ORIGINAL ARTICLE

Prevalence and Associated Factors of Peptic Ulcer Disease Among Dyspeptic Patients at Endoscopy Unit in Kabul, Afghanistan

Haidari SaidRahatullah[1,2*]

Abstract

Introduction: Dyspepsia is a medical term utilized to describe a cluster of symptoms related to the digestive system, particularly in the upper gastrointestinal tract. A peptic ulcer is a sore or erosion that forms in the stomach lining, upper part of the small intestine, or lower esophagus. The study aimed to determine the prevalence and associated factors of PUD among dyspeptic patients at the different hospital, Kabul, Afghanistan.

Materials and Methods: The study incorporated 500 dyspeptic patients who underwent upper gastrointestinal endoscopic assessments. This hospital-based analytical cross-sectional study was conducted at the endoscopy unit of different hospitals, spanning from January 1, 2023, to August 30, 2023.

Results: The findings revealed that out of 500 dyspeptic patients, 45 (9%) exhibited positive results for peptic ulcer, while 455 (91%) displayed non-peptic ulcer conditions. The correlation between dyspepsia and peptic ulcer was statistically significant ($\chi2= 73$, $P= 0.01$). Gender-specific prevalence indicated that 17 (37.7%) males and 28 (62.2%) females exhibited peptic ulcers. When stratified by age, the prevalence was 20 (44.4%) for individuals aged 18–40, 10 (22.2%) for those aged 41–52, and 15 (33.3%) for those above 52 years. Significant differences were observed among age groups ($\chi2= 85$, $P= 0.04$). Peptic ulcer prevalence was 16 (35.55%) for urban residents and 29 (64.44%) for rural residents. In the context of smoking habits, 30 (66.6%) of smokers exhibited peptic ulcers, compared to 15 (33.3%) of non-smokers. The association between smoking and peptic ulcers was statistically significant ($\chi2= 101$, $P= 0.02$). Additionally, 28 (62.2%) individuals with *Helicobacter pylori* displayed peptic ulcers, in contrast to 17(37.7%) without the infection. The association between *H. pylori* infection and peptic ulcers was statistically significant ($\chi2= 85$, $P= 0.05$). Regarding NSAID use, 29 (64.4%) of participants who used NSAIDs and 16 (35.5%) who did not use NSAIDs showed peptic ulcer prevalence. The highest prevalence was among individuals using NSAIDs for pain relief. The association between NSAID use and peptic ulcers was statistically significant ($\chi2= 100$, $P= 0.05$).

Discussion: These results highlight the significance of addressing these risk factors in managing and preventing peptic ulcer disease.

Keywords: Associated factors; Endoscopy; Dyspeptic patients; Prevalence; Peptic ulcer

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Introduction

A peptic ulcer is a sore or erosion that forms in the lining of the stomach, duodenum, or lower esophagus. Peptic ulcers are typically characterized by epigastric pain, which can range from a dull ache to a sharp, burning sensation. The most common types of peptic ulcers are gastric ulcers that form in the stomach and duodenal ulcers that occur in the upper part of the small intestine, called the duodenum. Peptic ulcers are primarily caused by a bacterial infection known as *Helicobacter pylori*. This bacterium is believed to be responsible for the majority of peptic ulcers. Other factors that can contribute to the development of peptic ulcers include long-term use of non-steroidal anti-inflammatory drugs (NSAIDs) such as aspirin or ibuprofen, excessive alcohol consumption, smoking, stress, and certain medical conditions.[1]

The term "dyspepsia" is a medical expression employed to portray a cluster of symptoms connected to the digestive system, predominantly within the upper gastrointestinal tract. Additionally recognized as indigestion, dyspepsia can result in uneasiness or ache in the upper abdomen, sensations of bloating, queasiness, emesis, and a sense of fullness following meals. Gastroesophageal reflux disease (GERD), peptic ulcer disease (PUD), and non-ulcer dyspepsia (NUD) are the most prevalent reasons for dyspepsia. GERD emerges when stomach acid retreats into the esophagus, leading to heartburn and other related indications. PUD encompasses the formation of open sores in the lining of the stomach or small intestine. NUD denotes dyspepsia that do not induced by GERD or PUD. Other conceivable triggers

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for dyspepsia encompass gastritis, gallstones, pancreatitis, celiac disease, and certain medications like non-steroidal anti-inflammatory drugs (NSAIDs) and antibiotics.[2-4] Management for dyspepsia is contingent on its root cause. For instance, if GERD is the instigator, treatment could involve lifestyle adjustments (such as refraining from particular foods and beverages), medicines to diminish stomach acid production, and in severe cases, surgical intervention. In situations where PUD is responsible for dyspepsia, therapy might encompass antibiotics to eliminate bacteria accountable for ulcers, alongside medications curbing stomach acid generation. Some instances of dyspepsia can be ameliorated with over-the-counter antacids or other drugs that counteract stomach acid. However, consulting a healthcare professional is essential if dyspepsia manifestations persist or worsen, as they could point to a more severe underlying ailment.[4,5]

Dyspepsia, also referred to as indigestion, is a prevalent condition influencing the upper digestive tract and giving rise to discomfort like belching, bloating, queasiness, and abdominal discomfort. The prevalence of dyspepsia globally fluctuates based on the studied populace and the criteria adopted to define the ailment. According to a comprehensive review and meta-analysis published in the Journal of Clinical Gastroenterology in 2020, the worldwide incidence of dyspepsia was estimated to be approximately 20%. Nevertheless, prevalence presented significant divergence among different global zones, with the highest figures recorded in Asia and the Middle East (up to 40%), and comparably lower rates in North America and Western Europe (around 10%).[6-8]

Parallel research studies corroborate these findings, exhibiting elevated frequencies of dyspepsia in developing nations characterized by lower socio-economic status and subpar sanitation, and also among populations with elevated incidence of *H. pylori* infection (a bacterium potentially instigating stomach ulcers and dyspeptic symptoms). In totality, dyspepsia is a pervasive ailment affecting a substantial share of the global populace, and its prevalence is swayed by an array of variables, encompassing geography, socio-economic conditions, and prevalence of infectious diseases.[7]

Dyspepsia, commonly termed indigestion, can be triggered by numerous factors, particularly prominent in developing nations, such as:

- ***H. pylori* infection:** This bacterium is a prevalent instigator of dyspepsia in developing nations, particularly in areas with substandard hygiene. *H. pylori* infection can incite inflammation in the stomach lining, inducing dyspeptic symptoms.[9, 10]
- **Parasitic infections:** Infections caused by parasites, as giardiasis and amoebiasis are more frequent in developing regions and can incite dyspepsia by instigating inflammation within the digestive tract.[11]
- **Foodborne illnesses:** Such illnesses are more rampant in developing areas with less stringent food safety norms. These ailments can evoke sensations like nausea, vomiting, and diarrhea, subsequently contributing to dyspepsia.[12]
- **Malnutrition:** Malnutrition's prevalence is higher in developing nations, potentially culminating in dyspepsia by disrupting digestive tract function.[13]
- **Medication impact:** Some developing countries may not have the same stringent medication regulations as developed nations, potentially leading to the use of medications that result in dyspeptic side effects.[14]
- *Stress:* Stress and anxiety can also contribute to dyspepsia in developing countries, exacerbated by factors like poverty and political instability.[15]

It is essential to acknowledge that the causes of dyspepsia can differ based on the individual and the particular circumstances, necessitating consultation with a healthcare professional for accurate diagnosis and suitable treatment.[16]

The study aimed to determine the prevalence and associated factors of PUD among dyspeptic patients at different hospitals in Kabul, Afghanistan.

Materials and Methods

Study design and Place

Five hundred (500) patients with dyspepsia were meticulously selected from different Hospitals in Kabul city. An analytical cross-sectional study was conducted at the endoscopy unit of different hospitals between January 1, 2023, and August 30, 2023.

Study population

The study included all Dyspeptic patients who underwent endoscopic evaluation at the endoscopy unit of different hospitals in Kabul city.

Inclusion criteria

The study encompassed adults aged 18 years and older who presented with complaints of dyspepsia and voluntarily underwent endoscopic evaluation at the endoscopy unit of different hospitals during the defined research period.

Exclusion criteria

Patients who had taken antibiotics or PPIs , showed concerning gastro-duodenal features, had active bleeding tendencies, or did not consent to undergo endoscopic evaluation were excluded from the study.

Study variables

The main variable of interest was peptic ulcer disease. Independent variables included (1) socio-demographic characteristics like age, gender and residence (2) clinical traits such as *H. pylori* infection and NSAIDs usage; and (3) behavioral factors like cigarette smoking.

Data collection Instrument and procedures

All pertinent clinical data, endoscopic findings, and *H. pylori* test results were meticulously documented using a specifically designed questionnaire.

Clinical procedures

Patients were interviewed together with socio-demographic details and pertinent clinical history before undergoing upper gastrointestinal endoscopy. The clinical history encompassed the reason for endoscopy (dyspepsia), duration of dyspeptic symptoms, use of NSAIDs/ASA, and smoking history. A comprehensive physical examination was conducted on each patient

Endoscopic Procedures

All endoscopic interventions were carried out by proficient medical professionals specializing in internal medicine and surgery. The Olympus endoscope manufactured by Olympus Corporation in Hamburg, Germany, served as the primary instrument. Prior to the procedures, explicit consent was secured from all patients. Local anesthetic and sometimes sedative agents were employed, namely Lidocaine (2%) throat spray and rarely IV midazolam (2 mg/mL). These interventions were consistently performed in the morning on an empty stomach. The endoscopist held discretion overdiagnosing gastro-duodenal lesion characteristics, encompassing site, dimensions, and quantity.

H. pylori Antigen Rapid Test (Fecal)

The *H. pylori* Ag rapid test (Fecal) is a sandwich lateral flow chromatographic immunoassay based on the principle of the double antibody-sandwich technique. Collect a sufficient quantity of Feces (1–2 mL or 1-2 g) in a clean, dry specimen collection container to obtain maximum antigens (if present). Best results are obtained if the test is performed within 6 hours after collection. Specimen collected may be stored for 3 days at 2–8°C if not tested within 6 hours. For long-term storage, specimens should be kept below -20°C.

Remove the test device from its foil pouch by tearing along the notch and use it as soon as possible. Then holding the sample collection device upright, carefully break off the tip of the collection device and squeeze 2 drops of the sample solution in the sample well of the cassette, as shown in the illustration. Finally, read the test results in 10 minutes. It is important that the background is clear before the result is read. Don't read results after 15 minutes. To avoid confusion, discard the test device after interpreting the results.

Data Analysis

Data analysis was conducted using SPSS version 20, developed by SPSS Inc., Chicago, USA. Categorical variables were presented as frequencies (percentages). The outcomes were succinctly summarized using frequency and graphical representations. For investigating risk factors associated with PUD, Chi-square tests for trend were employed to explore connections between study variables and PUD. Only variables with a p-value of 0.05 were recognized as significantly associated with PUD. A significance level of P value < 0.05 was employed to ascertain significant associations.

Results

The study encompassed 500 patients diagnosed with dyspepsia. Among them, 45 individuals (9%) exhibited positive peptic ulcer diagnoses, while 455 individuals (91%) showed no signs of peptic ulcers. The data unequivocally illustrated a substantial correlation ($\chi2= 73$, $P= 0.01$) between peptic ulcers and dyspepsia, as demonstrated in Figure 1. Furthermore, in terms of gender-specific prevalence,[17] males (37.7%) and 28 females (62.2%) were afflicted by peptic ulcers. Gender, however, exhibited a non-significant connection ($\chi2= 87$, $P= 0.25$) with peptic ulcers, as depicted in Figure 2. Additionally, age-based prevalence indicated that among individuals aged 18-40, 20 individuals (44.4%) tested positive, while 10 individuals (22.2%) in the 41-52 age group, and 15 individuals (33.3%) above 52 years were positive. Notably, the highest positivity rates were recorded in the 18-40 and above 52-year age groups, at 44.4% and 33.3%, respectively.

A significant association among age groups was observed ($\chi2= 85$, $P= 0.04$), as illustrated in Figure 3. Moreover, in terms of

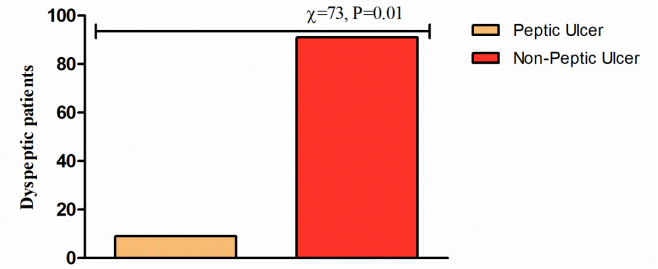

Figure 1: Prevalence of Peptic Ulcer in Dyspeptic Patients. The prevalence of peptic ulcers was significantly associated with dyspepsia.

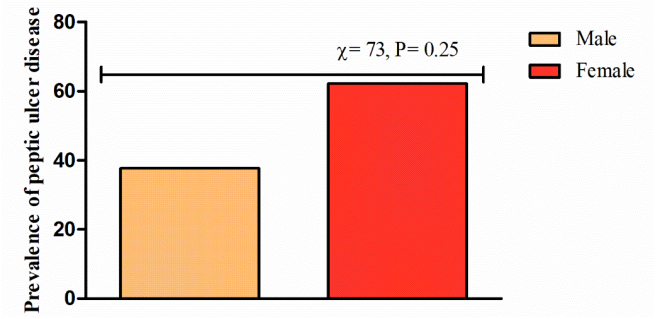

Figure 2: Prevalence of Peptic Ulcer Disease by Gender. The prevalence of peptic ulcers showed no significant association with gender.

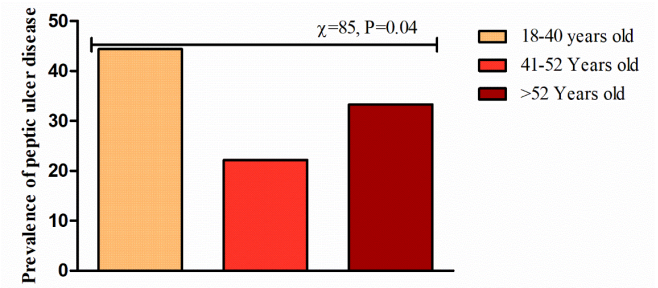

Figure 3: Prevalence of Peptic Ulcer Disease by Age. The highest prevalence was observed in the 18-40 and above 52 age groups, with a significant association among age groups.

residential prevalence, 16 cases (35.55%) were reported in urban areas, with 29 cases (64.44%) in rural locales. Rural residents exhibited the highest positivity rate, as depicted in Figure 4.

Association of Peptic Ulcer with Cigarette Smoking, *H. pylori*, and NSAID Use

The specific prevalence of peptic ulcers was 66.6% for smokers and 33.3% for non-smokers. Cigarette smoking showed a significant association (χ2= 101, P= 0.02) with peptic ulcers Figure. 5. Additionally, peptic ulcer prevalence was 28 (62.2%) for *H. pylori* positive individuals and 17 (37.7%) for those with negative *H. pylori* status. *H. pylori* showed a significant association (χ2= 85, P= 0.05) with peptic ulcers Figure. 6. Prevalence was 29 (64.4%) for NSAID users and 16 (35.5%) for non-users. NSAID use demonstrated a significant association (χ2= 100, P= 0.05) with peptic ulcers Figure. 7

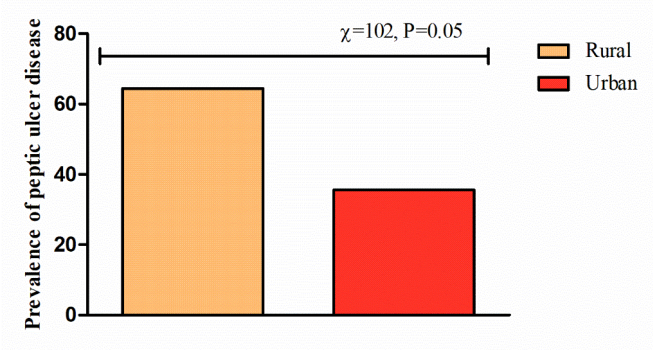

Figure 4: Prevalence of Peptic Ulcer Disease by Residence. Rural residents had the highest prevalence of peptic ulcers.

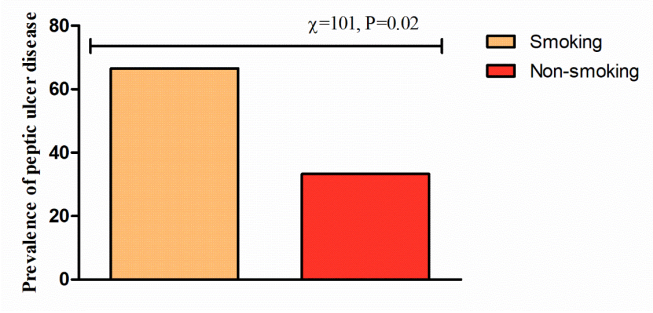

Figure 5: Prevalence of Peptic Ulcer Disease by Cigarette Smoking and Non-Smoking. The highest prevalence was observed among cigarette smokers compared to non-smokers.

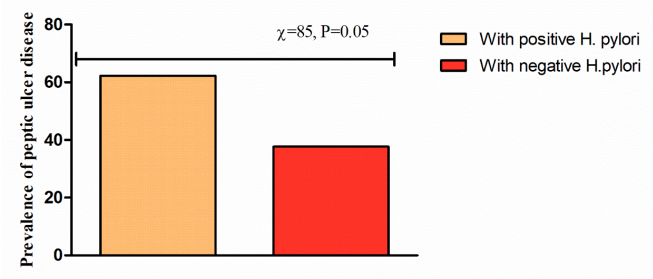

Figure 6: Association of Peptic Ulcer Disease with H. pylori. H. pylori infection was significantly associated with peptic ulcers.

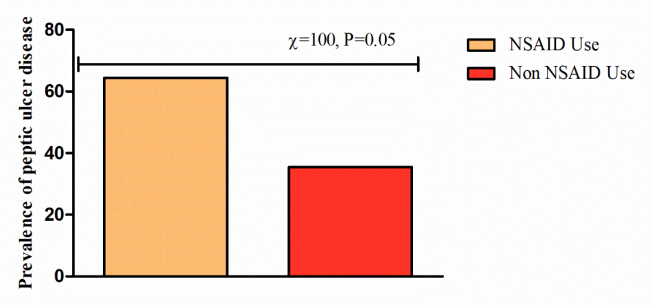

Figure 7: Association of Peptic Ulcer Disease with NSAID Usage. The highest prevalence was found among individuals who used NSAIDs for pain. NSAID use was significantly associated with peptic ulcers

Discussion

In the study cohort comprising 45 patients with peptic ulcers (PUD), 62.2% of participants were found to have an active *H. pylori* infection. Correspondingly, the research noted *H. pylori* infection rates spanning from 65% to 90% among PUD patients (17). A recent meta-analysis conducted in Ethiopian hospitals arrived at a combined prevalence of 52.2% for *H. pylori* infection.[18] Globally, the prevalence of *H. pylori* infection varies: 34% in Western Europe, 37% in Northern America, 55% in Asia, and 70% in Africa.[19] These discrepancies could be attributed to variances in socio-economic status, environmental sanitation, living conditions, and personal hygiene.[17]

The study revealed that 64.4% of PUD patients had a history of NSAIDs usage. Earlier Western literature reviews documented dyspepsia occurrences in 50 to 60% of patients using NSAIDs/ASA, with 15 to 30% of users developing PUD.[20, 21] Dyspeptic individuals using NSAIDs faced a six-fold escalated risk of PUD compared to non-NSAIDs users. NSAIDs disrupt the cyclo-oxygenase (COX) pathway and hinder the synthesis of gastric prostaglandins. Furthermore, the acidic nature of NSAIDs directly inflicts damage on the gastric mucosa.[22, 23]

The present study also disclosed a heightened prevalence of PUD among smokers in comparison to non-smokers, solidifying a significant correlation between cigarette smoking and PUD. Similarly, research underscores cigarette smoking as a substantial risk factor for gastrointestinal (GI) disorders, including peptic ulcers, inflammatory bowel diseases such as Crohn's disease, and cancer. Furthermore, evidence indicates that cigarette smoking positively correlates with the onset of peptic ulcers and the protraction of ulcer healing. Mechanistic inquiries shed light on how cigarette smoke and its active components trigger mucosal cell death, impede cell regeneration, diminish blood flow in the GI mucosa, and disrupt the mucosal immune system. Independently, cigarette smoking elevates the risk of various GI tract cancers.[24, 25]

The study's findings show cased age-specific prevalence rates: 44.4% for individuals aged 18-40, 22.2% for those aged 41-52, and 33.3% for individuals above 52. The highest

positivity rates were noted in the 18-40 and above 52-year age brackets, at 44.4% and 33.3%, respectively, with significant correlations among age groups. The prevalence rates were 35.55% for urban residents and 64.44% for rural areas. The highest positivity rate was observed in rural residents. While peptic ulcers in children are rare, global reports suggest estimated frequencies of 8.1% in Europe and 17.4% in the US, remaining relatively infrequent compared to adults.[26] Another study indicated that for patients aged ≥60 years, the incidence increased over 10-fold, and mortality increased more than 50-fold compared to younger ages.[27]

Conclusion

To summarize, this study's findings underscore the prevalence of PUD in dyspeptic patients and its association with PUD risk factors. Additionally, individuals with *H. pylori* infection, smokers, and users of NSAIDs face an elevated risk of developing peptic ulcers. These results highlight the significance of addressing these risk factors in managing and preventing peptic ulcer disease.

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