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The Relationship Between Knowledge and Perceptions of the Disease and Medication Adherence Among Elderly Patients with PRB Hypertension in the Service Area of the Cimalaka Community Health Center

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ABSTRACT

Background & Objective: Hypertension is a common chronic non-infectious disease, or noncommunicable disease (NCD), among the elderly and is often referred to as a "silent killer" because its symptoms are rarely apparent. Although the Referral-Back Program (PRB) is available, adherence to antihypertensive medication among the elderly remains a challenge. This study aims to analyze the relationship between knowledge and disease perception and medication adherence among elderly hypertensive patients in the Referral Back Program within the Cimalaka Community Health Center (Puskesmas) service area. **Method:** This study employed a quantitative correlational method with a cross-sectional design, involving 46 respondents selected through accidental sampling. Data collection in this study was conducted using the Hypertension Knowledge-Level Scale (HK-LS) questionnaire to assess knowledge levels, the Brief Illness Perception Questionnaire (B-IPQ) to evaluate illness perception, and the Morisky Medication Adherence Scale (MMAS-8) to assess medication adherence. Subsequently, the data were analyzed using the Spearman's rho correlation test to determine the relationship between variables **Result:** The results of the Spearman's rho test showed no significant association between knowledge and medication adherence ($r = 0.176$; $p = 0.241$) or between illness perception and medication adherence ($r = 0.259$; $p = 0.082$). **Conclusion:** It can be concluded that no significant association was found between knowledge levels and perceptions of the disease and medication adherence among elderly patients with hypertension participating in the Referral-Back Program in the service area of the Cimalaka Community Health Center.

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Introduction

Non-Communicable Diseases (NCDs) are a group of chronic diseases that are not caused by infections, such as coronary heart disease, diabetes mellitus, chronic kidney disease, stroke, chronic obstructive pulmonary disease, and cancer. Globally, NCDs continue to pose an increasing health challenge, both in terms of the number of cases and mortality rates (Hamzah et al., 2021). In 2021, NCDs were responsible for approximately 43 million deaths worldwide, including 18 million deaths among individuals under the age of 70 years. The majority of these cases (82%) occurred in low- and middle-income countries (WHO, 2024).

One of the most common NCDs is hypertension, the prevalence of which continues to increase annually. It is estimated that by 2025, approximately 1.5 billion people will suffer from hypertension, with an annual mortality rate reaching 9.4 million deaths (Ministry of Health of the Republic of Indonesia, 2018). Hypertension is often referred to as a "silent killer" because many patients do not experience symptoms, resulting in delayed detection of the disease (Ministry of Health of the Republic of Indonesia, 2021). Globally, around 1.28 billion adults aged 30–79 years are estimated to have hypertension, with nearly two-thirds living in low- and middle-income countries. Approximately 46% of individuals with hypertension are unaware of their condition, fewer than 42% receive treatment, and only 21% successfully achieve optimal blood pressure control (WHO, 2023). A similar situation also occurs in Indonesia, where the prevalence of hypertension remains high across various regions.

According to the 2018 Basic Health Research (Riskesdas), the prevalence of hypertension among older adults in Indonesia reached 55.2% in individuals aged 55–64 years, 63.2% in those aged 65–74 years, and 69.5% in individuals aged 75 years and older (Pusdatin Ministry of Health, 2022). Nationally, the prevalence of hypertension increased from 25.8% in 2013 to 34.1% in 2018, with West Java ranking second highest among 35 provinces at 39.6% (Riskesdas, 2018). In Sumedang Regency, data from the Health Office in 2024 indicated that there were 50,927 older adults with hypertension, with the highest numbers found in the working area of Puskesmas Cimalaka (4,394 older adults), followed by Puskesmas Situraja (3,590 older adults) and Puskesmas Sumedang Selatan (3,091 older adults). This condition indicates that hypertension remains an important health problem in the region and highlights the need for long-term management efforts, including patient adherence to treatment.

Hypertension management can be carried out through non-pharmacological therapy, such as lifestyle modification, as well as pharmacological therapy by taking antihypertensive medication according to healthcare professionals' instructions. The success of treatment is highly dependent on the level of patient adherence to therapy (Pertiwi et al., 2024). The Referral Back Program (Program Rujuk Balik/PRB) is provided for National Health Insurance (JKN) participants with stable chronic diseases who still require long-term treatment. This program is implemented in primary healthcare facilities based on referrals or recommendations from specialist physicians, with the aim of facilitating patient access to medications and healthcare services (Rahayu & Kusumawati, 2023).

Although the Referral Back Program has improved the availability of medications and healthcare services, medication adherence among older adults remains a challenge. One of the main factors influencing adherence is the patient's level of knowledge regarding hypertension. Knowledge is defined as an

understanding acquired by individuals through sensory processes and information processing, which subsequently shapes health-related attitudes and behaviors (Notoatmodjo, 2014). Adequate understanding of hypertension, including disease definition, lifestyle management, complications, dietary regulation, and drug therapy, is believed to encourage healthy behavior and improve patient adherence to regular medication use (Azzahra et al., 2025).

Research conducted by Fauziah & Mulyani (2022) showed that at Puskesmas Tes, 41% of patients with hypertension had poor knowledge, while 59% had good knowledge. However, these findings indicate that there are still hypertensive patients whose knowledge remains suboptimal. In addition to knowledge, illness perception also plays a role in influencing medication adherence among hypertensive patients. Patients who perceive hypertension as a non-serious disease, do not understand its long-term consequences, or doubt that treatment can help control hypertension tend to have lower adherence levels in taking medication regularly (Baharvand et al., 2023). Conversely, patients who perceive hypertension as a condition requiring long-term management are more likely to adhere to treatment (Soesanto, 2022). Research conducted by Prazuliana (2022) at Puskesmas Bangetayu showed that 58.7% of hypertensive patients had negative perceptions toward their disease, such as believing that hypertension was not dangerous or did not require treatment. Among this group, 45.7% were non-adherent to treatment. Data analysis demonstrated a positive correlation with moderate strength (γ, $p = 0.005$), indicating that negative illness perceptions significantly contributed to lower levels of medication adherence. Therefore, inaccurate or negative perceptions regarding hypertension may become barriers to medication adherence, highlighting the need for appropriate interventions to develop positive illness perceptions among hypertensive patients.

Previous research conducted by Pertiwi et al. (2024) at Puskesmas Sindang Jaya showed that the majority of respondents (63.2%) had low medication adherence, and most also had inadequate knowledge regarding hypertension. The study further reported a significant relationship between knowledge level and medication adherence ($p = 0.000$; $r = 0.603$). Meanwhile, research by Irman et al. (2023) at Puskesmas Nita found that 54.8% of adult hypertensive patients had negative perceptions toward their disease, and 69% of these patients demonstrated low adherence to medical follow-up. All patients with negative perceptions were recorded as having low adherence levels, whereas patients with positive perceptions generally demonstrated moderate adherence. Data analysis revealed a significant relationship between illness perception and adherence to medical control ($p = 0.000$), indicating that negative perceptions may reduce patient adherence to treatment.

Furthermore, research conducted by Purwandari et al. (2024) at Puskesmas Srondol reported that most respondents (80%) had positive perceptions toward hypertension, although their perception of disease threat severity remained low. Further analysis showed a very strong positive relationship between illness perception and medication adherence, with a correlation value of $r = 0.916$. This finding confirms that the more positive a patient's perception of hypertension, the higher their level of adherence to treatment. Consistent with these findings, research by Putri et al. (2024) at Puskesmas Rejosari reported that among 98 hypertensive patients, 44.9% had negative perceptions and 55.1% had positive perceptions toward their disease. Based on adherence levels, 25.5% of patients were categorized as having low adherence, 48% moderate adherence, and 26.5% high adherence. The results

demonstrated a significant relationship between illness perception and medication adherence (p = 0.004).

Based on a preliminary study conducted through interviews with six older adults with hypertension participating in the Referral Back Program (PRB) at Puskesmas Cimalaka, it was found that older adults still had insufficient knowledge regarding hypertension. Only two respondents knew that hypertension is a condition characterized by high blood pressure and understood triggering factors such as consumption of salty foods, stress, and lack of physical activity, while the other four respondents did not. Regarding medication use, two respondents understood that antihypertensive drugs must be taken daily even in the absence of symptoms, while four respondents were unaware of the importance of regular medication use. In terms of illness perception, four respondents perceived hypertension as a serious condition, whereas two respondents did not share this perception. Additionally, four respondents considered themselves cured because they no longer experienced symptoms, while only two respondents recognized the chronic nature of hypertension. Belief in the benefits of treatment was also low, as only two respondents believed that regular medication use could prevent complications such as stroke or heart disease. This condition was directly proportional to adherence levels, where only two respondents routinely took medication as recommended, while the remaining four respondents were non-adherent and tended to take medication only when experiencing symptoms, forgetting, feeling healthy, or running out of medication.

The findings of the preliminary study indicate variations in knowledge levels, illness perceptions, and medication-taking behaviors among older adult participants in the Referral Back Program. These variations suggest that knowledge, illness perception, and adherence are important components that require further investigation among older adults with hypertension. To date, studies comprehensively examining the relationship between knowledge and illness perception with medication adherence among older adults with hypertension participating in the Referral Back Program remain limited. Most previous studies have focused on the general adult population and have not specifically highlighted older adult participants in the Referral Back Program. Therefore, this study is considered important to fill this gap, particularly in the working area of Puskesmas Cimalaka. The purpose of this study was to evaluate the relationship between knowledge and illness perception with medication adherence among older adults with hypertension participating in the Referral Back Program in the region.

Objective

This study aimed to analyze the relationship between knowledge and illness perception with medication adherence among older adults with hypertension participating in the Referral Back Program in the working area of Puskesmas Cimalaka.

Method

This study employed a quantitative approach with a cross-sectional correlational design. The sample consisted of 46 older adults with hypertension who participated in the Referral Back Program at Puskesmas Cimalaka, selected using an accidental sampling technique while considering predetermined inclusion and exclusion criteria.

Data were collected using the Hypertension Knowledge-Level Scale (HK-LS) to assess knowledge, the Brief Illness Perception Questionnaire (B-IPQ) to evaluate illness perception, and the Morisky Medication Adherence Scale (MMAS-8) to measure medication adherence. Data analysis was conducted using the Spearman Rho correlation test, and the study was carried out from December 3 to December 28, 2025.

Results

1. Characteristics of the Respondents

The characteristics of the respondents in this study were analyzed based on the variables of gender, age, and occupation. The study aimed to evaluate the relationship between knowledge and disease perception levels and medication adherence among elderly individuals with hypertension participating in the Referral-Back Program (PRB) within the service area of the Cimalaka Community Health Center. According to data from the Cimalaka Community Health Center, there are 4,394 elderly individuals with hypertension, 76 of whom are participants in the Referral Back Program. Of this number, 46 individuals were selected as a sample using accidental sampling, taking into account the established inclusion and exclusion criteria. Data collection was conducted from December 3 to 28, 2025.

TABLE 1. Respondent Characteristics

Respondent Characteristics	N	%
Gender		
Male	12	26%
Female	34	74%
Total	46	100%
Age		
Elderly (*elderly*) 60–74 years old	46	100%
Total	46	100%
Employment		
Farmer	3	6,52%
Housewife	27	58,70%
Retiree	8	17,39%
Self-employed	6	13,04%
Unemployed	2	4,35%
Total	46	100%

Based on Table 1, the majority of respondents in this study were women, totaling 34 respondents (74%). This indicates that older adults with hypertension participating in the Referral Program in the service area of the Cimalaka Community Health Center are predominantly women. In terms of age, all respondents were between 60 and 74 years old, with the largest group consisting of 14 respondents aged 61. The average age of the respondents was 65.5 years, with the youngest being 61 years old and the oldest 74 years old. Meanwhile, based on employment status, the majority of respondents were housewives, totaling 27 respondents (58.70%).

2. Univariate Results

A. Knowledge

TABLE 2. Frequency Distribution of Knowledge

Category	N	%
Good	46	100%
Fair	0	0%
Total	46	100%

Table 2 shows that all elderly individuals with hypertension who participated in the Referral Program in the Cimalaka Community Health Center's service area had a good understanding of hypertension, with a total of 46 respondents (100%).

B. Perception of the Disease

TABLE 3. Frequency Distribution of Perception of the Disease

Category	N	%
Positive Perception	44	95,65%
Negative Perception	2	4,35%
Total	46	100%

Table 3 shows that the majority of elderly participants with hypertension in the Referral and Follow-up Program in the Cimalaka Community Health Center's service area have a positive perception of their condition, namely 44 respondents (95.65%).

C. Medication Adherence

TABLE 4. Frequency Distribution of Medication Adherence

Category	N	%
Compliant	37	80,43%
Non-compliant	9	19,57%
Total	46	100%

Table 4 shows that the majority of elderly participants with hypertension in the Cimalaka Community Health Center's service area who were enrolled in the Referral-Back Program demonstrated good medication adherence, with 37 respondents (80.43%).

3. Bivariate Analysis

A. Normality Test

The data distribution in this study was tested using the Shapiro-Wilk test because the sample size exceeded 40 respondents (n = 46). The data was categorized as normally distributed if the significance value exceeded 0.05. Conversely, a significance value below 0.05 indicated that the data was not normally distributed. The results of the normality test are presented in the following table to provide an overview of the characteristics of the study data distribution.

TABLE 5. Results of the Normality Test for Research Variables

Variables	N	p-*value*
Knowledge	46	<0.01
Perception of the disease	46	>0.05
Medication adherence	46	<0.01

Table 5 shows the results of the normality test, in which the variables of knowledge and medication adherence have p-values < 0.05, indicating that neither variable meets the assumption of a normal distribution. Meanwhile, the variable of disease perception has a p-value > 0.05, indicating that the data for this variable are normally distributed. Based on these data distribution characteristics, the analysis of the relationship between variables was conducted using the Spearman Rho test as a non-parametric method.

B. Correlation/Bivariate Test (Spearman-rho)

Table 6. Results of the Analysis of the Relationship Between Knowledge and Perception of the Disease and Medication Adherence Among Elderly Hypertension Patients in the Referral Program in the Service Area of the Cimalaka Community Health Center

Variable	Medication adherence	
	Spearman-rho	p-*value*
Knowledge	0.176	0.241
Perception of illness	0.259	0.082

Based on Table 6, the Spearman's Rho correlation analysis shows that the correlation coefficient between knowledge and medication adherence is 0.176 with a p-value of 0.241 (p > 0.05). These results indicate that there is no statistically significant relationship between the level of knowledge and medication adherence among elderly hypertensive patients participating in the Referral Program in the Cimalaka Community Health Center (Puskesmas) service area. The low coefficient value indicates that the relationship between the two variables is weak and positive, meaning that an increase in knowledge is not significantly followed by an increase in medication adherence.

Meanwhile, the correlation between disease perception and medication adherence yielded a coefficient of 0.259 with a p-value of 0.082 (p > 0.05). This indicates the absence of a statistically significant relationship between disease perception and medication adherence among the same respondents. Although the positive direction of the relationship suggests that a better perception of the disease tends to be associated with higher medication adherence, this relationship remains weak and not yet significant; therefore, the alternative hypothesis is rejected and the null hypothesis is accepted.

Discussion

1. Discussion of Respondent Characteristics: Gender

Based on the results regarding gender characteristics, of the total 46 respondents, the majority were female, accounting for 34 respondents (74%). Gender is known to play a role in the incidence of hypertension, where the prevalence of hypertension tends to be higher in women than in men, especially after menopause. This condition is associated with structural and functional changes in the cardiovascular system due to decreased estrogen hormone levels (Danes et al., 2025). These findings are consistent with previous studies stating that menopause may increase the risk of hypertension in elderly women. Decreased estrogen production due to ovarian aging causes reduced levels of High-Density Lipoprotein (HDL), which normally functions to prevent atherosclerosis. Low HDL levels increase the risk of blood vessel narrowing, thereby elevating blood pressure (Danes et al., 2025).

In addition, decreased estrogen hormone levels may stimulate increased renin levels in the blood, which subsequently activate the renin-angiotensin system. This process converts angiotensinogen into angiotensin I, which is then converted by Angiotensin-Converting Enzyme (ACE) into angiotensin II. Angiotensin II increases the secretion of antidiuretic hormone (ADH), triggering water reabsorption, increased blood volume, and vasoconstriction of blood vessels. This condition ultimately increases vascular resistance and contributes to the development of hypertension (Danes et al., 2025). Research conducted by Prazuliana (2022) reported similar findings, where most respondents were female (69.6%) compared to male respondents (30.4%).

The findings of this study indicate that the high proportion of female respondents reflects the characteristics of older adults with hypertension who are more accessible and more actively involved in the Referral Back Program at Puskesmas Cimalaka. Elderly women generally demonstrate higher health awareness and tend to be more adherent to long-term treatment and routine medical examinations (Dewi et al., 2024). This is in line with the report by Dewi et al. (2024), which stated that elderly women are more likely to become active participants in the Referral Back Program due to better healthcare-seeking behavior and higher adherence to antihypertensive therapy.

According to the researchers, the dominance of female respondents in this study not only reflects the high prevalence of hypertension among elderly women but also illustrates differences in health behavior between women and men. Elderly women tend to be more aware of their health conditions, more compliant with treatment, and more consistent in utilizing healthcare services, including the Referral Back Program. Furthermore, women are generally more active in managing both personal and family health, making them more receptive to long-term health monitoring. In contrast, elderly men tend to be less involved in routine healthcare visits due to occupational factors, perceptions of being healthy, or reluctance to seek medical examinations, resulting in lower participation in health programs.

2. Discussion of Respondent Characteristics: Age

Based on the study results regarding age characteristics, all 46 elderly respondents with hypertension were within the age range of 60–74 years, with the highest proportion being 61 years old, accounting for 14 respondents. With increasing age, arteries undergo changes such as dilation and stiffness, resulting in reduced

vascular recoil ability and increased systolic blood pressure (Setiyaningrum, 2023). Blood pressure, which is relatively low during adolescence, begins to rise in early adulthood and becomes more pronounced in late adulthood and old age due to thickening, hardening, and reduced elasticity of blood vessel walls, ultimately triggering hypertension (Kabba, 2024). Research by Akbar et al. (2020) supports these findings, showing that most elderly respondents (70.8%) were within the age range of 60–74 years, making this age group a primary target for healthcare services, especially in chronic disease management.

The findings of this study revealed that the majority of respondents were 61 years old, classified as young-old adults—a group with an increased risk of hypertension but still possessing adequate functional capacity to perform daily activities independently (WHO, 2025). This condition allows older adults to routinely adhere to treatment and monitor blood pressure through primary healthcare services, including community health centers and the Referral Back Program. Previous studies also emphasized that hypertensive patients with relatively good physical conditions are more capable of adhering to treatment and routine follow-up visits (Burnier & Egan, 2019). Furthermore, the decreased mobility more commonly experienced by older elderly groups makes younger elderly individuals easier to reach as research respondents (Stanley & Beare, n.d.).

According to the researchers, the predominance of 61-year-old elderly respondents indicates that younger elderly groups are more responsive to healthcare services, particularly the Referral Back Program. At this age, older adults begin to recognize declining health conditions and increasing risks of chronic disease, thereby increasing their motivation for routine health control and treatment adherence. Additionally, they still possess relatively good independence, cognitive function, and mobility, enabling easier access to healthcare facilities compared to older elderly individuals. These conditions make 61-year-old elderly individuals easier to recruit as research participants and more actively involved in the Referral Back Program at Puskesmas Cimalaka.

3. Discussion of Respondent Characteristics: Occupation

Based on the findings regarding respondents' occupational characteristics, the majority were housewives, totaling 26 respondents (56.52%). These findings indicate that housewives dominate participation in community-based health research. This result is consistent with the study by Zumniati et al. (2025), which stated that housewives tend to be the most active group in utilizing healthcare services at community health centers. This dominance is likely influenced by the flexibility of their schedules, which facilitates access to primary healthcare facilities. Furthermore, the role of housewives in managing and accompanying family healthcare needs increases their interaction with public healthcare services (Zumniati et al., 2025).

These findings are also consistent with research by Rato et al. (2022), which reported that among 73 respondents, the majority (62.8%) were housewives, while self-employed individuals and retirees each accounted for only 6 respondents (7.7%). This indicates that housewives are relatively easier to reach and more consistent in participating in continuous healthcare services.

According to the researchers, the dominance of housewives as respondents is not only related to time flexibility but also to their role in managing family and personal health. This group tends to be more active in participating in health education,

attending routine medical check-ups, and ensuring medication availability and adherence. In addition, the proximity of their residences to healthcare facilities facilitates access to community health centers, resulting in higher participation of housewives in the Referral Back Program compared to respondents with other occupations who may face time and mobility constraints.

4. Discussion of Knowledge About Hypertension Among Elderly Hypertensive Patients Participating in the Referral Back Program in the Working Area of Puskesmas Cimalaka

Based on the study results, all elderly participants in the Referral Back Program within the working area of Puskesmas Cimalaka had good knowledge regarding hypertension, totaling 46 respondents (100%). These findings indicate that respondents' knowledge scores were relatively homogeneous. Knowledge was measured using the Hypertension Knowledge-Level Scale (HK-LS), consisting of 22 true-or-false statements covering the definition of hypertension, treatment, adherence to medical therapy, lifestyle, diet, and disease complications.

Knowledge is the result of information processing obtained through sensory perception and processed in the brain to form understanding. In the context of health, knowledge belongs to the cognitive domain and serves as the basis for shaping attitudes and behaviors, including disease management. Individuals with good levels of knowledge tend to better understand their health conditions and are capable of making appropriate decisions regarding treatment and care (Notoatmodjo, 2014).

Adequate understanding is essential for hypertensive patients to prevent complications. Aspects that should be understood include the definition of hypertension, risk factors, the importance of long-term treatment, and the consequences of non-adherence to therapy recommendations (Kamelia Citra et al., 2023; Setiyana, 2021). Educational level also influences an individual's ability to understand health information, where higher education generally facilitates information acceptance (Darsini et al., 2019). Furthermore, knowledge is influenced by both internal and external factors, such as age, gender, occupation, experience, information sources, environment, and culture (Simbolon, 2020).

The results of this study are consistent with the findings of Fauziah and Mulyani (2022), who reported that the majority of hypertensive patients at Puskesmas Tes had good knowledge. However, these findings differ from the study conducted by Pertiwi et al. (2024) at Puskesmas Sindang Jaya, where most respondents had moderate or poor knowledge, and only a small proportion demonstrated good knowledge.

Overall, these findings suggest that the high level of knowledge among elderly participants in the Referral Back Program is likely influenced by their participation in the program, which involves routine visits and continuous interaction with healthcare professionals. This condition provides respondents with repeated opportunities to receive information regarding hypertension. These findings are supported by studies conducted by Sulassri et al. (2023) and Wardani et al. (2025), which stated that direct and continuous hypertension education in healthcare facilities significantly improves patient knowledge.

According to the researchers, the high level of respondent knowledge was also supported by their experiences in dealing with hypertension. Interactions with healthcare professionals through counseling, information during medication dispensing, and routine monitoring helped strengthen their understanding of

treatment and complication prevention. Nevertheless, this study found that high knowledge levels were not always accompanied by medication adherence, indicating that additional strategies beyond knowledge improvement are needed to enhance treatment adherence among elderly hypertensive patients.

Conclusion

The study found that most respondents were female older adults aged 60–74 years and predominantly housewives, with all respondents demonstrating good knowledge regarding hypertension. Most participants had positive illness perceptions and were categorized as adherent to antihypertensive medication based on the MMAS-8 assessment. Statistical analysis using Spearman Rho revealed no significant relationship between knowledge and medication adherence, nor between illness perception and medication adherence among elderly hypertensive patients enrolled in the Referral Back Program (PRB). These findings indicate that medication adherence in older adults with hypertension is influenced by multiple interacting factors, including family support, healthcare services, therapy characteristics, and the physical and cognitive conditions of the elderly, rather than knowledge and illness perception alone.

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