Journal of Nursing Science
Journal homepage: www.jns.vn

Quality of life among patients with peptic ulcer disease at Danang Hospital in 2025

Dao Duy Hai[1], Doan Hieu Trung[1], Nguyen Thi Phuc[1], Le Thanh Tung[2], Nguyen Ngoc Thanh[2]
[1]Da Nang Hospital, [2]Nam Dinh University of Nursing

ABSTRACT

***Objective**: To describe the quality of life and identify factors associated among inpatients with peptic ulcer disease at the Department of Gastroenterology, Da Nang Hospital in 2025. **Methods**: A cross-sectional descriptive study was conducted on 114 inpatients aged ≥ 18 years diagnosed with peptic ulcer disease via endoscopy. The Vietnamese version of the Quality of Life Instruments for Chronic Diseases – Peptic Ulcer (QLICD-PU) was used for face-to-face interviews one day prior to discharge. Data were analyzed using descriptive statistics and association analysis (OR, 95% CI, p < 0.05). **Results**: The mean overall quality of life score was 49.34 ± 8.93. Domain scores were psychological (58.25 ± 13.41), social (51.81 ± 9.80), symptom-specific (44.67 ± 8.73), and physical (42.54 ± 15.58). QoL levels were classified as good (50.0%), moderate (49.1%), and poor (0.9%). The quality of life was significantly associated with age, income, disease duration, history of hospitalization, comorbidities (cardiovascular and musculoskeletal), smoking, and alcohol consumption (p < 0.05). **Conclusion**: The quality of life of patients with peptic ulcer disease was predominantly at an moderate to good level. Clinical interventions should prioritize counseling and support for older patients, those with low income, prolonged disease duration, and co-existing chronic conditions to improve their overall quality of life.*

***Keywords**: Quality of life, Peptic ulcer disease, QLICD-PU, Da Nang Hospital*

INTRODUCTION

Peptic ulcer disease (PUD) is a prevalent gastrointestinal disorder affecting populations worldwide, including Vietnam. The disease occurs across all age groups in both acute and chronic forms, often characterized by a high recurrence rate that severely impacts patients' quality of life [1]. Globally, the estimated prevalence of PUD in the general population is approximately 5–10%, with an annual incidence ranging from 0.1% to 0.3% [2, 3]. In Vietnam, PUD accounts for up to 26% of hospital admissions and 16% of total surgical cases annually [4, 5]. The risk of developing the disease is four times higher in men than in women and increases significantly with age. Furthermore, the annual direct and indirect healthcare costs associated with PUD are estimated at approximately $10 billion USD[6]. Although PUD often manifests acutely and responds well to initial treatment, it carries a high risk of recurrence and progression to chronic illness [7]. Key clinical manifestations include epigastric pain, dyspepsia, nausea, vomiting, loss of appetite, and

Cor. author: Dao Duy Hai
Email: msndaoduyhai@gmail.com
DOI: 10.54436/jns.2026.01.1078
Received: Aug 19, 2025
Accepted: Feb 09, 2026
Published: Feb 10, 2026

fatigue [4]. The disease can also lead to life-threatening emergency complications, such as gastrointestinal bleeding and hollow viscus perforation [8]. Consequently, PUD substantially diminishes patients' quality of life, hindering daily activities and creating significant economic and social burdens [4].

According to the World Health Organization (WHO), quality of life is defined as "individuals' perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns". A good quality of life is achieved when individuals possess the necessary conditions for health and well-being in their daily lives [9]. In the medical field, particularly in the care and treatment of PUD, quality of life has become an increasingly important concept. This condition profoundly affects patients' habits and impairs their work productivity[10]; therefore, enhancing quality of life is a critical component of the therapeutic process. In recent years, research on PUD has primarily focused on etiology, pathogenesis, and treatment, while studies regarding patients' quality of life remain relatively limited, especially in Vietnam. As of 2023, global and domestic studies on this topic mainly utilized the Short Form 36 (SF-36) health survey[4]. In 2020, Chonghua Wan and colleagues developed the first version of the Quality of Life Instruments for Chronic Diseases – Peptic Ulcer (QLICD-PU) scale[11]. Recently, Yen et al 2023 successfully developed the Vietnamese version of this instrument [12].

In Vietnam, there is currently a lack of research evaluating the quality of life of PUD patients, particularly studies using the QLICD-PU tool. Da Nang Hospital is a first-class facility under the Municipal Department of Health, serving as a major tertiary referral center in the region. Despite the increasing number of PUD patients at the hospital's Department of Gastroenterology, no comprehensive study has yet assessed this issue. Given this gap, we conducted this study to describe the quality of life and identify associated factors among inpatients with PUD at the Department of Gastroenterology, Da Nang Hospital, in 2025. It would provide a deeper understanding of the disease's impact on patients' daily lives and establish a scientific foundation for appropriate interventions.

METHODS

Study population:

The study population consisted of inpatients diagnosed with peptic ulcer disease (PUD) via endoscopy who were receiving treatment at the Department of Gastroenterology, Da Nang Hospital.

Inclusion Criteria:

Patients aged 18 years and older. Diagnosed with gastric ulcer, duodenal ulcer, or peptic ulcer through endoscopic evaluation. Having a disease duration of at least one week. Clinically stable and capable of participating in face-to-face interviews. Voluntarily agreed to participate in the study and signed the informed consent form.

Exclusion Criteria:

Patients with mental illness, behavioral disorders, or cognitive impairment that prevented them from answering the questionnaire.

Study design and setting: A cross-sectional descriptive study was conducted

at the Department of Gastroenterology, Da Nang Hospital, from January 2025 to May 2025.

Sample size:

The sample size was determined using the formula for estimating a single population mean:

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

Where:

n is the minimum sample size;

$Z_{\alpha/2}$ = 2.58 is the corresponding to a confidence level of 99%, α = 0.01;

σ = 19.8 is the standard deviation, based on the study of Ha Thi Mai Huong et al [4] (2021);

d = 2 is the allowable error, resulting in a minimum sample size of 104 patients. To account for potential invalid responses or refusals, the sample size was increased by 10%, bringing the final sample to 114 patients.

Sampling technique:

Convenient sampling was employed to recruit all eligible patients meeting the inclusion criteria during the study period until the required sample size was reached.

Study instruments:

The study utilized the Vietnamese version of the Quality of Life Instruments for Chronic Diseases – Peptic Ulcer (QLICD-PU).

The tool was validated by Hoang et al [5] (2023) with a Cronbach's Alpha of 0.896. Psychological and symptom domains scored > 0.8, while physical and social domains were > 0.6. Structural validity was confirmed via exploratory factor analysis (EFA) and confirmatory factor analysis (CFA), with KMO coefficients > 0.8.

The instrument consists of 44 items divided into two modules: a General Module (30 items covering physical, psychological, and social domains) and a Specific Module (14 items for PUD-specific symptoms). All items are rated on a 5-point Likert scale. Raw scores are standardized to a 0–100 scale using the formula: SS = RS − Min x 100(Max − Min). Quality of life levels are classified as: Poor (0–25), Moderate (26–50), Good (51–75), and Very Good (76–100).

Data collection procedure:

Direct face-to-face interviews were conducted by the author at the bedside or in consultation rooms. Each interview lasted 30–45 minutes and was performed one day prior to discharge.

Data analysis:

Data were analyzed using SPSS 20.0. Qualitative variables are presented as frequencies and percentages; quantitative variables as Mean ± SD. Chi-square tests, t-tests, ANOVA, and regression models were applied to identify associated factors, with a significance level set at $p < 0.05$.

Ethical considerations:

The study was approved by the Ethics Committees of Nam Dinh University of Nursing (Decision No. 489/GCN-HDDD) and Da Nang Hospital (Decision No. 877/BVDN-HDDD). All participants provided voluntary informed consent, and their data remained confidential.

RESULTS

Table 1. Demographic characteristics of participants (n = 114)

Characteristic		n	%
Age	Mean ± SD: 55.99 ± 16.19		
	< 60 years old	65	57.0
	≥ 60 years old	49	43.0
Gender	Male	82	71.9
	Female	32	28.1
Place of residence	Urban	72	63.2
	Rural	42	36.8
Educational level	Primary school	7	6.1
	Middle schooll	27	23.7
	High school	34	29.8
	Intermediate/Elementary/Vocational Training	24	21.1
	College	3	2.6
	University/Postgraduate	19	16.7
Marital status	Single/Widow/Divorced	29	25.4
	Married/Living together	85	74.6
Current job	Manual labor	33	28.9
	Intellectual labor	17	14.9
	Housewife/Retired/Unemployed	29	25.4
	Student	7	6.1
	Other	28	24.6
Monthly Income	Sufficient for expenses and savings	45	39.5
	Enough for expenses.	21	18.4
	Insufficient	4	3.5
	No income/dependents	44	38.6

Table 1 showed that the average age of the study participants was 55.99 ± 16.19 years, with those under 60 years old accounting for a higher proportion (57%) than the group aged 60 and older (43%). Regarding gender, males represented the highest proportion (71.9%), more than double that of females (28.1%). The predominant place of residence was urban (63.2%). High school was the most common educational level (29.8%), while college education was the lowest (2.6%). Most participants were married or cohabiting (74.6%). Manual labor was the most frequent occupation (28.9%), while students represented the smallest group (6.1%). Income was mainly sufficient for expenses and savings (39.5%) or characterized by no income/dependency (38.6%).

Table 2. Clinical characteristics of participants (n = 114)

Characteristic		n	%
Diagnosis	Gastric ulcer	44	38.6
	Duodenal ulcer	47	41.2
	Peptic ulcer	23	20.2
Duration of illness	< 1 year	92	80.7
	≥ 1 year	22	19.3
Family history of peptic ulcers	Yes	41	36.0
	No	73	64.0
Prior hospitalization for complications	Yes	34	29.8
	No	80	70.2
Helicobacter pylori infection	Positive	61	53.5
	Negative	53	46.5
Co-morbidities	Obesity	0	0
	Asthma	2	1.8
	Chronic obstructive pulmonary disease	1	0.9
	Cardiovascular disease	16	14.0
	Hypertension	36	31.6
	Dyslipidemia	3	2.6
	Diabetes	19	16.7
	Musculoskeletal disorders	13	11.4
	Kidney disease	4	3.5
	Parkinson's disease	1	0.9
	No comorbidities	40	35.1
	Other chronic diseases	53	46.5

Duodenal ulcers were the most common diagnosis (41.2%), followed by gastric ulcers (38.6%) and gastroduodenal ulcers (20.2%). Illness duration was mostly less than one year (80.7%). A family history of peptic ulcers was present in 36% of cases. The rate of prior hospitalization due to complications (perforation/bleeding) was 29.8%, and Helicobacter pylori infection was detected in 53.5% of participants. The most prevalent comorbidities were hypertension (31.6%) and diabetes (16.7%); no cases of obesity were recorded. The rate of other chronic diseases was high (46.5%), but 35.1% had no comorbidities.

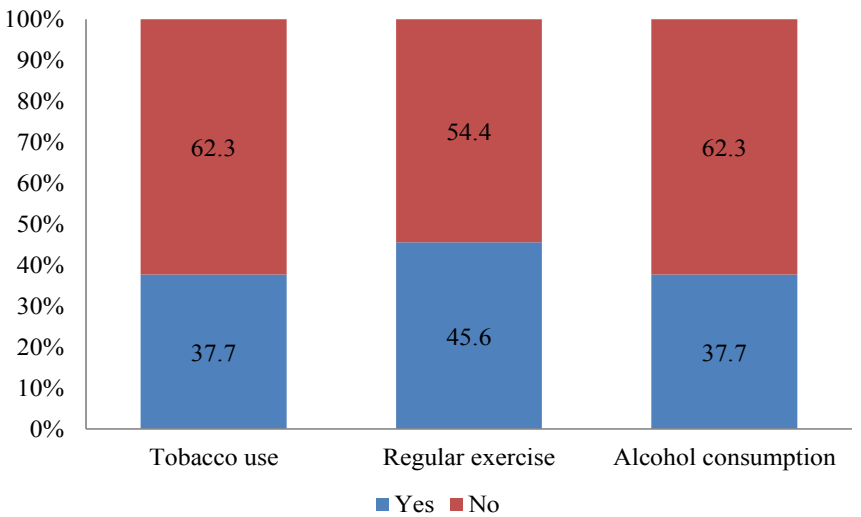

Figure 1. Lifestyle habits characteristics of the participant (n = 114)

Regarding lifestyle habits, the rates of regular tobacco use, and alcohol consumption were both 37.7%, while 45.6% engaged in regular exercise.

Table 3. Quality of life scores by domain (n = 114)

Domain	Mean	SD	Min	Max
Physical	42.54	15.58	9.38	75.00
Psychological	58.25	13.41	22.73	81, 82
Social	51.81	9.80	20.45	75.00
PUD-specific Symptoms	44.67	8.73	25.00	67.86
Overall quality of life	49.34	8.93	22.73	67.61

The average overall QoL score was 49.34 ± 8.93. The psychological domain achieved the highest average score (58.25 ± 13.41), whereas the physical health domain recorded the lowest (42.54 ± 15.58).

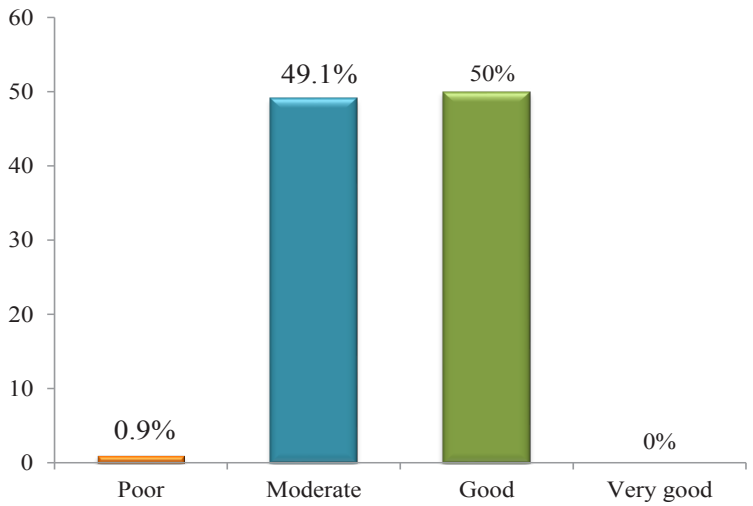

Figure 2. Classification of quality of life levels of patients with peptic ulcers (n = 114)

The quality of life of patients was mostly good (50.0%) and average (49.1%). Only 0.9% had a poor quality of life, and there were no cases of very good quality of life.

Table 4. Relationship between demographic/clinical characteristics and QoL (n = 114)

Characteristic		Quality of life				p
		Poor/ Moderate		Good/Very good		
		n	%	n	%	
Age (years)	< 60	24	36.9	41	63.1	< 0.01
	≥ 60	33	67.3	16	32.7	
Monthly Income	Sufficient & Savings	16	76.2	5	23.8	< 0.01
	Enough for expenses	16	35.6	29	64.4	
	Insufficient/No income/ Dependent	25	52.1	23	47.9	
Duration of illness	< 1 year	41	44.6	51	55.4	0.018
	≥ 1 year	16	72.7	6	27.3	
Previously hospitalized due to ulcers/perforation/ bleeding	Yes	23	67.6	11	32.4	0.014
	No	34	42.5	46	57.5	
There are co-morbidities.	Yes	42	56.8	32	43.2	0.05
	No	15	37.5	25	62.5	

Characteristic		Quality of life				p
		Poor/ Moderate		Good/Very good		
		n	%	n	%	
Cardiovascular	Yes	12	75.0	4	25	0.031
	No	45	45.9	53	54.1	
Musculoskeletal disease	Yes	10	76.9	3	23.1	0.039
	No	47	46.5	54	53.5	
Other chronic disease	Yes	34	64.2	19	35.8	< 0.01
	No	23	37.7	38	62.3	
Tobacco use	Yes	28	65.1	15	34.9	0.012
	No	29	40.8	42	59.2	
Regularly alcohol consumption	Yes	29	67.4	14	32.6	< 0.01
	No	28	39.4	43	60.6	

There were statistically significant differences between quality of life and the following factors: age ($p < 0.01$), monthly income ($p < 0.01$), duration of illness ($p = 0.018$), history of hospitalization due to complications ($p = 0.014$), comorbidities ($p = 0.05$), cardiovascular disease ($p = 0.031$), musculoskeletal disease ($p = 0.039$), other chronic diseases ($p < 0.01$), tobacco use ($p = 0.012$), and regular alcohol consumption ($p < 0.01$).

Table 5. Logistic regression model of factors associated with quality of life of patients (n = 114)

Factors		Quality of life				OR	95%CI	p
		Poor/ Moderate		Good/Very good				
		n	%	n	%			
Age (years)	< 60	24	36.9	41	63.1	12.825	3.572-46.041	<0.001
	≥ 60	33	67.3	16	32.7	1	-	-
Income	Sufficient & Savings	16	76.2	5	23.8	1	-	-
	Enough for expenses	16	35.6	29	64.4	7.749	1.512-39.719	0.014
	Insufficient /No income/ Dependent	25	52.1	23	47.9	5.149	0.990-26.776	0.051

Factors		Quality of life				OR	95%CI	p
		Poor/ Moderate		Good/Very good				
		n	%	n	%			
Previously hospitalized due to ulcers/ perforations/ bleeding.	Yes	23	67.6	11	32.4	1	-	-
	No	34	42.5	46	57.5	9.154	2.482-33.762	0.001
Regularly drinking alcohol	Yes	29	67.4	14	32.6	1	-	-
	No	28	39.4	43	60.6	5.623	1.751-18.055	0.004

The regression analysis indicated that patients under 60 years old were 12.8 times more likely to have a good QoL compared to older patients ($p < 0.001$). Patients with sufficient income and savings had a 7.749 times higher probability of better QoL ($p = 0.014$). the absence of a history of hospitalization for complications and avoiding regular alcohol use were significant predictors for higher QoL scores ($p = 0.001$ and $p = 0.004$, respectively).

DISCUSSION

The study was conducted on 114 patients with peptic ulcer disease (PUD) treated as inpatients at the Department of Gastroenterology, Da Nang Hospital. The average age of patients in the study was 55.99 ± 16.19, with 57.0% of patients under 60 years old. This indicates that the disease is common in middle-aged and elderly individuals, align to reports by Wen Z et al. (2014) and Ha Thi Mai Huong et al [4, 6]. Men accounted for 71.9%, more than twice as many as women, consistent with the findings of Wan C et al. (2020) that hormonal factors and smoking behavior increase the risk of ulcers in men [7]. Additionally, 74.6% of patients were married and 63.2% lived in urban areas, a characteristic similar to the results of some domestic studies [4, 8]. The proportion of patients with a disease duration of < 1 year was 80.7%, which is contrary to the results of most domestic and foreign studies [2, 4, 9, 10]. This could be explained by the fact that the majority of participants were new cases or acute relapses requiring hospitalization, while patients with stable chronic conditions are primarily treated on an outpatient basis. Furthermore, Da Nang Hospital is a top-tier regional hospital where the population tends to have higher health awareness and better access to medical services, leading to earlier detection and treatment compared to lower-level facilities. The proportion of patients who smoke and drink alcohol regularly remains high (37.7%), exceeding the results reported by H.N. Yen et al. (28.1% and

12.3%) [8]. Simultaneously, 53.5% of cases were infected with Helicobacter pylori, a result similar to the study by Molaoa S. Z. [11]. Only 29.8% of patients had a history of hospitalization due to complications such as ulcers, perforation, or bleeding, which is lower than the findings of Pham Ngoc Oanh and Tran Minh Hau [2]. Common comorbidities included hypertension, diabetes, cardiovascular disease, and musculoskeletal disorders. This profile indicates that hospitalized patients often face a higher disease burden, consistent with reports from provincial and central-level medical facilities [5, 8].

Regarding quality of life, the overall average score was 49.34 ± 8.93, representing a moderate level, with the lowest scores recorded in the domains of physical health and ulcer symptoms. This indicates that peptic ulcer disease has the most profound impact on physical health and bodily comfort, supporting the studies by Barkun A and Leontiadis G (2010) and Nguyen Trung Anh et al. (2021) [9, 12]. This result also aligns with the findings of Ha Thi Mai Huong et al. (2022), where psychological and emotional domains scored higher, while physical health and general activity scored lower when assessed using the SF-36 scale[4]. Although QLICD-PU and SF-36 have different structures, Wan C et al. (2020) demonstrated a positive correlation between corresponding domains (r = 0.51–0.67), allowing for a comparison of trends across studies [7].

The proportion of patients achieving a good quality of life was 50%, while the remaining 50% were at a moderate or poor level. This result is higher than the domestic study by Pham Ngoc Oanh and Tran Minh Hau (2021), where the proportion of good quality of life was only 3.88%, with moderate at 74.27% and poor at 21.85% [2]. The difference may stem from the current study sample mainly consisting of newly diagnosed cases with fewer complications and milder symptoms. Compared to international research, our proportion of good quality of life is significantly lower: Shanshal et al. (2022) reported 91.4%, while Hafez A.A. et al. (2013) reported 69.9% [10]. These variations may relate to demographic differences, illness duration, symptom severity, and healthcare systems. Notably, this sample included many new cases without severe complications, resulting in low physical scores but relatively high psychological and social scores (58.25 ± 13.41 and 51.81 ± 9.80). This reflects the psychological adaptability of patients in the early stages, as observed by Wen Z et al. (2014), where early-diagnosed patients tend to maintain a more stable psychological state [6].

Regression analysis demonstrated that quality of life was statistically significantly associated with age, income, duration of illness, history of hospitalization due to complications, comorbidities, smoking, and regular alcohol consumption. This result is consistent with the theoretical model of Ferrans C et al. (2005) regarding the interaction between physical health, psychological, and social conditions within the quality of life structure [13]. Patients under 60 years old, with sufficient income and savings, an illness duration of less than 1 year, and no prior hospitalization due to

complications, reported a better quality of life. This confirms that younger age, stable economic conditions, and a short duration of illness increase the likelihood of recovery and adaptation [2, 10]. Conversely, the presence of comorbidities significantly reduced quality of life, especially for those with cardiovascular, musculoskeletal, and other chronic diseases, matching studies by Hoang Thi Phuong et al. (2025) and Shanshal S.A et al. (2022) [5, 14]. These authors agree that multimorbidity increases the treatment burden, limits mobility, and heightens anxiety. Furthermore, smoking and regular alcohol consumption are inversely related to quality of life, reinforcing evidence from Barkun A and Leontiadis G (2010) that risky behaviors prolong the ulceration process, worsen symptoms, and reduce treatment response [12]. Overall, these results demonstrate that symptom control, limiting risky behaviors, and improving mental health are vital to enhancing the quality of life for patients with peptic ulcers.

STRENGTHS AND LIMITATIONS

The study utilizes the QLICD-PU (Vietnamese version), which has been standardized specifically for patients with peptic ulcer disease. Additional strengths include achieving the required sample size and employing multivariate regression analysis to identify associated factors. However, there are certain limitations to consider: the regression analysis was initially conducted at a univariate level, which may not have fully controlled for all confounding variables (such as age, income, and comorbidities), potentially leading to exaggerated odds ratios for some factors. Furthermore, the cross-sectional descriptive design precludes the establishment of causal relationships. The sample was recruited from a single hospital, which may limit its representativeness for the broader population, and the use of self-reported data could be subject to recall bias.

CONCLUSION

The quality of life of patients with peptic ulcer disease is predominantly at a moderate level, with the psychological domain achieving the highest score and the physical domain recording the lowest. Factors such as age, income, duration of illness, history of hospitalization, and comorbidities (specifically cardiovascular and musculoskeletal diseases), as well as smoking and regular alcohol consumption, are statistically significantly associated with the patients' quality of life.

It is essential to strengthen psychological support measures, improve living conditions, and enhance symptom management to improve the quality of life for patients with peptic ulcers. Particular focus should be placed on high-risk groups, including patients aged 60 and older, those with low income, individuals with comorbidities, or those with a prior history of hospitalization. Healthcare professionals should prioritize counseling on lifestyle modifications, specifically limiting alcohol and tobacco use, to improve overall treatment outcomes. Furthermore, more in-depth, multi-center studies with larger sample sizes are required to provide a comprehensive assessment of the factors influencing the quality of life in this patient population.

REFERENCES

1. Chan FK, Leung W. Peptic-ulcer disease. Lancet. 2002;360(9337):933-941. doi:10.1016/S0140-6736(02)11030-0

2. Pham NO, Tran MH. Quality of life of patients with peptic ulcers at the Agricultural General Hospital in 2021. Thai Binh Med J. 2022;1(3):49-53.

3. NIH Consensus Conference. Helicobacter pylori in peptic ulcer disease. NIH consensus development panel on Helicobacter pylori in peptic ulcer disease. JAMA. 1994;272(1):65-69.

4. Ha TMH, Nguyen TLA, Nguyen VH, et al. Quality of life of patients with peptic ulcers at Vinh Phuc Provincial General Hospital in 2021. J Med Res. 2022;156(8):301-310. doi:10.52852/tcncyh.v156i8.1045

5. Hoang TP, Nguyen HD, Nguyen HT. Quality of life and some related factors in patients with peptic ulcer disease at the Gastroenterology-Hepatology Center, Bach Mai Hospital in 2024. Vietnam Med J. 2025;551(2):122-126. doi:10.51298/vmj.v551i2.14595

6. Wen Z, Li X, Lu Q, et al. Health related quality of life in patients with chronic gastritis and peptic ulcer and factors with impact: a longitudinal study. BMC Gastroenterol. 2014;14:149. doi:10.1186/1471-230X-14-149

7. Wan C, Chen Y, Gao L, et al. Development and validation of the peptic ulcer scale under the system of quality of life instruments for chronic diseases based on classical test theory and generalizability theory. BMC Gastroenterol. 2020;20(1):1-10. doi:10.1186/s12876-020-01562-y

8. Yen HN, Quang TV, Tien DD, et al. Quality of life of patients with peptic ulcers: development and validation of instrument. J Community Med. 2023;64(13):42-49. doi:10.52163/yhc.v64i13.861

9. Nguyen TA, Nguyen MT, Nguyen TTH. Some factors related to quality of life in elderly patients with chronic peptic ulcer disease at the Central Geriatric Hospital. J Clin Med 108. 2021;16(DB4):20-26. doi:10.52389/ydls.v16iDB4.996

10. Hafez AA, Tavassoli E, Hasanzadeh A, et al. Quality of life in peptic ulcer patients referring to Al-Zahra hospital of Isfahan, Iran. Gastroenterol Hepatol Bed Bench. 2013;6(suppl 1):S87-S92.

11. Molaoa SZ. Prevalence of Helicobacter pylori infection and the incidence of the associated malignant and peptic ulcer disease (PUD) at Nelson Mandela Academic Hospital: A retrospective analysis. J Drug Assess. 2021;10(1):57-61. doi:10.1080/21556660.2020.1854560

12. Barkun A, Leontiadis G. Systematic review of the symptom burden, quality of life impairment and costs associated with peptic ulcer disease. Am J Med. 2010;123(4):358-366.e2. doi:10.1016/j.amjmed.2009.09.031

13. Ferrans CE, Zerwic JJ, Wilbur JE, et al. Conceptual model of health-related quality of life. J Nurs Scholarsh. 2005;37(4):336-342. doi:10.1111/j.1547-5069.2005.00058.x

14. Shanshal SA, Noori AS, Ghazi JA, et al. Impact of peptic ulcer disease on the quality of life: A Cross Sectional Study. Res J Pharm Technol. 2022;15(7):3267-3272. doi:10.52711/0974-360X.2022.00548