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Original Article

The Correlation Between Social Support and Incidence of Depression in Coronary Heart Disease Patients

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Abstract

Background : Coronary heart disease can cause psychological impacts in the form of depression which, if not managed optimally, can worsen the patient's condition. One of the psychosocial factors that cause depression is low social support. Social support can strengthen individual coping with the acceptance of disease conditions in patients.
Aims : This study aims to determine the relationship between social support and depression in coronary heart disease patients at the Heart Installation of Dr. Kariadi Hospital Semarang. **Methods :** This research is a descriptive quantitative correlation with a cross sectional approach. The research sample amounted to 39 respondents calculated by the Isaac and Michael formula with the sampling technique using accidental sampling. The research instruments used were Multidimensional Scale of Perceived Social Support (MSPSS) to assess social support and Beck Depression Inventory-II (BDI-II) to assess depression.
Results : The results of the Pearson Product Moment test showed a highly significant correlation between social support and depression (p = 0.000) with a value of r = -0.756 indicating a strong level of correlation with a negative correlation direction.
Conclusion : The correlation between the two variables is strong and inversely proportional where the higher the social support received, the more depressive symptoms experienced will decrease. Family education is needed to maintain and increase social support to prevent and reduce depression in coronary heart disease patients.

Keywords : social support, depression, coronary heart disease

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INTRODUCTION

Coronary heart disease is known to be the most common cause of death among cardiovascular diseases.[1] In addition to mortality, it also contributes significantly to the global burden of disease measured by disability-adjusted life years (DALYs). DALYs represent the total number of years lost due to premature death and years lived with disability caused by a disease in a population. Coronary heart disease is therefore considered a major contributor to DALYs worldwide.[2]

In 2021 globally coronary heart disease accounts for 9.4 million deaths and 185 million DALYs. [3,4]American Heart Association (AHA)[3] report that there are 16.5 million people over the age of 20 who are affected by coronary artery disease. According to the Institute of Health Matric and Evaluation (IHME) in the Indonesian Ministry of Health[4], deaths from coronary heart disease in Indonesia were found to be 245,343 people per year.

Coronary heart disease not only causes physical complications but also has significant psychological consequences for patients.[5] The psychological impact can be in the form of impaired patient perception of their disease and the emergence of depression. The research by Amni[6] reported that most coronary heart disease patients at Dr. Hasan Sadikin Hospital, Bandung, experienced depression, including 34.4% mild, 23.3% moderate, and 4.4% severe. Severe depression may lead to feelings of helplessness and worsen the prognosis of coronary heart disease. The management of psychological conditions in chronic diseases such as heart disease that is not optimal can increase the incidence of depression which can worsen the patient's condition. Coronary heart disease patients with psychological disorders such as depression can also increase the incidence of hospital readmission and increase the length of stay index significantly.[7]

One of the psychosocial factors that cause depression is low social support.[8] Social support is very important for coronary heart disease patients to strengthen individual patient coping and help patients accept the condition of their disease so that depression does not occur.[9] Social support can be obtained from family, friends, and other significant individuals. It generally includes emotional, informational, instrumental (tangible), and appraisal support.[2]

The research in the United States on 71 respondents with heart failure disease showed a relationship between social emotional support and depressive symptoms (p = <0.001), where coronary heart disease respondents who received greater emotional support had milder depressive symptoms.[10] The research results demonstrate that social support impacts the psychological/mental well-being of coronary heart disease patients. Providing social support, including positive emotional support, can reduce depressive symptoms in coronary heart disease patients.[11]

Research on the relationship between social support and depression in coronary heart disease patients is limited in Indonesia. Based on preliminary studies conducted at Dr. Kariadi Semarang General Hospital in the Cardiac Installation, coronary heart disease patients during the 2022 period were 851 patients and from January to August 2023 it was known that 700 patients were hospitalized. Based on this phenomenon, the researcher is interested in conducting a study entitled "The Correlation between Social Support and Incidence of Depression in Coronary Heart Disease Patients" at the Heart Installation of Dr. Kariadi Hospital Semarang.

METHODS

This study is categorized as a descriptive correlation a cross sectional approach. Before starting the research, the researcher has carried out the administrative process and obtained a research permit with the number : DP.04.01/D.X.2/1421 /2024. The population in this study was the monthly average of coronary heart disease patients at the Heart Installation of Dr. Kariadi Hospital Semarang in January-August as many as 88 patients. Then, the sample was obtained through calculations using the Isaac and Michael formula of 39 respondents . The sampling technique in this study was non-probability sampling in the form of accidental sampling. This study used three instruments, a demographic questionnaire, a social support questionnaire, and the depression questionnaire. Demographic data characteristic variables in this study include; age, gender, education, marital status, occupation, income, NYHA classification, duration of coronary heart disease, and readmission.

Social support was measured using the Multi-dimensional Scale of Perceived Social Support (MSPSS) developed Zimed. The MSPSS consists of 12 items to measure perceived social support from three sources: family, friends, and significant others.[12] The MSPSS instrument uses a 7-point Likert scale, with total scores ranging from 7 to 84. Scores are categorized as low social support (12–48), moderate social support (49–68), and high social support (69–84). The Indonesian version of the questionnaire has been tested for validity and reliability, showing corrected item–total correlation values ranging from 0.365 to 0.687 (r > 0.349) and a Cronbach's alpha coefficient of 0.842, indicating good reliability.

Depression was measured using the Beck Depression Inventory-II (BDI-II) developed by by Beck, Steer and Brown. The BDI is a 21-item self-report assessment inventory that measures attitudinal characteristics and symptoms of depression. The BDI consists of three categories : negative attitudes, performance impairment, and somatic factors. The BDI

score is interpreted as follows: scores of 0–13 indicate minimal depression, 14–19 indicate mild depression, 20–28 indicate moderate depression, and 29–63 indicate severe depression. The Indonesian version of the questionnaire has demonstrated good validity, with corrected itemtotal correlation values ranging from 0.437 to 0.730 (r > 0.349), and good reliability with a Cronbach's alpha coefficient of 0.809.[13]

RESULTS

General Characteristics of Coronary Heart Disease Patient Respondents

The demographic characteristics of the respondents indicate that most participants were middle-aged adults, predominantly male, married, and a high school level of education. Most patients were also classified as NYHA II–III, indicating moderate functional limitations associated with coronary heart disease. These findings suggest that many patients remained in their productive age while experiencing physical limitations, which may increase psychological vulnerability, including the risk of depression. It is known based on the data that most of the patients are married. Marital status serve as an important source of social support for patients with chronic illnesses. Family members often play a significant role in providing emotional, informational, and instrumental support that helps patients cope with the physical and psychological burden of coronary heart disease. Adequate social support therefore reduce the likelihood of depressive symptoms and enhance patients' ability to adapt to their illness.

Univariate Analysis of Social Support Variables in Coronary Heart Disease Patients

The results of the study of social support variables with the MSPSS questionnaire instrument found that the minimum score of social support obtained by patients was 43 while the maximum score of social support obtained by patients was 78. More than half of the sample of coronary heart disease patients, there were 24 (61.5%) patients known to receive moderate social support and a small portion of 3 (7.6%) patients received low social support. The average score of social support obtained by patients in the study was 63.10 which means moderate social support with a standard deviation of 8.344 which shows that the distribution of data varies greatly.

Univariate Analysis of Depression Variables in Coronary Heart Disease Patients

The results of the study of depression variables that have been studied using the BDI-II questionnaire obtained a minimum depression score of 6 and a maximum score of 34. The majority of 16 (41%) patients experienced

TABLE 1
Demographic Data of Participants (n=39)

Variable	Classification	f	(%)	Min.	Max.	Mean	SD
Age							
Late Adulthood	36–45 years	16	41	36	65	50.41	8.315
Early Old Age	46–55 years	11	28.2				
Late Old Age	56–65 years	12	30.7				
Gender							
Male		24	61.5				
Female		15	38.5				
Last Education							
Elementary School		5	12.8				
Junior High School		9	23				
Senior High School		23	58.9				
College		2	5				
Marial Statuses							
Not yet married		3	7				
Divorce		9	23				
Married		27	69.2				

TABLE 1. *Continued.*

Variable	Classification	f	(%)	Min.	Max.	Mean	SD
Job							
Civil Servant		0	0				
Police/Army		1	2.5				
Employee/labor		12	30.8				
Self-Employed		14	35.9				
Unemployment		12	30.8				
Salary							
Low	<1.500.000	13	33.3				
Medium	1.500.000–2.500.000	19	48.7				
Moderate	2.501.000–3.500.000	7	17.9				
High	>3.500.000	0	0				
NYHA							
I		11	28.2				
II–III		26	66.7				
IV		2	5.1				
Long Term of CHD							
<1 month		4	10.3				
1-6 month		12	30.8				
>6 month		23	58.9				
Readmission							
1–3x		26	66.7				
4–6x		11	28.2				
>6x		2	5.1				
Total		39	100				

moderate depression. It was found that the average patient experienced moderate depression as evidenced by a mean value of 21.6 from the average score obtained from the BDI-II questionnaire and a standard deviation of 6.983 which showed that the data distribution was very varied.

Bivariate Analysis of Social Support Variables and Depression in Coronary Heart Disease Patients

The results of the Pearson Product Moment correlation test between social support and depression variables are *p*-value = 0.000 (<0.05) which means Ha is accepted which indicates a very significant relationship and the correlation coefficient value r = -0.756. These results mean a strong level of relationship with a negative relationship direction which means the relationship between the two variables is inversely proportional where the more social support received by coronary heart disease patients, the symptoms of depression experienced will decrease.

DISCUSSION

The majority of coronary heart disease sufferers in this study were known to be between 36–45 years (late adult group) which is still classified as productive age. Research[14] showed that coronary heart disease sufferers were in the productive age range with an age range of ≤ 40–44 years with a prevalence of 66.9% (161 of 227 respondents). Research stated that 107 of 158 patients with a prevalence of 66.7% were diagnosed with STEMI in the age range of 26 – 49 years.[15] Individuals in this age range often experience multiple responsibilities related to

TABLE 2
Data Analysis of Social Support (n = 39)

Variable	Classification	f	(%)	Min.	Max.	Mean	SD
Social Support							
Low	12–48	3	7.6	43	78	63.10	8.344
Medium	49–68	24	61.5				
High	69–84	12	30.7				
Total		39	100				

TABLE 3
Results of data analysis of depression variables in coronary heart disease patients at Dr. Kariadi General Hospital, Semarang (n = 39)

Variable	Classification	f	(%)	Min.	Max.	Mean	SD
Depression							
Minimal	0–13	6	15.3	6	33	21.6	6.983
Mild	14–19	8	20.5				
Medium	20–28	16	41				
Severe	29–63	9	23				
Total		39	100				

TABLE 4
Correlation Test of Social Support Variables with Depression

Variable	Mean ± SD	Coefficient Correlation (r)	*p*-value
Social Support	63.10 ± 8.344	-0.756	0.000
Depression	21.6 ± 6.983		

work and family roles. When diagnosed with a chronic illness such as coronary heart disease, these responsibilities create additional psychological pressure.[16] Furthermore, patients in this age group experience physical limitations as a result of their illness, including fatigue, reduced physical endurance, and restrictions in performing daily activities. These limitations can interfere with patients' ability to fulfill their social and occupational roles, which may negatively affect their self-perception and emotional well-being. Feelings of reduced independence and uncertainty about future health conditions may also increase the risk of psychological distress.[1]

It is known that most coronary heart disease sufferers are male. In line with the research of[17] conducted at Ibnu Sina Hospital Makassar, it was stated that of the 40 patients diagnosed with coronary heart disease, the highest proportion based on gender was male patients, namely 21 people (52.5%). Another study showed that the majority of coronary heart disease sufferers were male (60.4%).[18] Gender differences may influence psychological responses to illness and coping mechanisms. Male patients may be less likely to express emotional distress or seek psychological help, which may increase vulnerability to depressive symptoms. In this context, social support from family members and significant others becomes important in helping male patients manage emotional stress and adapt to health condition.[19]

More than half of the percentage of respondents have a high school education background. Setiadi's research[20] also stated that out of 118 respondents with coronary heart disease, 52 (44.1%) respondents had a high school education. The research report that out of

34 respondents with coronary heart disease, 19 (55.9%) of them had a high school/equivalent education.[21] Research conducted also stated that the majority of 4,545 (32.6%) of the 13,948 respondents with coronary heart disease had a high school education.[22] Educational background can influence a patient's understanding of their illness and their ability to access health information. Patients with better knowledge of their illness are better able to adopt effective coping strategies and seek appropriate social support.[23] Therefore, adequate health literacy can help patients manage psychological stress and reduce the risk of depression.

Married patients are known to be the most common status of coronary heart disease patients in this study. Research[24] which examined the effect of marital status on the incidence of depression in coronary heart disease patients found that out of 101 respondents, 91 (90.1%) were married and 10 (9.9%) respondents were not married. Research[10] also found that 406 (81.2%) of 500 heart disease patient respondents were married. The research repot also stated that 100 (97.1%) of 103 coronary heart disease respondents were married. Marriage is known to be a factor that is inversely related to depression because married individuals have better psychological conditions and can protect someone from external factors that can trigger depression.[5] One of the psychosocial factors that causes depression is low social support.[8] According to research,[25] it is stated that someone who is married and in a relationship is known to get high social support compared to someone who is not or has never been married. This is supported by the results of research[26] which found that respondents who were not married had a relationship with the incidence of depression (p-value = 0.037). Social support from partners/family can provide social support in the form of emotional support that can help someone reduce stress, be more compliant with the medical treatment they are undergoing, and be able to avoid depression.[27]

The income level of patients in this study was mostly classified as a moderate income level ranging from 1,500,000 – 2,500,000 per month. Research[24] found that out of 107 respondents with coronary heart disease, 61 (57%) respondents had an income of <2.8 million rupiah. In addition, the results of this study are also supported by the results of research[27] which stated that 71 (35.5%) of 200 respondents with coronary heart disease were in the moderate economic status category. However, another study[28] found that out of 950 respondents with coronary heart disease, 546 (52.6%) respondents had low economic status. Economic status may influence patients' ability to access healthcare services and manage the financial burden associated with chronic illness. Financial difficulties may increase psychological stress and potentially contribute to depressive symptoms.[29] In such situations, emotional and practical support from family members may help patients cope with both the financial and psychological challenges associated with coronary heart disease.

More than half of the patients in this study were classified in the NYHA II-III category. The study on 443 patients with angina pectoris coronary heart disease found that most of the patients were classified with NYHA II, 261 (58.9%) patients, of which 66 patients had mild depression and 26 patients had moderate depression.[30] The results of study 224 coronary heart patients found that the majority of 132 (77.2%) patients were classified as NYHA II and III, consisting of 116 (51.8%) NYHA II patients (62 of whom had depression) and 57 (25.4%) NYHA III patients (30 of whom had depression).[26] Another study[31] stated that out of 1337 coronary heart disease patients, 679 patients (52%) were classified as NYHA II and III. Depressive symptoms are more common in coronary heart disease patients with poor functional conditions who have been assessed using NYHA.[30] In coronary heart disease patients, the NYHA classification is used to categorize the extent of physical limitations experienced by coronary heart disease patients because it can affect the quality of life of coronary heart disease patients.[26] Thus, NYHA classification in patients can help health workers in assessing functional status and anticipating the emergence of depression in coronary heart disease patients with higher NYHA status.

The majority of patients in this study had been diagnosed with coronary heart disease for >6 months. The study findings that 61 (79.2) patients diagnosed for ≥6 months with coronary artery disease.[32] The results of the study by Nuraeni[24] showed that out of 107 coronary heart disease patients, 77 (72%) of them had been diagnosed for ≥ 6 months. A similar study obtained results from 81 samples of patients diagnosed with coronary heart disease < 6 months, 13 (16%) patients, then for patients diagnosed >6 months, 68 (83.9%) patients.[33] Factors that influence health related to the quality of life of heart disease patients include the length of time suffering from the disease which is associated with the symptoms that appear and depression in coronary heart disease patients. In patients with cardiovascular diseases such as coronary heart disease, symptoms of depression persist for more than 6 months after myocardial infarction, or more specifically, for ± 12 months. In addition, compared to a temporary reaction to a coronary heart disease event, depression in many patients appears months or years before the event and persists long after the event.[34]

More than half of the results of this study showed that coronary heart disease patients received moderate social support. This is in line with the results of research that out of 284 coronary heart disease patients, 115 (40.1%) patients received moderate social support.[26] Research[35] showed that out of 192 coronary heart disease patients, 124 (64.6%) patients received

sufficient/moderate social support from their families. Social support is said to be a subjective feeling felt by individuals regarding the presence or absence of actual support from other people around them.[36] Social support plays an important role in the management of heart disease.[10] This is because social support is known to be associated with quality of life and mental conditions in coronary heart disease patients.[24] The effect of social support can reduce stressors in cardiovascular patients which has an impact on reducing morbidity and mortality.[11] Adequate social support can result in reduced cortisol response to stress, better immune function, less cell aging which has an impact on reducing the risk of heart disease.[37]

The results of this study conducted at Dr. Kariadi General Hospital Semarang show that the majority of patients received moderate levels of social support. In many communities, social support for sick individuals is commonly expressed through visits, expressions of empathy, and the provision of moral or material assistance from family members, relatives, and friends.[38] In general, family is often placed at the center of social life and becomes an important source of emotional comfort and support when individuals experience health problems. These findings are consistent with the study conducted,[35] which reported that out of 192 coronary heart disease patients, 124 (64.6%) received sufficient or moderate social support from their families. This suggests that sociocultural values emphasizing care, empathy, and kinship may contribute to the availability of social support for patients with coronary heart disease.
Depression was suffered by the majority of coronary heart disease patients in this study. In line with the research[39] on coronary heart disease patients in Palestine, it showed that out of 1,022 coronary heart disease patients, 257 (25.2%) of them were included in the mild-moderate depression category. The results of a study[6] showed that out of 84 coronary heart disease patients at Dr. Hasan Sadikin Hospital, Bandung, 18 (21.4%) of them experienced mild-moderate depression. There is also another study on 175 coronary heart disease patients with myocardial infarction in Jordan, 122 (69.7%) of them experienced mild to severe depression.[40] Depression contributes to the development of several chronic medical diseases, including heart disease which results in decreased quality of life. Depression is also a factor in readmission and increased length of stay in hospital in coronary heart disease patients. Symptoms of depression often occur after the onset of acute coronary heart disease and its appearance is related to the occurrence of recurrent myocardial infarction.[40] Symptoms of depression that often appear and are almost the same as symptoms of coronary heart disease are fatigue. Fatigue that appears in heart disease patients causes the need for activity restrictions which often cause depression in patients with recurrent myocardial infarction.[41] In patients with high depression, it must be really considered because this is related to the patient's feelings of helplessness due to activity restrictions that can affect the prognosis of the coronary heart disease condition they suffer from. Coronary heart disease patients who experience depression can experience a worse prognosis and are at risk of developing major depression (Major Depressive Disorder).[6]

The results of the Pearson product moment test showed a very significant relationship between the variables of social support and depression (p-value = 0.000) with a negative relationship direction (r = -0.756) which means the relationship between the two variables is strong and inversely proportional where the more social support received by coronary heart disease patients, the symptoms of depression experienced will decrease. In line with research[32] in Indonesia showed that the results of the relationship between social support and depression in coronary heart disease patients were moderate (p = <0.005, r = -0.467). Another study by[9] in Lithuania on 129 coronary artery disease respondents showed that social support influenced the reduction of depressive symptoms in the form of fatigue experienced by coronary artery disease patients (p <0.001).

In patients with coronary heart disease, psychosocial factors have been widely highlighted because they are considered capable of causing other prognoses such as depression related to cardiovascular disease.[2] Depression is one of the common symptoms in patients with heart disease which is associated with a worsening quality of life which results in functional disorders in patients with heart disease such as decreased daily activities and decreased walking distance compared to non-depressed patients. One of the psychosocial factors that causes depression is low social support. According to[27] factors that influence the relationship between social support and depression can be associated with medical conditions experienced by patients, such as post-Acute Myocardial Infarction conditions that occur repeatedly in patients with Coronary Heart Disease.

The results of this study and previous studies show that there is a relationship between social support and depression in patients with coronary heart disease. In this study, in addition to social support factors that influence the incidence of depression, the presence of medical conditions in patients such as recurrent myocardial infarction can also be influenced by other risk factors such as: age, gender, education, marital status, occupation, income, NYHA classification, duration of coronary heart disease and readmission events can affect depression in patients with coronary heart disease.

CONCLUSION

Pearson Product Moment tests revealed a very significant

relationship between social support and depression (p=0.000) and a correlation coefficient of r=-0.756. This is interpreted as a strong level of relationship with a negative relationship direction which means the relationship between the two variables is inversely proportional where the more social support received by coronary heart disease patients, the more the symptoms of depression experienced will decrease.

CONFLICT OF INTEREST

The authors declare no conflict of interest. This study was conducted independently without financial, commercial, or personal influence, and all findings are based on objective data analysis.

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