Relationship Self-Management Level of Hypertension Patients Towards Risk of Coronary Heart Disease

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ABSTRACT

Most hypertension sufferers are not very strict in controlling themselves and managing their blood pressure to prevent complications. One of the significant risk factors for heart disease is hypertension. This study aims to ascertain if hypertension patients' degree of self-management and the prevalence of coronary heart disease are related. This specific type of research uses a cross-sectional study design and is quantitative. Purposive sampling is employed. The Slovin formula is used to compute the sample. The study's total sample was 109 outpatients with hypertension from the internal medicine polyclinic of Dr. Moewardi Surakarta Hospital. This study used the HSMBQ (Hypertension Self-Management Behavior Questionnaire) questionnaire by Nargis Akther to measure the level of self-management of hypertension with coronary heart disease. The data analysis used was a univariate test, and the risk level was calculated using the Framingham Risk Score and the chi-square bivariate test. Results show that the study's p-value=0.048 (<0.05) suggests a significant correlation between hypertension patients' degree of self-management and the prevalence of coronary heart disease. Most individuals fall into the category of having an adequate level of self-management. The majority of the 76 people (69.7%) with intermediate levels of self-management had a minor risk of coronary heart disease. The results of the study showed a significant relationship between the incidence of coronary heart disease and the level of self-control in hypertensive patients. Promotive and preventive efforts through educational approaches and structured interventions are essential to improve the quality of self-control in hypertensive patients.

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INTRODUCTION

Most hypertension sufferers are not very strict in controlling themselves and managing their blood pressure to prevent complications. Hypertension is a condition where blood pressure in the arteries in the body increases above normal limits. Hypertension is also known as the "silent killer" because this disease does not cause signs or symptoms that sufferers are aware of, regardless of its severity (Agastiya, 2020). Hypertension is a chronic disease that requires significant attention because it has high morbidity and mortality rates. Uncontrolled hypertension, in the long term, can cause severe medical conditions such as increasing the risk of heart disease, stroke, blindness, kidney failure, and so on (Estrada et al., 2019).

Hypertension is a significant risk factor for cardiovascular disease and a preventable cause of death worldwide. The increase in the prevalence of hypertension globally is due to population aging and increasing exposure to poor self-management risk factors (Mills et al., 2021). World Health Organization (2020 in Nurarifah et al., 2022), there are 1.13 billion cases of hypertension, and it causes at least 9.4 million deaths. In the Southeast Asia region, including Indonesia, it is reported that 49% of deaths are caused by non-communicable diseases, including hypertension (Nurarifah et al., 2022).

Data from the World Health Organization (2023), cardiovascular disease is the number 1 cause of death in the world, with 17.9 million deaths due to cardiovascular disease recorded each year. The prevalence of heart disease based on doctor's diagnoses in the population of all ages, according to provinces in Indonesia, is 1.5% or an estimated 1,017,290 people with coronary heart disease. Central Java's prevalence is 1.6% (Ministry of Health Republic Indonesia, 2018).

Self-management behavior is an individual's ability to manage and control their lifestyle related to the treatment and care of disease, preventing signs of symptoms and factors that aggravate the disease for survival.

Hypertension treatment is carried out regularly so that the effective management of hypertension treatment depends significantly on the patient's ability to self-manage. Based on research from Izza et al. (2023), high-sodium foods consumed in large quantities daily can trigger increased blood pressure.

Coronary heart disease (CHD) is a disorder of heart function in which the heart muscle lacks blood supply due to the narrowing of the coronary blood vessels (Aisyaa, 2021). According to Shahjehan (2023), coronary artery disease is a condition in which atherosclerotic plaque forms in the lumen of blood vessels. Hypertension is one risk factor for coronary heart disease because its prevalence is higher compared to other risk factors.

Hypertension is a chronic disease that requires long-term treatment. The duration of treatment has the potential to increase the risk of CHD. However, the risk that occurs in each individual can vary. This can be related to the level of self-management of hypertension sufferers. Most hypertension sufferers are still found to be less strict in controlling themselves and managing their blood pressure to prevent complications. Based on this, researchers are interested in knowing the relationship between the level of self-management of hypertension sufferers and the incidence of coronary heart disease.

METHOD

This specific type of research uses a cross-sectional study design and is quantitative. The study was conducted for 3 months, from May-July 2024, targeting hypertensive patients undergoing outpatient care at the internal medicine polyclinic of Dr. Moewardi Surakarta Hospital. The sampling technique used in this study was purposive sampling, which was calculated based on the Slovin formula so that the number of research samples was 109 participants from a total population of 10,252 outpatient hypertensive patients at the Internal Medicine Polyclinic of Dr. Moewardi Surakarta Hospital.

Hypertensive patients at RSUD Dr. Moewardi Surakarta, aged 20-79 years and willing to participate, were included in the sample. However, it does not include patients with gestational hypertension, hypertension with stroke, and emergency hypertension.

This research used the HSMBQ (Hypertension Self-Management Behavior Questionnaire) questionnaire by Nargis Akther to measure self-management in hypertensive patients. This questionnaire consists of 40 questions covering self-integration, self-regulation, interaction with health workers, blood pressure monitoring, and compliance with recommended rules with an assessment category of "good" for a score of 121-160, "sufficient" for a score of 81-120, and "poor" for a score of 40-80. The data analysis used was a univariate test, and the risk level was calculated using the Framingham Risk Score and the chi-square bivariate test.

The ethical feasibility test was conducted at the Health Research Ethics Commission, Dr. Moewardi General Hospital, and was declared ethically feasible with letter number 742/III/HREC/2024.

RESULTS

Table 1. Demographic Characteristics of Participant

Variable	f	%
Age		
20 - 30 years	18	16.5
31 – 40 years	33	30.3
41 – 50 years	45	41.3
51 - 71 years	13	11.9
Gender		
Male	45	41.3
Female	64	58.7
Education		
Elementary school	25	22.9
Junior high school	34	31.2
High school/equivalent	46	42.2
Bachelor	4	3.7
Employee		
Farmer	14	12.8
Private employee	31	28.4
Civil Servants	5	4.6
Housewife	22	20.2
Self-employed	29	26.6
Unemployed	8	7.3

Table 1 shows that most participants were in the 41-50 year age range, with a distribution of 45 participants (41.3%). The average age of participants is 48, with a minimum age of 20. Based on gender, most participants were women, 64 (58.7%), while only 45 were men (41.3%). A total of 46 participants (42.2%) had a high school/equivalent level of education, 34 participants (31.2%) had a junior high school education, and 25 participants had an elementary school education (22.9%). In contrast, for bachelor education, there were only 4 participants (3.7%). The majority of participants have jobs as private employees as many as 31 participants (28.4%), work as self-employed as many as 29

participants (26.6%), Housewives as many as 22 participants (20.2), Farmers as many as 14 participants (12.8), Civil Servants as many as 5 participants (4.6%), and participant unemployed as many as 8 participants (7.3%).

Table 2. Distribution of self-management categories

Self-management	f	%
Good	21	19.3
Sufficient	84	77.1
Poor	4	3.7

Table 2 explains that 109 participants stated that the highest level of self-management was in the sufficient category, namely 84 participants (77.1%), participants with a good level of self-management were 21 participants (19.3%), and participant with a poor level of self-management were 4 participants (3.7%).

Table 3. Characteristics of CHD risk factors

Variable	f	%
Family history of hypertension		
Yes	66	60.6
No	43	39.4
Smoker		
Do not smoke	62	56.9
Never smoked	31	28.4
Still smoking	16	14.7
Distribution of history of alcohol consumption		
Never	106	97.2
2-3 x/month	3	2.8
Blood pressure distribution		
Prehypertension	4	3.7
Stage I hypertension	38	34.9
Stage II hypertension	67	61.5
Hypertension treatment		
Yes	65	59.6
No	44	40.4

Table 3 shows that most of them had a family history of hypertension, 66 participants (60.6%). There were 62 participants (56.9) who did not smoke, 31 participants (28.4%) sometimes smoked, and 16 participants who still smoked (14.7%). Characteristics of the frequency distribution of alcohol consumption: 106 participants (97.2%) did not consume alcohol, while 3 participants (2.8%) consumed alcohol 2-3x/month. The results of the distribution of blood pressure characteristics showed 4 participants (3.7) had blood pressure <130mmHg, while 38 participants had blood pressure in the range of 130-139mmHg (34.9%) and 38 participants (34.9%) had blood pressure >140mmHg, as many as 67 participants (61.5%). There were 65 participants (59.6%) who routinely underwent treatment for hypertension and 44 participants (40.4%) who did not routinely undergo treatment.

Table 4. The relationship between self-management sub-levels and risk of coronary heart disease

Sub-Level of self-management	Risk of coronary heart disease						p-value
	Low		Inter-mediate		High		
	n	%	n	%	n	%	
Self-integration							
Good	50	45.9	10	9.2	0	0.0	0.253
Poor	45	41.3	4	3.7	0	0.0	
Self-regulation							
Good	54	49.5	9	8.3	0	0.0	0.599
Poor	41	37.6	5	4.6	0	0.0	
Interaction with health workers							
Good	60	55.0	10	9.2	0	0.0	0.547
Poor	35	32.1	4	3.7	0	0.0	
Blood pressure monitoring							
Good	41	37.6	6	5.5	0	0.0	0.983
Poor	54	49.5	8	7.3	0	0.0	
Compliance with recommended							
Good	55	50.5	11	10.1	0	0.0	0.139
Poor	40	36.7	3	2.8	0	0.0	

Table 4 shows the results of the correlation test with chi-square obtained at the five sub-levels, which have p values of 0.253, 0.599, 0.547, 0.983, 0.139 (>0.005), so it can be interpreted that there is no significant relationship between each sub-level of self-management and the risk of coronary heart disease.

Table 5. The relationship between self-management and risk of coronary heart disease

Self-management	Risk of coronary heart disease						p-value
	Low		Inter-mediate		High		
	n	%	n	%	n	%	
Good	15	13.8	6	5.5	0	0.0	
Sufficient	76	69.7	8	7.3	0	0.0	0.048
Poor	4	3.7	0	0.0	0	0.0	

Table 5 shows that 15 participants (13.8%) with a good level of self-management had the majority of the mild risk. The other 6 participants (5.5%) had a medium risk of coronary heart disease, and 76 participants (69.7%) had a fair level of self-management. The majority had a mild risk of coronary heart disease, and the other 8 participants (7.3%) had an intermediate risk of coronary heart disease. Meanwhile, 4 participants

(3.7%) with a low level of self-management had a mild risk of coronary heart disease.

The chi-square test analyzing the relationship between the level of self-management of hypertensive patients and the incidence of coronary heart disease, was p-value=0.048 (<0.05), so it can be interpreted that there is a significant relationship between the level of self-management of hypertensive patients and incidence of coronary heart disease.

DISCUSSION

The results of the bivariate showed that the majority of those with a self-management level in the sufficient category had a mild risk of experiencing coronary heart disease. However, it does not rule out the possibility that hypertensive patients who have a good level of self-management do not have a risk of CHD. This is evidenced by the calculation of the Framingham Risk Score on the item of hypertension treatment and care having the answer "yes" but on other items also had the answer "yes," such as smoking, medical history, advanced age, and blood pressure above normal can affect the output results in the Framingham Risk Score calculation, namely having a low risk than 10 percent. Analysis of the relationship between self-management of hypertensive patients and the incidence of coronary heart disease was interpreted to show that there is a significant relationship between the level of self-management of hypertensive patients and the incidence of coronary heart disease.

The results of research from Karyatin (2019) showed that there is a relationship between hypertension and the incidence of CHD in the inpatient room of Sumber Waras Hospital. Hypertension has a ninefold greater risk of coronary heart disease compared to non-hypertension. Another study by Atika et al. (2021) showed that out of 51 samples of CHD sufferers, 27 people (52.9%) experienced hypertension. Hypertension is a preventable cause of death worldwide and a significant risk factor for cardiovascular disease. The increase in the prevalence of hypertension globally is due to population aging and increased exposure to poor self-management risk factors (Mills et al., 2021). Self-management is a strategy for self-control towards better behavioral changes for their health. Hypertension sufferers should adhere to implementing self-management as a treatment for the disease and an effort to prevent complications that can be implemented in everyday life. Coronary heart disease is a disorder of heart function in which the heart muscle lacks blood supply due to the narrowing of the coronary blood vessels (Aisyaa, 2021). According to the Ministry of Health Republic Indonesia (2021), the leading cause of CHD is blockage or narrowing of the coronary blood vessels due to plaque formation on the walls of blood vessels. According to Naomi (2021), cardiovascular disease risk factors are divided into two, namely modifiable factors, including lipid profile, lack of activity, excessive alcohol consumption, consumption of fatty foods, hypertension, smoking, and diabetes mellitus. Moreover, non-modifiable factors include family history, race, gender, and age.

In theory, one of the main factors that causes coronary heart disease is hypertension. Research by Setiadi et al. (2020) shows that the most common trigger for coronary heart disease is hypertension. Increased blood pressure can cause an additional burden on the heart, which can cause left ventricular vasodilation. A persistent increase in blood pressure can cause trauma to the walls of the coronary arteries, which will cause an infection reaction that can result in easy plaque formation on the artery walls, eventually leading to atherosclerosis. This can reduce the supply of blood and oxygen to the myocardium. In this study, the participant's self-management level results were sufficient. This requires improving the self-management ability of hypertensive patients to a better category. Based on previous studies, it has been shown that hypertensive patients with a good level of self-management positively impact their clinical improvement; in addition, with good self-management, the possibility of experiencing complications also decreases (Tursina et al., 2022).

CONCLUSION

The majority of participants with moderate levels of self-management had a mild risk of experiencing CHD. There was a significant relationship between the level of self-management of hypertensive patients and the incidence of coronary heart disease. This study can provide input for hypertensive patients to maintain self-management so that more serious complications do not occur.

CREDIT AUTHOR STATEMENT

JSP: Writing original draft, conceptualization, editing; **SR:** Supporting original draft, review**,** corresponding author.

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