

Factors Associated with Medication Adherence in Hypertensive Patients in Rural Areas

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ABSTRACT

Hypertension can have significant impacts if not addressed promptly, and treatment is often initiated too late. Effective management necessitates integrated care that considers both internal and external factors. Patients actively engaged in their treatment should possess essential qualities, including knowledge and motivation. This study aimed to investigate the factors associated with medication adherence in hypertensive patients residing in the rural area of Jember City. Using a cross-sectional design, this study focused on hypertensive patients in rural Jember. A simple random sampling technique was employed, including 94 respondents. Data collection was conducted using a questionnaire, with analysis performed using the Chi-Square test. The statistical results indicated a p-value of 0.015 ($p < \alpha = 0.05$), suggesting that the level of knowledge is associated with medication adherence. Additionally, motivation yielded a result of $p = 0.02$ ($p < \alpha = 0.05$), indicating that respondents' motivation correlates with adherence levels. The analysis of healthcare support showed a p-value of 0.048 ($p < \alpha = 0.05$), demonstrating its association with adherence. Furthermore, family support revealed a p-value of 0.000 ($p < \alpha = 0.05$), indicating significant influence on adherence levels. The variable concerning complementary therapy also showed a strong relationship, with a p-value of 0.000. In contrast, the type of medication indicated a p-value of 0.485 ($p > \alpha = 0.05$), suggesting no correlation with adherence. All respondents reported that healthcare facilities were easily accessible.

Keyword: Medication Adherence, Hypertension, Rural Area

ABSTRAK

Hipertensi merupakan penyakit yang seringkali terlambat untuk mendapat pengobatan. Perawatan hipertensi memerlukan perawatan yang terintegrasi pada aspek internal ataupun eksternal pasien. Pasien harus terlibat dalam pengobatan sebaiknya memiliki dasar penting seperti dukungan dan motivasi. Penelitian ini bertujuan untuk menganalisa hubungan antara kepatuhan pengobatan terhadap faktor lain pada pasien hipertensi di area rural. Penelitian ini menggunakan desain Crosssectional. Analisis dilakukan dengan chi-Square. Hasil uji statistik menunjukkan $p = 0.015 < \alpha = 0.05$ yang artinya tingkat pengetahuan berhubungan dengan kepatuhan pengobatan, uji statistik motivasi menunjukkan hasil $p = 0.02 < \alpha = 0.05$, dimana menunjukkan motivasi responden berhubungan terhadap tingkat kepatuhan, uji statistik dukungan petugas kesehatan didapatkan hasil $p = 0.048 < \alpha = 0.05$ menunjukkan dukungan petugas kesehatan juga berhubungan dengan tingkat kepatuhan responden, hasil uji variabel dukungan keluarga menunjukkan hasil $p = 0.000 < \alpha = 0.05$, sehingga dukungan keluarga berpengaruh terhadap tingkat kepatuhan responden, variabel penggunaan terapi komplementer juga dinilai terdapat hubungan dengan kepatuhan minum obat dengan hasil $p = 0.000 < \alpha = 0.05$ faktor yang lain yaitu jenis obat menunjukkan $p = 0.485 > \alpha = 0.05$ yakni jumlah jenis obat yang dikonsumsi responden tidak berhubungan dengan tingkat kepatuhan pengobatan dan variabel keterjangkauan tempat pelayanan kesehatan menunjukkan semua responden menjawab tempat pelayanan kesehatan masih mudah dijangkau. Kesimpulan dalam penelitian ini adalah terdapat hubungan pengetahuan, dukungan tenaga kesehatan, tingkat motivasi, dan dukungan keluarga terhadap tingkat kepatuhan minum obat sedangkan jumlah jenis obat tidak berhubungan dengan kepatuhan

Kata Kunci: Kepatuhan Pengobatan, Hipertensi, Daerah Pedesaan

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Introduction:

In the past, hypertension was primarily recognized among urban residents; however, it is increasingly becoming prevalent in rural areas, often resulting in delayed treatment. According to a report from the World Health Organization (WHO), only 25% of individuals with known hypertension receive treatment, and only 12.5% of those receive good-quality care (Ademe et al., 2019). Furthermore, the WHO (2023) reported that only an estimated 50% of adults with hypertension are aware of their condition, have received an accurate diagnosis, and are receiving appropriate treatment. Meanwhile, 46% of adults with hypertension remain unaware of their disease (World Health Organization, 2023).

According to the World Health Organization (WHO) in 2021, hypertension is a significant contributor to early mortality worldwide. A community-based study revealed that 58% of both rural and urban communities had at least one chronic disease in the previous year. Additionally, 33% of the communities reported having two or more chronic diseases, such as hypertension (67%), arthritis (25%), arrhythmia (15%), coronary heart disease (14%), and diabetes (14%) (Singh et al., 2017).

Hypertension can result in damage to numerous vital organs; therefore, it has been crucial to examine blood pressure since adolescence. If hypertension is detected, regular check-ups and control of blood pressure to the recommended level are necessary. Additionally, it is important to change unhealthy lifestyle habits to healthy ones and seek proper treatment (Leonard, 2019). Hypertension is a primary risk factor for congestive heart disease, stroke, vision problems, and kidney disease and, ultimately, leads to mortality (Burnier & Wuerzner, 2019).

The low rate of medication adherence in hypertensive patients has been hypothesized to contribute to the occurrence of complications or progression to a more severe condition. Adherence to medication refers to the actions taken by patients to follow all advice and instructions given by healthcare workers, including doctors and pharmacists, in order to

achieve treatment objectives. Medication adherence is crucial for achieving successful outcomes in the carried-out treatment (Saragi, 2017).

There are two approaches to managing hypertensive patients: pharmacological and non-pharmacological treatments. According to research by Tursina and Sya'id (2022), hypertensive patients often use complementary therapies at home and postpone seeking conventional treatment. Based on the research findings, some patients asserted that complementary therapy can serve as an alternative to pharmacological therapy, which is required to be taken on a daily basis. They also believe that complementary therapy has fewer adverse effects. Healthcare workers must address unfavorable perceptions associated with complementary therapy in order to prevent any detrimental effects on the health of hypertensive patients (Roth et al., 2020). The perception leads patients to discontinue antihypertensive medication (OAH), believing it is no longer necessary.

Tursina and Sya'id (2022) conducted research that highlighted the challenges faced by hypertensive patients in accessing first-level healthcare facilities. The research found that the considerable distance between their residences and the nearest first-level healthcare facilities often leads to postponements in getting antihypertensive medication. Patients in rural areas do not have the same access to information as those in urban areas; thus, healthcare workers should provide more specific and detailed care for patients with hypertension in rural areas (Saragi, 2017). In addition, some patients in rural areas reported that they prefer to employ complementary therapies in order to control their blood pressure. The availability of information from friends, neighbors, or therapists about using complementary therapy as an alternative therapy in the event that they do not have antihypertensive medication influences their belief in complementary therapy (Tursina and Sya'id, 2023), which in turn influences the knowledge level of patients in rural areas about medication adherence. Based on the

mentioned explanation, it was considered necessary to investigate factors associated with medication adherence in hypertensive patients residing in rural areas, who often hold their own beliefs regarding treatment.

Methods:

The Population of this study was hypertension patients in rural area specially in Jember. This study used a cross-sectional design. Furthermore, this study included 94 respondents, selected using a simple random sampling technique. Inclusion criteria of this study consisted of 18-65 years old, had been diagnosed by physician in primary health care at least 1 year. Exclusion criteria of this study was hypertension patient who have complication, unable to read and speak bahasa fluently. Data analysis was conducted using the Chi-Square test and SPSS software. Data collection was performed only once using a questionnaire method. The MMAS-8 questionnaire was used to measure the level of medication adherence. Modified questions from previous research by Pratama et al. (2014) was employed after researcher conducted validity and reliability tests were used to assess knowledge (chronbach alpha is 0,72), motivation (chronbach alpha is 0,73), healthcare support (chronbach alpha is 0,74), and family support (chronbach alpha is 0,72). Other variables, such as complementary therapy use and the type of medication, were measured using a simple modified questionnaire developed by the researcher, featuring closed-ended questions. This study received ethical clearance approval from the Ethical Committee of Medical Research at the Faculty of Dentistry, University of Jember, with registry number 2699/UN25.8/KEPK/DL/2024.pe. Kuesioner tersebut This study was received ethical clearance approval by the Ethical Committee Of Medical Research Faculty Of Dentristy University of Jember and registry with the registry number 2699/UN25.8/KEPK/DL/2024.

Results:

Based on the demographics of the respondents, the age groups with the highest number of respondents were 45–65 and over 65 years old, each comprising 36 people (37.1%). Additionally, the gender of respondents was dominated by women (57,4%).

Table 1. Characteristics of Respondents

| Characteristics of Respondents | n | % |
|--------------------------------|----|------|
| Age Group | | |
| 37-45 | 22 | 25.8 |
| 45-65 | 36 | 37.1 |
| > 65 | 36 | 37.1 |
| Gender | | |
| Men | 40 | 42,6 |
| Women | 54 | 57.4 |
| Last Education | | |
| Never attended school | 40 | 42.6 |
| Elementary School | 21 | 22,3 |
| Junior High School | 8 | 8.5 |
| Senior High School | 15 | 16.5 |
| Associate/Bachelor Degree | 10 | 15.4 |
| Occupation | | |
| Unemployment | 24 | 25.5 |
| Housewife | 9 | 9.6 |
| Self-employed | 17 | 17.5 |
| Workers/Farmers/Fishermen | 25 | 25.8 |
| Civil Servant | 4 | 4.1 |
| Employee | 2 | 2.1 |
| Retired | 13 | 16.5 |

According to the data in Table 2, it is evident that the majority of respondents, 66%, demonstrated a low level of adherence, while 34% demonstrated a high level of adherence.

Table 2. Distribution of Medication Adherence

| Variables | n | % |
|-------------------------|----|------|
| Adherence Level | | |
| Low | 62 | 66 |
| High | 31 | 34 |
| Knowledge Level | | |
| High | 80 | 85.1 |
| Low | 14 | 14.9 |
| Motivation Level | | |
| High | 80 | 85.1 |
| Low | 14 | 14.9 |

| Variables | n | % |
|---|----|------|
| Healthcare Worker Support | | |
| Positive | 83 | 88.3 |
| Negative | 11 | 11.7 |
| Family Support | | |
| Positive | 40 | 42.6 |
| Negative | 54 | 57.4 |
| Accessibility to Healthcare Facilities | | |
| Easy | 94 | 100 |
| Difficult | 0 | 0 |
| Type of Medicine (Amount) | | |
| Single Drug | 81 | 86.2 |
| Multiple drug | 13 | 13.8 |

Based on the respondents' knowledge of hypertension treatment, it is evident that the majority of them possess a high level of knowledge (85.1%), while a smaller percentage have a low level of knowledge (14.9%).

Moreover, a significant majority of respondents (85%) demonstrated a high motivation level to recover from their disease, while a small minority displayed a low motivation level (14.9%). According to the data, respondents stated that there was still a lack of support from healthcare workers. Furthermore, the findings revealed that a significant portion of respondents, 57.4%, reported low levels of family support, in contrast to the 42.6% of patients who reported being well supported by their families. It was also discovered that all respondents could easily access healthcare facilities (100%). In addition, a significant majority of respondents, 86.2%, took a single drug in their treatment, while a smaller percentage, 13.8%, took multiple drugs (Table 2).

Table 3. The Association between Independent Variables and Hypertension Medication Adherence

| Independent Variables | Medication Adherence Level | | | | Amount | | Statistical Test Results |
|---|----------------------------|------|------|------|--------|------|--------------------------|
| | Low | | High | | n | % | |
| | n | % | n | % | | | |
| Knowledge Level | | | | | | | |
| High | 48 | 59 | 32 | 41 | 80 | 85.1 | p=0.015 |
| Low | 13 | 92.9 | 1 | 7.1 | 14 | 14.9 | |
| Motivation Level | | | | | | | |
| High | 48 | 57.8 | 35 | 42.2 | 83 | 88.3 | p = 0.02 |
| Low | 14 | 100 | 0 | 0 | 11 | 11.7 | |
| Healthcare Worker Support | | | | | | | |
| Positive | 52 | 60.5 | 34 | 39.5 | 83 | 91.5 | p=0.048 |
| Negative | 10 | 90.9 | 1 | 9.1 | 11 | 8.5 | |
| Family Support | | | | | | | |
| Positive | 10 | 23.3 | 33 | 76.7 | 40 | 43 | p=0.000 |
| Negative | 52 | 96.3 | 2 | 3.7 | 54 | 57 | |
| Accessibility to Healthcare Facilities | | | | | | | |
| Easy | 62 | 63.9 | 35 | 36.1 | 94 | 100 | - |
| Difficult | 0 | 0 | 0 | 0 | 0 | 0 | |
| Type of Medicine (Amount) | | | | | | | |
| Single Drug | 53 | 65.4 | 28 | 34.6 | 78 | 83 | p=0.485 |
| Multiple drug | 9 | 56.3 | 7 | 43.8 | 16 | 17 | |

Respondents with a low level of knowledge tend to exhibit a low level of adherence, with 13 people (92.9%) falling into this category, compared to 48 people (59%) with a higher

level of knowledge. The chi-square statistical test results were $p = 0.015 < \alpha = 0.05$, indicating that the level of knowledge was associated with medication adherence.

Furthermore, respondents with a low level of motivation tend to exhibit a low level of medication adherence, with 14 people (100%) compared to 48 people (57.8%) who possess a high level of motivation. Additionally, the results of the statistical test using chi square showed $p = 0.02 < \alpha = 0.05$, indicating that the motivation of hypertensive patients was associated with their level of medication adherence.

Respondents who received less support from healthcare workers had a lower adherence level (10 people, 90.9%) than those who received strong support (52 people, 60.5%). The statistical tests revealed a p value of $0.048 < \alpha = 0.05$. Therefore, it can be concluded that support from healthcare workers was associated with the adherence level of hypertensive patients. Moreover, respondents with less family support had a significantly lower level of adherence, specifically 52 people (96.3%), in contrast to those who receive strong family support (10 people, 23.3%). The statistical test for these two variables revealed $p = 0.000 < \alpha = 0.05$, indicating that family support was associated with the level of adherence of hypertensive patients.

Respondents who took only one type of hypertension medication had a lower level of adherence (53 people, 65.4%) than those who took more than one type (9 people, 56.3%). The statistical test results show that the number of types of medicines taken by respondents was not associated with the level of medication adherence, as indicated by $p = 0.485 > \alpha = 0.05$. In addition, the accessibility of healthcare facilities variable indicates that all respondents reported that healthcare facilities were still easily accessible, with 62 people (63.9%) having a low adherence level and 35 people (36.1%) having a high adherence level. It was not possible to conduct statistical tests on this variable.

This study collected adherence data from 94 adult hypertensive patients using MMAS-8. The findings indicate that the hypertension medication adherence level remains low in rural areas. Out of the total respondents, a

majority of 62 people (66%) demonstrated a low level of adherence, while a smaller group of 32 people (34%) demonstrated a high level of adherence. The low adherence level of hypertensive patients residing in rural areas to hypertensive medication necessitates urgent attention and action from the community health center (Puskesmas), which serves as the healthcare provider unit. Additionally, several studies, particularly those focused on chronic diseases necessitating long-term treatment, have employed the MMAS-8 to assess an individual's medication adherence level. The research conducted by Pratama et al. (2016) used a similar instrument to assess the medication adherence level.

Discussion:

The Association between Knowledge Level and Medication Adherence

The level of knowledge possessed by hypertensive patients is one of the factors in their medication adherence for their disease. A high level of knowledge indicates that a patient is fully aware of and understands the importance of the treatment they are receiving (Dorans KS, Mills KT, Liu Y, 2018). Based on the findings, it was found that there was an association between the level of knowledge and medication adherence. Respondents who possess sufficient knowledge about their disease will be able to make rational and mature decisions to adhere to the medication they are receiving. The findings of this study align with the research findings by Jo et al. (2019), which demonstrated an association between an individual's level of knowledge and their attitude towards the medication they were receiving. This demonstrates that the patient's knowledge of hypertension is crucial to the effectiveness of their treatment (Hamrahian et al., 2022).

Interestingly, this study also discovered that the respondents' level of education did not appear to have an association with their knowledge about the disease. The data obtained from this study shows that respondents with a high level of knowledge made up 85.1% of the total respondents, which

comprises respondents that did not attend school. In this case, sources other than formal education can provide knowledge about the disease, specifically hypertension. Healthcare workers can provide health education activities and direct explanations to enhance patient knowledge when they seek treatment or in other activities (Algabbani et al., 2020).

The Association between Motivation Level and Medication Adherence

Motivation is the process that accounts for the intensity, direction, and persistence of an individual's efforts to attain their objectives, specifically in the context of successfully managing hypertension (American Heart Association (AHA), 2019). An individual's high motivation reflects their deep desire and determination to accomplish a goal that comes from within them (Hamrahian et al., 2022).

The results of this study revealed that the majority had a high motivation to recover from hypertension. According to the statistical tests, motivation was associated with medication adherence. The result is in line with research conducted by Varleta et al. (2017), which discovered that respondents with high motivation tend to adhere to medication because patients have a strong drive and desire to manage hypertension to prevent complications.

The Association between Healthcare Worker Support and Medication Adherence

Healthcare workers play a crucial role in providing support to patients with hypertension, particularly in rural areas. Information from healthcare workers is one of the most essential sources of support and knowledge regarding treatment management for hypertensive patients in rural areas. In addition to information, healthcare workers provide support in the form of comprehensive, sustainable, and good-quality service throughout the service process (Hamrahian et al., 2022).

The results of this study showed that

there was an association between healthcare worker support and medication adherence. Healthcare worker support is crucial for ensuring medication adherence in rural communities, where the circumstances and cultural factors associated with hypertension are often underestimated (Tursina and Sya'id, 2023). Respondents exhibited increased adherence to obtaining treatment as a result of receiving support from healthcare workers. The results align with research conducted by Ademe et al. (2019), which found that healthcare workers played a crucial role in ensuring medication adherence.

The Association between Family Support and Medication Adherence

Family support refers to the family's attitude, actions, and acceptance of the disease sufferer. Family members are perceived as supportive individuals who are consistently prepared to offer help and support, particularly during the management phase of hypertension. The family can offer a variety of support types, such as informational support, assessment support, instrumental support, and emotional support (Winahyu et al., 2017). Hypertensive patients in rural areas, particularly those in Jember with Javanese and Madurese cultures, also known as Pandalungan, strongly value their familial closeness because family members can remind them to take their medications and offer support during necessary medical visits (Tursina and Sya'id, 2023). Moreover, research conducted by Zinat Motlagh et al. (2018) found that receiving support from family members can increase medication adherence. The previous research findings are consistent with the results of this study, in which, based on statistical tests, family support was associated with the medication adherence of hypertensive patients, particularly in rural areas (Hamrahian et al., 2022).

The Association between the Amount of Medicine Taken and Medication Adherence

Medication non-adherence for chronic diseases can often be attributed to the amount

of medicine taken. Patients are less likely to adhere to their prescribed medication when they have a greater number of medicine to take. According to JNC 8, if a patient fails to achieve the target blood pressure with a single antihypertensive drug, the consideration of using multiple types of drugs is recommended. Meanwhile, in JNC 7, the administration of multiple drugs is initiated when a patient's blood pressure is classified as stage 2. This shows that the more difficult it is to control the patient's blood pressure, the more it will have an impact on the number of medicines. It is important to take into account that uncontrolled blood pressure can lead to an increased risk of complications in hypertensive patients (Hamrahian et al., 2022)..

This study found no significant association between the amount of medicine taken and medication adherence. It was also discovered that patients taking multiple types of drugs generally demonstrated higher levels of adherence compared to those taking only one type of medicine. In contrast to research conducted by Gupta et al. (2017), medication adherence was found to be associated with the number of types of medicine taken. They also found that there was no significant association between the amount of medicine taken and medication adherence in hypertensive patients.

Healthcare workers tend to prioritize patients who are at risk of complications or have already experienced complications, providing them with more attention. Patients receive additional information to ensure medication adherence, minimize the risk of complications, and prevent existing complications from worsening (Algabbani et al., 2020). Additionally, patients with more severe diseases tend to have a stronger motivation to recover in comparison to those with less severe conditions or without any complications. These two factors can indirectly increase patients' medication adherence.

This was also discussed in research conducted by Mills et al. (2017) on hypertensive patients in Pakistan. According to the research, it was discovered that patients

taking multiple antihypertensive drugs demonstrated a higher level of adherence in comparison to those taking a single type of drug. These findings can be attributed to the fact that patients who took multiple antihypertensive drugs often have a more severe stage of the disease compared to those who only took a single type of drug. As a result, their awareness of medication is typically higher. In addition, it was observed that patients who were prescribed a single drug were more likely to forget to take their drug, in contrast to patients who were prescribed multiple drugs.

The Association between Accessibility to Healthcare Facilities and Medication Adherence

According to several studies, access to healthcare facilities is one of the factors associated with medication adherence. However, statistical tests could not be conducted in this study. This may have been the result of sampling from the Puskesmas (community health center) register, which limited the selected samples to hypertensive patients who had visited the facility. In fact, patients tend to visit healthcare facilities near their residence. Therefore, patients who chose to visit this healthcare facility likely did so because of its easy accessibility from their residence. In addition, the presence of village health posts (Poskesdes or Pustu) in every village greatly facilitates access to healthcare facilities.

According to research by Gebreyohannes et al. (2019), access to healthcare facilities was not associated with medication adherence in hypertensive patients. In contrast to research conducted by James et al. (2018), it was found that access to healthcare facilities is one of the factors associated with hypertension medication adherence.

The Implications for Hypertension Management Programs

This study was conducted to determine the factors associated with hypertension

medication adherence in rural areas. According to the study's findings, there are several factors that are significantly associated with hypertension medication adherence in rural areas, including level of knowledge, level of motivation, healthcare worker support, and family support. This can serve as a foundation for developing programs that effectively address non-adherence to hypertension medication in rural areas, with the ultimate objective of improving health status through the chronic disease management program.

Health education is one of the mandatory activities in the management program for chronic or non-communicable diseases, including hypertension. In order to increase hypertension medication adherence, it is important to provide health education materials that specifically address hypertension medication. This health education should be conducted in all villages, thereby reaching all hypertensive patients in remote rural areas with their respective local cultural wisdom (Tursina and Sya'id, 2023). Moreover, health education can involve providing a clear understanding of hypertension, thereby increasing their motivation to seek proper medication. Furthermore, it can be conducted for the general public using the latest media, not only for those who already suffer from hypertension but also for those who are at risk. This will enable the community to provide support to the individual if one of their family members suffers from hypertension (Hamrahian et al., 2022).

A more specific approach can also be taken by conducting home visits to people with hypertension, particularly those who have a history of medication non-adherence. This enables healthcare workers to provide patients and their families with a proper understanding of hypertension medication. Healthcare workers are also expected to be more diligent in providing information regarding patient diseases and medications (Algabbani et al., 2020). In addition, healthcare workers should consistently encourage patients to seek regular medication, provide excellent service, and

prioritize maintaining a positive attitude towards patients.

Conclusion:

Based on this study's findings and discussion, there are several factors that were associated with medication adherence. The level of knowledge, motivation, healthcare worker support, and family support were all associated with medication adherence. In contrast, the type of medication, in terms of amount, was not associated with medication adherence. Additionally, it was expected that this study could serve as a valuable reference for future research, contributing to the development of new insights into the factors associated with medication adherence. Limitations of this study was only explore the relation of those variable using quantitative method. This study only observed variable and provide analysis based on an instrument indicator, that increase possibility to shallowly capture the real phenomena by thorough patients particularly internal factor. Qualitative design was recommended to answer that phenomena.

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