



ORIGINAL ARTICLE

RELATIONSHIP BETWEEN CHARACTERISTIC PATIENT WITH RECURRENT CORONARY HEART DISEASE

Hubungan Karakteristik Pasien dengan Penyakit Jantung Koroner Berulang

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ABSTRACT

Background: Recurrent coronary heart disease (CHD) increases the risk of complications and mortality among hospitalized patients. Previous studies report a 58% mortality rate within one year of treatment and a 30% recurrence rate in CHD patients. **Purpose:** This study aimed to examine the relationship between patient characteristics and CHD recurrence. **Methods:** A retrospective quantitative study was conducted at Kediri City Regional Hospital. A total of 123 CHD patients were selected using proportional random sampling. Independent variables included age, gender, education, income, and knowledge, while the dependent variable was CHD recurrence. Data were analyzed using Chi-square tests and logistic regression. **Results:** Bivariate analysis showed significant associations between age ($p = 0.000$) and knowledge ($p = 0.01$) with CHD recurrence. No significant associations were found for income ($p = 0.373$), gender ($p = 0.194$), or education level ($p = 0.983$). Multivariate analysis confirmed age ($p = 0.000$, OR = 8.426, 95% CI: 3.266–21.736) and knowledge ($p = 0.017$, OR = 2.984, 95% CI: 1.215–7.33) as significant predictors of CHD recurrence. **Conclusions:** Older patients are at a significantly higher risk of CHD recurrence compared to younger ones. Additionally, patients with better knowledge about CHD are less likely to experience recurrence. These findings highlight the importance of age-specific and educational interventions in preventing CHD relapse.

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ABSTRAK

Latar Belakang: Penyakit jantung koroner (PJK) yang berulang meningkatkan risiko komplikasi dan kematian pada pasien yang dirawat di rumah sakit. Studi sebelumnya melaporkan angka kematian sebesar 58% dalam satu tahun setelah pengobatan serta tingkat kekambuhan PJK sebesar 30%. **Tujuan :** Penelitian ini bertujuan untuk menganalisis hubungan antara karakteristik pasien dengan kekambuhan PJK. **Metode:** Penelitian ini merupakan studi kuantitatif retrospektif yang dilakukan di Rumah Sakit Umum Daerah Kota Kediri. Sebanyak 123 pasien PJK dipilih menggunakan teknik *proportional random sampling*. Variabel independen meliputi usia, jenis kelamin, pendidikan, pendapatan, dan pengetahuan, sedangkan variabel dependen adalah kekambuhan PJK. Analisis data dilakukan menggunakan uji *Chi-square* dan regresi logistik. **Hasil:** Analisis bivariat menunjukkan adanya hubungan signifikan antara usia ($p = 0,000$) dan pengetahuan ($p = 0,01$) dengan kekambuhan PJK. Tidak ditemukan hubungan signifikan pada variabel pendapatan ($p = 0,373$), jenis kelamin ($p = 0,194$), dan tingkat pendidikan ($p = 0,983$). Analisis multivariat menunjukkan bahwa usia ($p = 0,000$, OR = 8,426, 95% CI: 3,266–21,736) dan pengetahuan ($p = 0,017$, OR = 2,984, 95% CI: 1,215–7,33) merupakan prediktor signifikan terhadap kekambuhan PJK. **Simpulan:** Pasien usia lanjut memiliki risiko kekambuhan PJK yang jauh lebih tinggi dibandingkan pasien yang lebih muda. Selain itu, pasien dengan pengetahuan yang baik tentang PJK cenderung mengalami kekambuhan yang lebih rendah. Temuan ini menekankan pentingnya intervensi berdasarkan usia dan edukasi dalam mencegah kekambuhan PJK.

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INTRODUCTION

The recurrence of coronary heart disease (CHD) has a high risk. Patients with recurrent CHD in the hospital are at increased risk of complications and death (1). The incidence rate of recurrence and death of CHD patients continues to increase. The prevalence of recurrence of CHD is 47% (2). Recurrent coronary heart disease refers to the repeated occurrence of coronary heart disease (CHD) events, like heart attacks or unstable angina, in a person who has already experienced a previous episode of CHD.

The impact recurrent of CHD can damage the heart muscle, leading to a greater chance of developing heart failure where the heart cannot pump blood efficiently, leading to anxiety, depression, and stress, impacting overall mental health, reducing exercise capacity, and increasing the risk of death compared to someone with a single event. CHD is a chronic disease that requires a relatively long period of self-care to prevent recurrence of illness so the characteristics of the patient can also influence this. Patient characteristics that can influence recurrence include age, income, gender, educational status, and knowledge (3–6). Functional changes in aging

adults hearts have been characterized, which include reports of diastolic and systolic dysfunction, and also electrical dysfunction, including the development of arrhythmias. Collectively, both functional and electrical defects result in a high prevalence of heart failure, atrial fibrillation, and other cardiovascular diseases (CVD), in aging patients. The high prevalence of CVD in this population has been linked to a number several factors, including increased oxidative stress, inflammation, apoptosis, and overall myocardial deterioration, and degeneration (3,9).

Higher household income was causally associated with lower risks of coronary heart disease, myocardial infarction, and hypertension. With increasing household income, the cardiovascular biomarkers including triglycerides, C-reactive protein, body mass index, and fasting glucose were decreased whereas telomere length and high-density lipoprotein cholesterol were increased. Besides, individuals with higher household incomes were less likely to smoke, intake salt, or be exposed to air pollution or depression state. They were more likely to take physical activity and have long years of schooling (1,10).

According to the health belief model, knowledge regarding health behavior is a decisive modifying factor for a healthy lifestyle; however, it should be combined with other factors such as good perceptions, positive health attitudes, and many other conditions (9). Females had a 1.96 times higher risk of recurrent cardiovascular disease events than their male counterparts, and thus, were more likely to have a worse CVD risk-factor profile. Many factors, such as an increased prevalence of hypertension, diabetes, and obesity, may contribute to the poor CVD risk profiles of women. Additionally, smoking, coupled with increased consumption, had a higher negative effect in women than in men (2).

However, several studies show different results. Based on the results of previous research, it was found that age and gender had a significant relationship with recurrence in CHD patients. Older age increases the risk of recurrence in CHD patients and males are more at risk of experiencing a recurrence than females (1,11,12), although there are also other studies that show females are actually more at risk of experiencing a recurrence (4).

Based on the result of previous research also obtained, some studies found there was no significant relationship between age and gender and recurrence in CHD patients (14,15). Patients with high income have a lower risk of recurrence than patients with low income (13). Patients with low education had a higher risk of experiencing a recurrence of CHD disease (16,17). Higher levels of education tend to exhibit better health, experience fewer illnesses, and have longer lifespans than lower levels of education (17,18). However, studies suggest that higher education is associated with a high risk of recurrence of CHD and mortality (15).

Prevention of the recurrence of CHD disease can be influenced by knowledge factors. With good knowledge, it is hoped that recurrence can be prevented. Based on the results of previous research, it was found that there was a significant relationship between knowledge and recurrence in CHD patients (16). Knowledge is an important aspect in secondary prevention to reduce recurrence in CHD patients (2). Based on previous research, it was found that patient knowledge in carrying out secondary prevention efforts to avoid experiencing recurrence is still low (17).

Based on the above, there are still gaps in research results between one study and another, so further research needs to be done regarding patient characteristics as factors that influence the occurrence of recurrence in CHD patients. The purpose of this study was to determine the

relationship between the characteristics of patients (age, gender, education, income, and knowledge) with recurrent CHD patients.

METHODS

This type of research is a quantitative approach with a retrospective survey method. The population of this study was all patients who had been diagnosed by a doctor as having coronary heart disease at the Kediri City Regional Hospital, with 294 people. The sample of this study was all patients who had been diagnosed by a doctor as having coronary heart disease at the Kediri City Regional Hospital, and the sample size was 123 people taken using proportional random sampling. The independent variables of this study include age, gender, education, income, and knowledge, and the dependent variable was recurrent CHD patients. The data source uses primary data through questionnaires. The questionnaire includes demographic data, knowledge, and recurrence of heart disease.

Knowledge is the scientific insight possessed by respondents regarding the meaning, risk factors, signs and symptoms, and treatment of heart disease. Good Knowledge if the score is $> 50\%$, and low if the score is $\leq 50\%$. The knowledge questionnaire has been tested for validity using product moment and reliability testing using Cronbach's alpha. The questionnaire assessing patients' knowledge consists of 20 single-choice questions, each with four possible answers.

Recurrence of coronary heart disease is a heart attack that the respondent experienced in the last three months before collecting research data. Data collection was carried out on respondents at the hospital's cardio clinic. Univariate data analysis used a frequency distribution with a categorical scale. Bivariate data analysis used the Chi-square test, and multivariate analysis used logistic regression. Results were considered significant at $p < 0.05$. The approval of this study followed an ethical review by the Faculty of Dental Medicine Health Research Ethical Clearance Commission Universitas Airlangga with number 601/HRECC.FODM/VIII/2022.

RESULTS

Table 1 shows that most respondents were female, 53.66 % of the sample population. In addition, the majority of respondents were elderly (65.04%), income high (56.91%), low educational

(78.86%), low knowledge (68.30%), and no recurrent CHD (53.66%).

Table 1
Characteristics of The Respondent

Characteristics	n=123	%
Age		
Mature (<60 years old)	43	34.96
Elderly (≥60 years old)	80	65.04
Income		
High (>4,200,000)	70	56.91
Low (≤4,200,000)	53	43.09
Sex		
Male	57	46.34
Female	66	53.66
Educational status		
High educational (university)	26	21.14
Low educational (elementary school-senior high school)	97	78.86
Knowledge		
Good	39	31.70
Low	84	68.30
Recurrent CHD		
No	66	53.66
Yes	57	46.34

Based on Table 2, it can be seen that there was a relationship between age and knowledge with CHD recurrence. In Table 3, sex was included in the logistic regression analysis because the results of the Chi-square test had a $p\text{-value} < 0.25$, although from the results of the logistic regression analysis it was finally found that there was a relationship between age and knowledge with recurrence CHD while sex still showed that there was no relationship with recurrence CHD. Based on Table 3, it was also found that age was the dominant factor influencing the recurrence of CHD patients, which has an OR value of 8.426, which means that elderly people have a chance of recurrence 8.426 times compared to adults.

The OR from knowledge was 2.984 means CHD patients who have low knowledge will have 2.984 times the risk of recurrence compared to those with good knowledge. This shows that elderly patients and those with low knowledge are at very high risk of experiencing recurrence of their disease.

Table 2
Bivariate Analysis of The Relationship Between Characteristic Patients and Recurrent CHD

Characteristics	Recurrent CHD				Total		p-value
	No		Yes				
	n	%	n	%	n	%	
Age							
Mature	35	83.70	7	16.30	43	100	0.00
Elderly	30	37.50	50	62.50	80	100	
Income							
High	40	57.10	30	42.90	70	100	0.37
Low	26	49.10	27	50.90	53	100	
Sex							
Male	27	47.40	30	52.60	57	100	0.19
Female	39	59.10	27	40.90	66	100	
Educational status							
High	14	53.80	12	46.20	26	100	0.98
Low	52	53.60	45	46.40	97	100	
Knowledge							
Good	28	71.80	11	28.20	39	100	0.01
Low	38	45.20	46	54.80	84	100	

$\alpha=0.05$

Table 3
Multivariate Analysis Result Using Logistic Regression

Variable	β	p-value	OR	95%CI	
				Lower	Upper
Age	2.13	0.00	8.43	3.27	21.74
Sex	-0.63	0.14	0.53	0.23	1.22
Knowledge	1.09	0.02	2.98	1.22	7.33
$\alpha=0,05$					

DISCUSSION

In this study, age was the dominant factor influencing recurrent CHD. The result of this study was the same as previous research conducted by Cho So Mi Jemma et al (3). Recurrent CVD increased with increasing age, so that the older the patient, the greater the risk of recurrence compared to adults (5,22). The recurrence of CHD disease is influenced by changes that occur along with the aging process. Reactive oxygen species levels accumulate with age, and this increase triggers the persistence of a chronic systemic inflammatory state.

Knowledge related to understanding how to control CHD, as well as decisions regarding the behavior carried out in caring for oneself, is very important in preventing the recurrence of CHD disease. According to the health belief model, knowledge of health behavior is an important determinant of adherence to healthy lifestyle behaviors (20). However, knowledge alone is not sufficient, and patients' perceptions and attitudes toward health behaviors are also important predictors of healthy lifestyle behaviors. So those with good knowledge will be at lower risk of experiencing a recurrence than those with low knowledge, because with good knowledge they can understand how to take good care of themselves, such as diet, exercise, access to health services, taking medication, and stress management (9). Knowledge is an important aspect in efforts to prevent recurrence in CHD patients because knowledge will change a person's behavior in caring for their health (20).

While the results of income-based studies showed that there was no relationship between income and recurrent CHD, this was not the same as previous research by Cho So Mi Jemma et al (3). Income was a weak indicator in measuring a person's socioeconomic status. This could be a long treatment for CHD, requiring very large costs to prevent recurrence. Based on the research results, it was found that high and low incomes had relatively similar results in terms of the incidence of CHD

disease recurrence, so this may be the reason why there is no significant relationship. Recurrence may be influenced by other factors. The research results found no relationship between sex and recurrent CHD. This result was the same as previous research by Vynckier Pieter et al (6). However previous studies have shown there was a relationship between sex and recurrent CHD (4). Men are more likely to be at risk of experiencing repeated heart attacks or recurrences, but, in women, this risk increases when they reach menopause (2) in this study, there were as many elderly female patients as male patients, perhaps this is why there was no significant relationship between sex and recurrent CHD.

Based on the research results was also no relationship between educational status and recurrent CHD. This result was not the same as previous research by Che Bizhong et al (5). It was hoped that higher education could increase knowledge so that it could improve behavior in preventing the recurrence of CHD disease. However, in this study, it was found that the majority of respondents had low education, whereas the incidence of both recurrences and non-recurrences occurred in patients with low education. This may be what makes there is no relationship between education and recurrent CHD.

Most CHD patients have a tendency to experience recurrent events. Recurrence in CHD patients needs to be watched out for and prevention efforts made so that it can be expected to increase life expectancy and improve the patient's quality of life (22).

Research Limitations

This study has limitations, including that the researchers did not look at other risk factors that could cause recurrence in CHD patients, such as smoking, cholesterol levels, blood pressure, physical activity, and stress in patients.

CONCLUSION

Based on this study, it can be concluded that patient characteristics that can influence the recurrence of coronary heart disease are age and knowledge, and age was the dominant factor influencing the recurrence of CHD patients. This study has several implications. This study strengthens previous studies that examine patient characteristics that influence the incidence of CHD recurrence. Besides that, this study reveals is necessary to conduct a screening program designed for early diagnosis and provision of disease management interventions. In addition, it is also necessary to improve primary and tertiary prevention measures for CHD. It is important to continue research on the recurrence of CHD disease by involving the factors of comorbidities suffered by the patient

CONFLICT OF INTEREST

The authors stated that there is no conflict of interest in this research.

AUTHOR CONTRIBUTIONS

The contribution of each author is as follows: SH: Conceptualization, analysis, writing original draft. NA: Methodology, data visualization. AW: manuscript reviews, editing. NAA: manuscript review, proofreading. IPSS: editing, writing review.

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