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Associations of age and gender with dyspepsia among hospital patients

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Abstract

Background: Dyspepsia is a common gastrointestinal syndrome characterized by epigastric pain or discomfort. Demographic patterns, including age and gender, may differ across populations and clinical settings.
Purpose: To examine the associations of age group and gender with dyspepsia among hospital patients.
Method: This retrospective cross-sectional study used medical-record data from Bintang Amin Hospital, Bandar Lampung, for 2025. From a reported sampling frame of 389 patients, 197 medical records were selected by simple random sampling, comprising 110 patients with dyspepsia and 87 without dyspepsia. Age was categorized as 0–9, 10–19, 20–59, and ≥60 years. Associations were tested using the chi-square test with statistical significance set at $p < 0.05$.
Results: Most participants were aged 20–59 years (127 [64.5%]) and female (120 [60.9%]). Age group was significantly associated with dyspepsia status ($p = 0.003$), and gender was also significantly associated with dyspepsia status ($p < 0.001$). Dyspepsia was recorded in 90 of 120 female patients (75.0%) and 20 of 77 male patients (26.0%).
Conclusion: Age group and gender were significantly associated with dyspepsia in this hospital-based sample. These are unadjusted associations from a retrospective cross-sectional analysis and should not be interpreted as causal or independent effects.

Keywords: Age; Dyspepsia; Gender; Medical Records.

INTRODUCTION

Dyspepsia comprises upper-gastrointestinal symptoms such as epigastric pain or discomfort and may be classified according to the underlying clinical context. Symptom definitions, diagnostic criteria, age, alarm features, and the distinction between uninvestigated and functional dyspepsia influence how cases are identified and managed (Zakiyah, Agustin, Fauziah, Sa'diyyah, & Mukti, 2021; Ford, Mahadeva, Carbone, Lacy, & Talley, 2020; Moayyedi, Lacy, Andrews, Enns, Howden, & Vakil, 2017; Sayuk & Gyawali, 2020).

Population-based studies show substantial variation in functional dyspepsia prevalence across settings and diagnostic criteria. Differences between Rome III and Rome IV definitions can materially change prevalence estimates, and primary-care studies demonstrate substantial heterogeneity across clinical populations (Chuah, Beh, Mahamad Rappek, & Mahadeva, 2021). A recent global systematic review reported higher pooled prevalence among women than men, while Indonesian studies have highlighted behavioural factors such as diet and stress in selected populations (Lee, Kwon, Yeniova, Koyanagi, Jacob, Smith, Lee, Rahmati, Shin, Shin, Cho, & Yon, 2024; Afifah, Mariadi, Adnyana, & Merati, 2023).

Age and gender are demographic characteristics that have been associated with dyspepsia in previous studies. Differences across age groups may reflect variation in physiology, medication exposure, diet, stress, Helicobacter pylori infection, and comorbidity. Gender-related differences have also been reported in functional gastrointestinal disorders, including dyspepsia, with proposed contributions from biological, hormonal, visceral-sensitivity, psychosocial, and health-seeking factors (Kim & Kim, 2020; Narayanan, Anderson, & Bharucha, 2021).

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Functional gastrointestinal disorders, including functional dyspepsia, are also documented in pediatric populations, which is relevant because the present dataset includes patients younger than 20 years (Vernon-Roberts, Alexander, & Day, 2021; Waseem & Rubin, 2022).

Because local hospital data on these demographic associations remain limited, this study examined the associations of age group and gender with dyspepsia among patients recorded at Bintang Amin Hospital in 2025.

RESEARCH METHOD

This analytical quantitative study used a retrospective cross-sectional design. It was conducted at Bintang Amin Hospital, Bandar Lampung, Indonesia, between June and July 2026 using secondary data from 2025 patient medical records.

The sampling frame comprised 389 patients. A total of 197 medical records were included, comprising 110 patients with dyspepsia and 87 The study received ethical approval from the Health Research Ethics Committee of Universitas Malahayati (Ethical Clearance No. 5659/EC/KEP-UNMAL/VI/2026; 25 June 2026).

without dyspepsia. Sample size was determined using the Slovin formula, and records were selected by simple random sampling.

Records were eligible when a diagnosis of dyspepsia or another condition was recorded in 2025 and the record met the study criteria. Ultrasonography results were additionally required for patients with dyspepsia. Incomplete, illegible, or duplicate records were excluded.

The independent variables were age and gender, and the dependent variable was recorded dyspepsia status. Age was categorized as 0–9, 10–19, 20–59, and ≥60 years. Because only grouped age data were available, mean age, standard deviation, and range were not calculated. Data were processed through editing, coding, entry, and cleaning and analyzed in SPSS. Frequencies and percentages were used for descriptive analysis, and chi-square tests were used to examine associations, with statistical significance set at $p < 0.05$. For the 2 × 2 gender analysis, the continuity-corrected (Yates) chi-square result was used.

RESEARCH RESULTS

A total of 197 medical records were included. Table 1 summarizes participant characteristics and dyspepsia status.

Table 1. Characteristics of the participants (N=197)

Variables	Results
Age group (n/%)	
0–9 years	15/7.6
10–19 years	25/12.7
20–59 years	127/64.5
≥60 years	30/15.2
Gender (n/%)	
Male	77/39.1
Female	120/60.9
Dyspepsia status (n/%)	
Dyspepsia	110/55.8
No dyspepsia	87/44.2

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Table 1 shows that most patients were aged 20–59 years (64.5%) and were female (60.9%). Dyspepsia was identified in 55.8% of the study population.

Table 2. Association of age group and gender with dyspepsia status (N = 197)

Variables	Dyspepsia	No dyspepsia	Total	p-value
Age group (n/%)				
0–9 years	13/86.7	2/13.3	15/100.0	0.003
10–19 years	8/32.0	17/68.0	25/100.0	
20–59 years	76/59.8	51/40.2	127/100.0	
≥60 years	13/43.3	17/56.7	30/100.0	
Gender (n/%)				
Female	90/75.0	30/25.0	120/100.0	< 0.001
Male	20/26.0	57/74.0	77/100.0	

Table 2 shows that the proportion of patients with dyspepsia differed significantly across age groups ($\chi^2 = 14.27$, df = 3, p = 0.003). Dyspepsia was observed in 75.0% of female patients and 26.0% of male patients, with a significant association between gender and dyspepsia status ($\chi^2 = 43.75$, df = 1, p < 0.001).

DISCUSSION

Age group was significantly associated with dyspepsia in this hospital-based sample. The 20–59-year group contained the largest absolute number of dyspepsia cases, whereas the highest within-group proportion occurred among patients aged 0–9 years. The latter finding should be interpreted cautiously because this group contained only 15 participants and the study did not distinguish functional dyspepsia from other causes of upper-gastrointestinal symptoms.

Dyspepsia prevalence varies across populations, and age-related patterns may be influenced by physiological, behavioural, and psychosocial factors. Contemporary pathophysiologic models emphasize interactions among gastric and duodenal function, visceral sensitivity, mucosal and immune mechanisms, and gut-brain signalling (Broeders, Carbone, Balsiger, Schol, Raymenants, Huang, Verheyden, Vanuytsel, & Tack, 2023; Lacy & Cangemi, 2022). Because the present medical-record dataset did not include detailed information on medication exposure, Helicobacter pylori infection, diet, stress, or comorbidity, mechanisms underlying the observed age-group pattern cannot be determined from this analysis (Aziz, Palsson, Törnblom, Sperber, Whitehead, & Simrén, 2018; Lee et al., 2024).

Gender was also significantly associated with dyspepsia status, with a higher proportion of dyspepsia among female patients. This direction is consistent with literature describing gender-related differences in functional dyspepsia and other disorders of gut-brain interaction (Kim & Kim, 2020; Narayanan et al., 2021). An Indonesian student study likewise reported a higher proportion of dyspepsia among women than men, although its population and setting differ from the present hospital sample (Tiana, Susanto, Elena, & Hudyono, 2017).

Dyspepsia is multifactorial, and symptoms may be associated with dietary patterns, medication exposure, Helicobacter pylori infection, psychological factors, smoking, and comorbidity. Helicobacter pylori remains clinically relevant in dyspepsia assessment and management, while anxiety and depression are commonly associated with functional dyspepsia (Malfertheiner, Megraud, Rokkas, Gisbert,

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Liou, Schulz, Gasbarrini, Hunt, Leja, O'Morain, Rugge, Suerbaum, Tilg, Sugano, & El-Omar, 2022; Esterita, Dewi, Suryatenggara, & Glenardi, 2021). Population-based evidence has also linked smoking with postprandial distress syndrome, and emerging work has examined gastrointestinal microbiota and small-intestinal bacterial overgrowth as possible contributors to symptom generation (Talley, Powell, Walker, Jones, Ronkainen, Forsberg, Kjellström, Hellström, Aro, Wallner, Agréus, & Andreasson, 2021; Zhou, Zeng, Zhang, & Ma, 2022; Gurusamy, Shah, Talley, Koloski, Jones, Walker, Morrison, & Holtmann, 2021). Indonesian evidence has linked stress and eating habits with dyspepsia in a student population (Afifah et al., 2023). Therefore, the age- and gender-related associations reported here are unadjusted and should not be interpreted as independent causal effects (Ford et al., 2020).

Several limitations should be considered. The study used retrospective medical-record data collected for clinical rather than research purposes. Diagnostic criteria for dyspepsia and the role of ultrasonography were not fully specified in the submitted manuscript, and important potential confounders were unavailable. The cross-sectional design cannot establish temporal sequence or causality. The sample came from one hospital and may reflect referral and health-seeking patterns. Age categories were unequal in width, particularly the 20–59-year group, which may obscure variation within that category. No multivariable analysis was reported to adjust for potential confounding.

CONCLUSION

Age group and gender were significantly associated with dyspepsia among patients recorded at Bintang Amin Hospital in 2025. Dyspepsia frequency varied across age groups and was proportionally higher among female than male patients. These findings describe unadjusted associations in a retrospective hospital-based sample and do not establish causality or independent risk.

SUGGESTION

Future studies should use clearly defined diagnostic criteria, narrower and clinically meaningful age categories, and prospective or multicentre designs. Individual-level information on diet, Helicobacter pylori infection, medication use, smoking, alcohol consumption, stress, obesity, and comorbidity should be collected so that multivariable analyses can assess whether age and gender remain associated with dyspepsia after adjustment for relevant confounders.

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