

Awareness and Healthcare Adherence of Adult Patients with Hypertension

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Mark Nowell Y. Tanoja

Administrative Officer I, Bacolod City Government
<https://orcid.org/0009-0007-3472-6239>

Dr. Jonathan E. Lobaton

Faculty, STI West Negros University, Philippines
<https://orcid.org/0009-0006-9495-464X>

Dr. Jeetre D. Trinidad

Part-time Research Consultant, STI West Negros University, Philippines
<https://orcid.org/0009-0006-7026-9517>

Dr. Yasmin Pascual-Dormido

Professor, STI West Negros University, Philippines
<https://orcid.org/0009-0000-1374-6600>

Abstract:

Hypertension is a significant public health issue in a highly urbanized city in Central Philippines, ranking as the fourth leading cause of morbidity and the leading cause of mortality in 2023. This study aimed to assess the level of awareness and healthcare adherence among adult hypertensive patients. A descriptive research design was used, with data collected from 117 hypertensive adults selected through purposive sampling. Findings revealed that most participants were older, with a higher prevalence among females and individuals with lower education levels. While patients showed a moderate level of awareness regarding medication adherence, there was a significant gap in understanding the complications of hypertension, particularly life-threatening conditions like heart attacks and strokes. The study also found that awareness of hypertension risks varied by income and education level. Despite good adherence to medication, patients showed limited engagement in lifestyle changes such as exercise and stress management. Statistical analyses revealed a significant positive correlation between awareness and adherence to healthcare guidelines. Based on these findings, the study recommends targeted interventions to improve awareness and healthcare adherence, especially for older adults, females, and individuals with lower education. These interventions should include health education, lifestyle workshops, and community-based programs to enhance comprehensive hypertension management and reduce complications. A budget allocation for these initiatives is proposed to ensure their successful implementation.

Keywords: Awareness, healthcare adherence, hypertension

Introduction:

Nature of the Problem

Hypertension, often labeled the "silent killer," remains a leading contributor to premature death worldwide. The World Health Organization (2023) reports that around 1.28 billion adults between the ages of 30 and 79 are living with hypertension, with nearly half unaware of their condition. Control rates remain low, particularly in low- and middle-income countries where healthcare access is limited. In the Philippines, hypertension ranks as the second leading cause of morbidity and sixth in mortality based on the National Objectives for Health (Department of Health, 2024; PSA, 2023). The Philippine Heart Association's PRESYON study series noted a significant rise in hypertension prevalence, from 22% in the 1990s to 37% in 2021. While medication adherence is reported at 86% and treatment initiation at 68%, only 37% of patients achieve adequate blood pressure control (Sison, 2023), indicating persistent gaps in disease management.

At the local level, in a highly urbanized city in Central Philippines, hypertensive cardiovascular disease (HCD) led mortality causes in 2023, with 852 deaths recorded—following 2,650 in 2021 and 1,720 in 2022 (City Health Office-Medical Record Sections, 2024). Moreover, hypertension was the fourth leading cause of morbidity in 2023, with 2,526 cases compared to only 307 in 2021, reflecting an alarming increase. Despite the availability of pharmacologic treatments, control remains elusive due to social and behavioral challenges. Many patients remain unaware of their condition, often initiating monotherapy, which may be inadequate. Limited literature investigates awareness, adherence to medications, and lifestyle modifications, while community-level health education and interventions are frequently overlooked in policymaking and program design.

This study was driven by a shared concern by a government administrative officer and present researcher, who currently serves within the local government unit. The research aimed to provide valuable insights that can inform targeted interventions, enhance healthcare delivery, and ultimately improve the quality of life for individuals affected by hypertension in the region. The study sought to contribute to the ongoing efforts to promote better health management practices within the local community by addressing these critical aspects.

Current State of Knowledge

Hypertension, often called a "silent killer," is influenced by modifiable lifestyle factors like poor diet, inactivity, tobacco use, and alcohol consumption, with awareness being crucial for prevention and behavior change (WHO, 2021). Persistent high blood pressure can damage arteries, leading to atherosclerosis, heart attacks, strokes, heart failure, and kidney disease (AHA, 2023; NIDDK, 2021), while sociocultural factors like urbanization and limited healthcare access further impact hypertension rates (Fuchs & Whelton, 2020). Early symptom recognition is essential for better outcomes, yet many remain asymptomatic until complications arise (AHA, 2023). In the Philippines, public health campaigns have improved awareness, but many hypertensive patients neglect lifestyle changes like stress reduction, diet, and exercise (Santos et al., 2018; DOH, 2021), contributing to rising rates of stroke, heart failure, and kidney disease (Santos et al., 2021). Rural areas face additional challenges due to limited healthcare access, while urbanization, obesity, and genetic predispositions increase hypertension prevalence (PSA, 2020; Cruz & Reyes, 2021). Urgent care is needed for symptoms like blurred vision and nosebleeds, highlighting the importance of community-based prevention and management efforts (Philippine Hypertension Society, 2020).

International and regional studies emphasize that lifestyle behaviors, including exercise, diet, and reduced alcohol use, play a crucial role in hypertension awareness, management, and prevention of complications like stroke, heart failure, and renal damage (Khan & Haque, 2020; Murray & Lopez, 2021; Chrysafides, 2020). Educational interventions improve adherence and awareness, particularly among older adults (Saray, 2019), while modifiable risk factors such as obesity, inactivity, and high sodium intake are prevalent in LMICs, where urbanization and limited care exacerbate hypertension (Muntner et al., 2020; Bautista et al., 2019). Despite hypertension often being asymptomatic, severe stages can lead to vision problems, nosebleeds, or chest pain, highlighting the need for ongoing screening and lifestyle interventions (Whelton & Carey, 2019). In the Philippines, studies by Mañalac (2020) and others reveal that low awareness of lifestyle changes and barriers to adopting them hinder effective hypertension management, with gaps in knowledge and practice, particularly among older adults (Flores & De Castro, 2022; Santos & Dela Cruz, 2021). Family support, dietary habits, and factors like physical inactivity, alcohol consumption, and genetic predisposition also influence hypertension management (Santiago & Salazar, 2020; Gonzales & Garcia, 2020; Chua & Fernandez, 2021). The research underscores the need for comprehensive health education, early detection, and targeted interventions to address hypertension-related risks in the Philippines.

Managing hypertension requires strict adherence to healthcare regimens to prevent complications like strokes and cardiovascular diseases. Factors influencing adherence include patient education, healthcare access, awareness of untreated hypertension risks, motivation, and support systems like family and healthcare providers (CDC, 2021; AHA, 2020). Barriers such as medication side effects, cultural norms, poor physician communication, and low health literacy hinder compliance (NIH, 2019; European Society of Hypertension, 2019). In the Philippines, adherence is shaped by behavioral, cultural, psychological, and economic factors. Many patients, particularly in urban areas, struggle with stress, lack understanding of hypertension's chronic nature, and face economic challenges that limit access to care (Cruz & Reyes, 2020; Bautista & Santos, 2022). Psychological issues like anxiety and depression, along with cultural reliance on traditional remedies, further reduce adherence (De Guzman & Tan, 2020; Cruz & Reyes, 2020). These challenges highlight the need for a comprehensive, culturally sensitive approach to hypertension management, addressing both individual behaviors and systemic barriers.

Adherence to hypertension medication is significantly influenced by behavioral factors, including patients' attitudes toward therapy, concerns about side effects, and their self-efficacy in managing their health (Khouja & Duggan, 2019). Psychosocial factors like depression and anxiety can hinder adherence, highlighting the need for stress-reduction and mental health interventions (Moser & Watkins, 2020). Studies also emphasize the role of health literacy, cultural views, and social pressures in shaping treatment adherence, with personalized approaches and cognitive-behavioral strategies being effective (Sabaté, 2021; González-González, 2020). In the Philippines, misinterpretation of symptoms like dizziness and headaches delays diagnoses, increasing the risk of complications such as stroke and kidney damage (Javier & Cruz, 2022; Dizon et al., 2020). Regular blood pressure monitoring and improved awareness of symptoms are critical for early detection (Gonzales & Tan, 2023). Additionally, patient adherence improves when treatment regimens are clear, supported by healthcare providers, and tailored to individual needs, with higher health literacy contributing to better outcomes (Delgado & Rivera, 2021; De Leon & Estrella, 2022).

Theoretical Underpinnings

This study is anchored in two key theoretical frameworks: Nola Pender's Health Promotion Model (1982) and Dorothea Orem's Self-Care Deficit Theory (1959). Pender's model highlights the role of individual characteristics, perceptions, and cognitive factors in shaping health-promoting behaviors, such as medication adherence and lifestyle changes. It seeks to understand why individuals with hypertension struggle to take control of their condition. On the other hand, Orem's theory addresses situations where individuals are unable to meet their health needs independently, suggesting that nursing interventions—such as education and support—are vital in addressing these self-care deficits.

These theories have been successfully applied in past studies, demonstrating their relevance to hypertension management. Jutiphan and Muench (2020) utilized Orem's theory to improve self-care among hypertensive patients, leading to better quality of life. Similarly, Pei et al. (2020) found that interventions based on Pender's model significantly enhanced medication compliance. Together, these theories offer a dual perspective: Pender's model helps identify behavioral motivators, while Orem's emphasizes the critical role of nursing support. Their integration provides a strong foundation for examining and enhancing awareness and adherence among adults with hypertension.

Objectives

This study aimed to determine the level of awareness and the extent of healthcare adherence of adult patients with hypertension in a highly urbanized city in Central Philippines during the first quarter of the Calendar Year 2025. Specifically, the study sought to answer the following questions: 1) the level of awareness of adult patients with hypertension when grouped according to the domains of lifestyle, complications, risk factors, and signs and symptoms; 2) the extent of healthcare adherence of adult patients with hypertension according to the domains of behavioral and medical; 3) the significant difference in the level of awareness of adult patients with hypertension when grouped and compared to the aforementioned variables; 4) the significant difference in the extent of healthcare adherence of adult patients with hypertension when grouped and compared to the aforementioned variables; and 5) the significant relationship between the level of awareness and extent of healthcare adherence of adult patients with Hypertension.

Methodology

This section presents a discussion of the research methodology used, the subjects and respondents of the study, the research instruments used, the validity and reliability of the instruments, the procedure for data gathering, and the statistical tools and procedures for data analysis.

Research Design

Given the nature of the data, this study utilized a descriptive research design. Descriptive research has contributed significantly to developing data collection tools such as structured questionnaires, health record reviews, and interviews and creating policies at local, national, or global levels (Calmorin, 2016).

This method allowed a thorough investigation of adult hypertensive patients' awareness and healthcare adherence behaviors, practices, techniques, and procedures; it also effectively showed factual information that underpinned scientific decision-making and provided insights into their traits. Given its thorough picture of the present degree of awareness and the degree of healthcare adherence among adult hypertensive patients, the descriptive research approach was especially suitable for this study. This knowledge also helped to highlight areas in patient education and clinical management techniques that needed work, which might then guide more efficient interventions and policy changes in hypertension care.

Study Respondents

From 129 found hypertensive adults from a highly urbanized city in Central Philippines, the study included 117 participants. Conducted over two weeks of data collecting utilizing purposive sampling, the survey these respondents willingly participated in A non-probability sampling technique called purposive sampling—also known as judgmental sampling—involves carefully choosing participants depending on particular qualities or criteria pertinent to the goal of the research (Etikan, Musa, & Alkassim, 2016). Purposive sampling ensured that data was collected from individuals directly affected by hypertension in this study on hypertension awareness and healthcare adherence, hence providing insights into their level of awareness and the degree of healthcare compliance. This approach would enable a better understanding of the needs and challenges of hypertensive adults, hence guiding the development of more effective public health projects for control of hypertension in the community.

Instruments

A self-made survey questionnaire was utilized to gather data for the study. The questionnaire was divided into two parts: Part I focused on the demographic profile of the respondents, which included their age, sex, highest educational

attainment, and average family monthly income related to hypertension. Part II consisted of 20-item for awareness divided into four (4) key domains that assessed different aspects of hypertension awareness and 20-item questions comprised of behavioral and medical domains for healthcare adherence, two (2) for management, respectively. These domains included lifestyle awareness, complications, risk factors, and signs and symptoms. Likewise, behavioral and medical methods ensured healthcare adherence among adult hypertensive patients. Each domain consisted of five questions to evaluate the participants' knowledge and behaviors related to managing hypertension. The responses were measured using a 5-point Likert scale, where 5 represented "Always," 4 indicated "Often," 3 indicated "Sometimes," 2 stood for "seldom," and 1 was "Almost Never". It was subjected to validity (4.81-excellent) and reliability (0.778-acceptable). All of them were interpreted as worthy and good; respectively.

Data Gathering Procedure

Once the validity and reliability of the instrument had been confirmed, the researcher prepared a formal letter addressed to the City Health Officer to request authorization to conduct the study. Once approved, the researcher worked with on-duty healthcare professionals—including nurses, midwives, and medical doctors—to find appropriate respondents depending on patient lists supplied by the City Health Office's medical records department. The researcher sent the questionnaire to the participants, gave required directions to guarantee correct filling, and helped to gather the finished forms after permission was obtained. All gathered data's confidentiality was protected all through the study process. SPSS software was then used to encrypt and examine the collected data.

Data Analysis and Statistical Treatment

Objective No. 1 used the descriptive analytical scheme and mean distribution to assess the level of awareness of adult patients with hypertension according to the following domains: lifestyle, complications, risk factors, and signs and symptoms.

Objective No. 2 used the descriptive analytical scheme and mean to identify the extent of healthcare adherence of adult patients with hypertension according to the following domains of behavioral and medical.

Objective No. 3 used the comparative analytical scheme and Mann-Whitney U test to determine if there is a significant difference in the level of awareness of adult patients with hypertension when grouped and compared according to the variables.

Objective No. 4 used the comparative analytical scheme and Mann-Whitney U test to determine if there is a significant difference in the extent of healthcare adherence of adult patients with hypertension when grouped and compared according to the variables.

Objective No. 5 used a relationship-analytical scheme and Spearman Rho to if there is a significant relationship between the level of awareness and extent of healthcare adherence of adult patients with hypertension.

Ethical Consideration

The study on awareness and healthcare adherence of adult patients with hypertension diagnosed at the City Health Office of a Highly Urbanized City in Central Philippines adhered to the provisions of the Data Privacy Act of 2012 (RA 10173) to ensure the protection of participants' rights and confidentiality. Participants were given informed consent stressing voluntary involvement, the choice to withdraw at any time, and the assurance that their access to healthcare services would not be affected by their participation. Following rigorous confidentiality policies, data collecting and preservation made all information available only to authorized study researchers. The study's main concern was participant welfare, hence suitable support services were provided as required. Findings were published in a way that maintained participant privacy and data analysis was done methodically. Any possible ethical issues were quickly handled to protect the integrity of the study. Following these guidelines helped the study to preserve participants' rights, guarantee the confidentiality of their personal data, and keep ethical and legal standards all through the research process.

Results and Discussion

This section presents, analyzes, and interprets the data that were gathered consistent with its predetermined objectives.

Table 1

Level of Awareness of Adult Patients with Hypertension when according to Lifestyle

Lifestyle Items	Mean	Interpretation
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<i>As a patient with hypertension, I...</i>		
1. engage in physical activity of at least 2.5 hours per week to help reduce high blood pressure, according to PHIL PEN.	2.73	Moderate level
2. maintain a diet rich in whole grains, fruits, vegetables, and low-fat dairy products and low in saturated fat and cholesterol to lower high blood pressure.	3.44	Moderate level
3. limit my alcohol to less than 4 servings for men or less than 3 servings for women to lower blood pressure.	2.67	Moderate level
4. consume less salt in my diet to improve blood pressure.	3.05	Moderate level
5. quit smoking to lower blood pressure.	2.90	Moderate level
Overall Mean	2.96	Moderate level

Table 1 shows data on the level of awareness of adult patients with hypertension when grouped and according to Lifestyle. The overall mean score is 2.96, interpreted as "moderate level." According to Valdez and Ortega (2023), while lifestyle factors are considered a minor risk in the management of hypertension, adopting healthier lifestyle changes, such as improving diet and increasing physical activity, can significantly reduce cardiovascular risks.

Item No. 2, "maintain a diet rich in whole grains, fruits, vegetables, and low-fat dairy products and low in saturated fat and cholesterol to lower high blood pressure," obtained the highest mean score of 3.44, interpreted as "moderate level." This suggests that respondents moderately follow dietary recommendations, indicating they understand the importance of diet in managing blood pressure but may not fully implement all aspects of it.

Item No. 3, "limit my alcohol to less than 4 servings for men or less than 3 servings for women to lower blood pressure," got the lowest mean score of 2.67, interpreted as "moderate level." This suggests that respondents may struggle with alcohol intake recommendations or not fully understand its impact on blood pressure. The score highlights a need for further education or support. While heavy alcohol consumption is known to increase hypertension risk, research shows that reducing alcohol intake can significantly lower both systolic and diastolic blood pressure, indicating that moderating alcohol consumption may benefit individuals with hypertension (Bautista & Ramos, 2021).

Table 2

Level of Awareness of Adult Patients with Hypertension when according to Complications

Complications Items	Mean	Interpretation
<i>As a patient with hypertension, I...</i>		
1. could develop chest pains or angina.	2.45	Low level
2. may suffer a heart attack.	2.06	Low level
3. might experience a stroke.	2.11	Low level
4. could develop kidney disease.	2.56	Moderate level
5. may develop diabetes.	2.44	Low level
Overall Mean	2.33	Low level

Table 2 presents data on the level of awareness of adult patients with hypertension when grouped according to Complications. The overall mean score is 2.33, interpreted as "low level."

Item No. 4, "could develop kidney disease," got the highest mean score of 2.56, interpreted as "moderate level." This indicates that respondents recognize kidney disease as a potential consequence, though their level of concern or understanding may not be strong or fully comprehensive. It suggests that kidney disease is considered a possible, but not primary, risk associated with their health behaviors.

Item No. 2, "may suffer a heart attack," got the lowest mean score of 2.06, interpreted as "low level." This suggests that respondents may not view heart attacks as an immediate risk, reflecting a lack of awareness about the link between their behaviors and heart disease. This aligns with previous research showing a gap between actual and perceived cardiovascular risk, particularly among hypertensive individuals who are not on medication, unaware of their condition, or have uncontrolled blood pressure. This underestimation highlights the need for improved education and awareness about the impact of personal health behaviors on heart disease risk, which is essential for promoting proactive health management and reducing cardiovascular events (Santos & Dela Cruz, 2021).

Table 3

Level of Awareness of Adult Patients with Hypertension according to Risk Factors

Risk Factors Items	Mean	Interpretation
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<i>As a patient with hypertension, I...</i>		
1. may have developed this condition due to obesity.	2.84	Moderate level
2. might have acquired this disorder due to a high-salt diet.	2.79	Moderate level
3. may have probably developed this malady due to a lack of regular physical activity.	2.49	Low level
4. might have probably developed this affliction due to binge drinking.	2.56	Moderate level
5. may have developed this illness due to high levels of stress.	2.92	Moderate level
Overall Mean	2.72	Moderate level

Table 3 shows data on the level of awareness of adult patients with hypertension when grouped according to Risk Factors. The overall mean score is 2.72, interpreted as "moderate level."

Item No. 5, "may have developed this illness due to high levels of stress," received the highest mean score, 2.92, interpreted as "moderate level." This suggests that participants generally know the link between stress and health problems. However, this awareness might not be strong enough to inspire real behavior changes or preventive actions. The moderate score suggests that while they recognize stress as a factor, they may not fully grasp how it affects their health.

On the other hand, Item No. 3, "may have probably developed this malady due to a lack of regular physical activity," got the lowest mean score, 2.49, interpreted as "low level." This suggests that participants may not view a lack of exercise as a significant risk factor or are unaware of its role in preventing illness. The low score may reflect a lack of education or an underestimating of physical activity's importance in health. This aligns with global findings, highlighting physical inactivity as a significant risk factor for various health conditions, including kidney disease. Zelle et al. (2017) emphasize promoting physical activity as a preventive measure and a key component of disease management.

Table 4

Level of Awareness of Adult Patients with Hypertension according to Signs and Symptoms

Signs and Symptoms Items	Mean	Interpretation
<i>As a patient with hypertension, I...</i>		
1. remember not having felt any symptoms at the onset of my ailment.	2.50	Moderate level
2. have a severe headache when my blood pressure is high.	2.97	Moderate level
3. have nausea when my blood pressure is high.	2.66	Moderate level
4. have nosebleeds when my blood pressure is high.	1.85	Low level
5. have difficulty breathing when my blood pressure is high.	2.38	Low level
Overall Mean	2.47	Low level

Table 4 reveals data on the level of awareness of adult patients with hypertension when grouped according to Signs and Symptoms. The overall mean score is 2.47, interpreted as "low level."

Item No. 2, "have a severe headache when my blood pressure is high," got the highest mean score, 2.97, interpreted as "moderate level." Respondents moderately associate high blood pressure with severe headaches, suggesting that most participants recognize headaches as a common symptom when blood pressure rises. However, it may not be universally viewed as a consistent or significant indicator of high blood pressure. This indicates a general awareness of the link between headaches and high blood pressure but not necessarily a strong or consistent perception across all respondents.

Item No. 4, "have nosebleeds when my blood pressure is high," got the lowest mean score, 1.85, interpreted as "low level." Respondents demonstrate low awareness of the link between nosebleeds and high blood pressure, suggesting that few recognize nosebleeds as a significant symptom of hypertension. This may stem from a lack of education or understanding of the symptoms. This aligns with recent studies, such as a nationwide cohort study, which found that patients with hypertension are at higher risk of epistaxis, requiring more hospital visits and procedures like posterior nasal packing. The study emphasizes the importance of considering hypertension in managing nasal bleeding and recommends medical counseling on epistaxis for hypertensive individuals (Lopez & Garcia, 2021).

Table 5

Extent of Healthcare Adherence of Adult Patients with Hypertension according to Behavioral Domain

Behavioral Items	Mean	Interpretation
<i>As a patient with hypertension, I...</i>		
1. monitor my blood pressure daily.	3.91	Great extent
2. visit my healthcare provider as scheduled.	3.56	Great extent

3. visit my healthcare provider whenever an immediate concern arises.	3.40	Moderate extent
4. monitor my weight.	2.77	Moderate extent
5. exercise for 2.5 hours weekly as per PHIL PEN.	2.43	Low extent
6. avoid processed food.	3.19	Moderate extent
7. consume 2 servings of vegetables daily.	3.95	Great extent
8. avoid binge drinking.	2.99	Moderate extent
9. avoid smoking and smokers at all times.	3.09	Moderate extent
10. avoid stressful situations.	2.97	Moderate extent
Overall Mean	3.23	Moderate extent

Table 5 shows data on the level of healthcare adherence of adult patients with hypertension according to behavioral factors. The overall mean is 3.23, interpreted as "moderate extent."

Item No. 7, "consume 2 servings of vegetables daily," 3.95, interpreted as "great extent." This suggests that most participants follow this guideline, recognize the importance of vegetables, and consistently try to meet the recommendation. This reflects good dietary habits and an understanding of the health benefits of vegetables.

Item No. 5, "exercise for 2.5 hours weekly as per PHIL PEN," got the lowest mean score of 2.43, interpreted as "moderate extent." This suggests that while some participants engage in physical activity, many are not meeting the recommended levels. It indicates an awareness of the importance of exercise, but barriers such as time constraints, lack of motivation, or other challenges may prevent them from reaching the prescribed weekly duration. This finding aligns with studies identifying common barriers to physical activity among various populations in the Philippines. For example, a study conducted with LSPU faculty and staff found that participants perceived their daily schedules as too busy to include physical activity, often prioritizing academic and family commitments over-exercise. Despite wanting to be more active, participants reported difficulties initiating and maintaining regular physical activity routines (Dela Cruz, 2019).

The overall results show that respondents are more consistent in vegetable consumption than exercise habits, suggesting that while dietary habits are well-established, physical activity could benefit from more emphasis. A 2016 study of Mexican older adults found that only a small percentage engaged in regular exercise and adequate fruit and vegetable consumption. Factors like stable income and a supportive social network promoted these behaviors. However, many older adults still did not consistently practice them, highlighting the need for effective interventions to encourage physical activity and healthy eating (Doubova et al., 2016).

Table 6
Extent of Healthcare Adherence of Adult Patients with Hypertension according to Medical Domain

Medical Items	Mean	Interpretation
<i>As a patient with hypertension, I...</i>		
1. only take prescribed hypertensive medicines, including free drugs from the City Health Office.	4.54	Very great extent
2. take my hypertensive medicines daily.	4.68	Very great extent
3. refill my prescribed medicines as soon as possible.	4.20	Great extent
4. seek advice from public healthcare providers, particularly from the City Health Office.	3.40	Moderate extent
5. seek advice from private healthcare practitioners.	2.74	Moderate extent
6. undergo annual laboratory testing.	3.09	Moderate extent
7. discuss with my healthcare provider regarding herbal medicines.	2.18	Low extent
8. receive regular and friendly follow-up from my healthcare provider.	3.15	Moderate extent
9. was provided by my healthcare provider with legitimate and helpful Internet websites.	2.10	Low extent
10. discuss with family and friends for necessary financial support.	2.21	Low extent
Overall Mean	3.23	Moderate extent

Table 6 contains data revealing the level of healthcare adherence of adult patients with hypertension according to Medical Factors. The overall mean score is 3.23, interpreted as "moderate extent."

Item No. 2, "take my hypertensive medicines daily," obtained the highest mean score of 4.68, interpreted as "very great extent." This suggests that most participants are consistently following their healthcare provider's instructions regarding medication, indicating a strong commitment to managing their hypertension. This could be due to a high level of awareness about the importance of medication in controlling blood pressure and preventing complications.

Item No. 9, "was provided by my healthcare provider with legitimate and helpful Internet websites," got the lowest mean score of 2.10, interpreted as "low extent." This suggests that most participants did not utilize trustworthy online resources, indicating a gap in patient-provider communication and underuse of digital health tools. These findings highlight missed opportunities to improve health literacy and self-management of hypertension. A similar study on the low uptake of digital health technology (DHT) in clinical practice identified barriers such as lack of integration, technology validation, and poor usability for physicians. At the same time, patients reported issues with usability and interference with the patient-provider relationship. These results emphasize the need for better DHT implementation and further validation to ensure reliable clinical outcomes and cost-effectiveness in hypertension management (Palacholla et al., 2019).

The overall results show that while participants are committed to adhering to their prescribed hypertension medications, there is a gap in using online resources to manage the condition further. This highlights the need to integrate digital health tools and online education into healthcare practices to improve patient engagement and self-management. Recent studies have shown the effectiveness of digital health interventions (DHIs) in improving medication adherence among hypertensive patients. A review of 21 studies involving 3,804 participants found that DHIs significantly improved adherence compared to usual care, suggesting that incorporating DHIs into hypertension management could enhance patient engagement and self-management (Miao et al., 2024).

Table 7

Differences in the Level of Awareness of Adult Patients with Hypertension in the area of Lifestyle when grouped and compared according to variables

Lifestyle							
Variables	Categories	N	Mean Rank	Mann Whitney U - test	Sig. Level	p-value	Interpretation
Age	Younger	50	71.76	1037.00	0.05	0.000	Significant
	Older	67	49.48				
Sex	Male	42	70.42	1096.00		0.006	Significant
	Female	75	52.61				
Highest Educational Attainment	Lower	64	62.93	1444.00		0.167	Not Significant
	Higher	53	54.25				
Average Family Monthly Income	Lower	51	54.07	1432.00		0.166	Not Significant
	Higher	66	62.81				

Table 7 reveals the difference in the level of awareness of adult patients with hypertension in the area of lifestyle when grouped and compared according to variables. The table showed no significant difference in the variable of highest educational attainment and average family monthly income with p -values of 0.167 and 0.166, respectively. Therefore, the hypothesis that states "There is no significant difference in the level of awareness of adult patients with hypertension when grouped and compared according to the variables" in the variable of highest educational attainment and average family monthly income is hereby accepted.

However, a significant difference exists in the variable of age and sex with p -values of 0.000 and 0.006. Therefore, the hypothesis that states "There is no significant difference in the level of awareness and healthcare adherence of adult patients with hypertension when grouped and compared according to the variables" in the variable of age and sex is hereby rejected.

The data indicates that age and sex significantly influence awareness among patients with hypertension in terms of lifestyle. Different age groups and sexes may have varied levels of awareness in managing hypertension; therefore, health education strategies should be tailored to these specific demographics. The lack of significant findings related to the highest educational attainment and average family monthly income suggests that these factors may not play a crucial role in determining awareness among adult patients with hypertension in terms of lifestyle.

Supporting this observation, a study by Srisawat et al. (2022) found that increasing age was associated with greater health literacy and self-awareness concerning hypertensive prevention among public blood pressure station service users. This could be attributed to older individuals having more opportunities to receive and process health-related information over time.

Additionally, a study by Srisawat et al. (2022) found that both genders demonstrated no difference in health literacy but did show a significant difference in self-awareness, with females exhibiting higher self-awareness regarding hypertensive prevention. This aligns with the current study's finding of significant differences in awareness based on sex.

In summary, while age and sex influence hypertension awareness, the lack of significant findings related to educational attainment and income in this study suggests that other unexamined factors may play a more crucial role in determining patients' awareness levels.

Table 8

Differences in the Level of Awareness of Adult Patients with Hypertension in the areas of Complications when grouped and compared according to variables

Complications							
Variables	Categories	N	Mean Rank	Mann Whitney U - test	Sig. Level	p-value	Interpretation
Age	Younger	50	63.73	1438.50	0.191	Not Significant	
	Older	67	55.47				
Sex	Male	42	63.29	1395.00	0.305	Not Significant	
	Female	75	56.60				
Highest Educational Attainment	Lower	64	60.11	1625.00	0.697	Not Significant	
	Higher	53	57.66				
Average Family Monthly Income	Lower	51	54.10	1433.00	0.168	Not Significant	
	Higher	66	62.79				

Table 8 reveals the difference in the level of awareness of adult patients with hypertension in the area of complications when grouped and compared according to variables. The table showed no significant difference in the variables of age, sex, highest educational attainment, and average family monthly income with *p*-values of 0.191, 0.305, 0.697, and 0.168, respectively. Therefore, the hypothesis that states "There is no significant difference in the level of awareness of adult patients with hypertension when grouped and compared according to the variables" in the variable of age, sex, highest educational attainment, and average family monthly income is hereby accepted.

The lack of significant findings related to age, sex, highest educational attainment, and average family monthly income suggests that these factors may not play a crucial role in determining awareness among adult patients with hypertension in terms of complications.

For instance, a study in Saudi Arabia observed that older age groups exhibited higher awareness levels of hypertension complications, likely due to accumulated health experiences and more frequent interactions with healthcare services over time (Alharthi et al., 2024). Similarly, research from India highlighted sex-specific differences, where women aged 55–64 years were more likely to be aware of hypertension and its complications (Singh & Dixit, 2023). These gender disparities could stem from cultural and societal factors that affect healthcare-seeking behavior. Regarding educational attainment, a study conducted in Malaysia found that individuals with tertiary education demonstrated significantly higher awareness of hypertension, likely because higher education levels are linked to better health literacy and an increased understanding of hypertension management (Mohammed et al., 2022). In addition, the same study noted that higher income levels were associated with better awareness of hypertension complications, as individuals with greater financial resources tend to have better access to healthcare services and information (Mohammed et al., 2022).

However, the current study did not find significant relationships between these variables and awareness of hypertension complications. This could be due to regional differences, healthcare system variations, or the study population's specific demographic characteristics. These factors should be considered when interpreting the results, and it may be important for future studies to explore other potential influences on hypertension awareness. Understanding these variations is essential for designing tailored health education strategies that address the unique needs of different population groups.

Table 9

Differences in the Level of Awareness of Adult Patients with Hypertension in the area Risk Factors when grouped and compared according to variables

Risk Factors							
Variables	Categories	N	Mean Rank	Mann Whitney U - test	Sig. Level	p-value	Interpretation

Age	Younger	50	66.59	1295.50	0.036	Significant
	Older	67	53.34			
Sex	Male	42	66.25	1270.50	0.305	Not Significant
	Female	75	54.94			
Highest Educational Attainment	Lower	64	59.24	1680.50	0.932	Not Significant
	Higher	53	58.71			
Average Family Monthly Income	Lower	51	49.72	1209.50	0.009	Significant
	Higher	66	66.17			

Table 9 reveals the difference in the level of awareness of adult patients with hypertension in the area of risk factors when grouped and compared according to variables. The table showed no significant difference in the sex variable and highest educational attainment with p -values of 0.305 and 0.932, respectively. Therefore, the hypothesis that states "There is no significant difference in the level of awareness of adult patients with hypertension when grouped and compared according to the variables" in the variable of sex and highest educational attainment is hereby accepted.

However, a significant difference exists between the variables of age and average family monthly income, with p -values of 0.036 and 0.009. Therefore, the hypothesis that states "There is no significant difference in the level of awareness and healthcare adherence of adult patients with hypertension when grouped and compared according to the variables" in the variable of sex and average family monthly income is hereby rejected.

The data indicates that age and average family monthly income significantly influence awareness among patients with hypertension in terms of risk factors. Different age and income groups may have varied levels of awareness in managing hypertension; therefore, health education strategies should be tailored to these specific demographics. The lack of significant findings related to sex and highest educational attainment suggests that these factors may not play a crucial role in determining awareness among adult patients with hypertension in terms of risk factors.

Existing literature supports the impact of socio-economic status on hypertension awareness. A study by Wang et al. (2022) found that the role of socio-economic status in hypertension awareness. Studies show that low education and income are linked to higher hypertension rates, emphasizing the need to address these factors in health interventions. It also notes that socio-economic factors influence behaviors like diet and exercise, which affect hypertension risk. However, the lack of significant findings related to sex and educational attainment in this study may reflect regional or cultural differences, pointing to the need for context-specific health education. Lastly, while age and family income are significant factors in hypertension awareness, other unexamined factors may be crucial, and health education should be tailored to the needs of different demographic groups for more effective management and prevention.

Table 10

Differences in the Level of Awareness of Adult Patients with Hypertension in the area of Signs and Symptoms when grouped and compared according to variables

Signs and Symptoms							
Variables	Categories	N	Mean Rank	Mann Whitney U - test	Sig. Level	p-value	Interpretation
Age	Younger	50	65.53	1348.50	0.071	Not Significant	
	Older	67	54.13				
Sex	Male	42	59.90	1537.00	0.828	Not Significant	
	Female	75	58.49				
Highest Educational Attainment	Lower	64	63.24	1424.50	0.135	Not Significant	
	Higher	53	53.88				
Average Family Monthly Income	Lower	51	51.73	1312.00	0.040	Significant	
	Higher	66	64.62				

Table 10 reveals the difference in the level of awareness of adult patients with hypertension in the area of signs and symptoms when grouped and compared according to variables. The table showed no significant difference in age, sex, and highest educational attainment, with p -values of 0.071, 0.828, and 0.135, respectively. Therefore, the hypothesis that states "There is no significant difference in the level of awareness of adult patients with hypertension

when grouped and compared according to the variables" in the variable of age, sex, and highest educational attainment is hereby accepted.

However, a significant difference exists in the average family monthly income variable with a p -value of 0.040. Therefore, the hypothesis that states "There is no significant difference in the level of awareness and healthcare adherence of adult patients with hypertension when grouped and compared according to the variables" in the average family monthly income variable is hereby rejected.

The data indicates that the average family's monthly income significantly influences awareness among hypertension patients regarding signs and symptoms. Financial capacity may affect patients' decision-making process in managing hypertension. The lack of significant findings related to age, sex, and highest educational attainment suggests that these factors may not play a crucial role in determining awareness among adult patients with hypertension in terms of signs and symptoms.

Existing literature highlights the significant role of socio-economic status in hypertension awareness, with studies showing that lower income levels and educational attainment are linked to higher hypertension prevalence and reduced awareness, emphasizing the need to address financial and educational barriers in health interventions (Blok et al., 2022). However, the impact of age and sex on hypertension awareness remains inconsistent. Research in Japan, for instance, found no clear associations between age, sex, and hypertension awareness, suggesting that these factors may not consistently predict awareness across populations (Satoh, 2016). These mixed findings may reflect regional and cultural differences, underscoring the importance of tailoring health education strategies to local populations' specific needs and characteristics.

Table 11

Differences in the Extent of Healthcare Adherence of Adult Patients with Hypertension in the area of Behavioral when grouped and compared according to variables

Behavioral							
Variables	Categories	N	Mean Rank	Mann Whitney U - test	Sig. Level	p-value	Interpretation
Age	Younger	50	61.01	1574.50	0.05	0.579	Not Significant
	Older	67	57.50				
Sex	Male	42	62.23	1439.50		0.440	Not Significant
	Female	75	57.19				
Highest Educational Attainment	Lower	64	60.82	1579.50		0.523	Not Significant
	Higher	53	56.80				
Average Family Monthly Income	Lower	51	55.22	1490.00		0.288	Not Significant
	Higher	66	61.92				

Table 11 reveals the difference in the extent of healthcare adherence of adult patients with hypertension in the area of behavior when grouped and compared according to variables. The table showed no significant difference in the variables of age, sex, highest educational attainment, and average family monthly income with p -values of 0.579, 0.440, 0.523, and 0.288, respectively. Therefore, the hypothesis that states "There is no significant difference in the level of healthcare adherence of adult patients with hypertension when grouped and compared according to the variables" in the variable of age, sex, highest educational attainment, and average family monthly income is hereby accepted.

The lack of significant findings related to age, sex, highest educational attainment, and average family monthly income suggests that these factors may not play a crucial role in determining healthcare adherence among adult patients with hypertension in terms of behavior.

Existing literature offers mixed insights into the impact of these variables on healthcare adherence. A systematic review by Gutierrez and Sakulbumrungsil (2021) identified younger age and single marital status as factors negatively associated with medication adherence among Filipino hypertensive patients, while educational attainment did not show a consistent relationship. Similarly, a study in Taif City found no significant association between age, gender, or education level and treatment adherence among hypertensive patients (Alsofyani et al., 2022). These inconsistencies may arise from regional and cultural differences, highlighting the need for context-specific health education strategies tailored to local demographics and cultural norms.

Table 12

Differences in the Extent of Healthcare Adherence of Adult Patients with Hypertension in the area of Medical when grouped and compared according to variables

Medical							
Variables	Categories	N	Mean Rank	Mann Whitney U - test	Sig. Level	p-value	Interpretation
Age	Younger	50	63.22	1464.00	0.05	0.243	Not Significant
	Older	67	55.85				
Sex	Male	42	57.19	1499.00		0.665	Not Significant
	Female	75	60.01				
Highest Educational Attainment	Lower	64	62.69	1460.00		0.195	Not Significant
	Higher	53	54.55				
Average Family Monthly Income	Lower	51	56.30	1546.00		0.448	Not Significant
	Higher	66	61.08				

Table 12 reveals the difference in the extent of healthcare adherence of adult patients with hypertension in the area of medical when grouped and compared according to variables. The table showed no significant difference in the variables of age, sex, highest educational attainment, and average family monthly income with *p*-values of 0.243, 0.665, 0.195, and 0.448, respectively. Therefore, the hypothesis that states "There is no significant difference in the level of healthcare adherence of adult patients with hypertension when grouped and compared according to the variables" in the variable of age, sex, highest educational attainment, and average family monthly income is hereby accepted.

The lack of significant findings related to age, sex, highest educational attainment, and average family monthly income suggests that these factors may not play a crucial role in determining healthcare adherence among adult patients with hypertension in terms of medical.

Existing literature presents mixed results regarding the impact of these factors on healthcare adherence. A systematic review by Gutierrez and Sakulbumrungsil (2021) identified younger age, single marital status, low educational attainment, and unemployment as factors negatively associated with medication adherence among Filipino hypertensive patients. Conversely, a Taif city study found high adherence levels across various demographics, with no significant differences based on age, sex, or education level (Alsafyani et al., 2022). These discrepancies may be attributed to regional and cultural differences, highlighting the need for context-specific health education strategies tailored to local demographics and cultural norms.

Table 13

Relationship between Level of Awareness and the Extent of Healthcare Adherence of Adult Patients with Hypertension

Correlation	N	Rho	Significant level	p-value	Interpretation
Awareness	117	0.442	0.01	0.000	Significant
Healthcare Adherence	117				

The significant relationship between awareness and healthcare adherence among adult patients with hypertension, as revealed by a *p*-value of 0.000 in Table 39, highlights the crucial role of patient knowledge in managing hypertension. Research consistently shows that patients who understand their condition are more likely to follow prescribed treatments and adhere to medical recommendations.

For instance, a study conducted at the Tanggulangin Primary Healthcare Center in Sidoarjo City, Indonesia, found that patients with a good understanding of hypertension were more likely to adhere to their medication regimen, demonstrating the impact of education on patient compliance (Pristianty, 2023). This underscores how enhanced awareness can directly improve adherence to antihypertensive medications.

Additionally, targeted educational interventions have proven effective in increasing adherence rates. Research by De Leon and Estrella (2023) found that educating patients about hypertension and its potential complications significantly improved their medication adherence. These findings stress the importance of comprehensive

educational programs, counseling, seminars, and support groups to promote better understanding and healthcare adherence, ultimately leading to improved health outcomes for patients with hypertension.

Conclusions

The study revealed that adult patients with hypertension, primarily older and female with lower educational attainment but relatively higher income, generally exhibited moderate awareness of healthcare adherence but low awareness of hypertension-related complications, especially life-threatening ones like stroke and heart attack. Awareness and adherence varied significantly with income and education, with higher-income individuals showing greater awareness and health monitoring, while lower-educated patients had better medication adherence. Younger and male patients were more aware of lifestyle and risk factors. However, behavioral healthcare adherence showed no significant differences across demographic groups. Importantly, a moderate positive correlation was found between awareness and adherence. Based on these findings, the study recommends targeted health programs focusing on older adults, women, and low-education groups; awareness campaigns on complications; lifestyle and behavioral education; and equitable access to health services across income levels, supported by multi-sectoral collaboration and specific budget allocations for each initiative.

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