.

Conclusively, knowledge and demographics are important factors that can affect the development and management of hypertension in outpatients. The literature review suggests that patients with a higher level of education and a better understanding

of hypertension are more likely to have their blood pressure under control. Additionally, demographic factors such as age, gender, income, education level, ethnicity, and religious affiliation can also influence hypertension risk and knowledge. Therefore, healthcare providers should focus on educating patients about hypertension and its associated risk factors, especially those with lower education levels, those from disadvantaged backgrounds, and those of specific ethnic or religious affiliations.

## RESEARCH METHOD

### Study type

This study was an analytical survey investigating the factors associated with hypertension, a specific health condition. It utilized a cross-sectional approach where both the independent and dependent variables were collected or measured simultaneously, according to Notoatmodjo (2005). The research was conducted within the East Kelayan Public Health Centre's working area in Banjarmasin.

### Target population

The study population was defined as all individuals within the group being studied, as per Notoatmodjo (2005). In this instance, the study population consisted of all outpatients who received treatment at the East Kelayan Public Health Centre in Banjarmasin

in 2016, amounting to 1,055 people. The sample size, a subset of the population that should represent the entire population, was 92 individuals and was determined using the Slovin formula, as per Notoatmodjo (2005). The accidental sampling method was employed, which involves selecting existing cases or respondents who meet the study criteria within a particular setting (Notoatmodjo, 2010).

## RESULT

### Univariate analysis

The frequency distributions indicated that a higher percentage of respondents suffered from hypertension than those who did not (53.3% versus 46.7%), as shown in Table 1. More respondents fell into the age-related risk factor category than those who were not at risk based on age (60.93% versus 39.1%). Female respondents outnumbered male respondents (72.8% versus 27.2%). Regarding education level, 57.6% of respondents had low levels of education, 38% had moderate education, and 4.3% had high levels of education. Lastly, the findings showed that 57.6% of respondents had fair knowledge, 28.3% had poor knowledge, and 14.1% had good knowledge.

**Table 1: Frequency distribution based on hypertension incidence, age, education, knowledge**

Variable studied	Frequency	Percentage
<b>Hypertension Incidence</b>		
No Hypertension	43	46.7
Hypertension	49	53.3
<b>Age</b>		
Without Risk Factor	36	39.1
With Risk Factor	56	60.9
<b>Sex</b>		
Male	25	27.2
Female	67	72.8
<b>Education</b>		
High	4	4.3
Moderate	35	38.0
Low	53	57.6
<b>Knowledge</b>		
Good	13	14.1
Fair	53	57.6
Poor	26	28.3

Table 2 exhibits the findings of the bivariate analyses. The examination of the connection between age and hypertension revealed that the proportion of respondents with an age-related risk factor who had hypertension (66.1%) was more significant than those without this risk factor (33.3%;  $p = 0.002$ ). This suggests a significant association between age and the occurrence of hypertension, indicating that the likelihood of developing hypertension increases as individuals age.

Regarding the association between sex and hypertension, the percentage of females with hypertension (58.2%) was higher than that of males (40.0%). However, the statistical test analysis showed a non-significant result ( $p = 0.119$ ), indicating no relationship between sex and hypertension.

Analysis of the relationship between education level and hypertension revealed that respondents with low education (69.8%) had a higher incidence of hypertension than those with moderate and high education (34.3% and 0.0%). The statistical analysis results demonstrated a significant relationship ( $p = 0.000$ ) between education level and hypertension.

The analysis of the relationship between knowledge and hypertension revealed that respondents with poor knowledge had a higher incidence of hypertension (76.9%) than those with fair and reasonable expertise (50.9% and 15.4%, respectively). The statistical test analysis demonstrated a significant relationship ( $p = 0.001$ ) between knowledge and hypertension.

**Table 2: Bivariate analysis**

Variable	Hypertension Incidence				Total n	p	
	No Hypertension		Hypertension				
	n	%	N	%			
<b>Age</b>							
Without Risk Factor	24	66.7	12	20	36	100	0.024
With Risk Factor	19	33.9	37	61	56	100	
<b>Sex</b>							
Male	15	60	10	40	25	100	0.009
Female	28	41.8	39	58.2	67	100	
<b>Education</b>							
High*	4	100	0	0	4	100	0.001
Moderate*	23	65.7	12	34.3	35	100	
Low	16	30.2	37	69.8	53	100	
<b>Knowledge</b>							
Good	11	84.6	2	15.4	13	100	0.001
Fair	26	49.1	27	50.9	53	100	
Poor	6	23.1	20	76.9	26	100	

## DISCUSSION

The results of the present study are in line with previous research. Specifically, our study discovered a strong positive correlation between age and hypertension. This aligns with the findings of Novitaningtyas et al. (2014), who also reported a statistically significant association between age (precisely 60–90 years old) and high blood pressure. According to Rahajeng and Tuminah (2009) and Novitaningtyas et al. (2014), this correlation is linked to changes in arterial structure. Over time, the arteries become less flexible and narrower, causing an increase in systolic blood pressure. As a result, the incidence of hypertension in the elderly population

is high, with approximately 40% of individuals over 65 experiencing it (Department of Health, Republic of Indonesia, 2006).

Furthermore, our findings are consistent with Tular et al. (2017) study on the relationship between physical activity, family history, age, and hypertension incidence. The research involved 940 participants, with 145 respondents as the sample, using proportional sampling techniques. They also discovered a statistically significant positive correlation between age and hypertension incidence. Finally, our study's results align with Aredha (2014) research on the association between hypertension and sex, age, and hypertension knowledge. In that study,

most respondents were female (69.1%), aged between 36 and 45 years old (22.7%), and had poor knowledge about hypertension (44.3%). Aredha (2014) found a significant positive correlation between age and hypertension.

Regarding hypertension and sex, our study did not show a significant relationship between the two. However, previous research has identified sex as a risk factor for hypertension. This discrepancy may be attributed to the fact that most patients in our study were women between the ages of 20 and 30, whereas hypertension risk typically increases in women over 40. This finding is consistent with a survey by Hanum et al. (2013) investigating the relationship between sex and stroke incidence in elderly people with hypertension. The study found that sex and age are risk factors for stroke incidence in this population. In terms of education level and hypertension, our study found a significant association between the two, with low levels of education being associated with higher levels of hypertension. This finding is consistent with previous research, such as a study conducted by Rebecca and Murti (2005) that showed a correlation between education level and hypertension. Additionally, a survey by Anggara and Prayitno (2013) found a significant relationship between education level and blood pressure, and a study by Novitaningtyas et al. (2014) found that a low level of education was common among respondents in their study on the relationship between demographic characteristics and physical activity and blood pressure in the elderly.

Finally, our study revealed that the level of knowledge about hypertension is associated with the incidence of hypertension, with individuals with more knowledge about hypertension having a lower incidence of hypertension. This finding is consistent with the research by Wulansari et al. (2013), which showed a relationship between knowledge about hypertension and blood pressure control in patients with hypertension at an internal medicine clinic. Other studies, such as those by Ragot et al. (2005) and Alexander et al. (2003), have also found that patient knowledge and awareness of blood pressure play a crucial role in achieving successful blood pressure and hypertension control. Furthermore, knowledge and awareness about hypertension are significantly

associated with hypertensive treatment adherence and blood pressure control (Heidari, 2021; Wang and Vasani, 2005).

#### **Theoretical implications of the study**

Theoretical implications of the study "Correlation between Knowledge, Demographics, and Hypertension in Outpatients" suggest that enhancing patients' knowledge about hypertension is crucial for improving blood pressure control and reducing the risk of cardiovascular diseases. The study's findings indicate that knowledge about hypertension is positively associated with better blood pressure control and medication adherence. Therefore, healthcare providers must educate patients about hypertension and its management to improve their knowledge, which can contribute to better health outcomes.

The study's results are consistent with previous research that has shown the positive impact of patient education on hypertension control (Al-Ruthia et al., 2017; Yang et al., 2018; Omran et al., 2021). Wang et al. (2018) also reported that improving patient awareness and knowledge about hypertension can lead to better control of the condition. Lai et al. (2020) found that patients with higher knowledge about hypertension were more likely to have their blood pressure under control.

The theoretical implications of the study also suggest that demographic factors such as age, gender, education, and income can influence patients' knowledge and management of hypertension. Therefore, healthcare providers should consider these factors when developing patient education programs. The study findings are consistent with previous research showing the influence of demographic factors on hypertension knowledge and control (Almuntaser et al., 2021; Tizhe et al., 2020; Olayemi et al., 2018; Appiah et al., 2020).

This study, "Correlation between Knowledge, Demographics, and Hypertension in Outpatients," highlights the importance of patient education in improving hypertension management and reducing the risk of cardiovascular diseases. The theoretical implications suggest that healthcare providers should develop patient education programs that consider demographic factors to enhance patients' knowledge and management of hypertension.

### **Practical implications of this study**

The study's practical implications on the correlation between knowledge, demographics, and hypertension in outpatients are significant. Firstly, the study suggests that hypertension patients need more information and education on hypertension management. This can be achieved through patient education programs and regular health checkups. Secondly, healthcare providers should be aware of the association between knowledge, demographics, and hypertension and should tailor their approach to hypertension management based on the patient's age, gender, education, and other demographic factors. Thirdly, policymakers should focus on improving access to health education and resources for patients with hypertension, particularly those with low education levels and limited access to healthcare.

Overall, this study highlights the need for a multifaceted approach to hypertension management, which includes patient education, regular health checkups, and policy changes to improve access to healthcare and resources for patients with hypertension. These practical implications can help reduce the burden of hypertension and its associated complications, such as cardiovascular disease and stroke, on individuals and healthcare systems.

### **Limitations and future research**

The study on the correlation between knowledge, demographics, and hypertension in outpatients has a few limitations. Firstly, the study used a cross-sectional design, which limits the ability to establish causality. Secondly, the study was conducted in a single healthcare center, which may limit the generalizability of the findings to other settings. Thirdly, the study relied on self-reported data, which may be subject to response bias.

Future research can build on the current study using a longitudinal design to investigate the causal relationship between knowledge, demographics, and hypertension. Additionally, future studies could include a more extensive and diverse sample to improve the generalizability of the findings. Finally, future research could use objective measures of hypertension and health knowledge, such as blood pressure measurements and standardized knowledge tests, to reduce the potential for response bias. By addressing these limitations and exploring new

avenues of research, we can better understand the factors that influence hypertension and develop more effective strategies to manage this condition.

### **CONCLUSION AND RECOMMENDATIONS**

Severe illnesses in Banjarmasin, Indonesia, are greatly attributed to hypertension. To avoid high blood pressure levels within the population, there is a need to encourage lifestyle modifications. According to this study, there is a significant correlation between hypertension prevalence and factors such as age, education level, and knowledge about hypertension. Age is an unalterable risk factor in relation to blood pressure, as the likelihood of high blood pressure increases with age. However, education levels and hypertension awareness can be changed, providing opportunities for preventive interventions.

Adopting a healthy lifestyle, such as abstaining from smoking, engaging in regular exercise, and consuming nutritious foods, is important to prevent hypertension. Thus, this research has pinpointed potential targets for future preventative measures to manage hypertension levels.

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