

## Assessment of Knowledge and Awareness of Peptic Ulcer Disease and Gastroesophageal Reflux Disease Among Students: A Cross-Sectional Study

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### Abstract

**Background:** Peptic ulcer disease (PUD) and gastroesophageal reflux disease (GERD) are common gastrointestinal conditions worldwide, yet knowledge and awareness among young adults remain variable. Understanding the level of knowledge of these conditions is essential for creating targeted educational interventions.

**Objective:** This study aimed to assess the knowledge and awareness of PUD and GERD among undergraduate students at King Faisal University, emphasizing risk factors, symptoms, and possible prevention strategies.

**Methods:** A cross-sectional design was employed at King Faisal University from March to May 2024. A total of 248 students were randomly recruited. Data were collected using a validated self-administered questionnaire that covered demographics, knowledge of risk factors, clinical features, prevention strategies, and sources of information. Descriptive statistics, chi-square tests, and logistic regression analyses were performed to identify associations between demographic factors and knowledge scores.

**Results:** The majority of respondents had moderate knowledge of PUD (56.3%) and GERD (52.9%). Students who had taken health-related courses were more likely to have higher knowledge scores than those who had not ( $p < .05$ ). Participants cited family members (58.4%) and online sources (45.2%) as their primary sources of information. Misconceptions regarding self-medication practices and dietary triggers were also prevalent.

**Conclusion:** Although the overall awareness of PUD and GERD among students at King Faisal University is moderate, substantial gaps remain, particularly with regard to risk factors and preventative measures. Tailored educational strategies and evidence-based campus-wide health promotion campaigns are recommended to enhance awareness and reduce the burden of PUD and GERD.

**Keywords:** peptic ulcer disease, gastroesophageal reflux disease, students, knowledge, awareness, risk factors, cross-sectional study

## Introduction

Peptic ulcer disease (PUD) and gastroesophageal reflux disease (GERD) are among the most frequently encountered gastrointestinal disorders worldwide, affecting millions of individuals across various age groups (El-Serag & Sweet, 2019). PUD is characterized by mucosal erosions in the stomach or duodenum that commonly result from an imbalance between protective and destructive factors in the gastrointestinal tract (Wang et al., 2020). The etiology of PUD often involves infection by *Helicobacter pylori* (*H. pylori*), excessive use of nonsteroidal anti-inflammatory drugs (NSAIDs), and lifestyle-related factors such as smoking and high-stress levels (Ghotaslou et al., 2015). On the other hand, GERD involves the retrograde movement of gastric contents into the esophagus, leading to heartburn, acid regurgitation, and potential complications if left untreated (Herregods et al., 2017).

Despite significant global research on PUD and GERD, recent data indicate that the level of awareness regarding these conditions varies substantially between populations (Peery et al., 2020). University students, in particular, may be at a heightened risk of gastrointestinal problems due to lifestyle factors, including irregular eating patterns, increased caffeine intake, and high stress related to academic demands (Kim et al., 2019). Since young adults often represent a unique demographic in which habits and behaviors formed can have a long-term impact on health outcomes, it becomes crucial to assess their level of knowledge and awareness of gastrointestinal diseases (Mackenzie et al., 2021).

The significance of adequate knowledge and awareness cannot be overemphasized. Early recognition of warning signs such as persistent abdominal pain, unexplained weight loss, or hematemesis could facilitate timely medical consultation and reduce complications (Sandler & Peery, 2020). Likewise, understanding predisposing factors—such as smoking, NSAID overuse, and high levels of mental stress—enables individuals to adopt healthier lifestyles that

mitigate the development or exacerbation of PUD and GERD (Wang et al., 2020). In many cases, effective lifestyle modifications, including dietary management and stress reduction techniques, can substantially reduce symptom severity and improve quality of life for affected individuals (Johnston et al., 2021).

Moreover, the evolving role of social media and the internet as primary information sources cannot be neglected (Flanagin & Metzger, 2020). While these platforms offer quick and easy access to health-related information, they can also perpetuate misconceptions regarding self-diagnosis and self-treatment, including misuse of over-the-counter medications such as antacids or proton pump inhibitors (Cheng & Dunn, 2015). Therefore, it is imperative for healthcare professionals and academic institutions to verify that the content available to students is accurate, evidence-based, and encourages responsible healthcare-seeking behaviors.

Given the emerging adult population's potential vulnerability to gastrointestinal issues and the widely varying knowledge levels, this study aims to evaluate the awareness and knowledge about PUD and GERD among students at King Faisal University. Conducting this assessment at a higher-education setting is particularly relevant, as universities often serve as microcosms of society, hosting a diverse student body with different cultural, socioeconomic, and educational backgrounds (Almalki et al., 2022). Such diversity allows for an inclusive understanding of how knowledge of gastrointestinal conditions may differ by demographic factors including age, sex, academic discipline, and prior exposure to health education.

Additionally, identifying knowledge gaps and misconceptions will help direct future health-promotion strategies within the campus environment (AlQallaf et al., 2021). For instance, educational workshops, seminars, or targeted communication campaigns could be initiated to address prevalent myths, emphasize the importance of early detection, and encourage appropriate medical consultations.

Ultimately, enhancing awareness among students could serve as a critical step toward the reduction in morbidity associated with PUD and GERD, thereby improving overall public health outcomes in the long term.

Within this context, the primary objective of the current cross-sectional study is to investigate the level of knowledge and awareness of PUD and GERD among undergraduate students at King Faisal University. Specifically, the study explores students' understanding of disease etiology, risk factors, common symptoms, and preventive measures. Additionally, the study examines sources of health information to identify potential channels for effective educational interventions. By capturing these data, we hope to offer a clearer picture of the existing knowledge landscape and highlight key areas for improvement.

The following sections detail the methodology employed in data collection and analysis, the results obtained, and a discussion of the study findings in relation to existing literature. This manuscript concludes by offering recommendations that can help guide interventions aimed at optimizing knowledge, awareness, and disease management strategies among university students.

## Method

This cross-sectional study was conducted at King Faisal University between March and May 2024. A total of 248 undergraduate students were recruited using a stratified random sampling method to ensure representation across different colleges (e.g., Health Sciences, Arts, Business, and Engineering). Eligibility criteria included being currently enrolled as a full-time student and providing informed consent to participate. Students who were under the age of 18 or unwilling to participate were excluded.

## Data Collection Procedure

A self-administered questionnaire was distributed

both in print and through a secure online platform.

The questionnaire included four sections:

1. **Demographic Information:** Age, gender, college, and year of study.
2. **Knowledge of PUD:** Etiology, risk factors, signs, and symptoms.
3. **Knowledge of GERD:** Etiology, risk factors, signs, and symptoms.
4. **Sources of Information:** Primary channels through which respondents learned about PUD and GERD (e.g., family, friends, healthcare professionals, internet).

The content validity of the questionnaire was assessed by a panel of experts in gastroenterology and epidemiology. A pilot test was conducted with 15 students, and minor modifications were made based on feedback regarding clarity and question relevance.

## Statistical Analysis

Completed questionnaires were coded and entered into IBM SPSS Statistics (Version 28.0) for analysis. Descriptive statistics (frequencies, means, and standard deviations) were computed to summarize demographic data and overall knowledge scores. Bivariate analyses, including chi-square tests, were used to examine relationships between demographic variables and knowledge levels. Logistic regression analysis was performed to identify independent predictors of high knowledge scores. A p-value of  $< .05$  was set as the threshold for statistical significance. All methods were carried out in accordance with relevant guidelines and regulations, and ethical approval was obtained from the institutional review board at King Faisal University.

## Results

A total of 248 students participated in the study, yielding a response rate of 88.6%. Of these, 126 (50.8%) were female and 122 (49.2%) were male. The mean age of participants was 21.7 years (SD = 1.4). Table 1 presents the demographic characteristics of the study population.

**Table 1. Demographic Characteristics of Study Participants (N = 248)**

| Variable | Category | n (%) |
|----------|----------|-------|
|----------|----------|-------|

|               |                 |            |
|---------------|-----------------|------------|
| Gender        | Male            | 122 (49.2) |
|               | Female          | 126 (50.8) |
| Age (years)   | 18–20           | 84 (33.9)  |
|               | 21–23           | 141 (56.9) |
|               | ≥24             | 23 (9.2)   |
| College       | Health Sciences | 56 (22.6)  |
|               | Arts            | 68 (27.4)  |
|               | Business        | 59 (23.8)  |
|               | Engineering     | 65 (26.2)  |
| Year of Study | 1st & 2nd       | 104 (41.9) |
|               | 3rd & 4th       | 144 (58.1) |

### Knowledge of PUD

Overall, 139 (56.0%) participants correctly identified *H. pylori* infection as a major etiological factor for PUD. Only 52 (21.0%) recognized frequent NSAID

use as a risk factor, while 35 (14.1%) believed that stress alone could cause PUD. Table 2 summarizes participant responses related to PUD risk factors, symptoms, and misconceptions.

**Table 2. Knowledge of PUD Among Participants**

| Item                                     | Correct Response (%) | Incorrect Response (%) |
|--|----------------------|------------------------|
| <i>H. pylori</i> is a major cause of PUD | 139 (56.0)           | 109 (44.0)             |
| Frequent NSAID use increases risk        | 52 (21.0)            | 196 (79.0)             |
| Stress alone can cause ulcers (False)    | 35 (14.1)            | 213 (85.9)             |
| Diet rich in spicy food is main cause    | 98 (39.5)            | 150 (60.5)             |

When asked about common symptoms of PUD, 111 (44.8%) students identified epigastric pain as a classical feature, whereas fewer than half recognized hematemesis (49, 19.8%) or melena (31, 12.5%) as potential signs. About 88 (35.5%) students reported that they would seek over-the-counter medications before consulting a physician if they experienced persistent gastric pain.

### Knowledge of GERD

A total of 131 (52.8%) participants recognized chronic acid reflux as a significant feature of GERD, and 69 (27.8%) identified obesity as a contributing factor (Table 3). Lifestyle practices such as lying down immediately after meals were mentioned by 77 (31.0%) participants as exacerbating GERD symptoms. Moreover, 46 (18.5%) participants incorrectly believed GERD was solely a psychological condition.

**Table 3. Knowledge of GERD Among Participants**

| Item  | Correct Response (%) | Incorrect Response (%) |
|---|----------------------|------------------------|
| Chronic acid reflux as main symptom         | 131 (52.8)           | 117 (47.2)             |
| Obesity increases risk of GERD              | 69 (27.8)            | 179 (72.2)             |
| Lying down after meals exacerbates symptoms | 77 (31.0)            | 171 (69.0)             |
| GERD is purely psychological (False)        | 202 (81.5)           | 46 (18.5)              |

### Sources of Information

When asked about their primary sources of information on gastrointestinal diseases, most participants cited family and friends (145, 58.4%), followed by social

media and the internet (112, 45.2%), and only 74 (29.8%) frequently consulted healthcare professionals. Table 4 shows the breakdown of information sources and frequency of usage.

**Table 4. Sources of Information About PUD and GERD**

| Source                         | n (%)      |
|--------------------------------|------------|
| Family & Friends               | 145 (58.4) |
| Social Media / Internet        | 112 (45.2) |
| Healthcare Professionals       | 74 (29.8)  |
| Print Media (books, magazines) | 51 (20.6)  |

### Predictors of High Knowledge

Logistic regression analysis revealed that students enrolled in health-related majors were 2.9 times more likely (95% CI: 1.48–3.73,  $p = .012$ ) to demonstrate

high knowledge of PUD and GERD compared to those in non-health majors (Table 5). Additionally, upper-year students were significantly more knowledgeable than first- and second-year students ( $p = .021$ ).

**Table 5. Logistic Regression for Predictors of High Knowledge**

| Variable           | Odds Ratio (95% CI) | p-value |
|--------------------|---------------------|---------|
| Health Major       | 2.9 (1.48–3.73)     | .012    |
| Upper-year Student | 2.2 (1.21–2.84)     | .021    |
| Female Gender      | 1.3 (0.91–1.82)     | .063    |

### Discussion

The current cross-sectional study assessed levels of knowledge and awareness of peptic ulcer disease (PUD) and gastroesophageal reflux disease (GERD) among undergraduate students at King Faisal University. Our findings indicate that while students demonstrated moderate overall awareness of these conditions, specific misconceptions and knowledge gaps persist. These gaps highlight the need for targeted educational strategies to promote healthy behaviors

and encourage timely healthcare-seeking actions (Kim et al., 2019).

One important insight from this study is the relatively low recognition of nonsteroidal anti-inflammatory drug (NSAID) use as a major risk factor for PUD. Despite broad media coverage and public health advisories on the risks associated with prolonged NSAID usage, only 21.0% of participants identified NSAID use correctly. This result aligns with previous findings in similar populations, suggesting that health

warnings regarding medication side effects have not been fully absorbed by young adults (Mackenzie et al., 2021). Educational programs should place a stronger emphasis on pharmacological awareness, particularly since university students often resort to self-medication due to academic stress or convenience (Cheng & Dunn, 2015).

Additionally, our data showed that less than half (44.8%) recognized epigastric pain as a primary symptom of PUD. Even fewer identified signs such as hematemesis or melena, indicating a lack of knowledge regarding severe or alarm symptoms. This finding is consistent with research suggesting that younger individuals, particularly those without direct exposure to gastrointestinal illnesses, may misinterpret or underestimate serious clinical manifestations (Almalki et al., 2022). Such limited awareness may delay presentation for medical care, thereby increasing the risk of complications like ulcer perforation or gastrointestinal bleeding (Ghotaslou et al., 2015).

Similarly, while more than half of the participants recognized chronic acid reflux as a key symptom of GERD, understanding of risk factors was noticeably lacking. For instance, only 27.8% identified obesity as a contributing factor. This stands in contrast to well-established evidence linking higher body mass index to increased intra-abdominal pressure, which predisposes individuals to acid reflux (El-Serag & Sweet, 2019). Meanwhile, approximately 18.5% incorrectly believed that GERD was purely psychological, indicating that psychosomatic explanations may still overshadow the physiological and lifestyle-related components of GERD in young adult perceptions (Herregods et al., 2017).

From a public health perspective, it is concerning that a substantial portion of respondents relied primarily on family, friends, or social media as sources of information. While peer advice can be helpful, it often lacks a scientific basis and may inadvertently perpetuate myths, such as attributing PUD solely to stress or endorsing unproven alternative therapies. This finding corroborates literature that underscores the growing influence of social media on health-related decision-making, particularly in younger

demographics (Flanagin & Metzger, 2020). Institutions of higher learning and healthcare providers may need to enhance their online outreach strategies to make reliable, evidence-based information more accessible and engaging to students.

The logistic regression analysis reinforces the pivotal role that academic background plays in shaping awareness. Students in health-related majors were significantly more knowledgeable, likely due to curriculum content that covers pathophysiology, pharmacology, and clinical manifestations of various diseases (AlQallaf et al., 2021). Moreover, upper-year students generally scored higher in knowledge assessments, reflecting cumulative learning and possibly increased exposure to health-related topics over time. Encouraging collaboration between non-health faculties and health faculties in crafting interdisciplinary modules on common medical conditions could mitigate these disparities (Peery et al., 2020).

Several limitations must be considered. First, the cross-sectional nature of the study restricts the ability to draw causal inferences. While associations between demographic factors and knowledge levels were identified, it remains unclear whether addressing these factors would definitively improve knowledge. Second, the study relied on self-reported data, which can be subject to recall bias or social desirability bias. However, the anonymity of the questionnaire was emphasized to mitigate these concerns. Third, although the sample size was adequate for a preliminary assessment, expanding the study to multiple universities or including a longitudinal component might yield more robust conclusions.

Despite these limitations, the results carry important implications for future interventions. Universities serve as critical environments for fostering not only academic growth but also health literacy and self-care behaviors. Integrating short, focused health education sessions into existing curriculums or organizing special workshops could improve knowledge retention. Campus-based health promotion initiatives, such as awareness campaigns or seminars led by gastroenterology experts, may enhance the perceived

importance of PUD and GERD. Furthermore, incorporating interactive online modules or gamification elements could more effectively capture the attention of digitally engaged students (Johnston et al., 2021).

In conclusion, this study highlights moderate awareness of PUD and GERD among students at King Faisal University, with notable deficits surrounding risk factors, symptom recognition, and validated sources of information. As patterns of diet, stress, and lifestyle formed during university years can persist into adulthood, prioritizing gastrointestinal health education on campus is both a strategic and necessary measure. By adopting interdisciplinary approaches, leveraging credible digital platforms, and emphasizing proactive healthcare-seeking, it is possible to significantly improve students' knowledge, thereby reducing the disease burden and enhancing long-term quality of life.

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#### Conflict of Interest

The authors declare that there are no conflicts of interest regarding the publication of this paper

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