

## Factors Affecting Medication Regimen Adherence, Self-Care, and Quality of Life in Elderly with Cardiovascular Disorders

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### ABSTRACT

**Background:** Older adults, defined as individuals over 60 years of age, commonly experience physical, social, and mental decline. Cardiovascular diseases (CVDs) are one of the major health problems affecting this population. According to the World Health Organization (WHO), CVDs are the leading cause of death worldwide, accounting for approximately 17.9 million deaths annually.

**Objective:** This study aimed to identify the factors influencing medication regimen adherence, self-care, and quality of life among elderly individuals with cardiovascular disorders.

**Methods:** This research employed an analytical design with a cross-sectional approach. The population consisted of all elderly individuals attending the Posyandu Lansia Bina Sejahtera at Nurul Haq Mosque, Palembang, in 2023. A total of 35 respondents were recruited using purposive sampling. Data were analyzed to examine the relationship between treatment adherence, self-care, and quality of life with cardiovascular disorders.

**Results:** The findings revealed significant associations between medication regimen adherence ( $p = 0.042$ ), self-care ( $p = 0.024$ ), and quality of life ( $p = 0.008$ ) with cardiovascular disorders among the elderly at Posyandu Lansia Bina Sejahtera, Nurul Haq Mosque, Palembang.

**Conclusion:** The study highlights the importance of promoting treatment adherence, effective self-care practices, and improved quality of life among elderly individuals with cardiovascular disorders. Health education and counseling programs should be strengthened in community health posts to enhance elderly understanding and management of conditions such as hypertension, diabetes mellitus, and heart disease, thereby improving their overall well-being.



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## INTRODUCTION

Older age is defined as being over 60 years, during which individuals may experience physical, social, and mental decline. Aging is a natural process that occurs in all living beings, including tissues and cells, leading to functional deterioration. Health problems among the elderly vary widely and are closely related to degenerative diseases, one of which is cardiovascular disease. Changes in the cardiovascular system in older adults include thickening of the aortic wall and large blood vessels, as well as decreased vascular elasticity with increasing age. These changes lead to reduced compliance of large vessels and the aorta, resulting in elevated systolic blood pressure. Decreased vascular elasticity also increases peripheral vascular resistance, thereby raising blood pressure. Common cardiovascular problems among the elderly include hypertension and stroke (Suryaningsih & Armiyati, 2021).

Cardiovascular diseases (CVDs) are a group of heart and blood vessel disorders that include coronary heart disease, cerebrovascular disease, rheumatic heart disease, and other conditions. More than four out of five deaths from CVDs are caused by heart attacks and strokes, and one-third of these deaths occur prematurely in people under 70 years of age. According to World Health Organization (WHO) data, CVDs are the leading cause of death globally, claiming around 17.9 million lives each year (WHO, 2022).

Cardiovascular diseases such as heart disease, cancer, stroke, and chronic kidney disease are increasing annually and remain the leading causes of death in Indonesia, particularly among productive-age populations. Data from the Indonesian Basic Health Research (Riskesdas) show that the prevalence of cardiovascular diseases such as hypertension rose from 25.8% (2013) to 34.1% (2018); stroke decreased slightly from 12.1 per mille (2013) to 10.9 per mille (2018); coronary heart disease remained at 1.5% (2013–2018); and chronic kidney disease increased from 0.2% (2013) to 0.38% (2018). Riskesdas also reported that the prevalence of heart disease diagnosed by physicians in Indonesia reached 1.5%, with the highest prevalence in North Kalimantan (2.2%), Yogyakarta (2%), and Gorontalo (2%). Additionally, eight other provinces had higher prevalence rates compared to the national average, including Aceh, West Sumatra, Jakarta, West Java, Central Java, East Kalimantan, North Sulawesi, and Central Sulawesi (Rokom, 2021).

In South Sumatra Province, health service data in 2019 showed that 7,993 people (8%) suffered from heart disease. By 2030, it is predicted that 52 million deaths annually will be caused by non-communicable diseases, with 45% attributed to cardiovascular diseases, equivalent to 17.7 million out of 39.5 million deaths (Dinkes Prov. Sumsel, 2022).

Coronary heart disease, cerebrovascular disease, and peripheral arterial disease may lead to vascular dysfunction, resulting in insufficient blood supply to organs. Risk factors include smoking, unhealthy diet, physical inactivity, hypertension, diabetes, and dyslipidemia. Rapid lifestyle changes have contributed to increased consumption of foods and beverages containing caffeine, indirectly affecting blood pressure and triggering cardiovascular disease (Dewi & Syaifulloh, 2023).

CVDs have high prevalence and morbidity rates, reducing productivity, lowering quality of life, and often requiring repeated hospitalization. Despite these challenges, CVDs are largely preventable through promotive, preventive, and rehabilitative efforts, as they are chronic in nature but may suddenly become acute and life-threatening, requiring costly treatment. Preventive efforts can be effectively implemented through lifestyle modifications (Radi et al., 2019).

Medication adherence, reflected in patients' knowledge and positive behavior, is crucial in ensuring optimal outcomes. Patients need to understand how prescribed medications should be used and remain motivated to follow regimens consistently. Factors influencing adherence include patient-related aspects (age, gender), disease-related aspects (psychiatric or chronic comorbidities), therapy-related aspects (multiple drug regimens, frequent dosing, long treatment duration, side effects, cost, symptom relief, and medication errors), and healthcare-related aspects, such as insufficient communication between patients and providers (Ramadhan et al., 2022).

Elderly patients with cardiovascular disorders such as hypertension and heart failure often experience limitations in daily activities, making them vulnerable to depression, stress, anxiety, and emotional instability. Concerns about treatment costs, disease prognosis, and recovery time may further lower their quality of life. Quality of life is also influenced by age, gender, occupation, education, New York Heart Association (NYHA) class, heart failure severity, mortality risk, and mental health. Symptoms of heart failure, including dyspnea, fatigue, edema, loss of appetite, anxiety, and depression, significantly affect quality of life (Ramadhan et al., 2022).

The growing elderly population affects various aspects of life, particularly physical changes in the cardiovascular system. Cardiovascular dysfunction can worsen daily functioning and quality of life. Genetic factors and lifestyle choices contribute to major conditions such as hypertension. Self-management programs have been developed to support patients with chronic illnesses, including hypertension. Hayes (2018) highlighted that effective hypertension management includes smoking cessation, a healthy diet, and regular physical activity. Behavioral modifications are essential to reducing or delaying the adverse impacts of stroke (Isnaini & Lestari, 2018).

A preliminary study conducted on November 1, 2023, recorded 54 elderly individuals. Interviews with seven respondents revealed that four suffered from hypertension while three did not. All four hypertensive respondents reported non-adherence to treatment, citing forgetfulness and fatigue from taking medications continuously. However, all respondents stated that they were still able to perform self-care independently and continued to socialize with family and the surrounding community.

## RESEARCH METHODS

This study was conducted on all elderly individuals at Posyandu Lansia Bina Sejahtera, Nurul Haq Mosque, Palembang, in 2023 to determine the factors influencing medication regimen adherence, self-care, and quality of life among elderly people with cardiovascular disorders. An analytical method with a cross-sectional approach was employed. The analytical method seeks to explore how health phenomena occur and analyze the dynamic correlation between risk factors (medication regimen adherence, self-care, and quality of life) and their effects (cardiovascular disorders). The study was carried out from December 11, 2023, to January 11, 2024.

The study population consisted of all elderly individuals at Posyandu Lansia Bina Sejahtera, Nurul Haq Mosque, Palembang, in 2023, totaling 35 older adults. The sample was determined using purposive sampling, in which the selection was based on specific considerations made by the researcher according to known characteristics of the population. The instruments used in this study included the P-MAI-9 to measure medication regimen adherence, the WHOQOL-BREF to assess quality of life, and the Barthel Index of Activities of Daily Living (ADL) to evaluate self-care ability.

The preparation stage of this study began with the researcher obtaining a research permit letter from the Undergraduate Nursing Program of Mitra Adiguna Palembang, addressed to Posyandu Lansia Bina Sejahtera. A formal request letter was then submitted to the head of the Posyandu. After permission was granted, potential respondents were identified according to predetermined criteria through a preliminary study at Posyandu Lansia Bina Sejahtera. In this study, primary data were collected directly by administering questionnaires to the elderly at Posyandu Lansia Bina Sejahtera Palembang during the research period. Secondary data were obtained from the Posyandu, including records on the number of elderly participants and cases of cardiovascular disorders, as well as literature sources such as textbooks and internet-based references related to the research topic.

The sampling technique used was purposive sampling, in which subjects meeting the inclusion criteria were recruited until the required number of respondents was reached within a specific timeframe. Informed consent was obtained from all respondents prior to participation. The researcher then distributed the questionnaires; given the advanced age of respondents, assistance was provided in reading and explaining each questionnaire item. Data were subsequently processed using SPSS version 25.

## RESULTS AND DISCUSSION

The characteristics of respondents in this study included age, gender, education, occupation, and comorbidities, which are presented in the following table:

**Table 1. Characteristics of Respondents by Age, Gender, Education, Occupation, and Comorbidities**

No	Variabel	f	%
1.	<b>Age</b>		
	60-65 years	11	31,4
	66-70 years	24	68,6
	Total	35	100
2.	<b>Gender</b>		
	Male	13	37,1
	Female	22	62,9
	Total	35	100
3.	<b>Education</b>		
	Elementary School	3	8,6
	Junior High School	8	22,9
	Senior High School	17	48,6
	College/University	7	20
	Total	35	100
4.	<b>Occupation</b>		
	Unemployed	20	57,1
	Employed	15	42,9
	Total	35	100
5	<b>Comorbidities</b>		

Hypertension	32	91,4
Diabetes Mellitus	3	8,6
Total	35	100

Based on the respondents' characteristics, it was found that the majority were aged between 66–70 years (24 respondents, 68.6%), most were female (22 respondents, 62.9%), the majority had a senior high school education (17 respondents, 48.6%), most respondents were unemployed (20 respondents, 57.1%), and the majority had hypertension as a comorbidity (32 respondents, 91.4%).

This analysis was conducted to determine the relationship between the independent variables (medication regimen adherence, self-care, and quality of life in the elderly) and the dependent variable (cardiovascular disorders). The study employed the Chi-Square statistical test using the computerized Statistical Package for the Social Sciences (SPSS) version 20. The level of significance was set at  $\alpha = 0.05$ . A  $p\text{-value} < \alpha$  (0.05) indicates a significant relationship between the independent and dependent variables, whereas a  $p\text{-value} > \alpha$  (0.05) indicates no significant relationship between the independent and dependent variables.

**Table 2. The Relationship Between Medication Regimen Adherence and Cardiovascular Disorders at Posyandu Lansia Bina Sejahtera, Nurul Haq Mosque, Palembang**

Disorders at 10, 20, and 30 Days Post-Discharge, Nival and Rio Negro, Tucumán											
Medication Regimen Adherence	Cardiovascular Disorders								N	%	<i>p value</i>
	Normal		Pre- Hypertensi on		Hypertension Stage 1		Hypertension Stage 2				
	n	%	n	%	n	%	n	%			
Adherent	3	23,1	7	53,8	1	7,7	2	15,4	13	100	0,042
Non-adherent	0	0	9	40,9	8	36,4	5	22,7	22	100	
Total	3		16		9		7		35		

Based on the table above, it was found that among the 13 respondents who adhered to the medication regimen, the majority experienced pre-hypertension, with 7 respondents (53.8%). Meanwhile, among the 22 respondents who did not adhere to the medication regimen, the majority also experienced pre-hypertension, with 9 respondents (40.9%).

The Chi-Square test results showed a  $p\text{-value}$  of  $0.042 < \alpha$  (0.05), indicating a significant relationship between medication regimen adherence and cardiovascular disorders at Posyandu Lansia Bina Sejahtera, Nurul Haq Mosque, Palembang.

This study was conducted on 35 respondents. Bivariate analysis was used to examine the relationship between self-care and cardiovascular disorders, as presented in the table below.

**Table 3. The Relationship Between Self-Care and Cardiovascular Disorders at Posyandu Lansia Bina Sejahtera, Nurul Haq Mosque, Palembang**

Disorders and Self-Care Level											
Self-Care Level	Cardiovascular Disorders								N	%	<i>p value</i>
	Normal		Pre-Hypertension		Hypertension Stage 1		Hypertension Stage 2				
	n	%	n	%	n	%	n	%			
Independent	3	21,4	6	42,9	4	28,6	1	7,1	14	100	0,024
Mild Dependence	0	0	9	60	4	26,7	2	13,3	5	100	
Moderate Dependence	0	0	1	16,7	1	16,7	4	66,7	6	100	
Total	3		16		9		7		35		

Based on the table above, it was found that among the 14 respondents who were independent in self-care, the majority experienced pre-hypertension, with 6 respondents (42.9%). Among the 15

respondents with mild dependence, the majority also experienced pre-hypertension, with 9 respondents (60.0%). Meanwhile, among the 6 respondents with moderate dependence, most were at hypertension stage 2, with 4 respondents (66.7%). The Chi-Square test results showed a p-value of  $0.024 < \alpha$  (0.05), indicating a significant relationship between self-care and cardiovascular disorders at Posyandu Lansia Bina Sejahtera, Nurul Haq Mosque, Palembang.

This study was conducted on 35 respondents. Bivariate analysis was performed to examine the relationship between the quality of life of the elderly and cardiovascular disorders, as presented in the table below.

**Table 4. The Relationship Between Quality of Life of the Elderly and Cardiovascular Disorders at Posyandu Lansia Bina Sejahtera, Nurul Haq Mosque, Palembang**

Quality of Life	Cardiovascular Disorders								N	%	<i>p value</i>
	Normal		Pre-hypertension		Hypertension Stage 1		Hypertension Stage 2				
	n	%	n	%	n	%	n	%			
Good	3	25	6	50	2	16,7	1	8,3	12	100	0,008
Fairly Good	0	0	9	56,3	6	37,5	1	6,3	16	100	
Fairly Poor	0	0	1	20	1	20	3	60	5	100	
Poor	0	0	0	0	0	0	2	100	2	100	
Total	3		16		9		7		35		

Based on Table 4, it was found that among 12 respondents with a good quality of life, most were in the pre-hypertension category (6 respondents, 50.0%). Meanwhile, among 16 respondents with a fairly good quality of life, most were also in the pre-hypertension category (9 respondents, 56.3%). In contrast, among 5 respondents with a fairly poor quality of life, the majority were in hypertension stage 2 (3 respondents, 60.0%). Furthermore, all respondents with a poor quality of life (2 respondents, 100%) were in hypertension stage 2. The Chi-Square test showed a p-value of  $0.008 < \alpha$  (0.05), indicating a significant relationship between the quality of life of the elderly and cardiovascular disorders at Posyandu Lansia Bina Sejahtera, Nurul Haq Mosque, Palembang.

The bivariate analysis showed that among the 13 respondents who adhered to their medication regimen, most experienced pre-hypertension, with a total of 7 respondents (53.8%). Meanwhile, among the 22 respondents who did not adhere to their medication regimen, most also experienced pre-hypertension, with a total of 9 respondents (40.9%). The Chi-Square test results revealed a p-value of  $0.042 < \alpha$  (0.05), indicating a significant relationship between medication regimen adherence and cardiovascular disorders at Posyandu Lansia Bina Sejahtera, Nurul Haq Mosque, Palembang.

This finding is consistent with the study by Sutarwardana (2021) entitled Medication Adherence in Patients with Chronic Kidney Disease (CKD) Undergoing Hemodialysis at RSD dr. Soebandi Jember. The study found that the median adherence score was 43, with a minimum score of 33 and a maximum score of 51. These results suggest that medication adherence among CKD patients undergoing hemodialysis in the Hemodialysis Unit of RSD dr. Soebandi was relatively good, as the median score approached the maximum possible score.

This result also aligns with the statement of Ramadhan et al. (2022), who argued that adherence to drug therapy is demonstrated through patients' knowledge and positive behavior, meaning that patients understand how to use their medication and are motivated to take it as prescribed. This leads to perceived self-benefit and positive treatment outcomes. Factors associated with medication adherence include patient-related factors (such as age and gender), disease-related factors (such as psychiatric disorders or chronic illness), therapeutic regimen factors (such as multiple drug use, frequent dosing, long treatment duration, side effects, symptom relief leading to discontinuation, cost, dosing errors, and unpleasant taste of medication), as well as health service-related factors, such as limited interaction between patients and healthcare providers, which may result in patients failing to fully understand medication instructions.

Based on these findings and supporting literature, the researcher assumes that adherence to medication regimens is significantly related to cardiovascular disorders. This relationship is influenced by the aging process, where increasing age affects memory and activity levels of the elderly in following their treatment regimen and attending healthcare visits. Consequently, poor adherence among elderly patients may lead to worsening of their disease condition. Conversely, elderly patients who adhere to regular treatment and healthcare visits will have their health condition monitored more consistently, which may prevent further complications.

Based on the results of bivariate analysis, it was found that of the 14 respondents who performed self-care independently, the majority experienced pre-hypertension as many as 6 respondents (42.9%). Meanwhile, of the 15 respondents who performed self-care with mild dependence, the majority experienced pre-hypertension as many as 9 respondents (60%). Furthermore, of the 6 respondents who performed self-care with moderate dependence, the majority experienced stage 2 hypertension as many as 4 respondents (66.7%). The results of the Chi-Square test showed a  $p\text{-value} = 0.024 < \alpha (0.05)$ , which indicates that there is a significant relationship between self-care and cardiovascular disorders at the Elderly Posyandu Bina Sejahtera, Nurul Haq Mosque, Palembang.

The results of this study are consistent with research conducted by Arini & Kartika (2019) entitled *Self-care Activities in Elderly with Hypertension*. The study showed that the majority of respondents were aged 61–70 years (69.4%), most respondents experienced stage II hypertension (75%), and most respondents performed self-care activities for hypertension in the moderate category, namely 26 respondents (72.2%).

This is also in line with the statement of Yolanda (2017), who explained that pathophysiological changes in the cerebral cortex cause the elderly to experience self-care deficits. Therefore, it is necessary to design daily activities that are simpler and shorter, which can provide satisfaction for the elderly in performing them. The classification of self-care ability levels (client dependency levels) based on Orem's theory consists of minimal care (requires little assistance), partial care (requires some assistance in fulfilling self-care needs), and total care (requires full assistance in fulfilling self-care needs). Based on the Barthel Index of Activities of Daily Living (ADL), client dependency levels consist of independent, mild dependence, moderate dependence, severe dependence, and total dependence.

Based on the results of this study and discussion, the researchers assume that self-care is associated with cardiovascular disorders. This is related to the fact that the older a person gets, the more it affects the elderly's physical health, including their ability to perform daily self-care. In addition, elderly people who suffer from cardiovascular disorders such as hypertension, stroke, diabetes mellitus, or heart disease are more likely to experience limitations in self-care due to reduced physical activity and weakness or dysfunction of certain body parts, which consequently affects their self-care capacity.

Based on the results of univariate analysis, it was found that the frequency distribution of respondents with good quality of life was 12 respondents (34.3%), those with fairly good quality of life were 16 respondents (45.7%), those with fairly poor quality of life were 5 respondents (14.3%), and those with poor quality of life were 2 respondents (5.7%).

Based on the results of bivariate analysis, it was found that among the 12 respondents with good quality of life, most experienced pre-hypertension as many as 6 respondents (50%). Of the 16 respondents with fairly good quality of life, the majority also experienced pre-hypertension, namely 9 respondents (56.3%). Among the 5 respondents with fairly poor quality of life, most experienced stage 2 hypertension as many as 3 respondents (60%), and of the 2 respondents with poor quality of life, all experienced stage 2 hypertension (100%). The results of the Chi-Square test showed a  $p\text{-value} = 0.008 < \alpha (0.05)$ , indicating that there is a significant relationship between the quality of life of the elderly and cardiovascular disorders at the Elderly Posyandu Bina Sejahtera, Nurul Haq Mosque, Palembang.

The results of this study are consistent with research conducted by Seftiani (2018) entitled *The Relationship between Quality of Life of the Elderly and Hypertension in the Working Area of Perumnas II Health Center, Sungai Beliang Village, West Pontianak District*. The results of the Chi-Square test in that study showed a  $p\text{-value}$  of 0.025, which was below the significance threshold ( $<$

0.05), indicating a relationship between the quality of life of the elderly and hypertension in the working area of Perumnas II Health Center.

This finding is also in line with the statement of Idealistiana et al. (2021), who explained that as age increases, the elderly also experience functional changes in the body such as a decline in cell function, reduced musculoskeletal function (which can cause loss of bone density and limited mobility), physical deterioration, and chronic diseases that commonly occur in the elderly such as hypertension, diabetes mellitus, stroke, and gout arthritis. These conditions can reduce physical activity in the elderly.

Similarly, Prastika (2021) emphasized that elderly individuals with hypertension may experience several problems related to quality of life, as quality of life in the elderly is influenced by independence, physical condition, psychological well-being, social activities, social function, and family function. Hypertension affects multiple dimensions of quality of life, including physical, psychological, and social domains. The physical impact of hypertension may include coronary artery blockage and infarction, left ventricular hypertrophy, heart failure, cerebrovascular disorders, and coronary arteriosclerosis, all of which contribute to high mortality rates. The psychological impact includes feelings of meaninglessness due to weakness and the lifelong nature of hypertension as a chronic disease. Moreover, increased cerebral blood pressure can cause concentration difficulties and discomfort, which in turn affect social relationships, as elderly individuals may withdraw from social interactions. This eventually leads to discomfort and further negatively impacts the quality of life of elderly people with hypertension.

Based on these findings and discussion, the researchers assume that the quality of life of the elderly is closely associated with cardiovascular disorders. Elderly individuals who suffer from cardiovascular disorders often feel that their illness is difficult to cure, leading them to believe that their life expectancy is limited. Such perceptions may result in stress and depression, which in turn reduce their motivation and willingness to recover.

## CONCLUSION

Based on the results of this study involving 35 elderly respondents at Posyandu Lansia Bina Sejahtera, Nurul Haq Mosque, Palembang, it can be concluded that there is a significant relationship between medication regimen adherence, self-care, and quality of life with cardiovascular disorders. Elderly individuals who adhered to their prescribed medications tended to have better-controlled blood pressure compared to those who were non-adherent. Similarly, elderly respondents who were able to perform self-care independently experienced fewer cases of severe hypertension compared to those with moderate or higher dependency. Quality of life also played an important role, as elderly individuals with poor quality of life were more frequently found to suffer from advanced stages of hypertension. The Chi-Square test results supported these findings, with p-values < 0.05 for all three variables, indicating statistically significant associations.

These findings emphasize that adherence to treatment, self-care ability, and quality of life are crucial factors in the prevention and management of cardiovascular disorders among the elderly. Therefore, healthcare providers should strengthen educational programs regarding the importance of medication adherence, self-care, and healthy lifestyles for older adults, while families are encouraged to provide continuous support and motivation in daily activities. Community-based programs such as Posyandu also play an important role in improving elderly health monitoring through regular check-ups, counseling, and group activities that support physical, psychological, and social well-being. For future research, it is recommended to involve a larger sample size with a longitudinal approach to better understand the long-term impact of medication adherence, self-care, and quality of life on cardiovascular health among the elderly..

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