**ASTEEC Conference Proceeding: Applied Science**
3rd International Conference on Obstetricians Participating in Training for Innovative Measures to Advance Leadership 2025 (OPTIMAL 2025)
14 June 2025 (Online)

# Relationship between Frailty Syndrome and Quality of Life in Heart Failure Patients in Jakarta

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***Abstract.*** Congestive heart failure is a condition characterized by typical symptoms such as shortness of breath at rest or activity, fatigue and leg edema, tachycardia, tachypnea, pulmonary rales, pleural effusion, and increased jugular venous pressure. Lower quality of life in heart failure patients is associated with the presence of frailty syndrome. Frailty syndrome has a significant negative impact on prognosis and quality of life. The study aimed to determine the relationship between frailty syndrome and quality of life in heart failure patients in Jakarta. This research method was cross-sectional with descriptive correlation. The technique of selecting samples used purposive sampling with a total sample size of 87 patients, and the statistical test used Spearman's rank. The results obtained showed that frailty syndrome showed that the largest number of the pre-frail category was 60 people (69.0%). The quality of life was the largest number in the reverse category, 38 people (43.7%). Spearman's rank test showed a p-value of 0.000 ($p \leq 0.05$) and $r = 0.569$; there was a significant relationship between the frailty category and quality of life of patients. So, frailty syndrome has a significant negative impact on the quality of life of Congestive Heart Failure patients. It is hoped that consideration will be given to help patients in managing their condition.

**Keywords:** Frailty Syndrome, Quality of Life, Heart Failure.

## INTRODUCTION

Heart failure (HF), as defined by the American College of Cardiology (ACC) and the American Heart Association (AHA), is a complex clinical syndrome that results from any structural or functional impairment of ventricular filling or injection of blood. Heart failure is a common disorder worldwide with a high morbidity and mortality rate, with an estimated prevalence of 26 million people worldwide [1].

The World Health Organization (WHO) revealed that the number 1 cause of increasing death rates in the world is cardiovascular disease, with 17.9 million deaths each year. Around 85% of the causes of death in patients with cardiovascular disease are heart failure. Low and middle income countries have a prevalence of 75% in the population aged <70 years. The highest prevalence of heart failure in Asia and even in the world is occupied by Singapore (4.5%), while Malaysia (6.7%), Taiwan (2.2%), the Philippines (9%) and Vietnam (15%). Southeast Asia is in third place after Africa and India [2].

Indonesia ranks third after Laos and the Philippines with the highest death rate due to cardiovascular disease, the prevalence of heart failure in Indonesia based on a doctor's diagnosis is estimated at 0.85% or 877,531 people. Heart failure disease in Indonesia is increasing every year, estimated at around 2,784,064 people according to the Indonesian. Meanwhile, the prevalence at the provincial level that ranks high is Papua Tengah, DIY Yogyakarta, and DKI Jakarta at 1.56% or estimated at around 33,552 people [3]. Based on data obtained from the Heart Failure Patient Register at the Heart Polyclinic of Harapan Kita Heart and Blood Vessel Hospital, in 2020 there were 3260 patients, in 2021 there were 4846 patients, in 2022 there were 6319 patients. This shows a significant increase every year.

Heart failure is a progressive clinical syndrome that can be caused by abnormalities in myocardial function (systolic and diastolic), valve disease or others that can cause blood flow disorders accompanied by fluid retention. Typical symptoms of heart failure include shortness of breath at rest or during activity, fatigue and leg edema, while typical signs that may appear include tachycardia, tachypnea, pulmonary rhonchi, pleural effusion, increased jugular venous pressure, peripheral edema and hepatomegaly [4]. Heart failure often causes sufferers to be unable to carry out daily activities, causing long-term care and rehospitalization, thus affecting the patient's quality of life.

The World Health Organization Quality Of Life (WHOQOL) explains that quality of life is a very broad concept that is influenced by physical and psychological conditions and the level of independence as well as the relationship between the individual and his/her environment. The quality of life of heart failure patients is influenced by several factors including age, gender, occupation, education, and severity based on the New York Heart Association (NYHA). Lower quality of life in heart failure patients is often associated with the presence of frailty syndrome. Frailty assessment in heart failure patients is increasingly recognized due to its increasing prevalence accompanied by a significant negative impact on prognosis and quality of life [5].

Frailty syndrome is a syndrome of weakness, fatigue, decreased physical activity, slow gait, and weight loss [6]. Data from the Cardiovascular Health Study mentions two important factors of frailty syndrome. First, frailty syndrome not only overlaps with disability or comorbidity but also has other hidden features. Second, one quarter of the elderly without comorbidity and disability depend on services. Early detection of frailty syndrome in heart failure patients is one of the efforts to improve and maintain the quality of life of patients. When the patient has fallen into frailty status, this can cause clinical manifestations such as malnutrition, functional dependence, prolonged bed rest, pressure sores, life disorders, general weakness, and decreased cognitive function [7].

The results of a preliminary study conducted by researchers at the heart failure polyclinic at Hospital in Jakarta showed that 10 out of 15 or 66.6% of heart failure patients interviewed complained of frequent fatigue, shortness of breath, chest pain, sudden heart palpitations, and frequent swelling in the legs. The disorder is felt by patients repeatedly, 7 out of 10 patients complain of experiencing physical weakness such as; easily tired, walking using aids, such as canes and wheelchairs. Meanwhile, 3 out of 10 patients experienced a weight loss of between 3-6 kg in the last month. This certainly risks reducing their quality of life.

The results of this study are in accordance with research conducted by Lainsamputty et al entitled "Correlation of fatigue domains and quality of life in hypertensive patients in Indonesia". The results of this study indicate that the physical components of quality of life are significantly related to the Global Fatigue Index/GFI ($r = -0.17$, $p < 0.05$), severity domain ($r = -0.17$, $p < 0.05$), and stress ($r = -0.21$, $p < 0.01$). The psychological components of quality of life correlated with GFI ($r = -0.26$, $p < 0.01$), severity domain ($r = -0.25$, $p < 0.01$), distress ($r = -0.28$, $p < 0.01$), and degree of activity disruption ($r = -0.24$, $p < 0.001$). The environmental component of quality of life was only significantly related to the domain of degree of activity disturbance ($r = -0.17$, $p < 0.05$). The conclusion of this study, participants who experienced more severe fatigue, also had a worse quality of life in all components [8].

In addition, researchers have not found any specific research results discussing the relationship between frailty syndrome and the quality of life of heart failure. Based on the background above, researchers are interested in conducting further research on the relationship between frailty syndrome and the quality of life of heart failure patients in Jakarta.

## METHODS

This research is a descriptive study with a cross-sectional design. The variables studied were the frailty syndrome variables with quality of life. The sampling technique used was purposive sampling with the Slovin formula, so that 87 respondents were obtained who met the inclusion criteria in the form of heart failure patients in the heart polyclinic, willing to be respondents, aged ≥ 45 years, while the exclusion criteria were patients with physical mobility disorders, stroke, and dementia.

The questionnaires used were The Minnesota Living with Health Failure Questionnaire (MLHFQ) to measure quality of life, and the Ina-Fralil/RAPUH (Resistance, Fatigue, Illnesses, Ambulatory, and Loss of Weight) questionnaire to measure frailty syndrome. The entire questionnaire used closed questions. The MLHFQ measurement categories are divided into three, namely poor, moderate, and good quality of life. Meanwhile, the Ina-Frail/RAPUH measurement category is divided into two, namely pre-frail and frail. Data analysis used the Spearman Rank correlation test and looked at the correlation coefficient of the two variables. All of these analyzes used SPSS Version 22.0 for Windows.

## RESULTS AND DISCUSSION

Table 1 shows from the data above that the majority of respondents were in the mild vulnerability category, namely 60 people (69.0%), and respondents in the fragile/vulnerable category were 27 people (31.0%). Most respondents were in the good quality of life category, as many as 38 people (43.7%), followed by poor quality of life as many as 28 people (32.2%), and finally with the smallest number, namely moderate quality of life as many as 21 people (24.1%).

**Table 1.** Frequency Distribution of Respondents Based on Frailty Syndrome in Jakarta 2023 (n = 87)

| Variable | | Frequence | Presentace |
|---|---|---|---|
| Frailty Syndrome | Pre-Frail | 60 | 69.0 |
| | Frail | 27 | 31.0 |
| Quality of Life | Good | 38 | 43.7 |
| | Medium | 21 | 24.1 |
| | Bad | 28 | 32.2 |

Table 2 shows the results of the analysis of the relationship between frailty syndrome and quality of life. Data shows that the higher the level of frailty, the worse the quality of life, and vice versa. The results of the Spearman rank statistical test obtained a p-value of 0.000 (p ≤ 0.05), meaning that there is a relationship between frailty syndrome and quality of life in heart failure patients at the heart polyclinic of the Harapan Kita Heart and Blood Vessel Hospital. The results of the analysis obtained a correlation coefficient value of r = 0.569, meaning that frailty syndrome has a fairly strong relationship with quality of life.

**Table 1.** Association of Frailty Syndrome with Quality of Life of Patients with Cardiovascular Diseases in Jakarta 2023 (n = 87)

| Quality Of Life | Frailty Syndrome | | Total | P-Value | *r* |
|---|---|---|---|---|---|
| | Pre-Frailty | Frailty | | | |
| Good | 35 (40.2) | 3 (3.4) | 38 (43) | 0.000 | 0.569 |
| Medium | 17 (19.9) | 4 (4.6) | 21 (24.1) | | |
| Bad | 8 (9.2) | 20 (23.0) | 28 (32.2) | | |
| Total | 60 (69.0) | 27 (31.0) | 87 (100.0) | | |

**Frailty Syndrome**

The results of this study show that the majority of respondents were pre-frail, namely 60 people (69.0%). The results of this study are in line with research from Ratna which links frailty syndrome with sleep quality, where most respondents experienced mild frailty (48.9%) [9]. In addition, the research results of Alvarez et al also showed that the majority of patients who had cardiovascular risk factors experienced pre-frailty by 51.7%. This difference in prevalence may be due to differences in the inclusion criteria and diagnostic criteria for identifying frailty syndrome. In addition, age groups and health status of respondents can also explain the differences in these findings [10].

Based on this research, it is also stated that the number of respondents with early childhood age, namely 45-55 years old, is 40 people (46%), late childhood age, namely 56-65 years old, is 30 people (34.5%) and late childhood age, namely >66 years old, is 17 people (19.5%). This is in line with research from The Cardiovascular Health Study, where frailty increased to 7% at age 65 and increased to 30% at age 80, meaning that the older you get, the greater the chance of frailty. The traffic report put forward by Uchmalnowicz states that the incidence of frailty syndrome increases with age, so the number of patients with frailty syndrome in the heart is expected to increase gradually [7].

The traffic study that is parallel to this study is Kurniyanti et al which states that the distribution of classes based on NYHAI in the frailest category is NYHA III/IV, with a rate of 11% compared to 49% in the frailest category. This study also found that congestive conditions were more common in the most frail patients, while fatigue was twice as common in the most frail patients compared to non-frail patients [5].

Frailty and Pre-Frail are common in patients who are undergoing treatment at the hospital, but are undergoing treatment. Respondents in this study were heart failure patients who were undergoing treatment at the Railway Jalan polyclinic. In this study, respondents were patients who were maintaining their health by undergoing treatment so that their health condition could be restored. According to the researchers, the results of the study indicate that Pre-Frail syndrome is more likely to be found, this is because the condition of the kidneys can be treated in a more stable condition compared to the heart failure syndrome in the initial stages.

**Quality of Life**

The results of this study indicate that most respondents in the quality of life category returned (43.7%). This is in accordance with the results of the study by Saida et al which showed that most respondents with congestive heart failure had a quality of life that returned, namely 93 percent (89.4%) [11]. This is different from the study conducted by Mahanani which showed that most patients with congestive heart failure in Sural Kartal City had a poor quality of life with a percentage of 80% [12].

According to WHO, there are several factors that affect the quality of life of people with heart failure, namely: physical health, psychological health, level of independence, social relationships, environment, and spirituality [2]. The quality of life of people with heart failure is mainly influenced by left ventricular dysfunction, New York Health Association (NYHA) deral, heart failure, mortality risk, and mental health. Symptoms caused by heart failure include physical symptoms (dyspnea, fatigue, edema, loss of appetite) and psychological symptoms (anxiety and depression) that affect the quality of life [11]. Patients with heart failure experience a decrease in the quality of life because the kidneys of heart failure sufferers appear to be fatigued and the muscles of the heart are sent to the heart in the brain. Heart failure patients are often found to have memory loss and disorientation. This is caused by changes in the amount of certain substances in the body, such as sodium, which in turn causes a decrease in the work of nerve impulses. This occurs continuously and causes a decrease in the quality of life [13].

According to Hinkle's theory in Chevalier in the study of Izuddin et al, it is stated that with increasing age, changes in heart function occur. In patients aged 40 years and older who are inactive, the shrinkage

of the left heart muscle occurs as a result of low workload [14]. Other theories also talk about the thickening of the flow in the elasticity aorta, the increase in the flow of curvature and the persistence in the thickening of the blood valves, and the kalkibalt in the occurrence of sudden galvans in jantung. The decline in quality of life that occurs in primary care is multiplied by the physiological decline in secondary care. Quality of life was also significantly worse in the frail group compared to the non-frail group in patients with chronic heart failure. Clinical results of the latest meta-analysis study determined using the Fried Phenotype, showed that patients with heart failure in frailty had a 57% higher risk of alpha and an 80% higher risk of death compared to non-frail patients [15].

Fragility Syndrome has a major impact on the quality of life of heart failure palsy patients. Decreased physical activity in functional brains associated with weakness can lead to difficulty in performing daily activities, reduced independence, and increased symptom severity. In addition, deep weakness syndrome causes social isolation, depression, and anxiety, which further worsens the overall quality of life. According to the researcher's analysis, most of the respondents in this study were aged 45-55 years with declining physiological functions, but their quality of life was still improving, this was due to the renal alkalization process that prevented the occurrence of diseases. This is in line with the general condition of frailty syndrome which shows a higher frequency of pre-frailty than frailty.

**Correlation Frailty Syndrome and Quality of Life**

The results of the study showed that there was a relationship between intracranial frailty syndrome and the quality of life of heart failure patients in the heart polyclinic of the Heart and Vascular Hospital of Our City. The results of the analysis obtained a correlation coefficient value of r = 0.569, which means that frailty syndrome has a fairly strong relationship with quality of life. The results of this study are in accordance with the research conducted by Lainsamputty et al which showed that the physical components of quality of life were significantly related to the Global Fatigue Index/GFI, where residents who experienced more fatigue also had worse quality of life in all components [16]. Accurate assessment of frailty is the first step in planning individualized health care to reduce dependency, improve quality of life, and improve prognosis [17].

The increasing prevalence of renal failure in patients with heart failure is associated with significant negative impacts on prognosis and quality of life. More comprehensive assessment accompanied by therapeutic interventions needs to be further developed to further improve the prognosis and quality of life of frail patients with heart failure [5]. The quality of life of the patient is greatly influenced by the activities of self-rehabilitation, and the more self-rehabilitation behavior the better the quality of life of the patient, so that the symptoms that arise are not minimal. The patient's quality of life is greatly influenced by self-rehabilitation activities, and the more self-rehabilitation behaviors, the better the patient's quality of life will be, so that the symptoms that arise will be minimal. In line with several studies showing that most patients mentioned medication-taking behavior, disease stage, comorbidities, perception and symptom management are very important to improve patient outcomes and manage heart failure effectively [18,19,20].

The association of impairment in heart failure is dual in nature: higher impairment contributes to worse physical functional status, cognitive impairment, and reduced quality of life in patients with heart failure through increased regulation of proinflammatory pathways and decreased tolerance to physiological stress. In addition, this chronic process is often exacerbated by increased cytokine levels and worsening insulin resistance. These acute factors promote muscle loss and adipose tissue proliferation and lipid accumulation, which in turn impair muscle function and recovery and contribute to a sustained and sustained decline in global functional status through inflammatory pathways and local and systemic metabolism. This may contribute to the functional decline associated with

hospitalization in the “post-hospital syndrome” so that even after decompensated heart failure has resolved, patients still experience a decline in physical function and a greater degree of weakness [15].

According to the researcher's argument, frailty in the quality of life of patients is a dual aspect that is interrelated in the context of health and medical care. Frailty is a condition of physical, cognitive, and physiological impairment that makes a person susceptible to health problems, decreased quality of life, and risk of death. Mental quality of life includes various aspects, such as physical, mental, social, and environmental satisfaction. Studies have shown a significant association between general frailty and quality of life in patients. Patients who experience frailty tend to have a lower quality of life compared to individuals who do not experience the condition. This may be influenced by a number of factors, including impaired physical function, higher levels of dependency, increased risk of falls, and other medical complications.

## CONCLUSIONS

This study has proven that there is a relationship between frailty syndrome and the quality of life of heart failure patients. Heart failure patients who are still in the pre-frailty category have a better quality of life, compared to heart failure patients in the frailty category.In fact, recognizing the connection between frailty and quality of life in patients has important implications in the context of health promotion. Health care providers need to take frailty levels into account when evaluating patient quality of life in planning appropriate interventions. Efforts to prevent frailty maltreatment can also have a positive impact on enhancing the quality of life of patients. The relationship between frailty and quality

## ACKNOWLEDGMENTS

The author would like to thank the Yatsi Madani University, The Harapan Kita Heart and Blood Vessel Hospital Jakarta, Ns. Hermin Esti Dianingtyas, S.Kep., M.Kep., Sp.Kep.M.B (Field Supervisor at The Harapan Kita Heart and Blood Vessel Hospital Jakarta), patients and families for being willing to be respondents.

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