Tạp chí Sức khỏe và Lão hóa
Journal of Health and Aging
Published online at https://tcsuckhoelaohoa.vn

Original Article

SEX DIFFERENCES IN COMPONENTS OF THE GDS-15 DEPRESSION SCALE AMONG HOSPITALISED OLDER PATIENTS WITH HEART FAILURE AT THONG NHAT HOSPITAL

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ABSTRACT: Depression is common among older inpatients with heart failure and may present differently by sex. To describe demographic, comorbidity and geriatric characteristics, and to compare sex differences in components of the 15-item Geriatric Depression Scale (GDS-15) among hospitalised older patients with heart failure at Thong Nhat Hospital. A cross-sectional study of 137 inpatients aged ≥60 years with heart failure at the Department of Cardiology, Thong Nhat Hospital (64 men, 73 women). Categorical variables were presented as frequency and percentage; skewed continuous variables as median and interquartile range. Comparisons between men and women used chi-square/Fisher's exact or Mann-Whitney tests; depression was defined as GDS-15 ≥5. Median BMI was 22 (IQR 21–24) kg/m^2. Hypertension, dyslipidaemia and diabetes were the most common comorbidities. IADL dependence occurred in 85.4%, frailty in 86.8%, and GDS-15 depression in 81.8%; median GDS-15 score was 6 (IQR 5–7). No statistically significant sex differences were found in comorbidities, ejection fraction, ADL/IADL dependence, frailty, depression, or any GDS-15 component. The six GDS-15 items with the highest "yes" rates by sex were memory complaints, feeling full of energy, and preferring to stay home. Depression screened by GDS-15 was highly prevalent; women had a numerically higher rate than men without reaching statistical significance. Routine GDS-15 depression screening should be integrated into nursing care regardless of sex.

Keywords: heart failure, depression, GDS-15, sex differences, older adults, nursing.

Received: 24/08/2026 Accepted: 19/09/2026 Published: 01/10/2026
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1. INTRODUCTION

Heart failure is a complex clinical syndrome that is common in older adults and is a major cause of hospitalisation, reduced quality of life and death. According to the 2021 European Society of Cardiology (ESC) guidelines, heart failure is diagnosed on the basis of symptoms, signs, natriuretic peptides and evidence of structural or functional cardiac abnormalities; left ventricular ejection fraction is the main basis for classifying heart failure into reduced, mildly reduced and preserved EF [1].

In addition to the haemodynamic burden and cardiovascular comorbidities, depression is a common problem in patients with heart failure and is associated with poorer self-care, lower treatment adherence, greater use of health services and adverse outcomes. Systematic reviews have reported that the prevalence of depressive symptoms in patients with heart failure varies widely, from 14% to 60%, depending on the assessment instrument and study setting. A recent meta-analysis estimated a pooled global prevalence of about 41.9%, with estimates depending on the study population, inpatient or outpatient setting and assessment instrument [2-4].

In older adults, depression may present atypically and readily overlaps with fatigue, reduced activity, insomnia, memory decline or reduced exercise capacity caused by heart failure. The 15-item Geriatric Depression Scale (GDS-15) is a short screening tool that is easy to use in nursing practice and focuses less on somatic symptoms than some other depression scales [5, 6].

However, depressive manifestations may differ between men and women and are also influenced by frailty, functional dependence and comorbidities. Analysing each GDS-15 component by sex may help identify predominant symptom patterns and thereby support screening and counselling in the care of older patients with heart failure. We therefore conducted this study to describe the demographic characteristics, comorbidities and geriatric characteristics, and to compare sex differences in GDS-15 components among hospitalised older patients with heart failure at Thong Nhat Hospital.

Study objectives: This study aimed to describe the demographic characteristics, comorbidities and geriatric characteristics, and to compare sex differences in the components of the GDS-15 among hospitalised older patients with heart failure at Thong Nhat Hospital.

2. SUBJECTS AND METHODS

This was a cross-sectional descriptive study of hospitalised older patients with heart failure at the Department of Cardiology, Thong Nhat Hospital.

Study design: Cross-sectional descriptive study.

Study setting: The study was conducted at the Department of Cardiology, Thong Nhat Hospital, Ho Chi Minh City.

Sample size and sampling: Convenience sampling was used, including all patients aged ≥60 years in the study dataset who met the selection criteria; 137 patients were included in the analysis, 64 men and 73 women.

- Inclusion criteria

Patients aged ≥60 years who were hospitalised at the Department of Cardiology, Thong Nhat Hospital, were diagnosed with heart failure according to the 2021 European Society of Cardiology (ESC) criteria [1], and had complete data to calculate the GDS-15 score.

- Exclusion criteria

Records with undetermined age group, insufficient data to calculate the GDS-15 score, or missing information on sex; records identified as duplicate patients (only the first record was kept).

Data collection: Demographic characteristics, comorbidities, heart failure characteristics, geriatric assessment (basic activities of daily living [ADL], instrumental activities of daily living [IADL] and frailty syndrome) and the 15 components of the GDS-15 were collected with a predesigned data collection form, based on medical records and face-to-face interviews with patients.

Variable definitions: The GDS-15 consists of 15 yes/no questions, of which items 1, 5, 7, 11 and 13 are reverse-scored according to the standard scoring rules of the scale; the total GDS-15 score ranges from 0-15, and depression was defined as

a total score ≥5. Left ventricular ejection fraction (EF) was grouped as EF ≥50%, EF 41-49% and EF ≤40%. ADL dependence, IADL dependence and frailty were recorded as binary yes/no variables.

2.1. Data analysis

Categorical variables were presented as frequencies and percentages, calculated on the valid (non-missing) observations of each variable. Continuous variables with a non-normal distribution were presented as medians and interquartile ranges.

Comparisons between men and women: for categorical variables, the chi-square test (Pearson, without continuity correction) was used when the expected count of every cell in the contingency table was ≥5, and Fisher's exact test was used when at least one cell had an expected count <5. For non-normally distributed continuous variables, the Mann-Whitney U test was used. Statistical significance was set at $p<0.05$.

Data were cleaned before analysis: codes outside the valid categories of a variable were treated as missing for that variable, and GDS-15 values other than 0 were recoded as 1 (yes) before scoring. Data were managed in Microsoft Excel and analysed with R/RStudio.

2.2. Research ethics

The study was approved by the Biomedical Research Ethics Committee of Thong Nhat Hospital, decision No. 94-118/2026/CN-HĐĐD-BVTN, dated 20 April 2026.

3. RESULTS

From the original dataset, after removing duplicate records and keeping only patients aged ≥60 years, 137 patients who fully met the selection criteria were included in the analysis (64 men, 73 women).

3.1. General characteristics, ejection fraction and comorbidities

From the original dataset, after removing duplicate records and keeping only patients aged ≥60 years, 137 patients were included in the analysis (64 men, 73 women). The median body mass index (BMI) was 22 (21-24) kg/m², with no statistically significant difference between men and women [Table 1]. Most patients were of Kinh ethnicity (99.3%), lived in urban areas (86.0%), were married (79.7%) and had health insurance (97.8%); no sex differences were observed in these demographic characteristics. EF ≥50% was the most common category (54.0%), followed by EF ≤40% (27.7%) and EF 41-49% (18.2%), with no statistically significant difference by sex (p=0.471) [Table 1]. Hypertension (87.6%), dyslipidaemia (68.6%) and diabetes mellitus (33.6%) were the most common comorbidities; no statistically significant sex difference was found in any of the comorbidities examined [Table 1].

Table 1. Demographic characteristics and comorbidities of patients aged ≥60 years

Characteristic	Total (n=137)	Male (n=64)	Female (n=73)	P
Age, n (%)				
≥60	137 (100.0)	64 (100.0)	73 (100.0)	
BMI, kg/m²	22 (21–24)	22 (21–23)	22 (20–24)	0.984
Ethnicity, n (%)				
Kinh	136 (99.3)	64 (100.0)	72 (98.6)	1.000
Other	1 (0.7)	0 (0.0)	1 (1.4)	
Education, n (%)				
Post-graduate	2 (1.4)	2 (3.1)	0 (0.0)	0.213
University/ College	18 (13.1)	11 (17.2)	7 (9.6)	
Vocational school	20 (14.6)	10 (15.6)	10 (13.7)	
High school	23 (16.8)	12 (18.8)	11 (15.1)	
Other	74 (54.0)	29 (45.3)	45 (61.6)	
Residence, n (%)				
Rural	19 (14.1)	6 (9.4)	13 (18.3)	0.136
Urban	116 (85.9)	58 (90.6)	58 (81.7)	
Marital status, n (%)				
Single	2 (1.4)	2 (3.1)	0 (0.0)	0.317

Married	109 (79.6)	50 (78.1)	59 (80.8)	
Divorced	1 (0.7)	1 (1.6)	0 (0.0)	
Other	25 (18.2)	11 (17.2)	14 (19.2)	
Living arrangement, n (%)				
Living alone	2 (1.4)	2 (3.1)	0 (0.0)	0.285
Living with family	111 (81.0)	50 (78.1)	61 (83.6)	
Living with others	24 (17.5)	12 (18.8)	12 (16.4)	
Health insurance, n (%)				
Yes	134 (97.8)	63 (98.4)	71 (97.3)	1.000
No	3 (2.2)	1 (1.6)	2 (2.7)	
Ejection fraction, n (%)				
EF ≥50%	74 (54.0)	31 (48.4)	43 (58.9)	0.471
EF 41–49%	25 (18.2)	13 (20.3)	12 (16.4)	
EF ≤40%	38 (27.7)	20 (31.2)	18 (24.7)	
Comorbidities, n (%)				
Hypertension	120 (87.6)	56 (87.5)	64 (87.7)	0.976
Dyslipidaemia	94 (68.6)	45 (70.3)	49 (67.1)	0.688
Diabetes mellitus	46 (33.6)	21 (32.8)	25 (34.2)	0.859
Ischaemic heart disease	5 (3.6)	3 (4.7)	2 (2.7)	0.664
Valvular heart disease	13 (9.5)	5 (7.8)	8 (11.0)	0.531
COPD	6 (4.4)	3 (4.7)	3 (4.2)	1.000
Chronic kidney disease	20 (14.6)	7 (10.9)	13 (17.8)	0.256
Other diseases	60 (43.8)	29 (45.3)	31 (42.5)	0.738

Percentages were calculated on the valid observations of each variable. P compares men and women: chi-square test (expected cell count ≥5) or Fisher's exact test (expected cell count <5) for categorical variables; Mann-Whitney test for skewed continuous variables.

3.2. Geriatric characteristics and prevalence of depression by GDS-15

The prevalence of IADL dependence and frailty was high, at 85.4% and 86.8%, respectively, with no statistically significant difference by sex (p=0.868 and p=0.811) [Table 2]. The median GDS-15 score was 6 (5-7) in both men and women, with no statistically significant difference (p=0.652). The prevalence of depression by GDS-15 (score ≥5) was 81.8%; women had a numerically higher prevalence than men (86.3% vs. 76.6%), but the difference was not statistically significant (p=0.141) [Table 2].

Table 2. Geriatric characteristics of patients aged ≥60 years

Characteristic	Total (n=137)	Male (n=64)	Female (n=73)	P
ADL dependence, n (%)	62 (45.3)	30 (46.9)	32 (43.8)	0.721
IADL dependence, n (%)	117 (85.4)	55 (85.9)	62 (84.9)	0.868
Frailty, n (%)	118 (86.8)	56 (87.5)	62 (86.1)	0.811
GDS-15, score	6 (5–7)	6 (5–7.2)	6 (5–7)	0.652
Depression by GDS-15 (score ≥5), n (%)	112 (81.8)	49 (76.6)	63 (86.3)	0.141

Percentages were calculated on the valid observations of each variable. P compares men and women: chi-square test (expected cell count ≥5) or Fisher's exact test (expected cell count <5) for categorical variables; Mann-Whitney test for skewed continuous variables.

3.3. GDS-15 components by sex

Of the 15 GDS-15 components, the highest rates of "yes" answers were for feeling that one's memory has worsened (70.1%), feeling healthy/full of energy (63.5%) and preferring to stay at home rather than go out (56.2%) [Table 3]. In contrast, the component "satisfied with life" had the lowest "yes" rate (5.8%). None of the 15 GDS-15 components differed significantly between men and women (all p>0.05) [Table 3]. Note that the GDS-15 includes both positively worded and reverse-scored items (items 1, 5, 7, 11 and 13); therefore, the "yes" rate of each component should be interpreted according to the scoring rule of that item, and not every "yes" answer should be regarded as a sign of depression. The six GDS-15 components with the highest "yes" rates by sex are shown in [Figure 1].

Table 3. GDS-15 components in patients aged ≥60 years

Component	Total (n=137)	Male (n=64)	Female (n=73)	P
1. Satisfied with life	8 (5.8)	6 (9.4)	2 (2.7)	0.146
2. Dropped many activities/ interests	56 (40.9)	30 (46.9)	26 (35.6)	0.181
3. Feels life is empty	27 (19.7)	14 (21.9)	13 (17.8)	0.550
4. Often bored	40 (29.2)	20 (31.2)	20 (27.4)	0.621
5. Often feels in low spirits	39 (28.5)	20 (31.2)	19 (26.0)	0.499
6. Afraid something will happen	46 (33.6)	22 (34.4)	24 (32.9)	0.853
7. Feels happy/ cheerful	67 (48.9)	35 (54.7)	32 (43.8)	0.205
8. Feels no one can help	36 (26.3)	14 (21.9)	22 (30.1)	0.273
9. Prefers staying home to going out	77 (56.2)	35 (54.7)	42 (57.5)	0.738
10. Feels memory has worsened	96 (70.1)	49 (76.6)	47 (64.4)	0.120
11. Feels it is wonderful to be alive	51 (37.2)	25 (39.1)	26 (35.6)	0.677
12. Feels worthless	27 (19.7)	11 (17.2)	16 (21.9)	0.487
13. Feels healthy/ full of energy	87 (63.5)	43 (67.2)	44 (60.3)	0.402
14. Feels situation is hopeless	10 (7.3)	6 (9.4)	4 (5.5)	0.514
15. Thinks most people are better off	21 (15.3)	12 (18.8)	9 (12.3)	0.298

Percentages were calculated on the valid observations of each component. P compares men and women: chi-square test (expected cell count ≥5) or Fisher's exact test (expected cell count <5). The GDS-15 includes positively worded and reverse-scored items (items 1, 5, 7, 11, 13); the "yes" rates in the table are not directly equivalent to the depression score of each item.

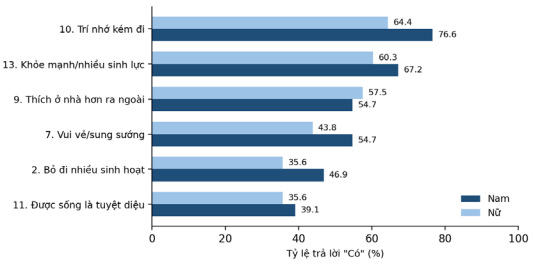


Figure 1. Rates of "Yes" answers by sex for the 6 GDS-15 components with the highest rates

4. DISCUSSION

This study analysed hospitalised patients aged ≥60 years with heart failure and found a high prevalence of depression screened by the GDS-15. Although women had a numerically higher prevalence of depression than men, the difference was not statistically significant. Likewise, there were no sex differences in any GDS-15 component. The results suggest that, among older inpatients with heart failure, the burden of physical illness, frailty and functional dependence may be

more prominent factors than sex differences in the presentation of depression.

4.1. Demographic characteristics, heart failure and comorbidities

In our sample, hypertension was present in 87.6%, dyslipidaemia in 68.6% and diabetes mellitus in 33.6% of patients. These comorbidities are common in older patients with heart failure and matter in practice, because multimorbidity increases the risk of polypharmacy and hospitalisation, reduces self-care ability and increases the need for health education. The distribution of ejection fraction did not differ significantly between men and women, although women had a numerically higher rate of EF ≥50%. No sex differences were observed in the main comorbidities, suggesting that among older inpatients both men and women carry a substantial comorbidity burden. Nursing care for older patients with heart failure therefore needs a multidimensional approach, including heart failure symptom control, monitoring of comorbidities, assessment of self-care ability, medication support and discharge planning.

4.2. Geriatric characteristics and prevalence of depression by GDS-15

The prevalence of IADL dependence and frailty was 85.4% and 86.8%, respectively, reflecting a very high burden of geriatric syndromes among hospitalised patients with heart failure. The prevalence of depression by GDS-15 was 81.8%, much higher than in some previous studies of older patients with heart failure. This difference may relate to the inpatient setting, the severity of cardiovascular disease, the high prevalence of frailty and the use of the GDS-15 as a screening tool rather than a definitive diagnostic instrument [2-4, 7]. The GDS-15 has the advantages of being short, suitable for older adults and placing less emphasis on somatic symptoms. However, in patients with heart failure, manifestations such as reduced activity, preferring to stay at home, low energy or fear about their illness may reflect both depression and the consequences of heart failure and frailty. A positive GDS-15 result should therefore be regarded as a signal for further assessment, including mood, sleep, cognition, pain, level of social support and risk of functional decline [5, 6]. In this study, the prevalence of depression was higher in women than in men but did not reach statistical significance. This may be because the sample size was too small to detect a small difference, or because the effects of frailty and functional dependence outweighed sex differences. The results also suggest that, in nursing practice, depression screening should be performed routinely in both older men and older women with heart failure rather than focusing on one sex.

4.3. GDS-15 components by sex

No GDS-15 component differed significantly between men and women. The most frequent "yes" answers were feeling that one's memory has worsened, feeling healthy/full of energy and preferring to stay at home rather than go out. Because the GDS-15 includes both positively worded and reverse-scored items, the "yes" rate of each component should be interpreted according to the scoring rule of that item, and not all "yes" answers should be regarded as signs of depression. The component "feeling that one's memory has worsened" had the highest rate, indicating that cognitive complaints are a notable problem in older patients with heart failure. These complaints may be related to depression, sleep disturbance, acute hospitalisation, polypharmacy, reduced cerebral perfusion or coexisting cognitive impairment. Therefore, when patients report memory complaints, nurses should assess their ability to understand treatment instructions, medication adherence, self-monitoring of symptoms and need for family support. The rate of "preferring to stay at home rather than go out" was also high, consistent with the reduced exercise tolerance, dyspnoea, fatigue and limited social activity that are common in older patients with heart failure. This component may reflect both reduced activity due to cardiovascular disease and depression-related social withdrawal. Post-discharge interventions should therefore combine heart failure education, appropriate rehabilitation, encouragement of safe physical activity and stronger social support.

4.4. Implications for nursing practice

Our results support incorporating the GDS-15 into the nursing assessment of hospitalised older patients with heart failure. Depression screening helps identify

early those patients at risk of poor self-care, poor treatment adherence, difficulty receiving health education or a need for psychosocial support. In particular, patients with frailty, IADL dependence or memory complaints need a more comprehensive assessment of their ability to self-manage their illness after discharge. In practice, patients with a GDS-15 score ≥5 should be further assessed for functional impact, sleep quality, anxiety, pain, family support and risk of social isolation. Patients with a high GDS-15 score, hopelessness or marked functional decline should be referred to the treating physician and to psychiatry/clinical psychology for further evaluation. Nurses have an important role in early detection, counselling, linking patients to support resources and follow-up after discharge.

5. LIMITATIONS

This study has several limitations that should be considered when interpreting the results. First, the cross-sectional design does not allow causal relationships between heart failure, frailty, functional dependence and depression to be established. Second, the study was conducted at a single centre, which limits generalisability. Third, the GDS-15 is a screening tool and does not replace a diagnosis of depression by standardised clinical interview. Fourth, the dataset recorded only age groups (<60 and ≥60 years) without age in years, so the effect of age could not be analysed as a continuous variable within the ≥60-year group. Fifth, some variables had missing data or codes outside the valid categories; these were treated as missing before analysis but may still have affected the precision of some estimates.

6. CONCLUSION

In hospitalised older patients with heart failure, the prevalence of depression by GDS-15 was 81.8%, with a median GDS-15 score of 6 (5-7). No statistically significant sex differences were found in comorbidities, ejection fraction, ADL dependence, IADL dependence, frailty, prevalence of depression or any GDS-15 component. The components with the highest "yes" rates were feeling that one's memory has worsened, feeling healthy/full of energy and preferring to stay at home rather than go out. These results support depression screening with the GDS-15 and comprehensive geriatric assessment in the nursing care of hospitalised older patients with heart failure, regardless of sex.

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