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# Mental health, depression, and quality of life levels in heart failure patients

## Niveles de salud mental, depresión y calidad de vida en pacientes con insuficiencia cardíaca

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**SUMMARY**

**Introduction:** *Heart failure is the most common cause of death. About 20 %-40 % of heart failure patients' have depressive disorders. Improvements in patients' quality of life could give an effect on the progression of cardiovascular disease. This study aims to describe depression and quality of life in heart failure patients.*
**Methods:** *This study was conducted using the Beck Depression Inventory (BDI) questionnaire and the Short-form 36 (SF36) questionnaire in heart failure patients' populations during January-March 2020.*
**Results:** *65 subjects were obtained in this study. Consisted of 37 male subjects (57 %), 28 female subjects (43 %). The highest ages were 61-70 years (38.5 %) and 51-60 years (36.9 %). Thirty-eight respondents (38.58 %) had no symptoms of depression. The mental health dimension has the highest score, with 76,123 median values. At the same time, the dimension of functional limitations related to emotional problems has the lowest score, with a 56,410-median value. There were 22 subjects (22.34 %) with mild depressive symptoms, 5 subjects (5.8 %) with moderate depressive symptoms, whilst none of the populations had severe depressive symptoms.*
**Conclusion:** *The most common depiction of depression in heart failure patients is no symptoms of depression, mild depression, and moderate depression. The best depiction of the quality of life in heart failure patients is the mental health dimension, and the lowest is function limitation related to emotional problems.*

**Keywords:** *Heart failure, depression, quality of life.*

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**RESUMEN**

**Introducción:** *La insuficiencia cardíaca es la causa más común de muerte. Aproximadamente entre el 20 % y el 40 % de los pacientes con insuficiencia cardíaca tienen trastornos depresivos. Las mejoras en la calidad de vida de los pacientes podrían influir en la progresión de la enfermedad cardiovascular. Este estudio tiene como objetivo describir la depresión y la calidad de vida en pacientes con insuficiencia cardíaca.*
**Métodos:** *Este estudio se realizó utilizando el cuestionario Beck Depression Inventory (BDI) y el cuestionario Short-form 36 (SF36) en poblaciones de*

*pacientes con insuficiencia cardíaca durante enero-marzo de 2020.*
**Resultados:** *En este estudio participaron 65 sujetos. Consistió en 37 sujetos masculinos (57 %), 28 sujetos femeninos (43 %). Las edades más altas fueron 61-70 años (38,5 %) y 51-60 años (36,9 %). Treinta y ocho encuestados (38,58 %) no tenían síntomas de depresión. La dimensión de salud mental tiene la puntuación más alta, con 76 123 valores de mediana. Al mismo tiempo, la dimensión de limitaciones funcionales relacionadas con problemas emocionales tiene la puntuación más baja, con un valor mediano de 56.410. Hubo 22 sujetos (22,34 %) con síntomas depresivos leves, 5 sujetos (5,8 %) con síntomas depresivos moderados, mientras que ninguna de las poblaciones presentó síntomas depresivos graves.*
**Conclusión:** *La descripción más común de depresión en pacientes con insuficiencia cardíaca es la ausencia de síntomas de depresión, depresión leve y depresión moderada. La mejor descripción de la calidad de vida en pacientes con insuficiencia cardíaca es la dimensión de salud mental, y la más baja es la limitación funcional relacionada con problemas emocionales.*

**Palabras clave:** *Insuficiencia cardíaca, depresión, calidad de vida.*

## INTRODUCTION

Cardiovascular disease is a non-communicable disease that contributes to the high mortality rate in the world. The death rate for cardiovascular disease in the world in 2008 reached 17 million. This rate is expected to rise from year to year until it reaches 25 million deaths by 2030 (1). Demographic changes that occur with epidemiological and nutritional transitions is a key role in cardiovascular disease shifting from developed to developing countries as a burden disease. In Indonesia, cardiovascular disease is the leading cause of morbidity and mortality and is responsible for one-third of all causes of death in Indonesia (2). The incidence of heart failure is still difficult to determine because there are only a few data available, especially in developing countries, but it is estimated that around 23 million people suffer from heart failure worldwide (3). Meanwhile, the overall incidence of coronary disease in Indonesia reached 138 380 or 9.89 % of the total deaths. Data shows that coronary disease ranks seventh highest in non-communicable diseases in Indonesia (4).

Chronic heart failure is defined as a pathological condition in which the heart cannot pump blood flow throughout the body so that metabolic body tissues requirement was not fulfilled. Heart failure can also be interpreted as a clinical syndrome, which consists of symptoms of dyspnea, fatigue (during activity and rest), accompanied by fluid retention symptoms such as edema in the ankles and lung congestion (5). Heart failure causes according to national heart failure surveys, are dominated by hypertension (53 %), ischemic heart disease (47 %), diabetes (28 %), and valvular heart disease (21 %) (6). Pathophysiology of heart failure requires an initial understanding of the typical clinical syndromes, circulatory disorders, structural abnormalities of the heart, hemodynamic and fluid balance disorders, biochemical abnormalities (reduced energy, decreased contractility), neurohumoral activity that causes maladaptive cardiac hypertrophy, and genetic involvement in heart failure (7,8).

Depression is a common comorbid condition among heart failure patients. Prevalence of depression ranges from 23.8 % to 67 % in inpatients and about 16.7 % to 70 % in outpatients with heart failure (9). There is a two-way relationship between heart failure and depression. Sometimes heart failure leads to the development of depression, and sometimes the same pathophysiological mechanisms leading to clinical manifestations of both conditions (10). 20 % to 40 % of patients with heart failure meet the criteria for major depressive disorder or experience an increase in depressive symptoms. This figure far exceeds the prevalence of 2 %-9 % seen in the normal population (11,12). Depression is a major cause of functional disability due to the patient's inability to cope with everyday stressors. Depression can be caused by many factors, including heredity and genetics, constitution, premorbid personality, physical, psychobiological, and neurological factors, biochemical factors, and electrolyte problems (13).

Research shows that depression is the strongest predictor of health status and quality of life in patients with heart failure (9). Depressed patients show decreased function in daily activities, increased heart failure symptoms intensity, and impaired quality of life. Other studies have

shown that heart failure patients with depression have a high risk for re-hospitalization and death compared with heart failure patients who are not depressed (11,12,14). Heart failure patients with depression have the highest risk for non-adherence in treatment, leading to decreased health status (9).

Quality of life (QoL) is a satisfactory level of life. QoL, according to WHO, is the perception of individuals about their position in life in the context of the culture and value system in which they live concerning their goals, hopes, and interests (15,16). Improvement and recovery of QoL is an important aspect in managing cardiovascular disease with depression so that it affects the quality of life, which can predict the further development of cardiovascular disease (17). Evaluation of health-related quality of life (HRQoL) is described as a treatment measurement for potential patient life changes. Several studies have also shown that several factors such as comorbid disease, depression, anxiety, and the incidence rate of invasive cardiovascular procedures are associated with increased HRQoL in patients with cardiovascular disease (18).

Seeing the phenomenon of many heart failure patients who suffer from depression can interfere with the quality of life, and there is no previous research has been conducted at the Jemursari Islamic Hospital Surabaya, which makes authors conduct this study. This study aims to determine the description of depression and the quality of life of heart failure patients.

## METHODS

This study is a cross-sectional descriptive study of heart failure patients at the Cardiac and Vascular Outpatient Installation at Jemursari Islamic Hospital, Surabaya, Indonesia. The study was conducted from January to March 2020. The inclusion criteria in this study were: all heart failure patients at the Cardiac and Vascular Outpatient Installation at Jemursari Islamic Hospital, Surabaya in January – March 2020 who were willing to become respondents and answer the Beck Depression Inventory (BDI) questionnaire and the Short-form questionnaire 36 (SF36). Exclusion criteria included patients with psychotic conditions. The data sources of this study were heart failure patients' data at the Cardiac and Vascular Outpatient installation at Jemursari Islamic Hospital Surabaya, BDI questionnaire, and SF36 questionnaire. Data were collected and processed by descriptive statistical methods in the form of tables and then presented in diagrams. Table 1 shows the operational definition of variables.

This study used the variables of heart failure, depression, and quality of life. Heart failure by definition is a clinical syndrome characterized by characteristic symptoms: shortness of breath, ankle swelling, fatigue, and increased jugular venous pressure, pulmonary crackles, and peripheral edema caused by structural or functional cardiac abnormalities. This results in reduced cardiac output and high intracardiac pressure both at rest and at the activity. The condition of heart failure is measured based on anamnesis and physical examination by a cardiologist.

Depression is defined as a syndrome characterized by several clinical symptoms that manifest in each individual differently. Depression syndrome can be affective, somatic, motivational, cognitive. This variable is measured using the BDI II (ordinal) scale, with a range of 0-63. Score 0-9 is considered as no symptoms of depression, score 10-18 is considered as mild depression symptom, score 19-29 is considered as moderate depression symptom, and score 30-63 is considered as major depression symptom.

Quality of life is an individual's perception of their position in life in the context of the culture and value system in which they live in terms of goals, expectations, and interests. Quality of life was measured using the SF-36, which has a score range of 0-800. The final score was determined based on the total score for the dimensions of physical function, functional limitations related to physical problems, functional limitations related to emotional problems, energy/fatigue, mental health, social functioning, pain, general health perception, then the mean and standard deviation (numeric) values were searched.

## RESULTS

### Demographic Characteristics of Heart Failure Patients at the Cardiac and Vascular Inpatient Installation, Jemursari Islamic Hospital, Surabaya

Table 1 shows the demographic characteristics of patients in this study. The total number of respondents was 65 people with more males than females (57 %). The highest ages were in the range of 61-70 years (38.5 %) and 51-60 years (36.9 %). Some fewer respondents were unemployed (40 %). The most subject was high school graduated (37 %). 36 respondents (56 %) had lower middle income, with a total income less than IDR 2 500 000.00. 45 respondents (69.2 %) suffered from heart failure for more than two years. 50 respondents (77 %) had undergone treatment for more than one year (77 %). 45 % of respondents feel support from family, while 39 respondents (60 %) had sufficient support from relatives, friends, and medical personnel. 56 respondents (86 %) interpreted heart failure as a test or life's problems.

Table 1

Demographic Characteristics of Heart Failure Patients at the Cardiac and Vascular Outpatient Installation of Jemursari Islamic Hospital, Surabaya

| No. | Characteristics | | Frequency (n=65) | Percentage (%) |
|---|---|---|---|---|
| 1 | Sex | male | 37 | 57.0 |
| | | female | 28 | 43.0 |
| 2 | Age | ≤ 40 years | 3 | 4.6 |
| | | 41 – 50 years | 4 | 6.2 |
| | | 51 – 60 years | 24 | 36.9 |
| | | 61- 70 years | 25 | 38.5 |
| | | 71- 80 years | 9 | 13.8 |
| 3 | Occupation | government employees | 3 | 13.8 |
| | | Private employees | 8 | 4.7 |
| | | Entrepreneur | 14 | 12.3 |
| | | Not working | 26 | 21.5 |
| | | Others | 14 | 40.0 |
| 4 | Education Level | Elementary School | 17 | 26.0 |
| | | Junior High School | 12 | 19.0 |
| | | Senior High School | 24 | 37.0 |
| | | College | 12 | 18.0 |
| 5 | Monthly income (IDR) | < 2 500 000 | 36 | 56.0 |
| | | 2 500 000 – 4 999 000 | 21 | 32.0 |
| | | 5 000 000 – 10 000 000 | 6 | 9.0 |
| | | > 10 000 000 | 2 | 3.0 |
| 6 | Period of heart failure suffering | 6 months – 1 year | 10 | 15.4 |
| | | 1 – 2 years | 10 | 15.4 |
| | | > 2 years | 45 | 69.2 |
| 7 | Period of treatment | < 6 months | 8 | 12.0 |
| | | 6 months – 1 year | 7 | 11.0 |
| | | > 1 year | 50 | 77.0 |
| 8 | Family support | Very sufficient | 29 | 45.0 |
| | | Sufficient | 34 | 52.0 |
| | | Insufficient | 2 | 3.0 |
| 9 | Support outside the family | Very sufficient | 15 | 23.0 |
| | | Sufficient | 39 | 60.0 |
| | | Insufficient | 7 | 10.7 |
| | | Very sufficient | 4 | 6.0 |
| 10 | The meaning of being sick | Life’s problems/tests | 56 | 86.0 |
| | | Punishment | 2 | 3.0 |
| | | Warning | 7 | 11.0 |

**Overview of Depression and Quality of Life of Heart Failure Patients at the Cardiac and Vascular Outpatient Installation, Jemursari Islamic Hospital, Surabaya**

In Table 2, there are 38 respondents with no symptoms of depression (38.58 %), 22 respondents with mild depressive symptoms (22.34 %), five people with moderate depression symptoms (5.8 %), and no respondents who experienced symptoms of major depression.

Table 2

Overview of depression in heart failure patients

| No | Characteristics | Frequency (n=65) | Percentage (%) |
|---|---|---|---|
| 1 | No symptoms of depression | 38 | 58.4 |
| 2 | Mild depression symptoms | 22 | 33.8 |
| 3 | Moderate depression symptoms | 5 | 7.0 |
| 4 | Major depression symptoms | 0 | 0.0 |

**Overview of the Quality of Life of Patients with Heart Failure at the Cardiac and Vascular Outpatient Installation, Jemursari Islamic Hospital, Surabaya**

Table 3

Overview of the quality of life of patients with heart failure at the cardiac and vascular outpatient installation, Jemursari Islamic Hospital, Surabaya

| No | Dimensions of Quality of Life | 0 - 100 | N | Mean | SD |
|---|---|---|---|---|---|
| 1 | Physical function | 0 - 100 | 65 | 70.923 | 28.393 |
| 2 | Functional limitations related to physical problems | 0 - 100 | 65 | 58.462 | 45.560 |
| 3 | Pain | 0 - 100 | 65 | 68.731 | 25.067 |
| 4 | General health | 0 - 100 | 65 | 58.333 | 18.837 |
| 5 | Energy/tired | 0 - 100 | 65 | 67.692 | 18.330 |
| 6 | Social function | 0 - 100 | 65 | 58.654 | 15.456 |
| 7 | Functional limitations related to emotional problems | 0 - 100 | 65 | 56.410 | 47.479 |
| 8 | Mental health | 0 - 100 | 65 | 76.123 | 14.106 |
| Total Quality of Life Score | | 0 - 800 | 65 | 515.328 | 213.228 |

## DISCUSSION

In this study, the depiction of depression in most heart failure patients was that there were no depressive symptoms. The best description for quality of life in heart failure patients is t mental health dimension, and the lowest is the functional limitations related to emotional problems. Most respondents in this study had no symptoms of depression. This is different from other studies, which state that many patients with heart failure suffer from depression (11,19). This various result is due to male subjects is frequent than females, while the prevalence of depression in heart failure patients is more frequent in females

than males (20). In this study, there were more males than females. This is in concordance with data from the American College of Cardiology Foundation/American Heart Association, which shows that the prevalence of heart failure in black and white men is more than in women's (14), whereas women have a lower risk for heart failure than men (21). Besides that, the meaning of pain perceived by respondents will affect emotional stress, such as symptoms of depression (22). The meaning of pain in most respondents is as a trial; only a few perceive pain as a punishment. Patients with negative perceptions about heart disease are prone to depression (22).

This study indicates that family and non-family support is very sufficient and sufficient for respondents. This shows that good support will prevent respondents from stressful conditions, increase adherence to medication and a healthy lifestyle. Other studies suggest that lack of social support can increase the incidence of hospitalization and the risk of death (14). Besides family and non-family support, there are studies shows that environmental factors, including sociodemography, can influence the onset of depression in patients with physical disorders, including age, gender, marital status, education, social support, and a history of depression or physical disturbance (23). The treatment duration will also affect mood conditions (24).

The mental health dimension has the highest value in this study, this result is in line with previous studies (25). In this study, the majority of respondents underwent treatment for more than one year. This indicates that the doctor-patient relationship is well established. Previous studies have shown that an effective doctor-patient relationship helps regulate patient emotions and facilitates understanding of information, ultimately leading to patient satisfaction and a better quality of life (26). In this study, it was also found that family and non-family support were quite good to improve the quality of life of heart failure patients. This result is also in concordance with previous research (25) In this study, many respondents did not have depressive symptoms, so the quality of life in this study is considered as good. Because depressive symptoms will affect the quality of life (24,27).

Another dimension of quality of life is the mental health dimension. This study's lowest quality of life dimension was the dimension of functional limitations related to emotional problems. This is consistent with a study that investigated the impact of chronic disease on quality of life among elderly whose living in various parts of the state of São Paulo, Brazil, where depression/anxiety was the most negative impact on vitality, emotional roles, social functioning, and mental health (28). Other studies have shown that patients who felt their illness had a more significant effect, and their emotional quality was less qualified (24).

Characteristics of respondents were described demographic conditions of respondents and used to assess some factors that influence depression and QoL in research respondents. In terms of age, the highest percentage is in the range of 61-70 years. This is following data from the AHA statistical update, which states that heart failure approaches 21 per 1 000 population after the age of 65 years. There is an increase among the elderly (29,30), and it is estimated that Japanese people 65 years of age had higher numbers of heart failure incidence (31). The high prevalence and incidence of heart failure among the elderly may be related to heart failure risk factors that increase with age, such as coronary artery disease and hypertension, and age-related maladaptive changes that can directly affect the cardiovascular system (30). Most of the research subjects did not work, with the most education of senior high school and low family economic income, which was less than IDR 2 500 000.00. Cohort research conducted on black and white populations in the southeastern United States showed an independent relationship between socioeconomic characteristics (income, education, and occupation) and the risk of heart failures (32).

Many respondents suffered from heart failure for more than two years in this study. The duration of illness makes patients easily adapt to chronic diseases, such as heart failure. Patients will strive to understand and manage their problems (24). Most respondents underwent treatment after one year, worries less about treatment because they were used to it, and felt most benefits from the treatment they had (24).

## CONCLUSION

The most common description of depression in heart failure patients is that there are no symptoms of depression, mild depression, and moderate depression. The best description of the quality of life of heart failure patients is the mental health dimension, and the lowest in the functional limitation related to emotional problems. Further research needs to be done with a more straightforward questionnaire and biological markers in future studies to determine the description of depression in heart failure patients.

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