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*Original Research*

# ASSESSMENT OF HEART FAILURE KNOWLEDGE IN OUTPATIENTS WITH CHRONIC HEART FAILURE AT THONG NHAT HOSPITAL

**Hoang Thi Tuyet[1], Le Quoc Hung[1,*], Nguyen Thi Thu Huong[1], Ngo Thi Hao[1], Nguyen Thi Huong[1], Nguyen Van Be Hai[1]**

1. Thong Nhat Hospital, Ho Chi Minh City, Vietnam

** Corresponding author: Le Quoc Hung MD. MSc. ✉ Bslequochung@gmail.com*

**ABSTRACT**: Chronic heart failure is one of the leading causes of hospitalizations, impaired quality of life, and increased socioeconomic burden. Adequate disease awareness and effective self-care are key factors in improving prognosis and reducing hospital readmissions. A cross-sectional descriptive study was conducted from January 1 to May 31, 2025, involving 200 patients. The tools used included the Dutch Heart Failure Knowledge Scale (DHFKS), a quality-of-life questionnaire, and a self-care assessment. Results: 66% of patients were aged ≥60 years, 94.5% had health insurance, and 78.5% resided in urban areas. Heart failure with reduced ejection fraction (HFrEF) accounted for 73.5%, significantly higher among patients aged ≥60 years (78.8%, p = 0.026). Hypertension (91%) and dyslipidemia (77%) were the most common comorbidities. A total of 78% of patients demonstrated good knowledge of heart failure. Regarding self-care behaviors, most adhered to a low-salt diet and regular weight monitoring, though physical activity remained suboptimal. Dyspnea and lower limb edema significantly impacted quality of life. When symptoms occurred, patients commonly contacted healthcare providers. Conclusions: The majority of outpatients with chronic heart failure demonstrated good disease awareness; however, improvements in self-care practices and multidimensional support are needed to enhance quality of life and reduce disease burden.

**Keywords**: Chronic heart failure, quality of life.

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# 1. INTRODUCTION

Heart failure is a condition in which the heart is unable to pump sufficient blood and oxygen to meet the needs of the body's organs, occurring when there is an abnormality in cardiac function. Heart failure predominantly affects the elderly population, with both prevalence and incidence increasing markedly with age. Individuals over 75 years old are at a higher risk of developing heart failure [1]. The estimated prevalence of heart failure is approximately 1–2% in the general population and exceeds 10% among the elderly [2]. Nearly 6.5 million people in Europe, 5 million in the United States, and 2.4 million in Japan are affected by heart failure, with approximately 1 million new cases diagnosed annually worldwide [3].

The management of heart failure is a continuous and long-term process aimed at stabilizing the disease and improving patients' quality of life through both pharmacological and non-pharmacological interventions. The European Society of Cardiology emphasizes the importance of self-care as a key component of successful treatment. Enhancing patients' self-care through educational programs has been shown to reduce symptom exacerbation, improve health outcomes, lower the risk of hospital readmission, and enhance quality of life [4].

To date, no studies have been conducted in Vietnam evaluating the effectiveness of health education in improving outpatient treatment understanding, particularly in Ho Chi Minh City. Thong Nhat Hospital is one of the leading cardiology centers in Ho Chi Minh City. Recognizing the importance of knowledge in identifying and managing heart failure both in inpatient and outpatient settings, this study aims to expand patients' understanding of the disease, thereby improving home-based disease management, reducing healthcare demands in the context of resource constraints, and alleviating the burden on the healthcare system. Conducting this research at Thong Nhat Hospital is therefore essential, not only for direct application in the hospital but also to provide valuable resources for the development of patient education programs for heart failure across hospitals in Vietnam.

# 2. 2. SUBJECTS AND METHODS

## 2.1. Study design

A cross-sectional study.

## 2.2. Study period

From January 1, 2025, to May 31, 2025, conducted at the outpatient clinic of Thong Nhat Hospital, Ho Chi Minh City.

## 2.3. Study setting

Thong Nhat Hospital.

## 2.4. Study population

Sample population: Patients attending the outpatient clinic of Thong Nhat Hospital between January 1, 2025, and May 31, 2025.

Target population: Patients with heart failure at Thong Nhat Hospital.

## 2.5. Eligibility criteria

*2.5.1. Inclusion criteria*

Patients diagnosed with heart failure attending the outpatient clinic.

Patients able to communicate, listen, and respond to the structured interview questionnaire.

Patients who provided informed consent to participate in the study.

*2.5.2. Exclusion criteria*

Patients not meeting the inclusion criteria.

Incomplete questionnaire responses.

## 2.6. Variable definitions

Age: Calculated from the year of birth to the date of data collection.

Gender: Binary variable, male or female.

Ethnicity: Binary variable, Kinh or other.

Educational level: Categorical variable, including postgraduate/undergraduate, college, intermediate, high school, and others.

Residence: Binary variable, rural or urban.

Marital status: Categorical variable with four values: single, married, divorced,

widowed.

Household income source: Categorical variable: living alone, living with family, living with others.

Health insurance: Binary variable, yes or no.

BMI status: Continuous variable.

Heart failure classification: Based on left ventricular ejection fraction (LVEF) measured by echocardiography using Teicholz or Simpson methods. Categories include: Heart failure with preserved EF (HFpEF): LVEF ≥50%; Heart failure with mildly reduced EF (HFmrEF): LVEF 41–49%; Heart failure with reduced EF (HFrEF): LVEF ≤40%

Medical history: Categorical variable including hypertension, diabetes mellitus, dyslipidemia, peripheral vascular disease, renal impairment, stroke, and prior percutaneous coronary intervention.

Questionnaire: Consisted of two sections [5]:

Part 1: Personal information including gender, age, education, residence, total income, marital status, occupation, health insurance participation, heart failure classification, and BMI.

Part 2: Questionnaires assessing patients' knowledge about chronic heart failure, quality of life, and self-care behaviors.

### 2.7. Data analysis

Data were analyzed using SPSS version 22.0. Qualitative variables were summarized as frequencies (n) and percentages (%). Quantitative variables were presented as mean ± standard deviation (SD). The Chi-square test or Fisher's exact test was used to compare qualitative variables, while Student's t-test or the Mann–Whitney U test was used for quantitative variables. A p-value <0.05 was considered statistically significant.

### 2.8. Ethical considerations

The study utilized data collected from medical records and prescriptions. No intervention in patient treatment or care was performed during the study. All patient data were anonymized and kept confidential, used solely for scientific research purposes and not for commercial or personal use.

## 3. RESULTS

Between January 1, 2025, and May 31, 2025, a total of 200 patients participated in our study.

### 3.1. General Characteristics of the Study Population

The proportion of patients aged 60 years and older was high, accounting for 66%, with the majority being of Kinh ethnicity (98.5%). Male patients constituted 56.5% of the study population. There was a statistically significant difference in age ≥60 years between genders ($p < 0.05$). Conversely, no statistically significant difference was observed between genders regarding ethnicity ($p > 0.05$). Most patients resided in urban areas (78.5%), with no significant gender differences ($p > 0.05$) **[Table 1]**.

**Table 1.** Age, Ethnicity, and Place of Residence

| Characteristics | Total (n=200) | Male (n=113) | Female (n=87) | P value |
|---|---|---|---|---|
| Age ≥60 year, n (%) | 132 (66%) | 67 (59.3%) | 65 (72.4%) | 0.02 |
| Ethnicity, n (%) | | | | 0.415 |
| Kinh | 197 (98.5%) | 112 (99.1%) | 85 (97.7%) | |
| Other | 3 (1.5%) | 1 (0.9%) | 2 (2.3%) | |
| Accommodation, n (%) | | | | 0.426 |
| Rural | 43 (21.5%) | 22 (19.5%) | 21 (24.1%) | |
| Urban | 157 (78.5%) | 91(80.5%) | 66 (75.9%) | |

Regarding educational level, more than half of the patients (52%) fell outside the four standard categories (postgraduate, university/college, intermediate, and high school). High school accounted for 22.5%, university/college 11.5%, and postgraduate only 3%. Regarding income source, the majority lived with family members (88%), while 6.5% lived with others and 5.5% lived alone. The proportions of patients living with family and those living alone were higher in women, whereas living with others was more common among men; however, these differences were not statistically significant ($p > 0.05$). Most patients were married (87.5%) [Table 2].

## 3.2. Clinical characteristics of the study population

With respect to BMI, among 200 patients attending Thong Nhat Hospital outpatient clinic, underweight and normal weight were more prevalent in women, while overweight and obesity were significantly more common among men ($p < 0.001$). Regarding heart failure classification, reduced ejection fraction (HFrEF) and preserved ejection fraction (HFpEF) accounted for the highest proportions at 73.5% and 21.0%, respectively, whereas mildly reduced ejection fraction (HFmrEF) was the least common (5.5%). No statistically significant gender differences

**Table 2.** Educational Level, Income and Marital Status

| Characteristics | Total (n=200) | Male (n=113) | Female (n=87) | P value |
|---|---|---|---|---|
| Educational level | | | | 0.263 |
| Postgraduate | 6 (3%) | 3 (2,7%) | 3 (3.4%) | |
| University/College | 23 (11.5%) | 17 (15%) | 6 (6.9%) | |
| Intermediate | 22 (11%) | 10 (8.8%) | 12 (13.8%) | |
| High school | 45 (22.5%) | 29 (25.7%) | 16 (18.4%) | |
| Other | 104 (52%) | 54 (47.8%) | 50 (57.5%) | |
| Income source | | | | 0.239 |
| Living alone | 11 (5.5%) | 6 (5.3%) | 5 (5.7%) | |
| Living with family | 176 (88%) | 97 (85.8%) | 79 (90.8%) | |
| Living with other | 13 (6.5%) | 10 (8.8%) | 3 (3.4%) | |
| Marital status | | | | 0.316 |
| Single | 4 (2%) | 3 (2.7%) | 1 (1.1%) | |
| Married | 175 (87.5%) | 100 (88.5%) | 75 (86.2%) | |
| Divorced | 2 (1%) | 1 (0.9%) | 1 (1.1%) | |
| Other | 19 (9.5%) | 9 (8%) | 10 (11.5%) | |

**Bảng 3.** BMI and Heart Failure Classification

| Characteristics | Total (n=200) | Male (n=113) | Female (n=87) | P value |
|---|---|---|---|---|
| BMI | | | | <0.001 |
| Underweight | 12 (6.0%) | 2 (1.8%) | 10 (11.5%) | |
| Normal | 109 (54.5%) | 53 (46.9%) | 56 (64.4%) | |
| Overweight | 34 (17%) | 23 (20.4%) | 11 (12.6%) | |
| Obese | 45 (22.5%) | 35 (31.0%) | 10 (11.5%) | |
| HF classification | | | | 0.19 |
| HFpEF | 42 (21.0%) | 20 (17.7%) | 22 (25.3%) | |
| HFmrEF | 11 (5.5%) | 6 (5.3%) | 5 (5.7%) | |
| HFrEF | 147 (73.5%) | 87 (77.0%) | 60 (69.0%) | |

were found in heart failure classifications (p = 0.19). However, patients aged ≥60 years had a significantly higher prevalence of HFrEF (78.8%) **[Table 3]**.

Among 200 patients included in the study, the most common comorbidities were hypertension (91%) and dyslipidemia (77%), followed by other cardiovascular conditions (44.5%). Chronic obstructive pulmonary disease (COPD) was the least common (4.5%). A higher prevalence of COPD was observed in men compared with women (p < 0.05) **[Table 4]**.

### 3.3. Knowledge of heart failure among study participants

Our study showed that, according to the DHFKS scale, 156 patients (78%) demonstrated good knowledge of heart failure, 20.5% had moderate knowledge, and 1.5% had poor knowledge [Figure 1].

Our study found that heart failure–related swelling (edema) of the ankles, feet, and lower legs at a level of "much" to "very much" was reported in more than half of the patients (63.3%). In addition, dyspnea at the level of "much" was the most commonly reported symptom, accounting for 41%. Notably, dyspnea requiring patients to sit or lie down to rest during the day was reported at moderate, much, and very much levels in 25.5%, 49.0%, and 18.5% of patients, respectively. The impact of heart failure on depression was also considerable, with nearly equal proportions of patients reporting "much" (29.5%) and "very much" (30.5%) [Figure 2].

**Table 4.** Associated Comorbidities

| Comorbidities | Total (n=200) | Male (n=113) | Female (n=87) | P value |
|---|---|---|---|---|
| Hypertension | 182 (91%) | 105 (92.9%) | 77 (88.5%) | 0.296 |
| Dyslipidemia | 154 (77%) | 84 (74.3%) | 70 (80.5%) | 0.304 |
| COPD | 9 (4.5%) | 8 (7.1%) | 1 (1.1%) | 0.028 |
| Ischemic heart disease | 31 (15.5%) | 21 (18.6%) | 10 (11.5%) | 0.161 |
| Valvular disease | 24 (12%) | 15 (13.3%) | 9 (10.3%) | 0.530 |
| Diabetes mellitus | 101 (50.5%) | 55 (48.7%) | 46 (52.9%) | 0.558 |
| Chronic heart failure | 23 (11.5%) | 13 (11.5%) | 10 (11.5%) | 0.998 |
| Other | 89 (44.5%) | 48 (42.5%) | 41 (47.1%) | 0.514 |

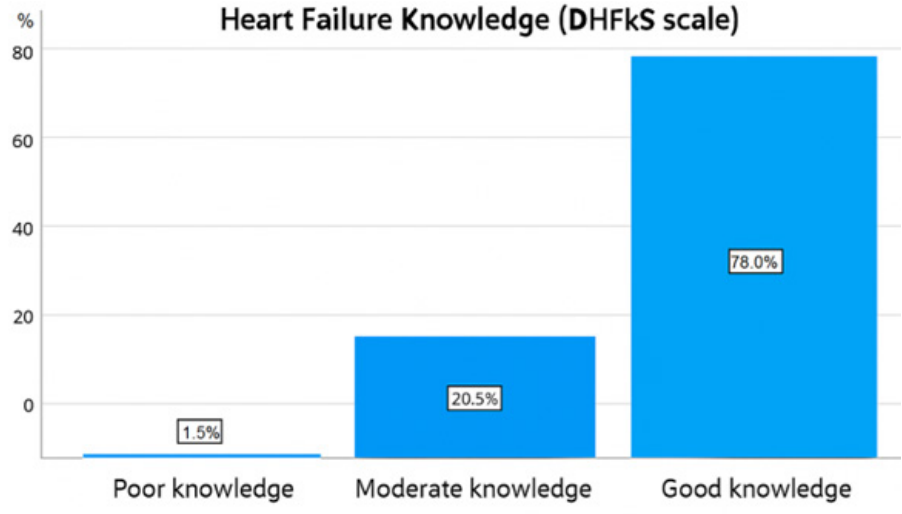


**Figure 1.** Distribution of Heart Failure Knowledge (DHFKS scale)

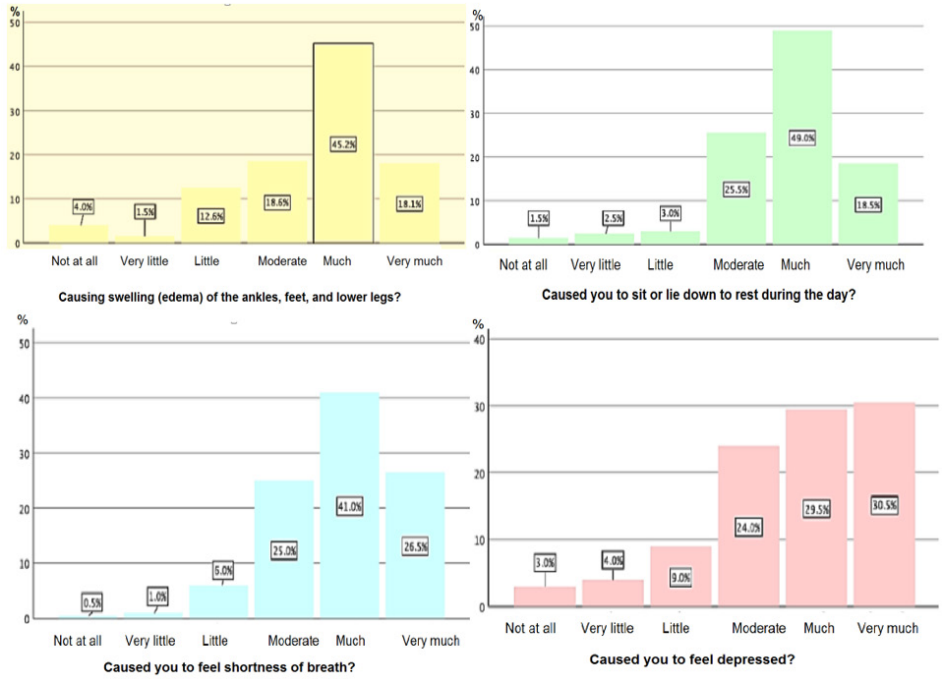


**Figure 2.** Characteristics of Quality of Life

Our study documented the self-care practices of patients with heart failure, particularly the frequency of behaviors ranging from dietary modifications (such as reducing salt intake) to lifestyle changes (such as physical exercise), and self-monitoring practices such as checking body weight. These activities had mean scores approaching 3. Regarding the response to heart failure symptoms such as dyspnea and ankle swelling (edema), most patients in our study reported that they would attempt to call a physician or nurse for guidance, with a mean score approaching 4 (SD = 0.607). In terms of self-confidence, patients demonstrated average scores close to 3 in aspects such as recognizing and understanding the importance of symptoms, management strategies for heart failure, and lifestyle modifications [Table 5].

# 4. DISCUSSION

## 4.1. General characteristics of the study population

In our study, 66% of patients were aged 60 years or older. This finding is consistent with trends reported in international studies, confirming that heart failure is predominantly a disease of the elderly. Díez-Villanueva & Alfonso (2016) noted that the prevalence of heart failure rises markedly with age, particularly among those ≥70 years [1]. They suggested that cardiovascular aging, together with comorbidities such as hypertension and diabetes, are major risk factors for heart failure in the elderly. Similarly, McMurray & Stewart (2002) described the "burden of heart failure" in Europe, with the highest prevalence among older adults. Advanced age is associated not only with higher prevalence but also with poorer prognosis and increased healthcare costs [3].

An important observation in our study was that women had a significantly higher proportion of patients aged ≥60 years compared with men (72.4% vs. 59.3%, p = 0.02). This is consistent with findings from Tung et al. (2012), who reported that elderly women are more frequently diagnosed with heart failure due to longer life expectancy and a higher prevalence of heart failure with preserved ejection fraction (HFpEF), which is more common among older women [4].

In terms of education, more than 50% of our patients did not fall into standard categories (postgraduate, university/college, intermediate, or high school), implying that they may have had no formal qualifications or only primary education. The proportion of university/college graduates was 11.5%, while only 3% had postgraduate education. These findings

**Table 5.** Characteristics of Self-Care Practices

| Question | Mean | SD |
|---|---|---|
| A. How often do you perform the following activities? | | |
| Check your body weight? | 3.28 | 0.726 |
| Check your ankles for swelling? | 3.10 | 0.680 |
| Try to avoid illness (e.g., vaccination, limiting exposure to sick people)? | 3.26 | 0.726 |
| Engage in sports or physical exercise? | 2.73 | 0.918 |
| Attend regular medical check-ups? | 3.19 | 0.637 |
| Follow a low-salt diet? | 3.40 | 0.688 |
| Exercise for about 30 minutes? | 3.00 | 0.891 |
| Forget to take one of your prescribed medications? | 2.64 | 0.896 |
| Follow a low-salt diet when eating with others? | 3.29 | 0.677 |
| Use a pill organizer (reminder box) to help remember medications? | 3.46 | 0.664 |
| B. Many patients with heart failure experience symptoms such as dyspnea and ankle swelling. If you experienced these in the past month, which of the following did you try? | | |
| Choose an action when experiencing dyspnea or ankle swelling | 2.86 | 0.764 |
| Reduce salt in your diet? | 3.45 | 0.722 |
| Reduce fluid intake? | 3.40 | 0.737 |
| Take additional medication? | 2.97 | 1.136 |
| Call a physician or nurse for guidance? | 3.62 | 0.607 |
| Think about the last remedial action you tried for dyspnea or ankle swelling? | 3.13 | 0.864 |
| C. Overall, how confident are you that you can: | | |
| Prevent heart failure symptoms from occurring? | 3.09 | 0.791 |
| Follow your doctor's advice correctly? | 3.24 | 0.674 |
| Understand the importance of symptoms? | 3.16 | 0.719 |
| Recognize health changes if they occur? | 3.22 | 0.749 |
| Apply measures to relieve symptoms? | 3.22 | 0.749 |
| Evaluate whether treatment is effective? | 3.24 | 0.752 |

align with Van der Wal et al. (2005), who found that low educational attainment was associated with poorer knowledge of heart failure and reduced effectiveness of educational interventions. In their study, the authors developed the Dutch Heart Failure Knowledge Scale and observed that patients with lower educational levels consistently scored poorly[5].

## 4.2. Clinical characteristics of the study population

In our study, the group with normal BMI accounted for the highest proportion (54.5%), followed by obesity (22.5%) and overweight (17%), while underweight was least common (6%). Gender analysis showed that underweight was more prevalent among women (11.5%), whereas overweight and obesity were more common in men (20.4% and 31%, respectively), with statistically significant differences ($p < 0.001$). These findings correspond with the "obesity paradox in heart failure" described in several international studies, including McMurray & Stewart (2002) and Tendera (2005) [2,3]. According to these authors, patients with higher BMI may sometimes have better survival outcomes than leaner patients, as greater muscle and fat reserves may help counteract catabolism and chronic inflammation seen in heart failure.

Hypertension (91%) and dyslipidemia (77%) were the most prevalent comorbidities. Díez-Villanueva & Alfonso (2016) reported that over 80% of elderly patients with heart failure had hypertension, and Tendera (2005) also found that hypertension and dyslipidemia predominated among HFpEF patients [1,2]. In our study, COPD prevalence was relatively low (4.5%) but significantly higher in men than in women (7.1% vs. 1.1%, p = 0.028), consistent with the higher smoking rates observed in men.

### 4.3. Knowledge of heart failure among study participants

Our study found that 78% of patients had good knowledge of heart failure, 20.5% had moderate knowledge, and only 1.5% had poor knowledge, based on the DHFKS scale. This is a positive result, reflecting a relatively high level of awareness. Van der Wal et al. (2005) reported that only 20% of patients demonstrated adequate knowledge of heart failure, with most showing misunderstanding or lack of awareness of self-care and warning symptoms of relapse [5]. Similarly, Tung et al. (2012) in Taiwan found that only 30–40% of patients correctly answered most questions on treatment, diet, and symptom monitoring [4].

The relatively high scores in our study may be explained by several factors: first, the study population consisted of outpatients with chronic heart failure, who had more opportunities to repeatedly receive information during follow-up; second, the use of the validated DHFKS scale provided more accurate and systematic assessment compared to self-designed tools in some international studies; and finally, the hospital environment may have contributed through regular counseling and health education programs, especially in recent years as chronic disease management has gained more emphasis.

Heart failure was also found to substantially affect patients' quality of life across multiple domains. Moderate to severe lower-limb edema was reported by 63.3% of patients, significant dyspnea by 41%, and daytime activity limitation (needing to sit or lie down to rest) was also common, with 49% reporting "much" and 18.5% reporting "very much". Nearly 60% of patients reported moderate to severe depressive symptoms, underscoring the psychological impact. These findings are consistent with previous research. Van der Wal et al. (2005) highlighted that many patients struggled with daily activities but failed to recognize symptoms in a timely manner, while Tung et al. (2012) showed that poor knowledge of heart failure contributed to reduced quality of life [4,5]. Clinically, symptoms such as dyspnea, edema, reduced physical activity, and depression are not only manifestations of disease but also indicators of quality of life. According to the 2021 ESC guidelines, improving quality of life should be a key therapeutic goal alongside symptom control and survival extension. Thus, incorporating quality-of-life assessments into heart failure management programs—using tools such as the MLHFQ or KCCQ—remains essential.

Our study also revealed that self-care behaviors among patients with heart failure were still suboptimal. Activities such as physical exercise, ankle swelling checks, and adherence to a low-salt diet were not consistently practiced. This is consistent with Tung et al. (2012), who found that patients had limited knowledge about diet and exercise, reducing the effectiveness of self-care [4]. While most patients responded proactively when symptoms occurred, primarily by calling a physician or nurse for guidance, other actions such as taking additional medications or reducing fluid intake were less common. Regarding self-confidence, patients reported relatively positive perceptions in areas such as following medical advice and evaluating treatment effectiveness, but limitations remained in recognizing the importance of symptoms and preventing recurrences. Similar findings were reported by Van der Wal et al. (2005), who noted that patients often waited for medical instructions rather than making independent adjustments. Díez-Villanueva et al. (2016) further observed that elderly patients were less proactive in managing symptoms, partly due to cognitive limitations and concerns about medication side effects [1,5].

## 5. CONCLUSION

Our study demonstrates that most chronic heart failure outpatients at Thong Nhat Hospital had good knowledge of the disease, especially regarding symptoms,

dietary modifications, and weight monitoring. However, self-care behaviors such as regular exercise, checking for peripheral edema, and preventive practices remained inconsistent. Additionally, quality of life was considerably affected by physical symptoms such as dyspnea and edema, as well as psychological factors such as depression. These findings highlight that while disease knowledge is an essential foundation, comprehensive and individualized health education programs—including nutritional counseling, physical activity promotion, and psychological support—are crucial to enhance self-care effectiveness, improve quality of life, and reduce the long-term burden of heart failure.

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