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Quality of life and associated factors among patients with heart failure at the Department of Cardiology, Kien An Hospital in 2025

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ABSTRACT

***Objectives**: To describe quality of life and associated factors among patients with heart failure in the Cardiology Department, Kien An Hospital in 2025. **Methods**: A cross-sectional descriptive study was conducted on 131 hospitalized patients with heart failure in the Cardiology Department of Kien An Hospital. Data were collected through face-to-face interviews using standardized instruments, including the GAD-7 and EQ-5D-5L questionnaires. Data analysis was performed using SPSS version 20.0, and associations were examined with a statistical significance level set at $p < 0.05$. **Results**: The quality of life of patients was at a moderate to relatively good level, with a mean EQ-5D-5L score of 0.86 ± 0.14. Treatment adherence ($p = 0.02$), number of hospital admissions within the past 12 months ($p = 0.003$), and level of anxiety ($p < 0.001$) were significantly associated with quality of life. **Conclusion**: Anxiety, treatment adherence, and the number of hospital admissions within the past 12 months were significantly associated with quality of life. Integrating mental health assessment into routine care is essential to improve the effectiveness of comprehensive care for patients with heart failure.*

***Keywords**: Heart failure; anxiety; quality of life; EQ-5D-5L*

INTRODUCTION

Heart failure (HF) is a common chronic clinical syndrome characterized by cardiac functional and/or structural abnormalities, leading to reduced cardiac output and increased intracardiac pressures. It is associated with high rates of hospitalization and mortality and substantially impairs patients' quality of life (QoL) [1]. Worldwide, more than 60 million people currently live with HF, and the condition remains a leading cause of hospitalization among older adults despite major advances in treatment [2].

In addition to physical symptoms, depression and anxiety are common psychological disorders among patients with HF, with substantially higher prevalence than in the general population. These disorders are significantly associated with reduced treatment adherence, impaired self-care ability, poorer QoL, and increased risks of hospitalization, rehospitalization, and mortality [3, 4].

Furthermore, several studies in Vietnam have initially addressed QoL, anxiety, or depression among patients with HF [5–9].

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However, these studies have generally focused on descriptive univariate analyses or examined individual groups of factors separately (such as QoL or anxiety disorders), while relatively few studies have simultaneously integrated psychological factors (particularly anxiety), treatment-related behaviors, and clinical characteristics into a single analytical model to clarify their overall impact on QoL.

Globally, although numerous studies have demonstrated that depression and anxiety are important factors affecting QoL and prognosis among patients with HF, research has primarily focused on individual aspects, and relatively few studies have simultaneously examined psychological factors, treatment-related behaviors, and clinical characteristics within the same study[10]. In addition, differences in healthcare systems, population characteristics, and care models across countries limit the direct applicability of international research findings to clinical practice in Vietnam.

At Kien An Hospital, although it is a first-class city-level hospital in Hai Phong that provides inpatient care to a large number of patients with HF in the Cardiology Department, no study has systematically evaluated the associations between QoL, anxiety, and clinical and treatment-related behavioral factors in this patient population. Therefore, a clear research gap remains both at the national and institutional levels, particularly in the context of the increasing burden of HF. This highlights the need for the present study to provide practical evidence for the care and management of patients with HF. Accordingly, we conducted this study to provide scientific evidence to support the care and management of patients with HF in clinical practice, with the following two objectives:

1. To describe QoL among patients with HF at the Department of Cardiology, Kien An Hospital, in 2025.

2. To identify factors associated with QoL among patients with HF at the Department of Cardiology, Kien An Hospital, in 2025.

PARTICIPANTS AND METHODS

Participants: Patients diagnosed with heart failure who were receiving inpatient treatment at the Cardiology Department, Kien An Hospital, in 2025.

Inclusion criteria: Patients aged ≥ 18 years. Being diagnosed with heart failure according to their medical records and classified according to the New York Heart Association (NYHA) functional classification. Receiving inpatient treatment at the Department of Cardiology. Able to respond to the interview questions or who could be assisted with reading the questions when necessary. Agreed to participate in the study and provided written informed consent.

Exclusion criteria: Patients who were unable to answer the interview questions or were unwilling to cooperate with the interview. Patients who were in an emergency or life-threatening condition at the time of data collection.

Time: From 10/2025 to 01/2026.

Study design: A cross-sectional study.

Sample size: The sample size was calculated using the formula for estimating a population mean:

$$n = \frac{(Z_{\alpha/2}.\sigma)^2}{d^2}$$

In which: n: required sample size. $Z_{\alpha/2}$: significance level (typically 95% confidence level → 1.96). σ = 0.121 based on the study by Truong Thanh Huong et al. (2021) [5].

d: acceptable margin of error in the study (d = 0.02). The estimated sample size was 88 patients. In practice, 131 patients were recruited for the study.

Data collection: a convenience sample

Data measurement: The questionnaire consisted of 26 items divided into three sections:

- Section 1: This section consisted of 13 questions assessing the patients' demographic and clinical characteristics.

- Section 2: The patients' level of anxiety was assessed using the Generalized Anxiety Disorder-7 (GAD-7) scale, developed by Spitzer et al. in 2006 [11]. The GAD-7 consists of seven items assessing anxiety symptoms experienced during the preceding two weeks. Each item is rated on a 4-point Likert scale: 0 = Not at all, 1 = Several days, 2 = More than half the days, and 3 = Nearly every day. The total score ranges from 0 to 21, with scores categorized as 0–4 (none or minimal), 5–9 (mild), 10–14 (moderate), and ≥ 15 (severe). The scale has demonstrated high internal consistency, with a reported Cronbach's alpha of 0.90[11]. In our study, the scale demonstrated a Cronbach's alpha of 0.89.

- Section 3: Health-related quality of life (HRQoL) was assessed using the EQ-5D-5L instrument developed by the EuroQol Group [12]. This standardized instrument comprises five dimensions: mobility, self-care, usual activities, pain/discomfort, and anxiety/depression. Each dimension is assessed at five levels, ranging from no problems (Level 1) to extreme problems or inability to perform the activity (Level 5). The combination of responses across the five dimensions generates 3,125 distinct health states, ranging from 11111 (the best health state) to 55555 (the worst health state). Each health state is converted into a health-related quality-of-life index using a country-specific value set. In this study, the EQ-5D-5L index was calculated using the Vietnamese value set, with scores ranging from -0.5115 to 1, where higher scores indicate better HRQoL[13]. In addition, the EQ Visual Analogue Scale (EQ-VAS) was used to allow patients to self-rate their current health status on a scale ranging from 0 to 100, where 0 represents the worst imaginable health state and 100 represents the best imaginable health state. The instrument has demonstrated good reliability, with a reported Cronbach's alpha of 0.95 [12]. In the present study, the instrument demonstrated good reliability, with a Cronbach's alpha of 0.94.

Data analysis: Data were entered and cleaned using SPSS version 20.0.

Descriptive statistics included frequencies, percentages, means, and standard deviations.

The normality test indicated that the QoL variable was not normally distributed. Therefore, the Kruskal–Wallis test and Mann-Whitney U test were used to assess the associations between the examined factors and QoL.

Statistical significance was set at $p<0.05$.

Ethical considearion: The study was approved by Kien An Hospital. Before participating in the study, patients were fully informed about the study's objectives, content, and procedures. Participation was entirely voluntary, and patients had the right to refuse to participate or withdraw from the study at any time without affecting their treatment. All collected information was used solely for research purposes and was kept strictly confidential.

RESULTS

Table 1. General characteristics of participants (n = 131)

Contents		Number (n)	Percentage (%)
Age	41-59	08	6.1
	≥ 60	123	93.9
Sex	Male	54	41.2
	Female	77	58.8
Living place	Urban	27	20.6
	Rural	104	79.4
Education level	< High school	70	53.4
	≥ High school	61	46.6
Job	Famer	27	20.6
	Workers, freelancers	27	20.6
	Retired	77	58.8
Living status	Living alone	03	2.3
	Living with family	123	93.9
	Living with a caregiver	05	3.8
Income (VND millions)	< 3	83	63.4
	3-5	38	29.0
	> 5	10	7.6
Treatment adherence	Good	71	54.2
	Avarage + Poor	60	45.8

Among the 131 patients with heart failure who participated in the study, 93.9% were older adults (≥ 60 years). Females accounted for a higher proportion than males (58.8% vs. 41.2%). The majority of patients lived in rural areas (79.4%), had an educational level below upper secondary school (53.4%), and had a monthly income of less than VND 3 million (63.4%). Most patients lived with their families (93.9%), and 54.2% demonstrated good treatment adherence.

Table 2. Clinical and psychological characteristics of patients with heart failure (n=131)

Contents		Number (n)	Percentage (%)
Heart failure classification	NYHA 2	06	4.6
	NYHA 3	106	80.9
	NYHA 4	19	14.5

Contents		Number (n)	Percentage (%)
Duration of heart failure (years)	≤ 1	17	13.0
	2- 5	48	36.6
	6- 10	45	34.4
	> 10	21	16.0
Number of hospitalizations in the past 12 months	No	15	11.5
	1 time	27	20.6
	≥ 2 times	89	67.9
Commobidities	No	10	7.6
	1-2	74	56.5
	≥ 3	47	35.9
Anxiety	None or minimal	103	78.6
	Mild	20	15.3
	Moderate and severe	08	6.1

The majority of patients with heart failure were classified as NYHA class III (80.9%), and most had been living with heart failure for 2–10 years (71.0%). Most patients had been hospitalized ≥ 2 times in the past 12 months (67.9%). Most patients with heart failure had comorbidities, with 56.5% having 1–2 comorbidities. Regarding anxiety, 15.3% of patients had mild anxiety, while 6.1% had moderate to severe anxiety.

Table 3. Score of Quality of life of patients with heart (n= 131)

Contents	Mean	SD	Min -Max
Score of EQ-5D-5L	0.86	0.14	0.04 – 1.00
Current health status	65.05	13.13	30 - 90

The mean QoL score among patients with heart failure was 0.86 ± 0.14. The mean self-rated current health status score was 65.05 ± 13.13 points.

Table 4. Association between general characteristics and quality of life among patients with heart failure (n= 131)

Contents		QoL of patients with heart failure (Mean Rank)	p
Age	41-59	77.38	0.38
	≥ 60	65.26	
Sex	Male	67.15	0.77
	Female	65.19	

Contents		QoL of patients with heart failure (Mean Rank)	p
Living place	Urban	76.00	0.12
	Rural	63.40	
Education level	< High school	63.56	0.43
	≥ High school	68.80	
Job	Famer	53.48	
	Workers, freelancers	73.72	0.12
	Retired	67.68	
Living status	Living alone	72.00	
	Living with family	67.37	0.73
	Living with a caregiver	78.00	
Income (VND millions)	< 3	62.23	
	3-5	72.32	0.32
	> 5	73.25	
Treatment adherence	Good	89.00	0.02
	Avarage + Poor	62.45	

Patients with good treatment adherence had better QoL than those with moderate or poor treatment adherence (mean rank = 89.00 vs. 62.45, p = 0.02).

Table 5. Association between heart failure characteristics, psychological factors, and quality of life among patients with heart failure (n = 131)

Contents		QoL of patients with heart failure (Mean Rank)	p
Heart failure classification	NYHA 2	72.67	
	NYHA 3	66.78	0.637
	NYHA 4	59.55	
Duration of heart failure years	≤ 1	81.29	
	2- 5	67.59	0.213
	6- 10	62.87	
	> 10	56.69	

Contents		QoL of patients with heart failure (Mean Rank)	p
Number of hospitalizations in the past 12 months	No	87.43	**0.003**
	1 time	78.56	
	≥2 times	58.54	
Commobidities	No	72.05	0.560
	1-2	68.05	
	≥ 3	61.48	
Anxiety	None or minimal	74.85	**< 0.001**
	Mild	36.08	
	Moderate and severe	26.88	

The results showed statistically significant differences in QoL among patients with heart failure according to the number of hospitalizations in the past 12 months ($p = 0.003$) and anxiety level ($p < 0.001$). Specifically, the mean rank of QoL was highest among patients who had not been hospitalized in the past 12 months (87.43), followed by those who had been hospitalized once (78.56), and was lowest among those who had been hospitalized ≥ 2 times (58.54). Similarly, regarding anxiety, patients with no or minimal anxiety had a substantially higher mean rank (74.85) than those with moderate to severe anxiety (26.88).

DISCUSSION

In this study, patients' health-related quality of life (HRQoL) was assessed using the EQ-5D-5L instrument and converted using the utility value set. The results showed that the mean EQ-5D-5L index score was 0.86 ± 0.14, reflecting a relatively good level of HRQoL in the study population. In addition, the mean current health status score assessed using the VAS was 65.05 ± 13.13, indicating that patients rated their health status as moderately good. Our findings were consistent with those of Jonsson et al. (2020) among cardiovascular patients in Sweden, in which QoL scores ranged from approximately 0.78 to 0.88 depending on the disease group [14]. Similarly, Yang et al. (2024), in a study of patients with heart failure in China, reported mean EQ-5D scores of approximately 0.80–0.87 [15]. This similarity may be explained by the common characteristics of heart failure as a chronic, progressive condition that affects both physical and psychological well-being. However, most patients in these studies were receiving inpatient treatment and follow-up, and therefore the decline in QoL was not particularly severe. In addition, differences in healthcare systems and access to treatment across countries may have contributed to the slight variation in EQ-5D-5L scores.

Among the factors examined, anxiety showed the most pronounced difference in QoL, followed by the number of hospitalizations and treatment adherence. Specifically, anxiety was significantly associated with QoL among patients with

heart failure. Although the proportion of patients with moderate to severe anxiety was relatively low (6.1%), the difference in QoL between anxiety groups was substantial ($p < 0.001$). Specifically, patients with no or minimal anxiety had a higher mean rank for QoL than those with moderate to severe anxiety (74.85 vs. 26.88; $p < 0.001$). This finding was consistent with the study by Nguyen Van Hiep and Tran Nguyen Ngoc (2025) at the Vietnam National Heart Institute [6], as well as the findings of Celano et al. (2020) regarding the role of anxiety in QoL deterioration among patients with heart failure [4].

In addition to psychological factors, the number of hospitalizations in the past 12 months was also significantly associated with QoL ($p = 0.003$), with patients who had been hospitalized ≥ 2 times having a lower mean rank for QoL than the other groups. This finding was consistent with the study by Vu Minh Hang et al. (2021), which showed that rehospitalization increased the disease burden and reduced QoL among patients with heart failure [7].

Furthermore, patients with good treatment adherence had significantly higher QoL than those with moderate or poor adherence ($p = 0.02$). This difference may be explained by the fact that good treatment adherence helps patients achieve better symptom control and reduce fluid retention, dyspnea, and fatigue, thereby improving their ability to perform daily activities. In addition, adherence to medication regimens and regular follow-up visits may help prevent acute exacerbations and hospitalization, contributing to long-term disease stability and improvements in patients' physical and psychological health.

Demographic factors, including age, sex, place of residence, educational level, occupation, living status, and income, as well as several clinical factors, including heart failure classification (NYHA), disease duration, and the number of comorbidities, were not significantly associated with QoL ($p > 0.05$). This finding suggests that QoL among patients with heart failure in this study was less influenced by sociodemographic characteristics and certain basic clinical characteristics. The lack of statistically significant differences may be explained by the chronic nature of heart failure, which may allow patients to gradually adapt to their condition over time, or by the relatively homogeneous characteristics of the study sample. In addition, the cross-sectional design may not fully capture the cumulative effects of these factors on QoL.

Overall, the findings of this study were consistent with the national and international literature, confirming that anxiety and rehospitalization are important factors associated with QoL among patients with heart failure. These findings highlight the need for early screening for psychological disorders and enhanced comprehensive nursing care to improve QoL among patients with heart failure in Vietnam [5–9].

Our study has several limitations. The cross-sectional descriptive design reflects associations at a single point in time and therefore does not allow causal relationships between the examined factors and QoL to be established. In addition, the use of convenience sampling at a single treatment facility may limit the generalizability of the findings to the broader population of patients with heart failure.

CONCLUSION AND RECOMMENDATIONS

The findings showed that the quality of life (QoL) of patients with heart failure was at a moderate-to-good level (0.86 ± 0.14). Treatment adherence ($p = 0.02$), the number of hospitalizations in the past 12 months ($p = 0.003$), and anxiety level ($p < 0.001$) were significantly associated with QoL. Integrating early screening for mental

health problems, such as using the GAD-7 scale, together with enhanced continuous monitoring and management after discharge, is necessary to optimize the effectiveness of comprehensive care for patients.

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