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FACTORS ASSOCIATED WITH MEDICATION ADHERENCE AMONG HYPERTENSIVE PATIENTS: THE ROLE OF FAMILY SUPPORT AND DURATION OF HYPERTENSION AT TOTO KABILA REGIONAL HOSPITAL

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ABSTRACT
Medication adherence is a key component of effective hypertension management. Poor adherence to antihypertensive therapy remains a major challenge and contributes to uncontrolled blood pressure and an increased risk of cardiovascular complications. Family support and disease duration have been identified as important determinants of medication adherence, yet evidence from local healthcare settings remains limited. This study aimed to examine the association between family support, duration of hypertension, and medication adherence among hypertensive patients at Toto Kabila Regional Hospital. A quantitative analytical study with a cross-sectional design was conducted among 23 hypertensive patients selected using purposive sampling. Family support was assessed using a structured 15-item questionnaire, while medication adherence was measured using the 8-item Morisky Medication Adherence Scale (MMAS-8). Data were analyzed using descriptive statistics and the Chi-square test with a significance level of $p < 0.05$. Most respondents had experienced hypertension for less than one year (56.6%). Good medication adherence was observed in 56.6% of respondents, whereas 43.4% demonstrated poor adherence. Chi-square analysis revealed a significant association between family support and medication adherence ($p < 0.001$). Likewise, the duration of hypertension was significantly associated with medication adherence ($p < 0.001$). Respondents who received greater family support tended to demonstrate better adherence to antihypertensive therapy. Family support and duration of hypertension were significantly associated with medication adherence among hypertensive patients. Strengthening family involvement and providing continuous support for patients with long-standing hypertension may improve long-term adherence and optimize hypertension management.

INTRODUCTION

Hypertension remains one of the most prevalent non-communicable diseases (NCDs) and a major public health challenge worldwide. It affects approximately 1.28 billion adults aged 30–79 years, with nearly two-thirds residing in low- and middle-income countries. As the leading modifiable risk factor for cardiovascular disease, hypertension substantially increases the risk of stroke, myocardial infarction, heart failure, chronic kidney disease, and premature mortality. Despite advances in antihypertensive therapy and healthcare services, blood pressure control remains inadequate, with only about one-quarter of hypertensive patients achieving recommended treatment targets. Poor medication adherence has been consistently identified as one of the primary contributors to uncontrolled

hypertension and adverse clinical outcomes [1][2].

Medication adherence is a fundamental component of successful hypertension management. Consistent adherence to antihypertensive therapy significantly improves blood pressure control, reduces the incidence of cardiovascular complications, minimizes hospitalization, and lowers healthcare costs. However, maintaining long-term adherence remains challenging because it is influenced by multiple interrelated factors, including patients' beliefs regarding medication, self-efficacy, health literacy, socioeconomic status, treatment complexity, adverse drug reactions, healthcare accessibility, and the quality of communication between healthcare providers and patients [3][4][5][6]. Furthermore, qualitative evidence suggests that family support, patient motivation, and trust in healthcare professionals also play essential roles in promoting sustained adherence to antihypertensive medication [7][8].

Although numerous studies have investigated medication adherence among hypertensive patients, considerable research gaps remain. Existing evidence has predominantly examined individual determinants independently, while limited attention has been given to the interaction between patient-related, therapeutic, healthcare system, and socioeconomic factors, particularly within developing countries. Moreover, variations in healthcare infrastructure, cultural beliefs, and economic conditions may influence adherence behaviors differently across populations, limiting the generalizability of findings from previous studies. Consequently, further investigation is required to comprehensively identify the factors influencing medication adherence within specific healthcare settings to support the development of context-specific interventions.

In Indonesia, hypertension continues to be a significant public health concern. In Gorontalo Province, the prevalence of hypertension reached 29.6%, with the highest prevalence reported in Gorontalo Regency (31.4%), followed by Gorontalo City (29.9%), Bone Bolango Regency (28.8%), Pohuwato Regency (27.8%), and North Gorontalo Regency (24.2%). According to the Central Statistics Agency, hypertension remains one of the ten most common diseases across the province. Furthermore, medical records from Toto Kabila Regional Hospital in Bone Bolango Regency reported 624 outpatient cases and 437 inpatient cases of hypertension during January–March 2024, indicating that hypertension continues to represent a substantial clinical burden despite ongoing prevention and treatment programs. These findings suggest that existing management strategies have not yet achieved optimal outcomes, emphasizing the need to better understand factors influencing patient adherence to antihypertensive medication.

Therefore, this study aims to analyze the factors influencing medication adherence among hypertensive patients by identifying both barriers and facilitators associated with adherence behavior. The findings are expected to provide evidence for healthcare professionals and policymakers in developing targeted interventions that improve medication adherence, optimize blood pressure control, and ultimately reduce hypertension-related morbidity and mortality.

Literatur Review

Medication Adherence in Hypertensive Patients

Medication adherence refers to the extent to which patients take medications as prescribed by healthcare providers in terms of dosage, timing, and duration. In hypertension management, adherence is essential because antihypertensive medications must be taken continuously to maintain optimal blood pressure and prevent cardiovascular complications. Poor medication adherence has been consistently associated with uncontrolled blood pressure, increased hospitalization, higher healthcare costs, and elevated risks of stroke, myocardial infarction, kidney disease, and premature mortality [3][1].

Because hypertension is generally asymptomatic, many patients discontinue medication once symptoms improve or when they perceive themselves to be healthy. Consequently, medication adherence is recognized as one of the greatest challenges in hypertension management.

WHO Five Dimensions of Medication Adherence

The World Health Organization conceptualizes medication adherence as a multidimensional behavior influenced by five interrelated dimensions: patient-related factors, therapy-related factors, condition-related factors, healthcare system factors, and socioeconomic factors. This framework has become the most widely accepted theoretical model for explaining adherence behavior in chronic diseases, including hypertension.

Patient-Related Factors

Patient-related factors encompass psychological, cognitive, and behavioral characteristics that determine an individual's willingness and ability to follow treatment recommendations. Recent evidence indicates that self-efficacy is among the strongest predictors of medication adherence, as patients with greater confidence in managing their treatment are significantly more likely to adhere to antihypertensive therapy.

Conversely, depressive symptoms negatively influence adherence by reducing patients' motivation to maintain long-term medication use. Patients' beliefs regarding medication, perceived necessity of treatment, and illness perception also play substantial roles in adherence behavior. Individuals who understand hypertension as a lifelong condition requiring continuous treatment demonstrate significantly better adherence than those who underestimate the disease.

Therapy-Related Factors

Therapy-related factors refer to characteristics of the prescribed treatment itself. Regimen complexity, polypharmacy, dosing frequency, treatment duration, and adverse drug reactions are among the most frequently reported determinants of adherence.

According to Zhou et al. [8], patients receiving complicated medication regimens or experiencing undesirable side effects are more likely to discontinue treatment. Simplified medication regimens and fixed-dose combination therapy have been shown to improve adherence by reducing treatment burden and increasing convenience.

Condition-Related Factors

Condition-related factors describe characteristics associated with hypertension and patients' perceptions of their disease. Since hypertension is frequently referred to as a "silent disease," many patients experience no noticeable symptoms despite elevated blood pressure, leading them to underestimate the importance of continuous medication use.

Healthcare System Factors

Healthcare system factors involve the quality and accessibility of healthcare services, including communication

between healthcare professionals and patients, medication counseling, continuity of care, and healthcare accessibility.

The qualitative meta-integration by Zhou et al. [8], identified patient-provider relationships as one of the strongest facilitators of medication adherence. Effective communication, clear medication instructions, regular follow-up, and individualized counseling improve patients' understanding of treatment and strengthen their motivation to remain adherent. Conversely, limited access to healthcare services, inadequate counseling, and insufficient follow-up reduce adherence rates.

Socioeconomic Factors

Socioeconomic factors include education level, income, employment, family support, health insurance coverage, and medication affordability. These factors directly influence patients' ability to obtain medications and maintain long-term treatment.

Evidence synthesized by Zhou et al. [8], indicates that social support from family members substantially improves medication adherence by encouraging patients to remember medication schedules, attend follow-up appointments, and sustain healthy behaviors. Conversely, financial difficulties, low educational attainment, and poor medication literacy remain major barriers to adherence in many low- and middle-income countries.

RESEARCH METHODS

Research Design

This study employed a quantitative research approach using an analytical cross-sectional design [9]. The cross-sectional approach was selected to examine the association between family support, duration of hypertension, and medication adherence among hypertensive patients at a single point in time.

Study Setting and Participants

The study was conducted at Toto Kabila Regional Hospital, Bone Bolango Regency, Indonesia. The study population comprised all hypertensive patients receiving treatment at the hospital during the study period. A total of 23 hypertensive patients who met the eligibility criteria participated in the study.

The inclusion criteria were: (1) patients diagnosed with hypertension by a physician; (2) aged 18 years or older; (3) currently receiving antihypertensive medication; and (4) willing to participate by signing informed consent. Patients who were unable to complete the questionnaire or had incomplete responses were excluded from the study.

Sampling Technique

Participants were selected using a purposive sampling technique. This method was chosen to ensure that respondents fulfilled the predefined inclusion criteria and were able to provide complete information regarding their medication adherence and family support.

Research Variables

The dependent variable was medication adherence among hypertensive patients. The independent variables included family support and duration of hypertension.

Research Instruments

Data were collected using a structured questionnaire consisting of three sections. The first section collected respondents' demographic and clinical characteristics, including the duration of hypertension. The second section measured family support using a 15-item questionnaire covering informational, emotional, instrumental, and appraisal support. Responses were rated on a four-

point Likert scale ranging from 1 (Never) to 4 (Always).

Medication adherence was assessed using the Morisky Medication Adherence Scale (MMAS-8), a standardized instrument widely used to evaluate adherence to antihypertensive medication. The MMAS-8 consists of eight questions designed to classify respondents according to their level of medication adherence.

Data Collection Procedure

After obtaining permission from the hospital and informed consent from the participants, questionnaires were administered directly to eligible respondents. The researcher explained the purpose of the study and provided guidance when necessary to ensure that all questionnaire items were clearly understood and completed accurately.

Data Processing

The collected data were processed through several stages, including editing to verify the completeness of questionnaires, coding to assign numerical values to each response, data entry into IBM SPSS Statistics, data cleaning to identify missing or inconsistent data, and tabulation to organize the data for statistical analysis.

Data Analysis

Data analysis was performed using IBM SPSS Statistics. Univariate analysis was conducted to describe respondents' characteristics and study variables using frequencies and percentages. Bivariate analysis was performed using the Chi-square test to determine the association between family support, duration of hypertension, and medication adherence. A p-value of less than 0.05 was considered statistically significant.

Ethical Considerations

This study was conducted in accordance with ethical principles for research involving human participants. Prior to data collection, all respondents received information regarding the objectives and procedures of the study and voluntarily provided written informed consent. The confidentiality and anonymity of participants' personal information were maintained throughout the research process.

RESEARCH RESULT

Respondent Characteristics

A total of 23 hypertensive patients participated in this study. The characteristics of respondents based on the duration of hypertension are presented in Table 1.

Table 1. Distribution of Respondents by Duration of Hypertension (n = 23)

Duration of Hypertension	Frequency (n)	Percentage (%)
< 1 year	13	56.6
≥ 1 year	10	43.4
Total	23	100.0

As shown in Table 1, the majority of respondents (56.6%) had experienced hypertension for less than one year, while 43.4% had been diagnosed with hypertension for one year or longer.

Family Support

Family support was assessed using a 15-item questionnaire comprising informational, emotional, instrumental, and appraisal support. The distribution of responses for each questionnaire item is presented in Table 2.

Table 2. Distribution of Family Support Responses (n = 23)

No.	Family Support Item	Always	Often	Sometimes	Never
1	Family informs patients about medical examination results	15	6	2	0

No.	Family Support Item	Always	Often	Sometimes	Never
2	Family reminds patients to take medication, exercise, and maintain diet	14	9	0	0
3	Family provides information about factors that worsen hypertension	13	10	0	0
4	Family explains unclear information regarding the illness	11	11	1	0
5	Family accompanies patients during treatment	3	8	8	4
6	Family pays attention to the patient's condition	7	11	2	3
7	Family listens to patients' complaints	11	4	1	7
8	Family helps meet patients' daily needs	11	5	4	3
9	Family provides assistance when needed	5	7	1	10
10	Family reminds patients to follow treatment recommendations	14	7	2	0
11	Family provides information about disease progression	7	3	2	11
12	Family explains medical information clearly	6	2	4	11
13	Family praises patients for following medical advice	13	10	0	0
14	Family supports medical treatment	12	7	3	1
15	Family comforts patients when feeling discouraged	15	5	2	1

Respondents reported receiving relatively good family support. The highest levels of support were related to medication reminders, encouragement to follow medical advice, and emotional support. In contrast, accompaniment during treatment and the provision of disease-related information were less frequently reported.

Medication Adherence

Medication adherence was measured using the Morisky Medication Adherence Scale (MMAS-8). The distribution of adherence levels is shown in Table 3.

Table 3. Distribution of Medication Adherence Levels (n = 23)

Medication Adherence	Frequency (n)	Percentage (%)
Good adherence	15	56.6
Poor adherence	8	43.4
Total	23	100.0

Table 3 indicates that more than half of the respondents (56.6%) demonstrated good adherence to antihypertensive medication, whereas 43.4% showed poor adherence.

Association Between Family Support and Medication Adherence

The association between family support and medication adherence was analyzed using the Chi-square test. The results are presented in Table 4.

Table 4. Association Between Family Support and Medication Adherence

Variable	χ^2	df	p-value
Family support	157.574*	42	<0.001

Based on the Chi-square test.

The Chi-square analysis demonstrated a statistically significant association between family support and medication adherence ($p < 0.001$). Patients receiving better family support tended to have higher adherence to antihypertensive medication.

Association Between Duration of Hypertension and Medication Adherence

The relationship between the duration of hypertension and medication adherence was examined using the Chi-square test (Table 5).

Table 5. Association Between Duration of Hypertension and Medication Adherence

Variable	χ^2	df	p-value
Duration of hypertension	23.000	1	<0.001

The results revealed a statistically significant association between the duration of hypertension and medication adherence ($\chi^2 = 23.000$; $p < 0.001$), indicating that the duration of the disease may influence patients' adherence behavior.

DISCUSSION

Family Support and Medication Adherence

The present study demonstrated a statistically significant association between family support and medication adherence among hypertensive patients ($p < 0.05$). These findings indicate that patients who receive stronger family support are more likely to adhere to antihypertensive medication. Family involvement appears to play an essential role in encouraging patients to maintain treatment routines, attend follow-up appointments, and comply with lifestyle recommendations.

The findings are consistent with the study by Shen et al. [10], which reported that perceived family and social support significantly improved medication adherence among patients with hypertension. Emotional support, reminders to take medication, and assistance in managing treatment were identified as important factors associated with higher adherence levels. Similarly, Pan et al. [11], found that social support positively influenced treatment adherence by enhancing patients' confidence and motivation to follow prescribed therapy. Furthermore, a systematic review by Shahin et al. [12], concluded that family support is one of the strongest social determinants contributing to improved medication adherence among individuals with hypertension.

The positive influence of family support may be explained by the role of family members in providing emotional encouragement, practical assistance, and continuous supervision during long-term treatment. Family members often remind patients to take medication, accompany them to healthcare facilities, and encourage healthy lifestyle behaviors such as dietary modification and regular physical activity. These supportive behaviors reduce forgetfulness and increase patients' commitment to

treatment, thereby improving medication adherence.

Nevertheless, previous studies also emphasize that family support alone may not be sufficient to ensure optimal adherence. Olaniran et al. [13], reported that although family support was generally high among elderly hypertensive patients, medication adherence was also influenced by other factors such as financial limitations, health literacy, and patients' beliefs regarding treatment. Therefore, interventions aimed at improving adherence should integrate family involvement with patient education and continuous support from healthcare professionals.

Duration of Hypertension and Medication Adherence

The present study also identified a significant relationship between the duration of hypertension and medication adherence ($p < 0.05$). This finding suggests that the length of time patients have lived with hypertension influences their adherence to antihypertensive therapy.

This result is supported by Ghaderi Nasab et al. [7], who found that patients with long-standing hypertension frequently experience treatment fatigue, reduced motivation, and psychological burden associated with lifelong medication use. These factors may contribute to decreased adherence over time. As hypertension is generally asymptomatic, patients often underestimate the importance of continuous medication once they perceive their condition as stable.

Conversely, some studies have reported that patients who have lived longer with hypertension may develop better disease awareness and medication routines through repeated interactions with healthcare providers. However, the relationship remains complex because prolonged disease duration is often accompanied by multiple comorbidities and increasingly complex medication regimens, both of which may negatively affect adherence.

The present findings therefore suggest that healthcare providers should pay particular attention to patients with prolonged hypertension by providing regular counseling, medication reviews, and continuous follow-up to prevent treatment fatigue and maintain long-term adherence.

Medication Adherence Based on MMAS-8

Medication adherence in this study was assessed using the Morisky Medication Adherence Scale (MMAS-**8)**. More than half of the respondents (56.6%) demonstrated good medication adherence, while 43.4% were categorized as having poor adherence. Although the proportion of adherent patients was relatively higher than that reported in several international studies, a considerable percentage of patients remained non-adherent, indicating that medication adherence continues to be a major challenge in hypertension management.

The MMAS-8 has been widely recognized as a valid and reliable instrument for assessing medication adherence among hypertensive patients across different populations. Studies conducted in various countries have demonstrated satisfactory psychometric properties, supporting its application in both clinical practice and research settings.

Previous studies have consistently shown that patients with higher MMAS-8 scores are more likely to achieve adequate blood pressure control and experience fewer hypertension-related complications. The observed adherence level in the

present study may reflect the beneficial influence of family support, which encourages patients to maintain regular medication use and follow medical advice.

However, despite relatively favorable adherence levels, nearly half of the respondents still exhibited poor adherence. This finding suggests that additional interventions focusing on patient education, medication counseling, reminder systems, and family-centered care are necessary to further improve long-term adherence among hypertensive patients.

Implications of the Study

Overall, the findings demonstrate that family support and the duration of hypertension are important factors associated with medication adherence among hypertensive patients. Strengthening family involvement through educational programs and encouraging healthcare providers to adopt family-centered approaches may contribute to improved treatment adherence. In addition, patients with prolonged hypertension require continuous monitoring and counseling to reduce treatment fatigue and sustain long-term adherence. These findings may assist healthcare professionals and hospital administrators in designing interventions aimed at improving medication adherence and ultimately reducing hypertension-related complications.

CONCLUSION

This study demonstrates that family support and the duration of hypertension are significantly associated with medication adherence among hypertensive patients. Patients who receive stronger support from their families are more likely to adhere to antihypertensive treatment, while the duration of hypertension also influences adherence behavior, reflecting the challenges of long-term disease management. These findings highlight that medication adherence is influenced not only by individual patient characteristics but also by social support and disease-related factors.

The findings emphasize the importance of implementing family-centered interventions in hypertension management. Healthcare professionals should actively involve family members in patient education, medication counseling, and long-term follow-up to improve adherence. In addition, patients living with hypertension for extended periods require continuous monitoring, motivation, and individualized counseling to prevent treatment fatigue and sustain adherence. Future studies should include larger sample sizes and additional variables, such as health literacy, self-efficacy, socioeconomic status, and healthcare accessibility, to provide a more comprehensive understanding of the determinants of medication adherence among hypertensive patients.

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