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The Correlation Between Adherence to Antihypertensive Drug Use and Quality of Life in Hypertensive Patients at Haji Medan General Hospital

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ABSTRACT

According to the WHO, hypertension affects approximately 972 million people worldwide—about 26.4% of the global population—with projections rising to 29.2% by 2025. The majority of cases (639 million) occur in developing countries, including Indonesia, where the Ministry of Health reported around 65.8 million people living with hypertension in 2018. Although hypertension requires lifelong treatment, adherence remains suboptimal. Previous studies indicate that medication compliance is often low (60%), with only 9% of patients demonstrating high adherence. Objective: To determine the relationship between compliance with the use of antihypertensive drugs and the quality of life of hypertensive patients at Haji Medan General Hospital. Methods: The sample consisted of 60 patients who met the inclusion and exclusion criteria; these patients completed the antihypertensive therapy adherence questionnaire using the MMAS-8 and the quality of life questionnaire using the WHOQoL-BREF. Results: In this study, the Chi-square value was 0.000, which is smaller than 0.05; thus, it can be concluded that there is a significant relationship between compliance with the use of antihypertensive drugs and the quality of life of hypertensive patients at Haji Medan General Hospital.

Keywords: *Medication Compliance, Quality of Life and Hypertension*

INTRODUCTION

Blood pressure readings above the normal range—specifically, systolic pressure of 140 mmHg and diastolic pressure of 90 mmHg—indicate hypertension (Böhm et al., 2018; Kandil et al., 2023). Known as the "silent killer," this disease is notorious because it can be fatal without showing clear symptoms, often leading to severe complications such as heart disease, stroke, and kidney failure. Globally, hypertension ranks as the third leading cause of death, underscoring its critical public health impact (Cheraghi et al., 2025; Khalid et al., 2025).

According to the World Health Organization (WHO), hypertension affects approximately 972 million people worldwide, accounting for 26.4% of the global population. By 2025, this number is projected to rise to 29.2%, with 333 million cases in developed countries and 639 million in developing countries such as *Indonesia*. Data from the Indonesian Ministry of Health (*Kemenkes RI*) in 2018 reported that 34.1% of Indonesians were diagnosed with hypertension. *West Papua* recorded the lowest prevalence rate at 2,163 cases per 100,000 population, while DKI Jakarta had the highest at 121,153 cases. North Sumatra ranked as the fourth-highest province in hypertension prevalence, with Medan City recording the highest number of cases (7,174) and Pakpak Barat the lowest (121 cases).

Medication adherence refers to patients' behavior in consistently taking prescribed medication and following medical advice to prevent hypertension-related complications. Since hypertension treatment is a long-term therapy, patient adherence often becomes a challenge, as many do not take their medication regularly. Previous studies have shown that 60% of patients demonstrate low adherence, 31% moderate adherence, and only 9% high adherence. Several

factors contribute to this issue, including patients' belief that they are already healthy, irregular visits to healthcare facilities, switching to traditional medicine, forgetfulness, and various other personal reasons.

Low adherence to antihypertensive medication can result in poor blood pressure control, thereby diminishing patients' overall quality of life (Alhaddad et al., 2016; de Souza et al., 2016; Mossello et al., 2015; Yue et al., 2015). Quality of life can be defined as an individual's ability to perform daily activities in accordance with their age and social role. It encompasses multiple dimensions, including physical, psychological, social, and environmental aspects. Among hypertensive patients, quality of life is influenced by how well blood pressure is managed, the level of medication adherence, lifestyle modifications, and the effectiveness of drug therapy. Thus, achieving good quality of life requires consistent adherence to medication and routine blood pressure monitoring to prevent complications.

According to Linggar, in developing countries, many studies assessing quality of life use the WHOQoL-BREF questionnaire, which evaluates physical health, psychological well-being, social relationships, and environmental interaction. These domains can fluctuate over time depending on the individual's circumstances. The tool allows researchers to assess the holistic impact of chronic diseases like hypertension on patients' daily lives.

Declines in quality of life often stem from various aspects of living with hypertension. Psychologically, patients may experience irritability, negative moods, and difficulty concentrating. Socially, hypertension may limit participation in daily activities, reduce social support, and cause problems in intimate relationships. Environmental aspects include financial constraints, lack of access to health information, and living conditions that exacerbate illness. Physically, patients often face fatigue, dependence on medication, reduced mobility, pain, and poor sleep quality—all of which collectively limit work capacity and daily functioning. These interconnected challenges contribute to discomfort and negatively affect the quality of life of individuals with hypertension.

Medication non-adherence directly affects clinical outcomes and quality of life. Studies have shown a clear relationship between adherence and quality of life in hypertensive patients. For example, research by Chalik et al. (2021) demonstrated that patients with higher adherence had significantly better quality of life scores. Another study by Jannah et al. (2023) found a strong positive correlation ($r = 0.552$) between medication adherence and quality of life, indicating that better adherence is associated with improved physical, psychological, and social well-being. However, most of these studies have been conducted in different geographic and hospital settings, leaving a gap in context-specific evidence from Medan.

Quality of life in hypertensive patients is a multidimensional construct influenced by blood pressure control, treatment adherence, and psychosocial factors. Instruments such as the WHOQOL-BREF have been widely used to assess quality of life in chronic conditions, including hypertension. Prior research, such as that by Rahayu (2019), highlights that hypertensive patients often experience impairments in physical and mental health domains, which are exacerbated by poor adherence.

Quality of life among hypertensive patients has been the subject of numerous studies, yet ongoing evaluation remains necessary. Regular assessments of both quality of life and medication adherence are crucial to determine whether current treatment plans are effective or need modification. These evaluations help healthcare providers adjust interventions to better

meet patient needs and improve therapeutic outcomes. Given this context, the present study aims to examine the relationship between medication adherence and the quality of life of hypertensive patients (Chantzaras & Yfantopoulos, 2023; Hanus et al., 2015; Silavanich et al., 2019). Since limited research has been conducted in the city of Medan, this study holds significant value in addressing the gap (Astari & Nasution, 2024; David et al., 2022; Nuraflah, 2025). The findings are expected to provide useful insights and resources to help hypertensive patients adhere more effectively to their medication regimens, thereby reducing the risk of complications and improving overall quality of life (Burnier & Egan, 2019). Consistent medication adherence is anticipated to play a pivotal role in preventing further health deterioration and enhancing patients' well-being (Ismail et al., 2024; Religioni et al., 2025; Ruswati, 2024).

This study aims to examine the relationship between adherence to antihypertensive medication use and the quality of life of hypertensive patients at Haji General Hospital Medan. The main research question addressed is: "What is the relationship between antihypertensive medication adherence and the quality of life of hypertensive patients at Haji General Hospital Medan?" Specifically, the study seeks to (1) assess the level of adherence among hypertensive patients in taking their prescribed antihypertensive medications, (2) evaluate their overall quality of life, and (3) identify their demographic characteristics, including age, gender, type of medication, duration of hypertension, medication adherence, and quality of life. The findings are expected to provide several benefits: for researchers, the study will deepen understanding of the link between medication adherence and quality of life among hypertensive patients; for educational institutions, it will serve as a valuable reference for future studies exploring similar correlations; and for the general public, it will help raise awareness about the importance of medication adherence in improving the quality of life of individuals living with hypertension.

METHOD

This research employed an analytical method using a cross-sectional design, which aims to examine the relationship between variables by measuring them at a single point in time. In this study, both the quality of life and adherence to antihypertensive medication were assessed independently to determine their relationship. The research was conducted at Haji General Hospital Medan, located in Medan Estate, Percut Sei Tuan District, Deli Serdang Regency, North Sumatra. The choice of this location was based on its accessibility and the availability of hypertensive patients who receive regular antihypertensive treatment, making it suitable for data collection and analysis related to medication adherence and quality of life.

The population in this study consisted of all hypertensive patients receiving antihypertensive medication at Haji General Hospital Medan. The term "population" refers to all subjects or elements that meet the research criteria and share similar characteristics relevant to the study. Thus, every individual diagnosed with hypertension and undergoing treatment in the hospital was considered part of the study population. The inclusion of this population aimed to ensure that the data collected represented the characteristics of hypertensive patients in this healthcare setting.

The sample of the study included hypertensive patients who met specific inclusion and exclusion criteria. The inclusion criteria were: (1) patients willing to participate as respondents, (2) patients undergoing pharmacological treatment with combination drugs, (3) patients aged

between 20 and 55 years, and (4) patients diagnosed with hypertension for more than five years. The exclusion criteria were: (1) patients with complications such as stroke, diabetes mellitus, coronary heart disease, or kidney failure, and (2) patients experiencing psychological stress. Based on these criteria, a total of 60 patients who met the inclusion standards were selected as research participants, ensuring that the data accurately reflected the condition of hypertensive patients without major comorbidities.

Data collection was conducted using validated questionnaires distributed to hypertensive patients who fulfilled the inclusion criteria. The respondents completed the questionnaires independently, following the questions provided. The primary data consisted of questionnaire responses measuring medication adherence and quality of life, while secondary data were obtained from patients' medical records to complement the analysis. The sampling technique used was non-probability sampling with a consecutive sampling approach, where all eligible participants within the study period were included. This approach ensured the inclusion of every patient who met the criteria until the required number of samples was reached.

The variables examined in this study consisted of one independent variable and one dependent variable. The independent variable was medication adherence to antihypertensive therapy, representing the patients' consistency in following prescribed treatment regimens. The dependent variable was quality of life, referring to patients' physical, psychological, social, and environmental well-being. The clear identification of variables allowed the researcher to establish a precise analytical framework for examining the relationship between medication adherence and the quality of life of hypertensive patients.

Data processing and analysis followed several systematic steps. The data collected were first edited to ensure completeness and accuracy according to inclusion and exclusion criteria. Next, coding was performed manually, followed by entry into the data processing program. The data were then cleaned to remove any inconsistencies before being saved for statistical analysis. Data analysis included two stages: univariate analysis, used to describe respondent characteristics such as age, gender, duration of hypertension, and type of medication; and bivariate analysis, used to assess the correlation between medication adherence and quality of life using the Chi-Square test in SPSS. The bivariate analysis aimed to determine whether a statistically significant relationship existed between adherence to antihypertensive treatment and the quality of life of hypertensive patients at Haji General Hospital Medan.

RESULTS AND DISCUSSION

Demographic Characteristics of Respondents

The subjects of this study were 60 hypertension patients who visited the Hajj Medan General Hospital and met the inclusion and exclusion criteria of the study. Most of the study subjects were aged 46-55 years old, as many as 43 subjects (71.7%) and the least in the age range of 20-45 years old were 17 subjects (28.3%). Most subjects were male as many as 35 subjects (58.3%) and female as many as 25 subjects (41.7%). Subjects who used the most hypertension drugs in the combination of Candesartan and Amlodipine were 40 subjects (66.7%), followed by Candesartan and Bisoprolol as many as 11 subjects (18.3%) and the least in the combination of Amlodipine and ramipril as many as 9 subjects (15%).

The subjects who experienced hypertension for 5-10 years were 37 subjects (61.7%) and the least in > 10 years were 23 subjects (38.3). The distribution of subject characteristics was

based on the degree of compliance with the use of hypertension drugs with the quality of life of people with hypertension. The most compliance variables were found in moderate compliance with 29 subjects (48.3%) followed by low compliance with 19 subjects (31.7%) and the least with high compliance with 12 subjects (20%). In the highest quality of life, 40 subjects (66.7%) were in moderate quality of life, followed by 11 subjects (18.3%) and 9 subjects (15.0%) had the least good quality of life.

Distribution of respondent answers by MMAS

Adherence refers to behavioral changes that correspond to the direction of therapy, such as exercise, diet, medication, or disease control with a doctor. In this study, the distribution of medication adherence in hypertensive patients was assessed using the Morisky Medication Adherence Scale (MMAS) questionnaire, which showed that most patients were at a moderate level of adherence. A variety of factors can affect a patient's level of adherence, including complicated therapeutic regimens, hard-to-read drug labels, and lack of information about the benefits of anti-hypertensive medications. However, based on the answers given by the subjects in the study, it is unlikely that these factors significantly affect the level of medication adherence.

Distribution of answers by WHOQOL-BREF

Quality of life refers to the level of well-being felt by an individual or group. It is a multidimensional and complex concept, encompassing various aspects such as physical health, functioning, perception of health, symptoms, satisfaction of needs, cognitive abilities, functional disabilities, mental disorders, and general well-being. The majority of patients in the study had a moderate quality of life, according to the WHOQOL questionnaire, which was used to measure quality of life. This result may be due to the fact that the respondent is a patient who has undergone treatment at the Haji General Hospital Medan and has been diagnosed with hypertension for more than five years.

Bivariate Analysis

Bivariate analysis was required in this study to identify the relationship between compliance in the use of antihypertensive drugs and the quality of life of hypertensive patients at Haji General Hospital Medan. To analyze the relationship between these two variables, the Chi-Square test is used. The following are the results of hypothesis testing using the Chi-Square correlation test

Table 1. Results of the analysis of the relationship between the adherence of the use of Antihypertensive drugs and the quality of life of people with hypertension

Compliance	Quality of Life		*p value*
	Bad	Medium-Good	
	n (%)	n (%)	
Low	10 (50,0)	10 (50,0)	0,000
Medium - High	1 (2,5)	39 (97,5)	

Source: Primary data obtained from patient questionnaires and medical records at Haji Medan General Hospital (2024)

Illustrated in table 1 is the result of the analysis of the table which is modified into 2 categories of compliance and 2 categories of quality of life because if you continue to use 3 categories in each variable, there will be one cell that totals 0. It is known that of the group of patients who have low adherence, 50.0% of them have a poor quality of life, and the other 50.0% have a moderate-good quality of life. Meanwhile, in the group of patients who had moderate-high adherence, 2.5% had poor quality of life, and 97.5% of them had a moderate-good quality of life. The table shows the Chi-Square value of 0.000 is smaller than the significance level of 0.005. This means that the quality of life of hypertensive patients at Haji Medan General Hospital is related to compliance with the use of antihypertensive drugs, which means H1 is accepted and H0 is rejected.

Demographic Characteristics of Respondents

The age range with the most participants was 46–55 years old (71.7% of the total), while the age range with the least participants was 20–45 years old (28.3%). These findings are consistent with the findings of Chalik R. et al. From July to September 2020, there were 102 hypertensive patients who received outpatient treatment at the hospital. The average age of these patients is 46 years. Hypertension is more common in older adults. The accumulation of collagen in the muscle layer causes the walls of the arteries to thicken after the age of 45. This further causes the blood arteries to gradually narrow and strain.29

In this study, 35 subjects (58.3% of the total) were male, and 25 subjects (41.7%) were female. A similar thing was found by Chalik R et al, a difference in results that was not too different was found in the sex where 54 male subjects and 48 other subjects were female. 29

In this study, the prevalence of hypertension between men and women was almost balanced. However, women who have not entered menopause tend to be more protected due to the influence of the hormone estrogen. The hormone estrogen helps maintain the elasticity and smoothness of blood vessels, thereby reducing the risk of plaque buildup on the walls of blood vessels. This protection from estrogen explains why compared to men, premenopausal women are less likely to develop hypertension.30

Characteristics of respondents based on Hypertension status

In this study, the subjects who used the most hypertension drugs in the combination of Candesartan and Amlodipine were 40 subjects (66.7%), followed by Candesartan and Bisoprolol as many as 11 subjects (18.3%) and the least in the combination of amlodipine and ramipril drugs as many as 9 subjects (15%).

Compared to other antihypertensive drugs, the Angiotensin Receptor Blocker (ARB) group usually has fewer side effects because it works by blocking angiotensin II receptors type I directly. An antihypertensive drug that belongs to the Calcium Channel Blocker (CCB) group, amlodipine lowers blood pressure by relaxing smooth muscles and the heart through calcium channel blocking. As a member of the Beta Blocker class of antihypertensive drugs, bisoprolol lowers blood pressure by blocking the work of beta-adrenergic receptors found in many different body systems. In patients at high risk of heart problems, the ACEI group of ramipril drugs have a great protective effect on the heart, making them an important tool in the fight against cardiovascular disease and its fatal consequences. Diarrhea and dry cough are common adverse reactions to ACEIs that trigger angioedema. Studies have shown that lowering blood

pressure with a combination of CCB and ARB is more successful than using only one drug.31, 32, 33

Of the total respondents, 37 (61.7%) had hypertension for less than 10 years, while 23 (38.1%) had hypertension for more than 10 years. Complications in organs such as kidneys, brain, heart, and blood arteries can develop as a result of long-term hypertension. 34 To measure medication adherence, this study used the Morisky Medication Adherence Scale (MMAS). The most compliance variables were found in moderate compliance with 29 subjects (48.3%) followed by low compliance with 19 subjects (31.7%) and the lowest with high compliance levels with 12 subjects (20%). Adherence in medication consumption in hypertensive patients is a crucial factor for controlling blood pressure, as there is a close relationship between medication adherence and blood pressure control. Some of the factors that can lead to non-adherence to medication include complicated therapeutic regimens, instructions on hard-to-read medication labels, as well as limited information about the benefits of anti-hypertensive medications. In addition, the Ministry of Health of the Republic of Indonesia identifies several reasons why hypertensive patients may not comply with treatment, such as feeling healthy despite hypertension, irregular visits to health facilities, use of traditional medicines, application of alternative therapies, forgetting to take medication, difficulty buying medications, side effects of medications, and unavailability of hypertension drugs in health facilities.35 , 36

With 39 participants (65%) in the medium quality of life category, there were 11 participants (18.3%) in the poor quality of life category and 10 participants (16.7%) in the high quality of life category in this study. A person's physical and mental well-being, the strength of their social networks, and the conditions in which they live all play a role in determining their quality of life. If this is not met, it can cause difficulties that reduce the quality of life.28

Discussion of Bivariate Analysis

1. Results of the analysis of the relationship between the adherence of the use of Antihypertensive drugs and the quality of life of people with hypertension

In this study, there was a significant decrease from 0.005 to the Chi-Square value calculated by 0.000. Hypertensive patients at Haji General Hospital Medan reported an improvement in quality of life when they took prescription medication, thus refusing H0 and receiving H1. The findings of this study show that there is a relationship between the quality of life of hypertension patients and the adherence to taking antihypertensive drugs at Haji Medan Hospital.

Jannah IN et al. found a strong correlation between compliance and quality of life in their previous study, and our findings are consistent with that. The correlation rate between compliance and quality of life was 0.552, indicating a strong and beneficial relationship. This shows that there is only one way for the two variables to relate to each other. Simply put, a person's quality of life is directly proportional to how well they adhere to their treatment regimen. 37 In a related study, Chalik et al. found that those with high medication adherence (75.3% of respondents) were more likely to have a positive quality of life than those with moderate or low adherence ($p = 0.005$). Individual age ($p = 0.041$), comorbidities ($p = 0.049$), and medication adherence ($p = 0.005$) were all significantly correlated with the quality of life of hypertensive patients. 29 Kurniawan et al. found a moderate correlation ($r = 0.42$) between

the level of treatment adherence of hypertensive patients and quality of life (p = 0.00) which was in line with the results of this study. 38

A patient's ability to adhere to his or her hypertension treatment plan is a component of their overall quality of life. Hypertensive people should take prescription antihypertensive medications to keep blood pressure under control. By following these instructions, you can reduce the chances of organ damage in the long run. 39

A person's quality of life can be defined as a level of satisfaction and happiness measured based on physical, mental, and social health, according to the Centers for Disease Control and Prevention. Complications such as stroke, coronary heart disease, kidney failure, and others are more likely to occur in untreated hypertensive patients. These complications can have a negative impact on the patient's quality of life. 40

CONCLUSION

This study on hypertensive patients at Haji Medan General Hospital revealed moderate overall medication adherence and good quality of life among participants. The sample, predominantly men (58.3%) aged 46-55 years (71.7%), most used Candesartan & Amlodipin (66.7%), had suffered from hypertension for 5-10 years (61.7%), showed moderate adherence (48.3%), and reported moderate quality of life (66.7%). These findings provide a foundation for understanding adherence patterns in this context. For future research, longitudinal studies could explore causal links between adherence interventions, sustained quality of life improvements, and reduced complications in diverse Indonesian hypertensive populations.

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