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Factors Influencing the Well-being of Coronary Heart Disease Patients at Dr. Wahidin Sudirohusodo General Hospital, Makassar, Indonesia: A Case-Control Study

Factores que influyen en el bienestar de los pacientes con cardiopatía coronaria del Hospital General Dr. Wahidin Sudirohusodo de Makassar, Indonesia: Un estudio comparativo de casos

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SUMMARY

Background: *Quality of life is an individual's perception of goals, expectations, standards, and concerns in society within the context of existing cultures and systems. Quality of life with coronary heart disease is significantly influenced by various factors, including disease severity, treatment received, and patient demographics.* **Aim***: This study aims to analyze the risk of age, income, drug compliance, physical activity, and family support on the quality of life of CHD patients at Dr. Wahidin Sudirohusodo Hospital Makassar.* **Method:** *The type of research used was a Case-Control design conducted from June to July 2024. The population in this study were outpatient CHD patients at Dr. Wahidin Sudirohusodo Hospital Makassar, with a sample size of 80 cases and 80 controls. The sampling technique used was Purposive Sampling.* **Results:** *The results of the age analysis obtained an OR of 6.023 CI 95 % LL-UL (2.5821-14.856), fission activity OR 11.058 CI 95 % LL-UL (5.002-24.734), and family support OR 11 CI 95 % LL-UL (4.910-25.110).* **Conclusion:** *Age, physical activity, and family support are significant determinants of the quality of life of CHD patients. Physical activity is the main determinant of the quality of life of CHD patients.*

Keywords: *Coronary heart disease, physical activity, quality of life.*

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RESUMEN

Antecedentes: *La calidad de vida es la percepción de un individuo sobre sus metas, expectativas, estándares y preocupaciones en la sociedad, dentro del contexto de las culturas y sistemas existentes. La calidad de vida en pacientes con cardiopatía coronaria está influenciada significativamente por varios factores, incluidos la gravedad de la enfermedad, el tratamiento recibido y los datos demográficos del paciente.* **Objetivo:** *Este estudio tiene como objetivo analizar el riesgo de la*

edad, el ingreso, la adherencia a la medicación, la actividad física y el apoyo familiar en la calidad de vida de los pacientes con cardiopatía coronaria en el Hospital Dr. Wahidin Sudirohusodo de Makassar. Método: El tipo de investigación utilizado fue un diseño de Casos y Controles, realizado entre junio y julio de 2024. La población en este estudio fueron pacientes ambulatorios con cardiopatía coronaria en el Hospital Dr. Wahidin Sudirohusodo de Makassar, con un tamaño de muestra de 80 casos y 80 controles. La técnica de muestreo utilizada fue el Muestreo Intencionado. **Resultados:** *Los resultados del análisis de la edad obtuvieron un OR de 6.023 IC 95 % LL-UL (2.5821-14.856), actividad física OR 11.058 IC 95 % LL-UL (5.002-24.734) y apoyo familiar OR 11 IC 95 % LL-UL (4.910-25.110).* **Conclusión:** *La edad, la actividad física y el apoyo familiar son determinantes significativos de la calidad de vida de los pacientes con cardiopatía coronaria. La actividad física es el principal determinante de la calidad de vida de estos pacientes.*

Palabras clave: *Enfermedad coronaria, actividad física, calidad de vida.*

INTRODUCTION

Coronary heart disease (CHD) is one of the major consequences of atherosclerosis, also known as the hardening of the arteries. CHD is one of the most common cardiovascular diseases, accounting for 43 % of all cardiovascular diseases and causing high mortality worldwide (2). Based on data from the World Health Organization (WHO), CHD is the first of the ten leading causes of death. Worldwide, 17.9 million people die from cardiovascular causes, 38% of whom are under the age of 70. Worldwide CHD mortality in 2010 was 17 million per year and is projected to increase to 23.4% by 2030 (1).

In Indonesia, the number of CHD cases is 1.5 %, with the highest prevalence ranking. Based on Indonesia Basic Health Research (RISKESDAS) data, the number of CHD cases increased by 1 % from 2013 to 2018, while the life expectancy and quality of life of Indonesians with poor health status due to CHD increased by 2.01 % from 2016 to 2018. The mortality rate caused by CHD in Indonesia is quite high, reaching 651 481 people per year. As many as 15 out of 1 000 people, or about 2 784 064 people in Indonesia, suffer from CHD (2).

One way to reduce CHD morbidity and mortality is to control risk factors and improve quality of life. Poor quality of life will affect mortality because poor quality of life has been associated with a desire to hasten death in seriously ill patients. This is due to their inability to control themselves, loss of morale, meaning and purpose, and hopelessness due to their illness (2). Quality of life is an individual's perception of goals, expectations, standards, and concerns in his life in society in the context of existing cultures and systems (3). Thus, a person's expectation of the disease is in the quality of life. If the quality of life is low, it will worsen the patient's condition and trigger recurrent heart attacks, further complications, and even death (6).

Several factors, including disease severity, treatment outcomes, and patient demographics, significantly influence the quality of life in CHD. Research has consistently shown that patients with CHD often experience reduced quality of life, which can worsen their prognosis. A study conducted in Singapore found that health-related quality of life in outpatients with CHD was significantly associated with age, gender, and the presence of comorbidities. Therefore, assessing quality of life is important to maintain and stabilize their physical abilities as optimally as possible and prevent recurrence so they can live comfortably (4).

This study aims to analyze the risk of age, physical activity, and family support on the quality of life of CHD patients at Dr. Wahidin Sudirohusodo Hospital Makassar.

METHODOLOGY

This research employs a quantitative approach with a case-control study framework. The study population consisted of outpatient CHD patients from Dr. Wahidin Sudirohusodo Hospital in Makassar, which took place between June and July 2024. The sample was split into two groups: the case group and the control group, maintaining a 1:1 ratio. A total of 160 participants (80 cases and 80 controls) were selected using the Lemeshow formula. Inclusion criteria were patients receiving outpatient care, documented in the medical records of the Integrated Heart

Center at Dr. Wahidin Sudirohusodo Hospital, with varying quality of life levels and a history of coronary heart disease over the past three years. Exclusion criteria were patients in acute or emergency conditions. The sampling method applied was purposive sampling.

The study utilized convenience sampling. Instruments used included the Seattle Angina Questionnaire-7 (SAQ-7), Morisky Medication Adherence Scale (MMAS-8), Hospital Anxiety and Depression Scale (HADS), and the ENRICHED Social Support Instrument (ESSI). The study's dependent variable is the quality of life in CHD patients, while the independent variables include age, lifestyle, income, medication adherence, physical activity, and family support.

Data Analysis

Data analysis was performed using the STATA application in three ways: univariate, bivariate, and multivariate. Bivariate analysis was performed to analyze the relationship and risk of two variables: the dependent and independent variables. Data were analyzed using the OR test with 95 % confidence intervals. Multivariate analysis was performed using the logistic regression test to analyze the most dominant risk factors of age, lifestyle, income, medication compliance, physical activity, and family support.

Ethical Approval

This study has received a recommendation for ethical approval, handled by the Ethics Commission of the Faculty of Public Health, Hasanuddin University, with Number 1434/ UN4.14.1/TP.01.02/2024, dated 14 June 2024.

RESULTS

Table 1 shows that a higher proportion of male respondents (60.00 %) report a low quality of life, while most female respondents (51.25 %) report a high quality of life. In the 18-39 age group, 87.50 % of individuals reported a high quality of life, whereas in the 40-60 age group, 46.25 % reported a low quality of life. Regarding

Table 1. Distribution of Respondent Characteristics

Characteristics of PJK respondents	Low Quality of Life (Case) n (%)	High Quality of Life (Control) n (%)
Gender		
Male	48 (60.00)	41 (51.25)
Female	32 (40.00)	39 (48.75)
Age group		
18-39	43 (53.75)	70 (87.50)
40-60	37 (46.25)	10 (12.50)
Marriage Status		
Not married yet	11 (13.75)	13 (16.25)
Marry	69 (86.25)	67 (83.75)
Education Level		
Elementary School Graduate	6 (7.50)	2 (2.50)
Junior High School Graduate	14 (17.50)	3 (3.75)
High School Graduate	16 (20.00)	20 (25.00)
S1 College Graduate	41 (51.25)	50 (62.50)
Master's College Graduate	3 (3.75)	5 (6.25)
Job		
Not Working	17 (21.25)	27 (33.75)
PNS/TNI/Polri/BUMN/BUMD	11 (13.75)	15 (18.75)
Farmer/Fisherman/Laborer	14 (17.50)	9 (11.25)
Private Employee	38 (47.50)	29 (36.25)
Total	80 (100)	80 (100%)

Source: Primary Data, 2024

marital status, most unmarried respondents (16.25 %) reported a high quality of life, while a significant majority of married respondents (86.25 %) reported a low quality of life.

Respondents with only elementary schooling reported the lowest quality of life (7.50 %), followed by those with junior high education (17.00 %). Those with a high school education (25.00 %) and college graduates with S1 (62.50 %) and S2 degrees (6.25 %) reported higher quality of life levels. The majority of unemployed respondents (33.37 %) and those working as civil servants, military personnel, police, state or local government employees (18.75 %) had a high quality of life. In contrast, respondents working as farmers/fishermen/laborers (17.50 %) and private employees (47.50 %) predominantly reported a low quality of life.

Table 2 shows that most respondents aged 40-60 (46.25 %) have a low quality of life compared to those with a high quality of life (12.50 %). In contrast, most respondents aged 18-39 (87.50 %) reported a high quality of life. Respondents with poor lifestyles mostly had a low quality of life (51.25 %), while those with good lifestyles predominantly had a high quality of life (75.00 %). Respondents earning less than 3 523 181 reported a lower quality of life (12.50 %), while those earning more than this amount mostly had a high quality of life (92.50 %). Similarly, those not adhering to medication had lower quality of life (16.25 %), while respondents compliant with their medication showed higher levels (88.75 %).

For physical activity, respondents engaging in less activity predominantly had a low quality of life (77.50 %), while those engaging in sufficient activity largely reported a high quality of life (76.25 %). Those with low family support reported a low quality of life (70.00 %), while those with strong family support (82.50 %) were likelier to report a high quality of life.

Table 3 reveals that respondents aged 40–60 have a higher risk of low quality of life than those aged 18-39. The OR value of 6.023 indicates that older respondents are 6.023 times more likely to experience a low quality of life. This finding is statistically significant, with a 95% confidence interval (CI) of 2.581-14.856 and a p-value of 0.0001, showing age as a significant determinant of quality of life in CHD patients at Dr. Wahidin Sudirohusodo Hospital, Makassar.

Respondents with poor lifestyles were also more likely to have a low quality of life, with an OR of 3.153, suggesting a 3.153 times higher risk than those with healthier lifestyles. This finding is statistically significant, with a CI of 1.536-6.535 and a p-value of 0.0001. Income below 3 523 181 also contributed to a lower quality of life, with an OR of 1.761. However, this finding was not statistically significant, as the CI of 0.544-6.204 includes 1, and the p-value was 0.291.

Medication adherence was not a significant determinant, with an OR of 1.530, a CI of 0.561-4.332, and a p-value of 0.358, indicating no meaningful effect on quality of life. However, physical activity was a strong determinant, with an OR of 11.058, showing that respondents with insufficient physical activity are 11.058 times more likely to have low quality of life. This result was statistically significant, with a CI of 5.002-24.734 and a p-value of 0.0001.

Table 2. Distribution of Respondents Based on Variables

Determinant	Low Quality of Life (Case) n (%)	High Quality of Life (Control) n (%)
Age Years		
40-60	37 (46.25)	10 (12.50)
18-39	43 (53.75)	70 (87.50)
Lifestyle		
Poor	41 (51.25)	20 (25.00)
Good	39 (48.75)	60 (75.00)
Income		
<3.523.181	10 (12.50)	6 (7.50)
≥3.523.181	70 (87.50)	74 (92.50)
Medication Compliance		
Non-Compliant	13 (16.25)	9 (11.25)
Compliant	67 (83.75)	71(88.75)
Physical Activity		
Insufficient	62 (77.50)	19 (23.75)
Enough	18 (22.50)	61 (76.25)
Family Support		
Poor	56 (70.00)	14 (17.50)
Good	24 (30.00)	66 (82.50)
Total	80 (100)	80 (100)

Source: Primary Data, 2024

Table 3. Results of Bivariate Analysis

Determinant	Low Quality of Life (Case) n (%)	High Quality of Life (Control) n (%)	OR	(CI 95 % LL-UL)	p-value
Age (Years)					
40-60	37 (46.25)	10 (12.50)	6.023	(2.581 – 14.856)	0.0001
18-39	43 (53.75)	70 (87.50)			
Lifestyle					
Poor	41 (51.25)	20 (25.00)	3.153	(1.536 – 6.535)	0.0001
Good	39 (48.75)	60 (75.00)			
Income					
<3.523.181	10 (12.50)	6 (7.50)	1.761	(0.544 – 6.204)	0.291
≥3.523.181	70 (87.50)	74 (92.50)			
Medication Compliance					
Non-Compliant	13 (16.25)	9 (11.25)	1.530	(0.561 – 4.332)	0.358
Compliant	67 (83.75)	71(88.75)			
Physical Activity					
Insufficient	62 (77.50)	19 (23.75)	11.058	(5.002 – 24.734)	0.0001
Enough	18 (22.50)	61 (76.25)			
Family Support					
Poor	56 (70.00)	14 (17.50)	11	(4.910 – 25.110)	0.0001
Good	24 (30.00)	66 (82.50)			
Total	80 (100)	80 (100)			

* Candidate variables (p<0.25) that will proceed to multivariate analysis
Source: Primary Data, 2024

Table 4. Results of Logistic Regression Analysis

Variables	Model 1		Model 2	
	p-value	OR Cl 95 % (LL-UL)	p-value	OR Cl 95 % (LL-UL)
Age	0.001	7.580 (2.378-24.161)	0.0001	8.058 (2.558-25.384)
Lifestyle	0.130	2.079 (0.806-5.365)	-	-
Physical Activity	0.0001	16.553 (5.858-46.773)	0.0001	18.049 (6.414-50.787)
Family Support	0.0001	12.466 (4.495-34.567)	0.0001	12.576 (4.584-34.502)

*p-value<0.05. Data analysis was by logistic regression test.

Family support also played a crucial role, as respondents with poor family support were 11 times more likely to experience a low quality of life. This finding was significant, with a CI of 4.910-25.110 and a p-value of 0.0001.

The regression analysis presented in Table 4 (Model 1) includes variables such as age, lifestyle, physical activity, and family support, all with p-values less than 0.25. In Model 2, lifestyle was excluded due to its larger p-value

(0.130). The remaining variables—age, physical activity, and family support—were significant, with p-values of 0.0001, 0.0001, and 0.0001, respectively. Physical activity, with an OR of 18.049, was the most significant determinant of quality of life. Respondents with inadequate physical activity are 18.049 times more likely to experience low quality of life, with a 95 % CI of 6.414-50.787, further reinforcing the importance of physical activity in determining the quality of life for CHD patients.

DISCUSSION

The quality of life for people with CHD tends to decline as they get older. With age, the ability of tissues and organs to perform their respective functions decreases. This can affect a person's body in ways that can easily reduce the quality of life. Patients with old age often have other concurrent conditions such as diabetes, hypertension, or arthritis, as well as psychological conditions such as anxiety and depression, which can reduce motivation and worsen overall quality of life (5).

The analysis results obtained an OR value of 6.023, which means that CHD patients aged 40-60 years have a 6.023 times higher risk of experiencing low quality of life compared to CHD patients aged 18-39 years. The OR test results with 95 % CI with LL-UL 2.581-14.856 do not include the number 1, which means that age is a significant determinant of quality of life in coronary heart disease.

This study is in line with the studies conducted on the elderly population, where it is shown that older patients with CHD often experience a decrease in quality of life due to increased symptoms and decreased physical and social activities (5). Then, the results of the same study suggest that there is a relationship between age and quality of life of CHD patients with the OR value obtained at 54.379, which means that patients with an older age range have a 54.379 times greater chance of experiencing low quality of life compared to patients with a younger age range (5,6).

Contrary to the results of research conducted on the elderly, Wardoku et al. showed that the decline in quality of life in CHD patients is not related to age (7). This is because they are often recommended to make lifestyle changes such as a healthy diet, stop smoking, and increase physical activity according to their abilities. Support from family and friends plays an important role in improving patients' quality of life because it helps patients feel better emotionally and be more motivated to follow their treatment plan.

The relationship between age and quality of life in CHD patients is consistent with the theory that quality of life in CHD patients varies significantly between younger and older patients. Younger patients generally have better physical health. Conversely, older patients are at greater risk for declining quality of life. Nonetheless, older patients can experience significant improvements in quality of life after procedures such as coronary artery bypass grafting (CABG). However, factors such as low income, anxiety, and poor sleep quality can negatively impact the quality of life in CHD patients of all ages (8).

The research results show that physical activity is a significant determinant of the quality of life of CHD patients. The results of the analysis carried out obtained an OR value of 11.058, which means that CHD patients who are less in doing physical activity will be at risk 11.058 times to experience a low quality of life compared to CHD patients who are sufficient in doing physical activity. The results of multivariate test analysis showed that physical activity has the largest OR value of 18.049, so physical activity is the main determinant of the quality of life of coronary heart disease patients, and the 95 % CI value of LL-UL 6.414-50.787 does not cover the number 1, so the OR value is meaningful. The results of this study are consistent with research that shows that physical activity has a significant relationship with the quality of life of CHD patients, with an OR value of 4 400 times for patients who do less physical activity compared to patients who do enough physical activity (9,10). The results of the same study conducted in America show that adults who are not physically active have a higher likelihood of low quality of life and may be associated with poor mental health compared to those who do sufficient physical activity.

Most respondents did only light physical activity, both those with a low quality of life and

those with a high quality of life. Respondents, such as housewives, usually do only routine moderate physical activity such as sweeping or cooking. This study also found that respondents only did physical activity 1 or 2 times a week for less than 20 minutes, the most common activity being walking in the morning. Respondents also reported that they mostly relaxed at home by watching TV and sleeping. Lack of physical activity can worsen the respondents' condition, such as a decrease in overall physical fitness, and increase the risk of complications such as obesity, further deteriorating their quality of life (11).

However, respondents who get enough physical activity but still experience a low quality of life have several factors that affect their well-being. From the respondents' interviews, one factor that prevented them from engaging in physical activity was the presence of other comorbidities, such as diabetes or hypertension, which aggravated the respondents' conditions and thus reduced their quality of life. In addition, the side effects of medications, such as fatigue and sleep disturbances, are the cause, even though patients are actively engaged in physical activity (12,13).

According to the researchers, CHD patients should routinely engage in physical activity as advised by a physician or cardiologist, starting with low-intensity activities such as walking and light cycling and slowly increasing the duration. Scheduling a specific time each day to exercise helps maintain consistency and ensures that exercise is not excessive. In addition, engaging family or friends in physical activity can provide strong social support and make physical activity more enjoyable (14,15).

Lack of family support can lead to significant psychological distress in patients, including anxiety and depression, as a lack of emotional support or understanding can lead to feelings of isolation and loneliness. Managing a chronic condition such as CHD can be stressful if family members are not supportive, as patients may feel overwhelmed and responsible for managing their health, leading to increased stress and decreased quality of life (16-18).

Good family support can help CHD patients recover from their illness, reduce distress, and heal CHD symptoms, especially while in the hospital (11,19). The results of research conducted in China found that patients with less family support feel worse psychosocial quality of life with an OR value of 7.471, which means that patients with poor family support are 7.471 times more likely to experience low quality of life than those with good family support (20). Family support is a determinant of family compliance, which is in line with the opinion that family support can determine an individual's health beliefs and values and can find out the treatment programs they can receive (20). The family also provides support and makes decisions regarding the care of sick family members.

The results of the analysis carried out obtained an OR value of 11, which means that CHD patients with poor family support are 11 times more likely to experience a low quality of life than patients who have a good quality of life. According to the interview results, the reason why low-income patients have low family support is because they have busy families, so they don't have time to accompany them to treatment. Some patients also live far away from family members. Other interview results indicated that when they only did check-ups, they did not want to bother family members, so they chose to do it alone (21,22). While some patients who lack family support still have a high quality of life because they have social involvement, hobbies, or community groups that can provide emotional support, positive social activities can improve patients' well-being and quality of life despite lack of family support (23,34).

CONCLUSION

Age, lifestyle, physical activity, and family support are significant determinants of quality of life in CHD patients. Physical activity is the main determinant, with a risk of experiencing a low quality of life of 18.049 times in CHD patients who experience low physical activity compared to CHD patients who do sufficient physical activity. Improving CHD patients' welfare and a good lifestyle, especially in doing enough physical activity according to the patient's condition, will improve the patient's quality of life.

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