

Prevalence of *Helicobacter pylori* infection in upper gastrointestinal tract disorders (dyspepsia) patients visiting outpatient department of a hospital of North India

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ABSTRACT

Background: *Helicobacter pylori* infection is a major health ailment in developing countries. The infection is related with high morbidity and mortality ranging from chronic gastritis to gastric malignancies. The prevalence of *H. pylori* infection greatly varies from country to country and region to region. The aim is to study the prevalence of *H. pylori* infection in upper gastrointestinal (GI) tract disorders (dyspepsia) patients. **Methods:** The study was carried out in an outpatient department, India. Patients presenting with dyspeptic symptoms were subjected to serological investigation and upper GI endoscopy, histopathological examination, and rapid urease test of specimen. Diagnosis of *H. pylori* infection was made if one or both diagnostic test results were positive. **Results:** *H. pylori* infection was diagnosed in 85% of patients. There was no significant difference in sex- and age-related distribution (<50 years' age group and >50 years' age group) of *H. pylori* infection. However, association of *H. pylori* infection was positive in 83.3% (45) of patients with endoscopic abnormalities (54). **Conclusion:** The prevalence of *H. pylori* infection is high in the study population. Early detection and prompt treatment are essential for prevention of serious complications.

Keywords: Gastrointestinal complications, *Helicobacter pylori* infection, histopathological examination, rapid urease test

Introduction

Helicobacter pylori infection is known to be among the most common human infections worldwide; approximately 50% of the world's population is infected with *H. pylori*^[1] while most of the infected individuals are asymptomatic; it acts as a cofactor to produce gastrointestinal (GI) disorders (dyspepsia) in a small but significant minority.^[2] *H. pylori* gastritis is the principal cause of chronic active gastritis and has major complications such as gastric adenocarcinoma and mucosa-associated lymphoid tissue lymphoma.^[3]

A wide range of laboratory investigations are available for diagnosis of *H. pylori*. The tests belong to noninvasive group and invasive group. Noninvasive tests include urea breath test, serological immunoglobulin G and immunoglobulin M detection, saliva and urinary antibody test, and stool antigen test.^[4] The invasive tests are endoscopy-based tests, which include histopathological examination, rapid urease test (RUT), and polymerase chain reaction.

H. pylori infection is among the leading gastroenterological public health problems in developing countries.^[5] Approximately 80% of the population may be infected by the age of 20. In India, the prevalence of this infection is 22%, 56%, and 87% in the 0–4 years', 5–9 years', and 10–19 years' age group, respectively.^[6]

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Table 1: *Helicobacter pylori* sex distribution

	<i>H. pylori</i> negative, n (%)	<i>H. pylori</i> positive, n (%)	Total
Female	7 (18.9)	30 (81)	37
Male	8 (12.6)	55 (87)	63
Total	15	85	100

H. pylori: *Helicobacter pylori*

Table 2: Age distribution of *Helicobacter pylori*

Age group	<i>H. pylori</i> positive	<i>H. pylori</i> negative	Total
11-20	4	1	5
21-30	11	1	12
31-40	14	2	16
41-50	13	2	15
51-60	15	4	19
61-70	16	2	18
71-80	10	2	12

H. pylori: *Helicobacter pylori*

Table 3: Correlation of symptoms with *Helicobacter pylori* infection

	Present	<i>H. pylori</i> positive	<i>H. pylori</i> negative
Upper abdominal pain	81	72	9
Gastric fullness	68	60	8
Nausea	71	61	10
Vomiting	24	21	3
Fatty food intolerance	13	9	4
Bloating	76	65	11
Belching	67	58	9
Melena	4	2	2
Early satiety	47	42	5

H. pylori: *Helicobacter pylori*

Table 4: Correlation of endoscopic abnormalities with *Helicobacter pylori* infection

Endoscopic abnormality	<i>H. pylori</i> negative, n (%)	<i>H. pylori</i> positive, n (%)	Total
Chronic gastritis	4 (36.3)	7 (63.6)	11
Duodenal ulcer	2 (7)	27 (93)	29
Gastric ulcer	1 (14.2)	6 (85.7)	7
NUD	2 (28.5)	5 (71.4)	7
Total	9 (16.6)	45 (83.3)	54

H. pylori: *Helicobacter pylori*; NUD: Nonulcer dyspepsia

However, data concerning the prevalence of *H. pylori* infection in Northern India are scanty; the present study has been undertaken to determine the prevalence and relationship between *H. pylori* infection in patients with different upper GI disorders.

Objectives

1. To determine the prevalence of *H. pylori* infection in upper GI tract disorder patients visiting outpatient department of a hospital of Northern India
2. Relationship of *H. pylori* infection with different upper GI disorders.

Materials and Methods

This is a cross-sectional prospective study involving the observation of data of routinely advised investigations to patients complaining of upper GI symptoms (dyspepsia) visiting surgical outpatient department (OPD) after taking informed consent from each patient.

Patients were selected on the basis of chief complaints of dyspepsia (according to the Rome I criteria), and the age of patients ranged from 15 to 86 years. Patients were divided into two groups. Group “A” patients (younger than 55 years of age with dyspepsia who are without alarm features) underwent serologic testing for *H. pylori*. Group “B” patients (older than 55 years of age and/or those with alarm features, e.g., weight loss, progressive dysphasia, recurrent vomiting, evidence of GI bleeding, or family history of cancer) were advised for upper GI endoscopic (UGIE) evaluation, and biopsy was subjected to RUT test for *H. pylori*.

In Group A, 7 patients already had gone through the UGIE, before visit of OPD. Rest 46 patients were only investigated for serology. In Group B, all 47 patients went for UGIE with RUT.

The presence of *H. pylori* was determined by RUT and serology. Any test, if positive, was considered positive for *H. pylori* infection. The collected information was recorded on the pro forma (study instrument). Analysis was done by Epi Info software. Appropriate tests of significance such as Chi-square test and *t*-test were also applied.

Results

During the study period, 100 patients were included in the study as per inclusion criteria. In study population, the age range (median) was 15–86 (50.3) years. Fifty-three patients (the age range [median] was 15–54 [35.8] years) were included as Group A and 48 patients (the age range [median] was 55–86 [66.78] years) were included as Group B.

In our study, we found total 41 (76%) patients out of 54, positive for *H. pylori* by RUT. By serology, we found 81% of patients positive. Collectively, total 85% of patients were found to be positive for *H. pylori* and 15 patients were negative.

The female (37)-to-male (63) ratio was 1–1.7 [Table 1]. The average age of male patients is 45.7 years, and the average age of female patients is 58.2 years [Table 2].

In our study population, 62 patients belong to rural area and 38 were from urban area. Sixty-nine patients were strictly vegetarians whereas 31 were on mixed diet. Thirty-three patients accepted to have some kind of addiction in which 4 are females and rest are males, mostly aged between 30 and 50 years. We did not found any significant difference related to addiction in regard of the prevalence of *H. pylori* infection. Education status of

the population varies from illiterate to master's degree. Total 11 patients were illiterate and a maximum number of patients were having a bachelor degree.

In this study, abdomen (epigastric) pain was reported by 81 patients, gastric fullness by 68, nausea by 71, vomiting by 25, fat intolerance by 13, bloating by 76, blenching by 67, melena by 4, and early satiety by 47 patients. Abdominal pain shows marginally significant raise in the prevalence of *H. pylori*; apart from this, there is no significant difference among other symptoms [Table 3].

Total 54 patients' endoscopy report was evaluated, and out of them, chronic gastritis was noted in 11 (20.37%) patients, duodenal ulcer in 29 (53.7%) patients, gastric ulcer in 7 (12.9%) patients, and nonulcer dyspepsia in 7 (12.9%) patients [Table 4].

Discussion

Numerous epidemiological studies have shown substantial differences in the prevalence of *H. pylori* infection in the population studied. The infection rate is by and large higher and begins at an earlier age in developing as compared to developed countries, demonstrating an important role of socioeconomic status in its transmission.^[2]

In developing country like India where resources are limited, especially the access to endoscopy services, it is important for clinicians to know common causes of dyspepsia and frequency of *H. pylori* infection. In our study, endoscopy and RUT were only advised to the selective patients, and data were analyzed. Serology being a noninvasive investigation and also does not require special technical expertise and was done in all the cases.

In the present study, we did not get a significant difference in *H. pylori* prevalence according to gender. In our study, male-to-female ratio is in concordance with the study done by Adlekha *et al.*,^[7] Tarkhashvili *et al.*,^[8] Isabelle *et al.*,^[9] and Shokrzadeh *et al.*,^[10] but these result are in contrast with a study done by Kaore *et al.*,^[11] which showed higher prevalence in male gender.

Age distribution of *H. pylori* infection did not show any trend toward increase or decrease in infection with the advancing age. There was no statistically significant difference in the prevalence of *H. pylori* in the age group of <50 years and >50 years. This is similar to the observations laid by Adlekha *et al.*,^[7] Tarkhashvili *et al.*,^[8] and also a study done by Isabelle *et al.*,^[9] in 2016, but in some studies like Shokrzadeh *et al.*,^[10] and Kaore *et al.*,^[11] they have reported increased *H. pylori* infection in age groups of 20–40 years than the older age group.

In our study, 81% of patients complained abdominal pain which is somewhat similar to the study done by Segni M. Ayana *et al.*,^[12] where epigastric pain was reported by 86.1% of patients with dyspepsia but in both the studies apart from this other clinical complaints greatly varies.

In our study, 87% of patients had organic causes which were diagnosed with endoscopy. This is consistent with the findings of the studies done in Ethiopia (Asrat *et al.*,^[13] 2004) and Nigeria (Mustafa *et al.*,^[14] 2007) where organic causes of dyspepsia were documented in 96.4% and 82.1% of patients, respectively. However, our finding differs from the findings of the studies done in Kate *et al.*,^[2] and Adlekha *et al.*,^[7] where organic causes of dyspepsia were documented in 73% and 67.1% of dyspeptic patients, respectively. A meta-analysis of 22 studies from the developed countries which is done by Tytgat *et al.*,^[15] showed abnormal endoscopic findings in only 51% of dyspeptic patients; similarly, in a study done by Eusebi *et al.*,^[16] in 2014, the prevalence of infection ranged from 58% to 62% in patients with dyspeptic symptoms. This difference may be attributed to how patients were selected and the inclusion and exclusion criteria used in different studies, differences in socioeconomic status, and health-care seeking behavior.

In our study, duodenal ulcer and chronic gastritis were found to be the most common endoscopic abnormalities. Moreover, our study also demonstrated the association between *H. pylori* infection and duodenal ulcer, and chronic gastritis is statistically significant as also reported by Kate *et al.*,^[2] There is ample evidence regarding the beneficial role of *H. pylori* eradication therapy in patients with peptic ulcer disease and gastritis (Hopkins *et al.*,^[17] and Yi-Chia *et al.*,^[18]). Thus, clinicians should test and treat for the infection if resources are available. In resource-poor settings where confirmatory test is not available or may not be cost-effective, empirical therapy is recommended (World Gastroenterology Guidelines, 2010).

The present study certainly establishes the burden of *H. pylori* in the society. There is a need of another broader study in this region, assessing the association of different demographic and lifestyle factors, presenting complaints, role of different investigating modalities and preexisting conditions such as diabetes mellitus with prevalence of *H. pylori* infection, and follow-up of the patients after treatment and lifestyle modifications.

Conclusion

The present study concludes that duodenal ulcer, gastric ulcer, nonulcer dyspepsia, and chronic gastritis are the most common etiologies of dyspepsia. *H. pylori* infection is still present in significant proportion of dyspeptic patients.

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Conflicts of interest

There are no conflicts of interest.

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