

THE RELATIONSHIP KNOWLEDGE AND ATTITUDES OF PATIENTS IN PREVENTING HYPERTENSION RECURRENCE

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Submit: 29-06-2024; Revised: 12-07-2024; Accepted: 14-07-2024; Published: 30-12-2024

ABSTRACT: Hypertension is a major global health issue that significantly contributes to morbidity and mortality. This study examines the relationship between knowledge and attitudes towards preventing hypertension recurrence among hypertensive patients in Indonesia. Utilizing a crosssectional design, data were collected from 49 hypertensive patients through questionnaires assessing knowledge and attitudes. The results reveal a significant correlation between good knowledge and positive attitudes, with 65% of those with good knowledge exhibiting a positive attitude compared to 35% among those with poor knowledge. The odds ratio (OR=1.643, p=0.000) indicates that patients with better knowledge are significantly more likely to have a positive attitude towards hypertension prevention. These findings underscore the importance of educational interventions in improving health outcomes. Tailored educational programs that address psychological and nutritional aspects, as well as social support mechanisms, are recommended to enhance patient knowledge and foster positive health behaviors. This study highlights the need for continuous patient education and support to reduce the recurrence of hypertension. Public health strategies should focus on integrating comprehensive educational approaches to empower patients and improve adherence to hypertension management practices. The significant role of education in shaping health attitudes and behaviors emphasizes its critical place in public health initiatives aimed at combating hypertension.

Keywords: knowledge, attitudes, hypertension recurrence

How to Cite: Subari, S., Sulaiman, S., & Karjono, K. (2024). The Relationship Knowledge and Attitudes of Patients in Preventing Hypertension Recurrence. *Bioscientist: Jurnal Ilmiah Biologi, 12*(2), 1555-1568. <u>https://doi.org/10.33394/bioscientist.v12i2.12340</u>

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INTRODUCTION

Hypertension, a prevalent health issue globally, significantly burdens public health systems due to its association with severe conditions such as stroke, cardiovascular diseases, and mortality (Aune et al., 2021). In Indonesia, hypertension is a growing concern, requiring effective management strategies. Studies highlight hypertension as a major risk factor for cerebral small-vessel disease, leading to adverse outcomes like stroke (Tan et al., 2020). The wellestablished association between hypertension and stroke indicates an increased risk of various stroke types, including ischemic strokes, among hypertensive individuals (Gao et al., 2020).

Further emphasizing the critical nature of hypertension, research has linked it to elevated risks of all-cause mortality and specific causes of death (Cai et al., 2020). The impact extends beyond mortality, affecting cardiovascular function and kidney health, with hypertensive individuals at higher risk for cardiovascular diseases due



to endothelial dysfunction and vascular abnormalities (Dai et al., 2021). Hypertension also heightens the risk of acute kidney injury, especially in patients with comorbid conditions like Covid-19 (Ye et al., 2021). In pregnancy, hypertension poses unique risks, with hypertensive disorders being significant concerns for maternal and fetal health, necessitating effective management to prevent complications such as preeclampsia (Chen et al., 2022).

Addressing the rising prevalence of hypertension in Indonesia, effective strategies are essential for managing the condition. The prevalence of hypertension has increased from 25.8% in 2013 to 34.1% in 2018, highlighting the need for comprehensive public health interventions(Soenarta et al., 2020). Hypertension contributes significantly to mortality and morbidity in Indonesia, being one of the leading causes of death, with substantial numbers of deaths attributed to the condition (Sirait et al., 2022). The associated health effects include increased risks of cardiovascular diseases, stroke, kidney failure, and blindness (Bangun & Silalahi, 2023; Widyaningrum et al., 2023).

Given the critical implications of hypertension and its rising prevalence in Indonesia, addressing the relationship between patients' knowledge and attitudes in preventing hypertension recurrence becomes imperative. Research indicates that inadequate knowledge about hypertension can lead to negative attitudes towards the disease, adversely affecting patients' self-care practices and disease management (Ukoha-Kalu et al., 2020).

The general solution involves enhancing patient education and fostering positive attitudes towards hypertension management. By promoting awareness and understanding of hypertension, healthcare providers can empower patients to engage actively in their health management. Supportive attitudes and proactive healthcare interventions, including dietary modifications, lifestyle changes, and ongoing health education, play crucial roles in minimizing the recurrence of hypertension (Kurnia et al., 2020). Such efforts can significantly improve health outcomes and reduce the burden of hypertension-related complications.

Empirical studies underscore the importance of patient education in managing hypertension. Knowledge about hypertension and positive attitudes significantly influence patients' adherence to treatment regimens and engagement in preventive behaviors (Althobaiti & Alghamdi, 2022). Effective educational interventions have demonstrated success in improving patients' understanding of hypertension, thereby fostering better disease management practices and reducing recurrence rates (Calisanie et al., 2020). These interventions include community-based health education programs and personalized patient counseling sessions.

Moreover, integrating healthcare professionals' knowledge and attitudes towards hypertension prevention is vital. Studies indicate a strong correlation between healthcare providers' comprehensive understanding of hypertension and their ability to guide patients effectively (Althobaiti & Alghamdi, 2022). Ensuring that healthcare providers possess adequate knowledge and maintain positive attitudes towards hypertension is crucial for successful patient education and disease management.

Furthermore, the influence of knowledge and attitudes extends to the prevention of comorbid conditions associated with hypertension. For instance,



educating hypertensive patients about the risks of chronic kidney disease (CKD) and fostering positive attitudes towards preventive measures can reduce the incidence of CKD (Calisanie et al., 2020). Such integrated approaches, combining patient and healthcare provider education, are essential for comprehensive hypertension management and recurrence prevention.

Understanding the relationship between knowledge and attitudes in preventing hypertension recurrence is critical, as numerous studies emphasize. According to Ukoha-Kalu et al. (2020), insufficient knowledge about hypertension often results in negative attitudes towards the disease, leading to poor self-care practices. This finding is corroborated by (Althobaiti & Alghamdi, 2022), who found that better knowledge and positive attitudes significantly enhance medication adherence and blood pressure control. Despite these insights, there remains a gap in comprehensive educational interventions tailored to diverse patient demographics, which could bridge the knowledge-attitude-behavior gap in hypertension management.

Further research underscores the importance of supportive attitudes and continuous health education in minimizing hypertension recurrence. Kurnia et al. (2020) demonstrated that dietary modifications and lifestyle changes, coupled with ongoing health education, significantly reduce hypertension recurrence. However, there is a notable lack of longitudinal studies tracking the sustained impact of these educational interventions over extended periods, highlighting a gap in long-term patient adherence and outcome sustainability. understanding Additionally, studies highlight the correlation between healthcare professionals' knowledge and attitudes and their effectiveness in patient guidance (Althobaiti & Alghamdi, 2022). This underscores the need for healthcare providers to possess comprehensive knowledge and positive attitudes toward hypertension management. Despite this, there is limited research on the continuous professional development and training programs required to maintain high standards of knowledge and attitudes among healthcare providers, indicating another critical gap.

Research also reveals the significant role of patient education and positive attitudes in preventing comorbidities associated with hypertension. Calisanie et al. (2020) found that educating hypertensive patients about the risks of chronic kidney disease (CKD) and fostering positive attitudes significantly reduce CKD incidence. However, the specific educational content and methods most effective in achieving these outcomes are not well-documented, representing a gap in best practices for patient education. Nevertheless, gaps remain in the areas of tailored educational interventions, long-term impact assessments, continuous professional development for healthcare providers, and detailed best practices for patient education. Addressing these gaps through targeted research can significantly enhance hypertension management strategies. Thus, research is needed to examine the relationship between patient knowledge about hypertension and their attitudes towards preventing hypertension recurrence. This study aims to determine whether increased knowledge positively influences patient attitudes, subsequently improving their preventive behaviors and health outcomes.



METHOD

This study employed an observational analytic design with a cross-sectional approach, measuring the variables of knowledge and attitude simultaneously without repeated measurements on the subjects. The study population consisted of 2,161 hypertensive patients in 2020. The sample was selected using the accidental sampling method, resulting in 49 respondents who met the inclusion criteria: hypertensive patients treated at the Internal Medicine Clinic of RSUP NTB, able to read and write, willing to participate, and cooperative.

Sampling was conducted using the accidental sampling method, where respondents were chosen based on their availability and willingness at the time of the study. The inclusion criteria comprised hypertensive patients visiting the Internal Medicine Clinic of RSUP NTB, capable of reading and writing, willing to participate, and cooperative. Exclusion criteria included hypertensive patients not visiting the Internal Medicine Clinic of RSUP NTB and unwilling to participate.

Data collection was performed using questionnaires, which included a knowledge questionnaire and an attitude questionnaire. Primary data were obtained directly from the respondents through the completion of these questionnaires. Secondary data were gathered from monthly reports and the profile of the Internal Medicine Clinic of RSUP NTB to support the primary data. Researchers introduced themselves, explained the study's purpose, and obtained consent from respondents before they completed the questionnaires.

The questionnaires were designed to gather detailed information about the patients' knowledge of hypertension and their attitudes towards preventing relapse. The knowledge questionnaire included questions related to the definition, causes, risks, and prevention of hypertension. The attitude questionnaire assessed perceptions, beliefs, and actions taken by patients in managing their hypertension.

Data collected were analyzed using the Fisher correlation test. The analysis process included data preparation, tabulation, scoring relevant items, coding respondents' answers, and modifying data types according to the analysis technique to be used. The results of the analysis will determine the relationship between patient knowledge and attitudes in preventing hypertension relapse.

RESULTS AND DISCUSSION

Sociodemographic Characteristics of Respondents

The sample consisted of 49 individuals, with a slight predominance of males (53%) over females (47%). Age distribution showed that the majority of participants were over 60 years old (43%), followed by those aged 51-60 years (33%), 41-50 years (14%), and under 40 years (10%). Educational attainment varied, with 22% having completed elementary school, 22% junior high school, 22% senior high school, and 33% having tertiary education. In terms of employment, 35% were self-employed, 29% were retired civil servants, 20% were civil servants, and 16% were housewives.

This distribution indicates a sample that is slightly male-dominated, predominantly older, with a relatively high level of education and diverse employment status. The sociodemographic characteristics of the respondents are summarized in Table 1.



Bioscientist: Jurnal Ilmiah Biologi

E-ISSN 2654-4571; P-ISSN 2338-5006 Volume 12, Issue 2, December 2024; Page, 1555-1568 Email: bioscientist@undikma.ac.id

Table 1. Sociodemogerafic (N=49)				
	Variabel	N (%)		
Sex	Male	26 (53%)		
	Female	23 (47%)		
Age	<40 Years	5 (10%)		
	41-50 Years	7 (14%)		
	51-60 Years	16 (33%)		
	>60 tahun	21 (43%)		
Education	Elementary	11 (22%)		
	Junior High	11 (22%)		
	Senior High School	11 (22%)		
	College	16 (33%)		
Occupation	Civil Servant	10 (20%)		
	Retired Civil Servant	14 (29%)		
	Entrepreneur	17 (35%)		
	Housewife	8 (16%)		

The sociodemographic profile of the study sample shows similarities and differences when compared to existing literature on hypertensive populations. For instance, the study by (Deng et al., 2021) reported a mean age of 44.7 years among a tribal population, with a lower prevalence of formal education and employment compared to our study sample. The higher proportion of older individuals in our sample aligns with findings from global studies indicating an increased prevalence of hypertension in older populations (Albrandt-Salmeron et al., 2021). Additionally, our sample's relatively high level of tertiary education contrasts with studies showing lower educational attainment among hypertensive groups, suggesting that our sample may have better health awareness and access to healthcare. This unique demographic composition provides an advantage for understanding hypertension's impact across different age groups and educational levels, offering a comprehensive perspective on sociodemographic factors influencing hypertension.

The findings from this study highlight the significant role that education plays in managing hypertension, providing critical insights into how educational interventions can improve health outcomes. Higher education levels have been consistently linked to better understanding and adherence to hypertension treatment, as individuals with higher education are more likely to seek appropriate medical care and adhere to prescribed treatment regimens (Damilare et al., 2022; Zegeye et al., 2021). This underscores the necessity of integrating educational programs into public health strategies to enhance treatment adherence and overall health management among hypertensive patients.

Education not only enhances health literacy but also empowers individuals to make informed decisions about their health. Research has shown that health education combined with personalized psychological nursing interventions can effectively control conditions and improve health outcomes (He et al., 2022). This is particularly important for managing chronic conditions like hypertension, where early detection and preventive measures are crucial. Educating patients about the



risks and management of hypertension can lead to better health behaviors and outcomes, highlighting the need for tailored educational approaches in healthcare settings (Tegegne et al., 2020).

Moreover, the influence of education extends beyond medical knowledge to affect psychological responses to treatment. Studies suggest that a patient's level of education can predict their capacity to understand and respond to medical treatments, thereby shaping their treatment experiences and outcomes (Dereci et al., 2021). Strengthening health education for self-management of chronic conditions has been associated with improved life satisfaction among patients, indicating that educational interventions can have broad benefits for patient well-being and quality of life (Han et al., 2020). These findings emphasize the importance of continuous patient education to enhance self-efficacy and treatment adherence.

The impact of education on health behaviors is also reflected in lifestyle choices that affect hypertension management. Educational interventions focusing on nutritional and psychological habits have been shown to reduce hypertension risk and improve blood pressure control (Chen et al., 2020). Social support, often influenced by education levels, plays a significant role in treatment adherence and hypertension control, highlighting the interconnectedness of education, social support, and health outcomes (Wake & Wogie, 2020). This suggests that comprehensive educational programs should include components that enhance social support networks to maximize their effectiveness.

In conclusion, the role of education in managing hypertension is multifaceted and profound. By equipping individuals with the necessary knowledge and skills to make informed health decisions, educational interventions can lead to better treatment adherence, improved health behaviors, and overall better health outcomes. Health education programs should cover a wide range of topics, including physical activity, healthy eating, and stress management, all vital in managing hypertension. These programs can help individuals develop the confidence and self-efficacy needed to make positive health changes, ultimately reducing the burden of hypertension on both individuals and healthcare systems. The findings of this study highlight the critical need for integrating educational strategies into public health policies to combat hypertension effectively.

Sociodemographic Characteristics with Knowledge and Attitude Variables

In the following section, we will discuss the results of the Bivariate test, namely Sociodemographics associated with the Knowledge and Attitude variables, as presented in Table 2.

Category -	Knowled	ge Level	Attitude		
	Good	Poor	Positive	Negative	
Male	15 (29%)	11 (21%)	22 (42%)	4 (8%)	
Female	11 (22%)	12 (24%)	18 (36%)	5 (10%)	
<40 Years	2 (4%)	3 (6%)	4 (8%)	1 (2%)	
41-50 Years	3 (6%)	4 (8%)	6 (12%)	1 (2%)	
	CategoryMaleFemale<40 Years41-50 Years	Knowled Good Male 15 (29%) Female 11 (22%) <40 Years 2 (4%) 41-50 Years 3 (6%)	Knowledge LevelGoodPoorMale15 (29%)11 (21%)Female11 (22%)12 (24%)<40 Years2 (4%)3 (6%)41-50 Years3 (6%)4 (8%)	Knowledge Level Attit Good Poor Positive Male 15 (29%) 11 (21%) 22 (42%) Female 11 (22%) 12 (24%) 18 (36%) <40 Years 2 (4%) 3 (6%) 4 (8%) 41-50 Years 3 (6%) 4 (8%) 6 (12%)	

 Table 2. Bivariate Analysis of Sociodemographic Characteristics with Knowledge and Attitude Variables (N=49)

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E-ISSN 2654-4571; P-ISSN 2338-5006 Volume 12, Issue 2, December 2024; Page, 1555-1568 Email: <u>bioscientist@undikma.ac.id</u>

Variable	Catagony	Knowledg	ge Level	Attitude		
	Category	Good	Poor	Positive	Negative	
	51-60 Years	10 (20%)	6 (12%)	12 (24%)	4 (8%)	
Occupation	>60 Years	11 (22%)	10 (20%)	18 (36%)	3 (6%)	
	Civil Servant	10 (20%)	0 (0%)	10 (20%)	0 (0%)	
	Retired C. S.	8 (16%)	6 (12%)	10 (20%)	4 (8%)	
	Entrepreneur	4 (8%)	13 (27%)	12 (24%)	5 (10%)	
Education	Housewife	4 (8%)	4 (8%)	8 (16%)	0 (0%)	
	Elementary	0 (0%)	11 (22%)	8 (16%)	3 (6%)	
	Junior High	2 (4%)	9 (18%)	7 (14%)	4 (8%)	
	Senior High	8 (16%)	3 (6%)	9 (18%)	2 (4%)	
	College	16 (33%)	0 (0%)	16 (33%)	0 (0%)	

The data reveals varied levels of knowledge and attitudes towards hypertension across different sociodemographic groups. Gender-wise, 29% of males and 22% of females exhibited good knowledge about hypertension, while 21% of males and 24% of females had poor knowledge. Attitudes towards hypertension management were predominantly positive, with 42% of males and 36% of females showing a positive attitude, whereas negative attitudes were less prevalent at 8% for males and 10% for females. Age-wise, those over 60 years demonstrated the highest levels of good knowledge (22%) and positive attitude (36%), while the 51-60 age group also had significant good knowledge (20%) and positive attitude (24%). Education level had a marked influence, with those having college education showing the highest good knowledge (33%) and positive attitude (33%), whereas those with only elementary education showed no good knowledge and had a higher proportion of poor knowledge (22%).

The findings of this study align with existing literature that emphasizes the impact of sociodemographic factors on health knowledge and attitudes. Previous studies, such as those by (Fekadu et al., 2024)and (Yu et al., 2020), highlight the influence of education and socioeconomic status on health awareness and access to healthcare resources. Our study further corroborates these findings by demonstrating that higher education levels correlate with better knowledge and more positive attitudes towards hypertension management. Compared to research in Ethiopia which emphasized food safety knowledge among different sociodemographic groups, our study specifically focuses on hypertension, providing a more targeted understanding of how these factors influence chronic disease management.

Additionally, the positive correlation between higher education and health literacy observed in this study echoes findings by (Tegegne et al., 2020), reinforcing the notion that educational attainment significantly improves health outcomes. Our study also highlights the role of occupation, with civil servants showing higher levels of good knowledge and positive attitudes compared to other occupational groups. This is consistent with (Shitu et al., 2023), who noted that occupation and income level impact awareness and preventive measures for hypertension. The



comprehensive nature of our study, which includes gender, age, occupation, and education, provides a holistic view that can inform more tailored health education programs compared to broader studies that may not delve into specific sociodemographic interactions as deeply.

The findings from this study underscore the critical role of sociodemographic factors in shaping knowledge and attitudes towards hypertension, offering significant implications for both scientific research and practical public health interventions. Understanding these sociodemographic influences is vital for designing effective health education programs tailored to different population segments. For instance, the strong correlation between higher education levels and better knowledge and positive attitudes towards hypertension suggests that educational interventions should be prioritized, especially in less educated populations to bridge the knowledge gap and improve health outcomes.

From a scientific perspective, these findings contribute to the growing body of evidence that emphasizes the multifactorial nature of health literacy and its impact on chronic disease management. The study aligns with existing research indicating that higher educational attainment enhances health literacy, leading to better management of conditions like hypertension (Tegegne et al., 2020). Furthermore, the positive impact of occupation on health knowledge and attitudes, particularly among civil servants, highlights the potential benefits of workplace health programs and policies that can support chronic disease management.

Practically, these insights can inform the development of targeted health education initiatives. Programs that focus on increasing health literacy among lower education and income groups could significantly improve hypertension management. Tailored interventions that consider the unique needs and challenges of these groups can enhance their understanding of hypertension and its risk factors, encouraging preventive measures and adherence to treatment regimens. For example, integrating health education into community centers and workplaces could reach a broader audience and provide support where it is most needed.

Moreover, the study's findings on the influence of lifestyle behaviors on hypertension awareness and management highlight the importance of promoting healthy behaviors through education. Tailored educational interventions that address specific lifestyle factors such as diet, physical activity, and stress management can be highly effective. Research has shown that these interventions not only improve knowledge but also foster positive attitudes towards chronic disease prevention (Carreira-Míguez et al., 2022). By focusing on these aspects, healthcare providers can help individuals adopt healthier lifestyles, thereby reducing the incidence and impact of hypertension.

Finally, the role of social support and community engagement in shaping health attitudes underscores the need for community-based interventions. Programs that foster supportive environments and enhance health literacy within communities can lead to sustained positive health behaviors. This approach is particularly relevant in addressing the challenges faced by socioeconomically disadvantaged groups who may have limited access to healthcare resources. By promoting community engagement and social support networks, healthcare providers can



create a more inclusive and supportive framework for hypertension management, ultimately improving health outcomes across diverse populations.

The Relationship Knowledge and Attitudes Towards Preventing Hypertension Recurrence

The bivariate analysis of knowledge and attitudes towards preventing hypertension recurrence reveals a significant relationship between these variables. Individuals with good knowledge of hypertension prevention exhibited a 100% positive attitude (26 individuals), whereas those with poor knowledge had a significantly lower positive attitude (35%, or 14 individuals) and a higher negative attitude (100%, or 9 individuals). The significance value (p=0.000) and the odds ratio (OR=1.643) with a confidence interval (CI) ranging from 1.184 to 2.28 indicate that good knowledge is strongly associated with a positive attitude towards hypertension prevention. This relationship highlights the critical role of education and awareness in fostering proactive health behaviors among hypertensive patients. The results of data analysis are presented in Table 3.

Table 3. Bivariate Analysis of the Relationship Between Knowledge and
Attitudes Towards Preventing Hypertension Recurrence (N=49)

Variabal	Cotogomy	Attitude		Sia*	OP	CI (95%)	
variabei	Category	Positive	Negative	Sig	UK	Lower	Upper
Knowledge Level	Good	26 (65%)	0 (0%)	0,000	1,643	1,184	2,28
	Poor	14 (35%)	9 (100%)				

The findings of our study are consistent with existing literature that underscores the impact of knowledge on patient attitudes towards hypertension prevention. For example, (Carreira-Míguez et al., 2022)emphasized the importance of integrating psychological therapy and nutritional recommendations to enhance knowledge and improve attitudes towards hypertension management. Similarly, our study demonstrates that good knowledge significantly correlates with positive attitudes, reinforcing the idea that comprehensive educational interventions can improve health outcomes. Tegegne et al. (2020) highlighted the role of education in raising awareness about comorbid conditions like chronic kidney disease among hypertensive patients. Our study further supports this by showing that individuals with better knowledge have more positive attitudes towards preventive measures. This comparison indicates that tailored educational programs focusing on comprehensive disease management can effectively enhance patient engagement and adherence to preventive strategies.

Result of research by Hu et al. (2021) on the association between frailty and healthcare outcomes in hypertensive patients points to the importance of considering sociodemographic factors in hypertension management. Our study's detailed analysis of knowledge and attitudes across different sociodemographic groups provides a nuanced understanding of how these factors interplay, offering a more targeted approach to educational interventions. The findings from this study underscore the pivotal role that knowledge plays in shaping patient attitudes



towards preventing hypertension recurrence. Scientifically, this study contributes to the growing body of evidence that highlights the multifaceted nature of hypertension management, where knowledge and education are integral to improving patient outcomes. The significant association between good knowledge and positive attitudes suggests that enhancing patient education can lead to more proactive health behaviors, ultimately reducing the risk of hypertension recurrence.

From a practical perspective, these results have substantial implications for public health strategies and clinical practice. Healthcare providers can leverage this information to develop targeted educational interventions that cater to the specific needs of different patient groups. For instance, tailored educational programs that address both psychological and nutritional aspects of hypertension management, as suggested by Carreira-Míguez et al. (2022), can be particularly effective. Such interventions can enhance patient knowledge, foster positive attitudes, and encourage adherence to preventive measures, leading to better health outcomes.

Furthermore, the study highlights the importance of integrating social support into hypertension management programs. Thuy et al. (2021)demonstrated the positive influence of social support on blood pressure control and hypertensive complications. By incorporating social support mechanisms into educational interventions, healthcare providers can enhance patient engagement and adherence to treatment regimens. This approach can help create a supportive environment that reinforces positive health behaviors and reduces the risk of hypertension recurrence.

The relationship between knowledge and patient attitudes also emphasizes the need for continuous patient education and support. Healthcare systems should prioritize ongoing education initiatives that keep patients informed about the latest advancements in hypertension management and preventive measures. This continuous learning process can help patients stay engaged with their health, make informed decisions, and maintain positive attitudes towards managing their condition. In conclusion, the significant association between knowledge and patient attitudes towards preventing hypertension recurrence highlights the critical role of education in hypertension management. By developing and implementing comprehensive educational programs that address the psychological, nutritional, and social aspects of hypertension, healthcare providers can empower patients to take an active role in their health. This approach not only improves individual health outcomes but also contributes to the overall reduction of hypertension-related morbidity and mortality, benefiting public health on a broader scale.

CONCLUSION

Based on the result of study, can be concluded that (1) The findings indicate that individuals with better knowledge about hypertension are more likely to have positive attitudes towards its management. This positive correlation underscores the importance of educational interventions in improving health outcomes for hypertensive patients. (2) Good knowledge significantly correlates with proactive health behaviors, as evidenced by our data showing a 100% positive attitude among those with good knowledge. (3) Integrating psychological and nutritional interventions into hypertension management can further enhance patient knowledge and attitudes, leading to better blood pressure control and reduced recurrence rates.



(3) By empowering patients with knowledge and fostering supportive environments, we can significantly reduce the burden of hypertension and improve overall health outcomes.

RECOMMENDATIONS

Based on the research results, we recommend that further research should focus on longitudinal studies to assess the long-term impact of educational interventions on knowledge retention and sustained positive health behaviors among hypertensive patients. Additionally, investigating the effectiveness of tailored educational interventions across diverse sociodemographic groups will provide insights into cultural, economic, and geographic factors influencing hypertension management.

ACKNOWLEDGMENTS

We extend our heartfelt gratitude to all the patients who participated in this study for their invaluable time and cooperation. Your willingness to share your experiences and insights has significantly contributed to the success of this research. We also wish to express our sincere appreciation to the staff of RSUP NTB, especially the Internal Medicine Clinic, for their unwavering support and assistance during the data collection process. Your dedication and collaboration have been instrumental in making this study possible. Thank you for your exceptional commitment to improving healthcare outcomes for hypertensive patients.

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