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Frequency of Helicobacter Pylori Infection in Patients with Gastritis in Bangladesh.

Dr. Md. Nuruzzaman[1]*, Dr. Mohammed Obayedur Rahman[2], Dr. Amitav Saha[3], Dr. Mohammed Tozammel Haque[4], Dr. Sharmin Sultana[5], Dr. Sanjoy Kumar Saha[6], Dr. Sajalendu Biswas[7], Dr. Mohammad Ashaduzzaman[8], Dr. Meherunnesa Mukta[9].

[1]Assistant Professor, Department of Gastroenterology, Bangbandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh.

[2]Registrar, Department of Gastroenterology, Sheikh Russel Gastroliver Institute and Hospital, Dhaka, Bangladesh.

[3]Assistant Professor, Department of Gastroenterology, Dhaka Medical College, Dhaka.

[4]Assistant Registrar, Department of Gastroenterology, Sheikh Russel Gastroliver Institute and Hospital, Dhaka, Bangladesh.

[5]Lecturer, Department of Biochemistry, Shaheed Suhrawardy Medical College, Dhaka, Bangladesh.

[6]Professor and Head, Department of Medicine, Bashundhara Addin Medical College, South Keranigonj, Dhaka, Bangladesh.

[7]Associate Physician, Department of Gastroenterology, Shaheed Suhrawardy Medical College and Hospital, Dhaka, Bangladesh.

[8]Assistant Professor, Department of Hepatology, Mugda Medical College and Hospital, Dhaka, Bangladesh.

[9]Associate Professor, Department of Medicine, Ad-Din Sakina Women's Medical College Hospital, Jashore, Bangladesh.

***Corresponding Author:** Dr. Md. Nuruzzaman, Assistant Professor, Department of Gastroenterology, Bangbandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh. E-mail: drmnzaman82@gmail.com;

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ABSTRACT

Background: Helicobacter pylori infection is strongly associated with gastritis, peptic ulcers, and gastric cancer. Regional data on its prevalence in Bangladesh, particularly among symptomatic patients, are essential for guiding clinical management and public health strategies. ***Objective:*** This study aimed to determine the frequency of H. pylori infection in patients diagnosed with gastritis. ***Methods:*** A cross-sectional study was conducted at multiple center in Bangladesh. Study Sample were collected at Bangabandhu Sheikh Mujib Medical University (BSMMU), Ad-din Medical College, South Keranigonj, Dhaka, Sheikh Russel Gastroliver Institute and Hospital, Dhaka, Shaheed Suhrawardy Medical College,

Dhaka Medical College, Dhaka, Mugda Medical College and Hospital, Dhaka in Bangladesh, from January 2023 to June 2023. Using purposive sampling, 223 gastritis patients underwent upper gastrointestinal endoscopy were included. H. pylori infection was confirmed via rapid urease test (RUT). Data on age, sex, and symptoms (epigastric pain, nausea, bloating) were analyzed using SPSS version 23.0, with results presented as frequencies and percentages. ***Results:*** Among 223 gastritis patients (mean age: 42.5 years; 55.2% male), H. pylori prevalence was 68.2%, peaking in 40-60-year-olds (76.3%, p=0.028). Epigastric pain (92.1% vs 83.1%, p=0.042) and erosive changes (27.6% vs 18.3%) were more frequent in H. pylori-positive cases. Age 40-60 years (aOR=2.1, p=0.012) and epigastric pain (aOR=1.9, p=0.028) independently predicted infection. ***Conclusion:*** H. pylori infects two-thirds of patients with gastritis, Middle age and epigastric pain as key predictors. Routine screening and targeted treatment are recommended, particularly for 40-60-year-olds with erosive changes.
Keywords: Bangladesh, Clinical symptoms, Gastritis, Helicobacter pylori, Prevalence.

INTRODUCTION

Gastritis, the inflammation of the gastric mucosa, is a common gastrointestinal disorder affecting millions worldwide, with Helicobacter pylori (H. pylori) infection recognized as its leading cause [1]. This gram-negative bacterium colonizes the stomach lining, inducing chronic inflammation that can progress to peptic ulcers, gastric atrophy, and even gastric cancer if left untreated [2,3]. The global prevalence of H. pylori infection varies significantly, with higher rates in developing countries (70–90%) compared to developed nations (30–50%) due to differences in sanitation, socioeconomic status, and healthcare access [4,5]. In Bangladesh, the burden of H. pylori-associated gastritis remains understudied, despite the country's high population density and suboptimal hygiene conditions favoring bacterial transmission [6]. Existing studies report infection rates ranging from 60% to 80% among dyspeptic patients, but regional data, particularly from tertiary care centers in Dhaka, are scarce [7,8]. The lack of localized epidemiological data hampers the development of targeted screening and treatment protocols, contributing to persistent morbidity and healthcare costs [9]. The clinical presentation of H. pylori-positive gastritis includes epigastric pain, nausea, bloating, and heartburn, though asymptomatic cases are also common [10]. Diagnosis typically relies on invasive methods (rapid urease test, histopathology) or non-invasive techniques (urea breath test, stool antigen detection) [11]. However, resource constraints in Bangladesh often limit testing to symptomatic patients undergoing endoscopy, potentially underestimating true prevalence [12]. Understanding the frequency of H. pylori infection in gastritis patients is critical for optimizing empirical treatment, reducing antibiotic resistance, and preventing long-term complications [13]. This study aimed to determine the frequency of H. pylori infection in gastritis patients, and to correlate infection status with demographic and clinical features. The findings will contribute to regional epidemiological data and inform clinical decision-making in similar resource-limited settings.

METHODOLOGY

This cross-sectional study was conducted at multiple in Bangladesh. Study Sample were collected at Bangabandhu Sheikh Mujib Medical University (BSMMU), Ad-din Medical College, South Keranigonj,

Dhaka, Sheikh Russel Gastroliver Institute and Hospital, Dhaka, Shaheed Suhrawardy Medical College, Dhaka Medical College, Dhaka, Mugda Medical College and Hospital, Dhaka in Bangladesh, from January 2023 to June 2023. A total of 223 adult patients (aged ≥18 years) diagnosed with gastritis via upper gastrointestinal endoscopy were enrolled using purposive sampling. Patients with prior H. pylori eradication therapy, gastric cancer, or recent antibiotic/PPI use were excluded.

H. pylori infection was confirmed through:

- Rapid Urease Test (RUT): Biopsy specimens from the antrum and corpus were tested using a commercial kit (CP Test®, sensitivity: 95%, specificity: 98%).

Data collection:

- Demographics: Age, sex, residence (urban/rural).
- Symptoms: Epigastric pain, nausea, bloating (recorded via structured questionnaire).

Statistical analysis:

Data were analyzed using SPSS version 23.0. Categorical variables (e.g., infection frequency, symptom prevalence) were expressed as percentages (%), and associations were assessed using Chi-square tests ($p<0.05$ considered significant).

Ethical considerations:

Written informed consent was obtained, and confidentiality was maintained.

RESULT

The study included 223 patients with endoscopically confirmed gastritis. The mean age was 42.5 years (range: 18-75), with 55.2% males. Helicobacter pylori infection was detected in 68.2% of participants. Infection rates varied significantly by age group, with the highest prevalence in 40–60-year-olds (76.3%). Males showed higher infection rates than females (71.4% vs 64.1%), though this difference was not statistically significant. Urban residents had a marginally higher prevalence than rural dwellers (70.1% vs 65.8%). Clinically, epigastric pain was the most common symptom (89.5%), and it was significantly associated with H. pylori infection ($p = 0.042$). Other symptoms, like heartburn (72.6%) and nausea (58.3%), showed no significant correlation. Endoscopically, antral gastritis was most frequent (85.2%), with erosive changes more common in H. pylori-positive cases. Comorbidity analysis revealed non-significant trends, while multivariate analysis identified age 40-60 years and epigastric pain as independent predictors of infection.

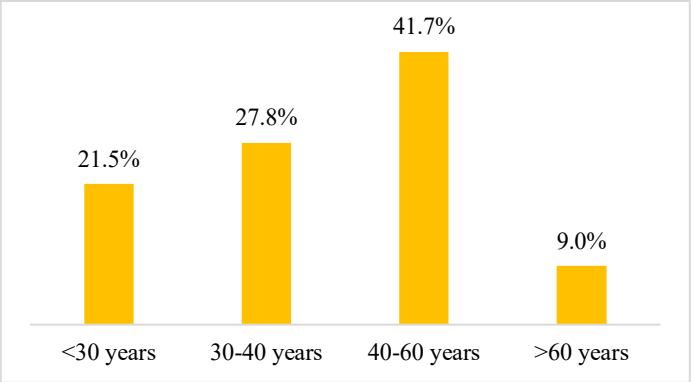

Figure 1: Age distribution of participants

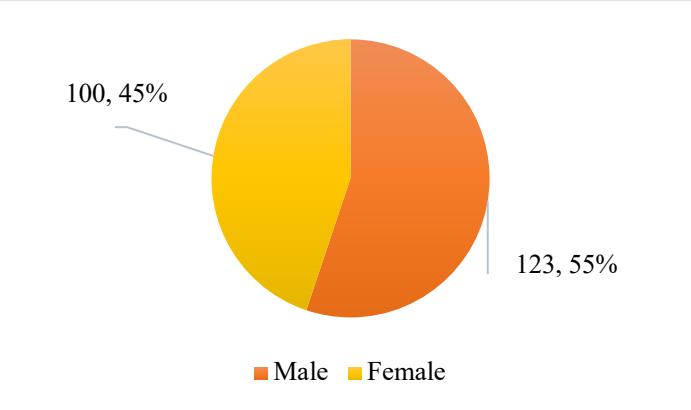

Figure 2: Gender distribution of participants

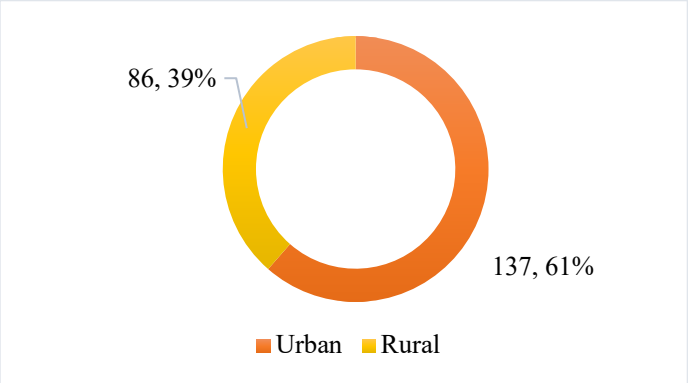

Figure 3: Gender of residence areas

Table 1: H. pylori prevalence by demographics

Category	H. pylori+ (%)	p-value
Age		
<30 years	25 (52.1)	0.028
30-40 years	42 (67.7)	

40-60 years	71 (76.3)	
>60 years	14 (70.0)	
Gender		
Male	88 (71.4)	0.182
Female	64 (64.1)	
Residence		
Urban	96 (70.1)	0.423
Rural	56 (65.8)	

Table 2: Clinical symptoms by H. pylori status

Symptom	Total (n=223)	H. pylori+ (n=152)	H. pylori- (n=71)	p-value
Epigastric pain	199 (89.5)	140 (92.1)	59 (83.1)	0.042
Heartburn	162 (72.6)	115 (75.7)	47 (66.2)	0.134
Nausea	130 (58.3)	92 (60.5)	38 (53.5)	0.312
Bloating	92 (41.3)	67 (44.1)	25 (35.2)	0.216

Table 3: Endoscopic findings

Finding	Total (n=223)	H. pylori+ (n=152)	H. pylori- (n=71)	p-value
Antral gastritis	190 (85.2)	132 (86.8)	58 (81.7)	0.287
Pangastritis	28 (12.6)	18 (11.8)	10 (14.1)	0.634
Erosive changes	55 (24.7)	42 (27.6)	13 (18.3)	0.127

Table 4: Comorbidity analysis

Condition	H. pylori+	H. pylori	p-value
Diabetes	31 (75.6)	10 (24.4)	0.214
Hypertension	28 (70.0)	12 (30.0)	0.792

Table 5: Multivariate logistic regression

Factor	aOR	95% CI	p-value
Age 40-60 yrs	2.1	1.2-3.8	0.012
Epigastric pain	1.9	1.1-3.4	0.028
Urban residence	1.2	0.7-2.1	0.453

DISCUSSION

The findings of this study demonstrate a 68.2% prevalence of H. pylori infection among gastritis patients, which aligns closely with previous reports from Bangladesh (60-80%) [7,8] but remains substantially higher than global averages (30-50%) [4]. This elevated prevalence likely reflects the socioeconomic

conditions characteristic of developing nations, where factors such as compromised sanitation infrastructure and crowded living conditions facilitate fecal-oral transmission of the bacterium [6]. The age-stratified analysis revealed particularly high infection rates among 40-60-year-olds (76.3%, p=0.028), consistent with the established paradigm of cumulative exposure risk increasing with age [5]. The relatively lower prevalence observed in younger patients (<30 years: 52.1%) may indicate emerging improvements in public health measures and hygiene standards among newer generations [14]. While the study observed a higher infection rate among male participants (71.4%) compared to females (64.1%), this difference did not reach statistical significance (p=0.182). This trend mirrors observations from other regional studies [8] and may be partially explained by gender-based differences in healthcare-seeking behavior or higher prevalence of risk factors such as smoking among males in this population [15]. Interestingly, the analysis revealed no significant urban-rural disparity in infection rates (70.1% vs 65.8%, p=0.423), a finding that contrasts with some previous reports [16] but may reflect the unique epidemiological context of Dhaka, where urban slum conditions can approximate rural transmission risks [17]. The clinical symptom analysis identified epigastric pain as having the strongest association with H. pylori infection (92.1% in positive cases vs 83.1%, p=0.042), reinforcing its potential utility as a clinical indicator for infection in resource-constrained settings where diagnostic testing may be limited [18]. However, the absence of significant associations with other common symptoms such as heartburn or nausea suggests these manifestations alone may not reliably predict infection status [19]. Endoscopic evaluation revealed a higher frequency of erosive gastritis among H. pylori-positive patients (27.6% vs 18.3%), providing further evidence of the bacterium's role in direct mucosal injury [3], though the borderline significance (p=0.127) suggests this finding should be interpreted with caution. Multivariate logistic regression analysis identified two independent predictors of H. pylori infection: age 40-60 years (aOR=2.1, p=0.012) and epigastric pain (aOR=1.9, p=0.028). These findings are consistent with patterns observed in other Asian populations [20] and reinforce the importance of considering demographic and clinical factors in infection risk assessment. The lack of significant association with urban residence (p=0.453) contrasts with some previous literature [16] but aligns with emerging data from similar urban centers in developing countries [17].

Limitations:

This study has limitations as a multicenter analysis with purposive sampling, potentially affecting generalizability. Reliance on endoscopic diagnosis may underestimate true prevalence. The cross-sectional design precludes causal inferences. Limited data on socioeconomic factors and antibiotic resistance patterns constrain broader interpretation of findings.

CONCLUSION

This study confirms H. pylori as highly prevalent (68.2%) among Bangladeshi gastritis patients, particularly affecting middle-aged adults (76.3%) and those with epigastric pain. The findings underscore

H. pylori's significant etiological role in gastritis within this population. The strong association between infection, age 40-60 years, and characteristic symptoms suggests these factors could guide targeted clinical management in resource-limited settings where universal testing remains challenging.

Recommendation:

Implement routine H. pylori screening for gastritis patients aged 40-60 years with epigastric pain. Public health initiatives should emphasize improved sanitation and hygiene practices. Future research should assess antibiotic resistance patterns and include large number of populations for broader generalizability of findings.

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