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Age and employment status as dominant factors in medication adherence among hypertensive patients

Usia dan Status Bekerja sebagai Faktor Dominan dalam Perilaku Kepatuhan Minum Obat pada Pasien Hipertensi

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ABSTRACT

Background: *Hypertension is a common chronic condition that requires consistent medication adherence to prevent complications. Despite various control programs, adherence remains influenced by sociodemographic factors.*
Objective: *This study aimed to examine the association between sociodemographic characteristics, national health insurance enrollment (JKN), smoking habits, and medication adherence among hypertensive patients.*
Methods*: This cross-sectional study was conducted at the Mengwi Public Health Center, Badung Regency, Bali Province. The study population included 611 adult hypertensive patients, and 239 respondents were selected using random sampling. The dependent variable was medication adherence, while the independent variables were age, gender, marital status, education, employment status, household position, JKN membership, and smoking habits. Data were analyzed using the Chi-square test to assess associations.*
Results: *The results showed that among 239 participants, 82.8% adhered to their medication. Age was significantly associated with adherence (p = 0.008), and regression analysis (p = 0.901; OR = 1.001; 95% CI: 0.980–1.023) indicated a small effect but a pattern where older and middle-aged patients were more compliant than younger adults. Employment status was also significantly related to adherence (p = 0.039), with regression results (p = 0.039; OR = 3.125; 95% CI: 1.061–9.206), showing a positive association. Other variables, including gender, marital status, education, household position, JKN membership, and smoking habits, were not significantly associated.*
Conclusion: *Age and employment status significantly influenced medication adherence among hypertensive patients. These findings emphasize the importance of age- and occupation-based interventions, such as adherence education for younger patients and time management strategies for employed individuals.*

Keywords: *hypertension, medication adherence, sociodemographic*

ABSTRAK

Latar Belakang: Hipertensi adalah penyakit kronis umum yang memerlukan kepatuhan pengobatan yang konsisten untuk mencegah komplikasi. Meskipun berbagai program pengendalian telah dilakukan, namun kepatuhan minum obat ternyata juga dipengaruhi oleh faktor sosiodemografi.
Tujuan: Penelitian ini bertujuan untuk mengetahui hubungan faktor sosiodemografi pasien hipertensi dengan perilaku kepatuhan minum obat hipertensi.
Metode: Studi cross-sectional ini dilakukan di Puskesmas Mengwi, Kabupaten Badung, Provinsi Bali. Populasi sasaran adalah pasien hipertensi dewasa sebanyak 611 responden. Sampel dipilih menggunakan teknik random sampling, dengan jumlah 239 responden. Variabel dependen adalah kepatuhan pengobatan. Variabel independen meliputi usia, jenis kelamin, status perkawinan, pendidikan, status pekerjaan, posisi

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dalam rumah tangga, kepesertaan JKN, dan kebiasaan merokok. Data dianalisis menggunakan uji chi-square untuk menilai hubungan.
Hasil: Hasil penelitian menunjukkan dari 239 peserta, 82,8% mematuhi pengobatan. Variabel usia berhubungan signifikan dengan kepatuhan (p=0,008), dengan hasil regresi (p= 0.901; OR= 1.001; 95% CI: 0.980–1.023), meskipun pengaruhnya kecil, namun menunjukkan pola bahwa pasien usia lansia dan paruh baya lebih patuh dibandingkan usia dewasa muda. Status pekerjaan juga menunjukkan hubungan yang signifikan (p=0,039) dengan hasil regresi t (p= 0.039; OR= 3.125; 95% CI: 1.061–9.206), arah hubungan positif . Variabel lain yaitu jenis kelamin, status perkawinan, pendidikan, posisi dalam rumah tangga, kepesertaan JKN, dan kebiasaan merokok tidak signifikan.
Kesimpulan: Usia dan status pekerjaan signifikan dengan kepatuhan pengobatan. Temuan ini menunjukkan perlunya intervensi yang disesuaikan dengan kelompok usia dan status pekerjaan, seperti edukasi kepatuhan bagi pasien muda serta dukungan manajemen waktu bagi pasien yang bekerja, guna meningkatkan kepatuhan pengobatan hipertensi.

Kata kunci: Hipertensi, kepatuhan pengobatan, sosiodemografi

INTRODUCTION

Hypertension is a global health problem; around 1.28 billion adults in the world are reported to suffer from hypertension. The prevalence of hypertension in Indonesia is quite high, namely around 34.1% of the population in 2018[1]. Most hypertension sufferers are not well aware of the risks of this disease, which causes a lack of community compliance in undergoing hypertension treatment. The prevalence of hypertension sufferers in Bali Province reaches 3.4 to 8.4% of the Bali population. The results of the Bali Provincial Health Office study in 2015 and 2016 showed that hypertension was included in the top ten most common diseases in community health centers and ranked second; the trend of the number of sufferers showed a significant increase every year. Although self-report data based on literature studies state that the level of compliance with hypertension treatment in Bali Province is relatively high (> 75%), several facts indicate that the distribution of compliance varies based on the sociodemographic characteristics of hypertension sufferers[2], [3].

Several studies also show that medication adherence is influenced by various sociodemographic and behavioral factors, including age, gender, education level, and employment status.[4]. Elderly patients tend to be more compliant because they perceive a higher risk due to hypertension, while younger patients often ignore symptoms[5].

The results of the preliminary study showed that primary hypertension was the most common disease found in the Mengwi I Community Health Center UPT, in 2018 there were 1307 cases recorded and it was around 16.5% of the 10 most common diseases, based on a household survey conducted in the PISPK program, the majority of hypertension patients at the Mengwi I Community Health Center were elderly, if measured from data from 2016 and 2017 it is known that the trend of this disease is increasing[6]One of the efforts undertaken by Mengwi I Community Health Center is to provide education and mentoring through the PIS-PK program. This aligns with Prasetya's (2023) research, which explains that increasing knowledge in elderly people with hypertension can be achieved through health education activities regarding hypertension. This knowledge, formed in the elderly, has increased compliance in taking medication[7].

In addition to knowledge, hypertension management, in terms of patient compliance with treatment, also involves different variables in each community setting. Fan's (2024) research on the influence of demographic factors on hypertension explains that there is

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a significant relationship between marital status and hypertension in women, where women experiencing marital turmoil (divorced or widowed) have a higher average systolic blood pressure compared to those who are still married.[8]. Another study by Pan (2023), which was conducted cross-sectionally in the city of Nanchong, China, the results of the study found that the behavioral intention aspect (intentions) in the theory of planned behavior and the theory of health belief models was the main predictor of adherence behavior to treatment using[9].

Furthermore, Perdana (2023) explained that several factors that influence compliance with hypertension treatment are knowledge, motivation, family support, and involvement of health services[10]. The study also explained that there is a significant relationship between patient knowledge about hypertension and their treatment adherence, patients who have a better understanding of hypertension tend to be more compliant in undergoing treatment therapy, then other significant factors in influencing the level of adherence to hypertension treatment are motivation, family support and health service factors, while internal factors such as age, gender, and attitude do not show a significant relationship with treatment adherence.

One of the government programs in order to overcome the impact of hypertension on the community is the PROLANIS activity. This program is integrated with community participation in JKN through BPJS Kesehatan[11]. The success of hypertension therapy is greatly influenced by the patient's level of compliance in taking antihypertensive drugs. Compliance with taking medication in hypertension sufferers is influenced by the amount and level of medication. Aqilatul's research explains that compliance with taking medication in hypertension sufferers tends to decrease along with the length of treatment duration and the increase in the number of medications that must be taken[12]. KJKN participation was chosen as one of the predictor variables, considering the role of the health insurance system in ensuring access to drugs and routine control services, which are important factors in successful treatment.

In addition to access to healthcare, smoking is also considered an important variable, as this habit has been shown to increase the risk of hypertension and its severity. However, even after being diagnosed with hypertension, many patients have not yet quit smoking. Smoking is one behavior that can increase a person's risk of being diagnosed with hypertension. However, hypertensive patients do not simply give up smoking. Kiswara's research shows that smoking is still common among hypertensive patients[13]. This behavior indicates that smoking is not only a biological risk factor for hypertension, but also reflects a low level of commitment and self-control in hypertension treatment.

This study aimed to analyze the relationship between sociodemographic factors (age, gender, marital status, education, employment status, position in the household, JKN insurance membership, and smoking habits) with the level of medication adherence in hypertension patients at Mengwi I Community Health Center, Badung Regency, and to identify the most dominant factors influencing this adherence based on the results of statistical analysis.

METHODS

Study design

This study used a quantitative approach with a cross-sectional design to analyze the influence of sociodemographic factors, National Health Insurance (JKN) membership, and smoking habits on medication adherence in hypertensive patients at Mengwi I Community Health Center, Badung Regency.

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Data source and sampling procedure

The study population included all 611 adult hypertensive patients registered for regular treatment at Mengwi I Community Health Center. A sample of 239 respondents was determined based on the Krejcie and Morgan Table with a 95% confidence level and 80% test power. Tomasino Research (2025)stated that the global rate of antihypertensive non-adherence ranges from 30%–40%[14]Based on this, the researcher used the assumption of a 35% compliance prevalence, resulting in approximately 84 events resulting in an Events-Per-Variable (EPV) of 10.5 for eight predictors, which meets the EPV ≥ 10 criteria, thus n = 239 is considered adequate for multivariate analysis. Furthermore, sampling was carried out using a simple random sampling (SRS) technique to ensure equal opportunities for each member of the population to become respondents. The inclusion criteria in this study were hypertensive patients aged ≥ 18 years who had complete medical record data and research variable information. The exclusion criteria in this study were patients with cognitive impairments or conditions that hindered the ability to provide answers independently, and patients who could not be contacted at the time of data collection or refused to continue the interview process.

Variables of the study

The dependent variable was medication adherence, measured through direct questions (self-report), which is part of the healthy family indicator in the PIS-PK questionnaire.

Data Collection

Data collection was conducted in May–July 2025 by trained surveillance officers through data verification and structured interviews to minimize recall bias and social bias. To increase validity, the self-report results were verified with monthly medical record data.

Measurement and instruments

The questionnaire validity test was conducted using the Morisky Medication Adherence Scale (MMAS-8) instrument on a subsample, with a Cronbach's reliability value of α = 0.83. The independent variables included age, gender, marital status, education, employment status, position in the household, JKN membership, and smoking habits. Independent variables were categorized as follows: age (18–35, 36–59, ≥60 years), gender (male/female), marital status (married, unmarried, widow/widower), education (non-formal, elementary school, junior high school, high school, college), employment status (working/not working), position in the household (head/not head of household), JKN membership (participant/non-participant), and smoking habits (smoker/non-smoker).

Ethical Considerations

This study has obtained ethical approval from the Research Ethics Committee of STIKES Wira Medika Bali (Number: 513/E1.STIKESWIKA/EC/V/2025, dated May 21, 2025), and all respondents provided written informed consent.

Data Analysis

Data analysis was performed using SPSS version 26.0 through three stages: univariate analysis for frequency distribution, bivariate analysis using the chi-square test, and multivariate analysis using binary logistic regression to identify the factors most influential on adherence. The results of the analysis are presented as odds ratios (OR) with a 95% confidence interval ($p<0.05$).

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RESULTS

The characteristics of the respondents studied were age, gender, marital status, education, occupation, position in the household, participation in national health insurance (JKN), and smoking habits. Based on Table 1, the distribution of respondent characteristics shows that the majority were in the elderly age group (≥60 years), as many as 125 people (52.3%). There were more female respondents than male respondents, and the majority were married. Most respondents had a primary education. Judging by employment status, most respondents were employed (185 people; 77.4%). Of the 157 respondents who had complete data regarding their household position, 82 people (65.7%) were heads of household. Almost all respondents were registered as National Health Insurance (JKN) participants, namely 237 people (99.2%). Meanwhile, the majority of respondents were non-smokers, with a total of 217 people (90.8%).

Table 1. Respondent Characteristics

No	Character	n	%
1	Age		
	- 18–35 years	4	1.7
	- 36–59 years	110	46.0
	- ≥60 years	125	52.3
	Total	239	100.0
2	Sex		
	- Male	104	43.5
	- Female	135	56.5
	Total	239	100.0
3	Marital status		
	-Married	171	71.5
	-Unmarried	14	5.9
	-Widowed	54	22.6
	Total	239	100.0
4	Education Level		
	-No Formal education	35	14.6
	-Elementary school	115	48.1
	-Junior high school	21	8.8
	- Senior high school	53	22.2
	-College	15	6.3
	Total	239	100.0
5	Employment Status		
	-Employed	185	77.4
	-Unemployed	54	22.6
	Total	239	100.0
6	Household Role		
	-Head of household	82	65.7
	- Non Head of household	34.3	239
	Total	157	100.0
7	Health Insurance (JKN)		
	-Insured (JKN Member)	237	99.2
	-Uninsured (non-JKN)	2	0.8
	Total	239	100.0
8	Smoking Status		
	- Non-smoker	217	90.8
	- Smoker	22	9.2
	Total	239	100.0

Table 2 presents the crosstabulation between respondent characteristics and medication adherence among hypertensive patients. Overall, the highest adherence was

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observed in patients aged ≥60 years (84.0%), followed by those aged 36–59 years (83.6%), while adherence was lowest among those aged 18–35 years.

Females showed slightly higher adherence than males (85.2% vs. 79.8%). Married and widowed respondents had similar adherence levels (83.6% and 83.3%), whereas unmarried respondents showed lower adherence (71.4%). Respondents with higher education demonstrated better adherence, with those having a college education reaching 100%.

Unemployed respondents had higher adherence than employed respondents (92.6% vs. 80.0%). Heads of household were more adherent than non-heads (86.6% vs. 80.9%). Most JKN members showed high adherence (82.7%), while the small number of non-members were fully adherent.non-smokers had a higher compliance rate (83.9%) than smokers (72.7%).

Table 2. Crosstabulation Analysis of Medication Adherence by Respondent Characteristics

Characteristics	n	Adherent	Non-adherent
Age: 18–35 years	4	1 (25.0%)	3 (75.0%)
Age: 36–59 years	110	92 (83.6%)	18 (16.4%)
Age: ≥60 years	125	105 (84.0%)	20 (16.0%)
Sex: Male	104	83 (79.8%)	21 (20.2%)
Sex: Female	135	115 (85.2%)	20 (14.8%)
Marital Status: Married	171	143 (83.6%)	28 (16.4%)
Marital Status: Unmarried	14	10 (71.4%)	4 (28.6%)
Marital Status: Widowed	54	45 (83.3%)	9 (16.7%)
Non-formal education	35	29 (82.9%)	6 (17.1%)
Education: Elementary School	115	98 (85.2%)	19 (16.5%)
Education: Junior High School	21	18 (85.7%)	3 (14.3%)
Education: Senior High School	53	40 (75.5%)	13 (24.5%)
Education: College	15	15 (100.0%)	0 (0.0%)
Occupation: Employed	185	148 (80.0%)	37 (20.0%)
Occupation: Unemployed	54	50 (92.6%)	4 (7.4%)
Household Role: Head of household	82	71 (86.6%)	11 (13.4%)
Household Role: Non-head of household	157	127 (80.9%)	30 (19.1%)
Health Insurance (JKN): Insured (JKN Member)	237	196 (82.7%)	41 (17.3%)
Health Insurance (JKN): Uninsured (non-JKN)	2	2 (100.0%)	0 (0.0%)
Smoking Status: Non-smoker	217	182 (83.9%)	35 (16.1%)
Smoking Status: Smoker	22	16 (72.7%)	6 (27.3%)

Based on Table 3, two of the eight variables examined were significantly associated with medication adherence among hypertensive patients, namely age (p = 0.008) and employment status (p = 0.039). This suggests that differences in age and employment may influence patients' adherence to treatment.In contrast, sex (p = 0.302), marital status (p = 0.505), education level (p = 0.259), household role (p = 0.286), health insurance (JKN) membership (p = 1.000), and smoking status (p = 0.231) were not significantly associated with medication adherence.

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Table 3. Results of Bivariate Analysis Between Respondent Characteristics and Compliance with Taking Hypertension Medication

No	Characteristics	*p-value*
1	Age-Compliance	.008*
2	Sex-Compliance	.302
3	Marital Status-Compliance	.505
4	Compliance Education	.259
5	Compliance Occupation	.039*
6	Position in the household-Compliance	.286
7	Insurance Membership (JKN)-Compliance	1,000
8	Smoking status-Compliance	.231

*Significant

To further assess the influence of these variables, logistic regression analysis was performed, and the results are presented in Table 4.

Table 4. Logistic Regression Analysis Between Factors Influencing Compliance

Variables	B	Sig. (p)	OR (Exp(B))	95% CI for OR
Age	0.001	0.901	1,001	0.980 – 1.023
Occupation	1,140	0.039*	3.125	1,061 – 9,206

*Significant

Based on the results of the logistic regression analysis in Table 4, it is known that the age variable does not significantly influence medication adherence (p = 0.901; OR = 1.001; 95% CI: 0.980–1.023). The regression coefficient (B) value of 0.001 indicates a positive but very small relationship. The confidence interval range that exceeds 1 also confirms that age is not a significant predictor of medication adherence. The employment variable significantly influences medication adherence (p = 0.039; OR = 3.125; 95% CI: 1.061–9.206). The coefficient (B) value of 1.140 indicates a positive relationship, meaning that employed respondents have a higher chance of being compliant than unemployed respondents. Employment status is a factor that plays an important role in increasing medication adherence.

DISCUSSION

Based on the results of statistical analysis, it was found that the variables of age (p = 0.008) and employment status (p = 0.039) had a significant relationship with medication adherence in hypertensive patients. The regression results showed that the relationship between age and adherence was positive, although the strength was relatively small. This finding confirms that sociodemographic factors remain an important determinant in the medication behavior of hypertensive patients[5]. Theoretically, age is associated with changes in health behaviors as life experience increases and physiological function declines. Kim's (2019) study reported that adherence to antihypertensive medication increased in the middle-aged group, but declined again in the elderly over 70 years due to cognitive impairment and polypharmacy[5]. Based on the description above, researchers are of the opinion that increasing age is related to compliance, but is not the main factor determining compliant behavior in treatment.

Biologically, increasing age is associated with physiological changes. Research by Farah (2024) states that increasing age is seen as a situation with a higher burden of comorbidities compared to younger ages. This increasingly complex health condition makes patients tend to be more careful about maintaining the regularity of taking their medication[15]. Furthermore, theoretically, the relationship between age and medication adherence from a psychological perspective can be explained by the fact that older patients generally face more severe illnesses than younger patients, so they become

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more aware of their health condition. This increased awareness can then encourage them to be more compliant in undergoing treatment[16].

In the social pathway mechanism, increasing age tends to be followed by better family support. In addition to minimal work demands at retirement age or no longer working, this can reduce obstacles to discipline in taking medication, which is relevant to the findings of this study, where 92.6% of patients with unemployed status were compliant with taking hypertension medication. Conversely, younger individuals who tend to have less supportive social environments tend to have lower medication compliance[17].

The results of the regression analysis indicate that employment status has a positive and strong cohesive relationship with compliance. Theoretically, employment status is related to the level of independence in decision-making. The Self-Determination Theory proposed by Deci and Ryan explains that an individual's motivation to behave consciously and responsibly is influenced by three basic psychological needs: autonomy, competence, and social connectedness[18]. Based on the description above, researchers assume that employed individuals generally have a higher level of autonomy in making decisions regarding health behaviors. Furthermore, they also tend to have better social and economic support than unemployed individuals. As the economic pillar of their families, employed individuals typically have greater awareness and responsibility for maintaining their health to remain productive and able to maintain their roles within the family and society. The results of this study are also in line with research by Gemmechu (2020) at Shasemene Referral Hospital, Ethiopia, which showed that employment status was significantly associated with adherence to hypertension treatment ($p = 0.033$), confirming that employed patients are more likely to follow therapy regimens regularly than unemployed patients[19]. Based on this description, researchers think that working individuals have social support and better access to health services, all factors that contribute to treatment consistency.

Although this study found that age and employment status were significantly associated with adherence, several other studies have reported different results. Research by Ruksakulpiwat et al. (2024) in Thailand showed that comorbidity burden and medication regimen complexity were more dominant factors than sociodemographic factors in determining adherence in hypertensive patients[20]. Another study by Widayani et al. (2024) emphasized that perceived benefits and self-efficacy were the strongest predictors of adherence in the elderly, not age itself[21]. Studies by Kim et al. (2019) and Gemmechu (2020) found that health system factors, such as access to services, continuity of care, and patient-healthcare provider relationships, contributed more to adherence than age and occupation[22], [23]. Researchers also found several results that are in line with this study, namely Gemmechu's (2020) study at Shasemene Referral Hospital, Ethiopia, showed that employment status was significantly associated with adherence to hypertension treatment ($p= 0.033$), confirming that patients who have jobs are more likely to follow the therapy regimen regularly than those who do not work[19]. This phenomenon is also in accordance with research by Hosen and JT Mohl (2025), which shows that older age is associated with better compliance and more optimal blood pressure control in antihypertensive therapy[24],[25]. In addition to the different findings, there were also consistent research results. This strengthens the interpretation of the results of this study, where age and employment status still play an important role in treatment behavior, especially in the context of populations with similar socio-demographic characteristics.

Based on the results of the statistical analysis, it is known that other sociodemographic variables, namely sex, marital status, education, occupation, household position, insurance participation (JKN), and smoking status, did not

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significantly influence compliance. However, this study revealed that female respondents showed a higher level of compliance than male respondents. This is consistent with research. Lefort (2018) showed that compliance with antihypertensive therapy was more frequently found in women than in men. In women, the level of compliance reached 69%, and in men it was at a lower percentage, namely 58%; this difference was statistically significant ($P < 10^{-4}$)[26]. When viewed based on the Health Belief Model theory, it can be seen that women tend to have a higher awareness of risk and confidence in the effectiveness of treatment. This results in higher self-efficacy in women, leading to greater adherence to certain treatments[27]. Furthermore, from the aspect of marital status, it is known that respondents who are married and those who are widows/widowers have a high level of compliance, while respondents who are not married have a lower level of compliance. A meta-analysis on "Adherence to antihypertensives in the United States: A comparative meta-analysis of 23 million patients" found that marital status was significantly associated with higher odds of medication adherence (OR = 1.66, $p < .01$)[28]. This is likely related to the role of partners and family support. Research by Waluya A (2025) stated that the majority of respondents at the Kamala Clinic Polyclinic, Hermina Hospital, Sukabumi, who reported having good family support had a high level of medication adherence, and showed a positive relationship between family support and adherence to taking hypertension medication[29]. In terms of education level, most respondents had completed primary education, with only 6.3% having completed tertiary education. However, respondents at all levels of education had relatively high levels of adherence to hypertension medication (above 75%). However, there was a tendency for respondents with higher education (college graduates) to have better adherence. This is likely due to the level of awareness derived from the knowledge and understanding of hypertension sufferers. This is in line with a similar study conducted in Aceh, which found that individuals with secondary or higher education were more likely to adhere to medication regimens well than those with lower education or no schooling at all[30].

Theoretically, this difference can be explained by better health literacy and knowledge among those with higher education. Individuals with higher education tend to be better able to understand medical information, medication instructions, and the importance of consistent medication adherence, all of which increase their motivation and ability to adhere to medication[31]. Researchers argue that higher education not only broadens medical knowledge but also fosters healthier lifestyle habits and a willingness to engage in long-term treatment. Based on their position in the household, heads of households showed higher levels of compliance than non-heads of households. This phenomenon may be related to the role of the head of household. Head of the family. The head of the family in Indonesia largely plays a role in household decision-making. This is supported by a study conducted in Nigeria, which reported that hypertension patients living in functional families had up to three times higher odds of adherence than patients from dysfunctional families (OR = 2.585; $p< 0.05$)[32]. Based on the description above, the research assumes that the phenomenal conditions found in this research are related to the existence of family function factors.

Based on the characteristics of participation in the National Health Insurance, it is known that the National Health Insurance (JKN) membership was not significantly associated with medication adherence in hypertension patients. This finding can be understood by examining the characteristics of the available data. Nearly all respondents were JKN participants (99.2%), while only a small proportion were not participants. This highly unequal distribution resulted in very limited data variability, making it impossible to statistically detect differences in adherence levels between groups. Furthermore, it

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indicates that healthcare services for hypertension management at the primary healthcare facility level have generally been implemented equitably for both JKN participants and non-participants. Service standards such as routine check-ups, health education, and the availability of essential medications tend to be similar, so access to therapy is no longer a major differentiator in adherence behavior. This condition is reinforced by research findings showing that all respondents had a good level of adherence. Based on this assumption, the researchers assume that the high level of coverage and affordability of JKN services for hypertension sufferers has encouraged patients to undergo therapy more routinely and consistently.

Based on smoking habits, it was found that non-smokers had a higher level of compliance than smokers. This phenomenon indicates that awareness among hypertensive patients about the risks of smoking needs to be improved, as hypertensive patients still smoke. One study reported that when comparing smokers and non-smokers during treatment, it was found that smokers consistently tend to be less compliant with treatment and therapy programs, including those with patients with hypertension. Sherman's (2014) research shows that smokers have a 7% lower ratio of drug ownership than non-smokers[33]. Based on the description above, the researcher assumes that respondents who have a smoking habit generally do not have awareness of adopting a healthy lifestyle, so this also affects their compliance in taking hypertension medication.

This study has both strengths and limitations. The strength of this study is the discovery that the dominant factors influencing medication adherence in hypertension patients are age and occupation. This study used a fairly large sample size so that the results are more representative. However, the limitation of this study is that it was conducted using a cross-sectional method, so it did not examine psychological factors, family support, and the quality of health services. The implication of this study is the need for health promotion strategies focused on young people and the unemployed, with a more personalized and community-based educational approach, so that it can improve medication adherence and support efforts to control hypertension more effectively.

This study has several strengths, particularly in identifying the dominant factors influencing medication adherence in hypertension patients, namely age and occupation. Furthermore, the use of a relatively large sample size makes the findings more representative of the population studied. However, this study has several limitations that require consideration. The cross-sectional study design limits the ability to assess causal relationships, thus only describing associations at a specific point in time. Measuring adherence using self-report methods also has the potential to introduce information bias, such as over-reporting due to respondents' desire to provide answers deemed favorable (social desirability bias). Furthermore, this study did not use a more comprehensive multivariate analysis to control for confounding factors, so the association findings are still modest. Another limitation is the study's context, which was conducted within a single healthcare facility, thus limiting the generalizability of the findings to the broader population. Other important factors, such as psychological well-being, family support, and quality of healthcare services, were also not analyzed, thus making it impossible to conclude their contribution to adherence.

This study recommends the need for more specific, evidence-based interventions to improve medication adherence in patients with hypertension. Education for young people should be provided through digital media, brief counseling, and the use of relevant social media platforms. Furthermore, to improve medication adherence among unemployed individuals, it is recommended that Mengwi I Community Health Center strengthen the role of health cadres and regularly evaluate Posbindu PTM activities, as well as empower local leaders to assist hypertension patients. Strengthening family support is also

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necessary through structured education on the importance of medication adherence. Furthermore, an app-based medication reminder system should be introduced to help prevent negligence. Mengwi I Community Health Center is expected to strengthen scheduled monitoring, follow-up on non-compliant patients, and provide ongoing pharmaceutical counseling services.

CONCLUSION

This study shows that medication adherence in hypertensive patients is significantly influenced by age and employment status. Older patients tend to show higher adherence levels than younger and unemployed patients, although the effect is not statistically significant. Employment status plays a significant role in increasing adherence, with employed patients tending to be more compliant with their medication. Other factors such as gender, marital status, education level, household position, National Health Insurance (JKN) membership, and smoking habits did not show statistically significant associations. The main limitations of this study lie in its local sample size and cross-sectional design, which make the results difficult to generalize broadly and unable to establish causal relationships. These findings provide practical implications: health promotion strategies should focus on younger age groups and the unemployed, with an emphasis on adherence to antihypertensive medication. Future research is recommended to conduct longitudinal studies to assess causal relationships, with broader and more diverse data sets to strengthen the validity of the results.

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