

Original Article

Endoscopic Findings of Dyspeptic Patients and *H. pylori* infection in patients at a Tertiary care Teaching Hospital, Nepal

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ABSTRACT

Background & Objective: Dyspepsia is a common condition presenting with epigastric pain that lasts at least a month and may develop peptic ulcers. *Helicobacter pylori* infection and lifestyle are the risk factors for peptic ulcers. So, the objective of this study was to identify the magnitude and status of *Helicobacter pylori* in dyspeptic patients.

Material and Methods: This cross-sectional study included data from the endoscopy unit records among patients who had endoscopy for dyspepsia and biopsy taken from an antrum for the helicobacter pylori status, during June 1, 2020 and November 30, 2022 at Manmohan Memorial Medical College Teaching Hospital, Kathmandu, Nepal. Age, sex and status of histopathology findings were analyzed for association using Chi-square test and a $p < 0.05$ was considered statistically significant.

Results: Among 439 dyspeptic patients, 297 (67.7 %) had positive finding of PUD. In all investigated patients, *H. pylori* positive was 297(67.7%) and negative in 142(32.3 %). The mean age was 45.42 y (17 - 82), 267 (60.8%) males and 172 (39.2%) females, 33(7.5 %) had a gastric ulcer and 55(12.5%) had duodenal ulcer. Duodenal ulcers were seen in younger age (17-39 y) and gastric ulcer in older age (> 60 y) with p-value <0.0001. Gastric malignancies were found in 6 (1.4%).

Conclusion: The occurrence of *H. pylori* with dyspeptic patients was high. Peptic ulcers were more common in young age and males than in females. Duodenal ulcers were more common than gastric for both sexes.

Keywords: Dyspepsia, Endoscopy, Peptic ulcer, *H. pylori*

INTRODUCTION

Dyspepsia can manifest as fullness in the epigastric area after food, early satiety, epigastric burning or pain, and negatively impacts the quality of life and increases health care cost. Globally prevalence of dyspepsia ranges from 7-40% [1,2]. The WHO data in 2020 estimated in Nepal that mortality due to PUD reached 0.12% of total death. The age adjusted rate is 1.16/100,000 of population ranks Nepal is 144 in the world [3]. The etiology of dyspeptic symptoms is

various and complex and has opened a wide spectrum of putative mechanisms. In a subset of patients dyspeptic symptoms are likely to originate from *Helicobacter pylori* infection. Population-based studies have demonstrated that *H. pylorus* is detected more frequently in dyspeptic patients compared to controls. *H.pylori* eradication therapy gives modest but significant benefit in non-ulcer dyspepsia and leads to long-term symptom improvement [4]. It also reduces the risk of developing peptic ulcer disease and other *H. pylori*-related gastric pathologies (i.e. atrophic gastritis, gastric cancer). The main therapeutic strategy for managing dyspepsia in patients under the age of 45 years is 'test and treat'. *H. pylori* eradication is recommended in patients with dyspepsia and no other gastroduodenal abnormalities than *H. pylori* induced gastritis [5].

H. pylori have a contributory relationship with dyspepsia, PUD and carcinoma of gastric cancer. Estimated one half of the world's population has *H. pylori* infection, higher in developing countries (up to 90%), and is a major culprit of gastro-duodenal mucosal injuries, PUD and gastric malignancy [5]. Nepal, the reported prevalence of *H. pylori* is 30% to 70 % [6, 7]. *H. pylori* infection is the major culprits for causing gastro-duodenal mucosal injuries and widely known to cause gastritis and PUD. It causes chronic and active gastritis, peptic ulcer disease and associated with increased risk of developing gastric cancer [8,9].

Locally, there are few published data regarding symptoms of dyspepsia, its association with UGI endoscopy findings of PUD and *H. Pylori* status. Thus, the aim of this study was to analyze and compare with similarly studies locally and internationally

on endoscopy finding of PUD and its association with age, sex, *H. pylori* infection.

MATERIAL AND METHODS

A cross-sectional study was conducted at the endoscopy unit, Manmohan Memorial Medical College Teaching Hospital (MMTH) in Kathmandu, Nepal during three years period from June 2020 and November 2022. The records from the endoscopy unit of MMTH were reviewed. Data of dyspeptic adult patients (≥ 16 y) were collected, who underwent upper gastrointestinal (UGI) endoscopy.

All endoscopic procedures were performed by qualified MDGP, physicians and surgeons. Olympus flexible fiber-optic endoscope (Olympus GIF-E 600) was used for the procedure. Informed consent was obtained from all patients before the procedure. Xylocaine (2%) throat spurt was done before endoscopic procedure. All procedures were conducted in the morning on an empty stomach. Diagnoses of endoscopic appearances (site, size, and number of gastro duodenal lesions) were identified at the judgment of the endoscopist.

Adult's patients 16 years or more who presented with a history of dyspepsia, and underwent endoscopic evaluation at the endoscopy unit, MMTH during the study period were included in the study. During endoscopy procedure biopsy from the lesion site had taken for *H. pylori* analysis and data were kept in histo-pathological unit. Exclusion criteria were the patients who were on antibiotics or PPI in the last one month, had alarming gastro duodenal features, had active bleeding , and didn't give consent for endoscopic evaluation were excluded from the study. As per the hospital policy consent

was obtained before the procedures. Biopsies from antrum were obtained during UGI endoscopy procedure to find out the presence of *H. Pylori*. The study was approved by the ethics review committee of the MMTH (Ref: MMIHS-IRC 693). Patients were met to get socio-demographic information and significant clinical history that had done already the upper gastrointestinal endoscopy unit. The patients with clinical history include sign of dyspepsia, period of dyspepsia, history of cigarette smoking, alcohol utilization, and presence of co morbidities were considered. Physical examination was done to each of the patients. Dependent variable were peptic ulcer disease and independent variables were socio-demographic characteristics include age, gender and *H. pylori* infection.

The data were entered into MS excel and transferred to SPSS 20 for analysis. Data on endoscopy findings of PUD, *H. pylori* status in gastric biopsies, patient's age and gender were analyzed. Chi-square test was used for the association. A p-value ≤ 0.05 was considered statistically significant.

RESULTS

A total of 439 dyspeptic patients were presented for analysis. The positive finding of *H-pylori* infection in biopsy was 297(67.7%). Among total ulcers patients, *H. pylori* positive for duodenal ulcers were 55 (94.5%) and gastric ulcers 23(69.7%). The mean age was 45.42 y (range 17-82), 267 (60.8%) were males and 172(39.2%) females. Total 439 study population 373 (84.7%) had positive finding in UGI Endoscopy and 67 (15.2%) had normal finding. Total of 371 (84.5 %) of dyspeptic patients had epigastric pain and had positive findings of peptic ulcer disease such as gastric ulcers 33(7.5 %), duodenal ulcers 55(12.5 %), gastritis 167(38.0%),

duodenitis 55(12.5%), esophagitis 53(12.1%), gastric malignancy 6(1.4%) and esophageal cancer 3(0.7%) as shown in table 1.

Table1. Clinico-demographic features of adult dyspeptic patients who had endoscopy and biopsy for *H.pylori* (N=439)

Variables	N	%
Age (years)		
Young (16-39)	187	42.6
Middle (40-59)	154	35.1
Elderly (>=60)	98	22.3
Gender		
Male	267	60.8
Female	172	39.2
Symptoms		
Epigastric pain	371	84.5
Other	68	15.5
H. Pylori status		
Negative	142	32.3
Positive	297	67.7
Endoscopy		
Negative (Normal Finding)	67	15.2
Positive (Abnormal Finding)	372	84.7
Inflammation	275	62.6
Gastritis	167	38.0
Duodenitis	55	12.8
Esophagitis	53	12.1
Ulcers	88	20
GU	33	7.5
DU	55	12.5
Malignancy	9	2.1
Gastric	6	1.4
Esophagus	3	0.7
Normal finding	67	15.2

Note: UGI- upper gastrointestinal, PUD- peptic ulcer disease

Table 2 depicts that among 439 study Patients, 88 were ulcers patients, where males were 60 (13.6%), (GU 22 and DU 38) and Female were 28 (6.37%), (GU 11 and DU 17). In this study most vulnerable age groups for duodenal ulcer were (17-39) years. Gastric ulcers were > 60 years (P value < 0.0001).

Table 2 Association of peptic ulcers (88) with age groups and gender features of adult dyspeptic patients who had done endoscopy and biopsy (N=439)

Variables	Ulcers				X ²	P-value
	GU(N=33)		DU (N=55)			
	N	%	N	%		
Gender						
Male	22	5.0	38	8.6	0.055	0.813
Female	11	2.5	17	3.9		
Age (y)						
Young (17-39)	5	1.1	29	6.6	38.89	<0.0001
Middle (40-59)	7	1.6	24	5.5		
Elderly (>60)	21	4.8	2	0.4		

Table 3: Association of H. pylori positive (297) with ulcers (G+D), Gastritis, Duodenitis, esophagitis and gender of adult dyspeptic patients who had performed endoscopy and biopsy (N=439)

Variables	N	H.pylori +ve (N=)	%	X ² test	p-value
Ulcer	88				
GU	33	23	69.7	10.11	0.001
DU	55	52	94.5		
Inflammation	75				
Gastritis	167	145	86.8	14.74	<0.0001
Duodenitis	56	48	85.7		
Esophagitis	53	34	64.2		
Gender					
Male	267	197	73.8	11.69	<0.001
Female	172	100	58.1		
Malignancy					
Gastric	6		1.4		
Esophagus	3		0.7		

Table 3 illustrates that among gastric ulcer patients 23 (69.7 %) had *H. Pylori* positive and for duodenal ulcers 52 (94.5 %) *H. Pylori* positive, p-value 0.001. Among total 267 male patients 197(73.8%) had *H. Pylori* positive compared to total 172 female patients 100 (58.1%) had *H. Pylori* positive, p-value <0.001.

DISCUSSION

In determining the diagnosis and management of patients with dyspepsia, upper GI endoscopy has become one of the most commonly used procedures worldwide.

Dyspepsia is the persistent or recurrent pain or discomfort in the upper abdomen lasting for at least one month [1,2]. Out of total of 439 dyspeptic study patients 297(67.7 %) found *H.pylori* positive and 371 (84.5%) of had an epigastric pain, which are most common symptoms of PUD. Similar results were seen in a study conducted at Lumbini Provincial Hospital and published in the Chitwan Medical College Journal. Abdominal pain with dyspepsia was the main indication for UGI endoscopy in this study (83.0%). Similar findings were confirmed in different institutes and hospitals in different years [6-8].

In this study of *Helicobacter pylori* infection, a positive gastric antrum biopsy result was higher in 297 (67.7%) dyspeptic patients who underwent UGI endoscopy for dyspepsia and upper abdominal pain occurred in 371 (84.5%) of 439 patients with dyspepsia. Similar findings of pain abdomen was reported from Nepal, with an incidence of 74% to 83.0% (166 cases) [6,7]. In our study inflammation of gastrointestinal system noted as gastritis 167 (38.0%), esophagitis 53 (12.1%), duodenitis 55 (12.5%), duodenal Ulcer 55 (12.5%), were seen. Similar to our study that recent Nigerian study reported that gastritis/duodenitis (27%) and PUD (28%) were the frequently documented abnormal endoscopic findings. Gastric cancer (2.3%) was less frequently reported. Studies in Tanzania and Ethiopia reported that gastritis/duodenitis (80–98%) followed by PUD (25–32%) were the commonly observed endoscopic pathologies. Gastric cancer was detected in 3–7% of dyspeptic patients [9].

Our study identified 9 (2.1%) malignancies, 3 (0.7%) esophageal malignancies, and 6 (1.4%) gastric malignancies. In our study, the general age group for malignancies revealed >60 years for both malignancies. About half of the world's population is infected with *H. pylori*, and the majority of colonized individuals develop chronic inflammation at the same time. In most people, *H. pylori* colonization does not cause symptoms. However, *H. pylori* greatly increase the risk of developing site-specific disease. Of those infected people, about 10% develop gastric ulcers, and 1-3 develop gastric adenocarcinoma. It may be completely cured by eradication of *H. pylori* and thus is considered to be the first clonal lesion which can be eliminated by treatment with antibiotics [10].

Similar study and similar finding were found in national and international institute [11-13]. Similar studies done in Patan Academy dyspepsia were the most common indication for UGI endoscopy, 67% of the cases in their study. In their study endoscopic lesion was seen in 72.2%, while in 27.7% were normal identified. These patients probably suffered from functional dyspepsia [14]. This result from mid-western Nepal reported 49.15% normal UGI endoscopy. However, the study from Nepal Medical College reported normal findings in only 17.87% of patients who underwent the procedure for dyspepsia, which was similar to our study 15.2% [15]. These findings were matching with hospital-based sub-Saharan African (SSA) reports. The African reports verified that 40–65% of dyspeptic and 65–90% PUD patients were positive for *H. pylori* infection [11-13,16].

Similarly, in our study the *H. pylori* infection rate with duodenal ulcer was 52(94.5%) and gastric ulcer was 23(69.7 %). These findings were similar to the study done in the Patan Academy of Health Sciences, Lalitpur, Nepal a (67. %) of patients had dyspepsia, which was similar to our study [14]. In our study most vulnerable age groups for duodenal ulcer were 26-45 years and gastric ulcers were more than 60 years P-value <0.0001.

H. pylori are the most common PUD pathogen worldwide, with a prevalence of 40% in the United States and 70-80% in developing countries [16,17]. In our study, the prevalence of *H. pylori* was 67.7%, which is statistically significant. Global differences in the extent of *H. pylori* infection rates can be explained by differences in socioeconomic status, dietary habits, environmental hygiene,

living conditions and personal hygiene [18]. It was confirmed that *H. pylori* causes persistent infection of the gastro-duodenal mucosa, causing chronic active gastritis and PUD [2,11].

Lifestyle and social factors such as alcohol use and smoking are two etiological factors closely associated with peptic ulcer disease. However, inflammatory changes in the gastric and duodenal mucosa are probably related to coexisting *helicobacter pylori* infection, which is common in alcoholics. In addition, chronic alcoholism also correlates with the presence of gastric metaplasia. Alcohol has been shown clinically and experimentally to impair the mucosal barrier [19,20]. A number of studies suggest that smoking increases both the incidence and recurrence rates of gastric ulcers in humans and also delays ulcer healing. Numerous studies have also shown that smoking is an important factor in the development of ulcer disease. Smoking causes a decrease in circulating epidermal growth factor, an increase in tissue production of free radicals and the presence of free radicals in smoke, and a decrease in mucosal constitutive nitric oxide synthesis activity in the gastric mucosa [21,22,24].

In addition, altering normal blood flow and vascularization of the gastric mucosa and inhibiting cell proliferation are major causes of delayed ulcer healing in smokers. At the same time, alcohol consumption and smoking greatly increase the risk of stomach and duodenal ulcers [20,23-25]. In present study, our data collected retrospectively and the information, the status of alcohol consumption and smoking were incomplete or missing, and hence we could not analyze these factors.

In the present study, the incidence of gastric ulcer was slightly higher in males than females; however, the incidences of duodenal ulcers were more common in males than females. Similar to our study, peptic ulcer disease has been reported to occur more frequently in men than in women in some others studies [26]. The patho-physiology for higher prevalence of peptic ulcer disease in men is yet not clear. Possible explanation could be males compared to females have higher risk lifestyle and social risk factors of smoking, alcohol consumption and hard working.

The limitations of this study include the nature of retrospective data in the risk variables for PUD, such as smoking and alcohol intake, which was not possible to analyze due to missing or incomplete information. This study was conducted in a hospital, thus it might not accurately reflect the status of *H. pylori* infection in the general community. However, our results indicate a connection between *H. Pylori* infection and patients who present with peptic ulcer disease symptoms. A broader, community-based study that takes social factors into consideration could be beneficial.

CONCLUSION

The majority (2/3rd) of dyspepsia patients had *H. pylori* infection, and was more common in duodenal ulcers than in gastric ulcers. Young age and males were commonly affected. Additional multicenter prospective studies using different diagnostic methods will need to be conducted at the national level in the future to validate our findings even more.

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Conflict of interest

None

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