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Prevalence of Helicobacter Pylori Infection in Patients Presenting to SSG/RHQ Hospital Gilgit with Dyspepsia

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Article Details

Keywords: Helicobacter Pylori, Infection, Dyspepsia

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ABSTRACT

Objectives: To determine the frequency of helicobacter pylori infection in patients presenting to SSG/ RHQ Hospital Gilgit with dyspepsia. Materials and Methods: After obtaining approval from the ethical committee of SSG/RHQ Hospital Gilgit and CPSP, patients meeting the selection criteria were enrolled in the study, with written informed consent obtained from each. A total of 151 patients underwent examination for H. pylori infection, and demographic data including age, gender, income, residence, education, and smoking status were recorded. Stool samples were collected from all patients and tested for H. pylori antigen; a positive result confirmed the presence of the infection. Data was collected using a pre-designed questionnaire. Results: The study included 151 dyspeptic patients with a mean age of 36.5 years and symptom duration of about 25 weeks. Of these, 49% tested positive for H. pylori. Most patients were aged 31–40 years, male, urban residents, and non-smokers. There was no significant association of H. pylori infection with age, gender, education, smoking, or symptom duration. However, infection was significantly higher among patients with a monthly income below 70,000 Rs ($p = 0.000$), suggesting socioeconomic status as a key risk factor. Conclusion: It was concluded that Helicobacter pylori infection is common among dyspeptic patients at SSG Hospital, underscoring its key role in gastrointestinal symptoms. Early screening and treatment are essential to prevent serious complications. Additionally, considering patient demographics and symptom duration can help tailor interventions and improve management of dyspepsia in the commu

INTRODUCTION

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Helicobacter pylori (H. pylori) are a Gram-negative bacterium that plays a central role in the development of various gastrointestinal diseases, including chronic gastritis, peptic ulcer disease, and gastric cancer.(1) It is one of the most common bacterial infections worldwide, affecting approximately half of the world's population.(2) In low- and middle-income countries, the prevalence exceeds 80%.(3) Despite its widespread distribution, the infection remains clinically silent in most affected individuals, with no noticeable symptoms.

Dyspepsia, a common complaint with symptoms such as upper abdominal pain, bloating, nausea, and loss of appetite, is one of the most common clinical manifestations of H. pylori infection.(4) Early identification and treatment of this infection can help prevent serious complications such as ulcers and gastric cancer.

This study aims to determine the prevalence of Helicobacter pylori infection among patients with dyspeptic symptoms at SSG Hospital. A better understanding of the local prevalence and risk factors of this infection can help optimize diagnostic, treatment and prevention strategies and ultimately improve patient care.

OBJECTIVE: To determine the frequency of helicobacter pylori infection in patients presenting to SSG/ RHQ Hospital Gilgit with dyspepsia.

MATERIALS AND METHODS

STUDY DESIGN: Cross-sectional Descriptive study.

STUDY SETTING: Department of Medicine, SSG/RHQ Hospital Gilgit.

DURATION OF THE STUDY: Duration of the study was 6 month (June 2024 to Dec 2024).

SAMPLING TECHNIQUE: Non-probability consecutive sampling was used for the recruitment of patients.

SAMPLE SIZE: The sample size was calculated by using WHO sample size calculator keeping the following parameter:

Level of confidence: 95%
Absolute precision: 8%
Anticipated population proportion I: 50.89 (4)
The sample size will be 151 patients.

INCLUSION CRITERIA

- Participants with dyspepsia symptoms duration >6 months.
- Patients of age 18-50 years.
- Both gender (male and female).
- Patients who will be willing to undergo evaluation for extra gastric associations of Helicobacter pylori infection, which may include conditions like iron deficiency anemia, idiopathic thrombocytopenic purpura, or gastroesophageal reflux disease (GERD), among others.

EXCLUSION CRITERIA

- Patients who have received treatment for Helicobacter pylori infection in the past.
- Patients with a history of gastric surgery, such as partial gastrectomy or gastric bypass surgery, which could alter the anatomy of the stomach and affect the prevalence of Helicobacter pylori infection.
- Patients currently using proton pump inhibitors less than 2 weeks on presentation, as these

medications can affect the accuracy of diagnostic tests for Helicobacter pylori infection.

- Pregnant individuals, as pregnancy can influence the presentation of dyspeptic symptoms and may introduce confounding variables.
- Patients with severe co-morbid conditions.
- Patients using NSAid for more than 2 month.

METHODS: After the approval of ethical committee of SSG/RHQ Hospital Gilgit and CPSP, patients fulfill the selection criteria were enrolled. A written informed consent was taken from patients. A total of 151 patients were enrolled in the study. All the patients were undergo examination for H-pylori infection. All the demographic data such as age, gender, income, residence, education and smoking were noted. Stool were collected from all enrolled patients and were tested for Antigen for Helicobacter pylori infection. The sample were considered positive for H. pylori if it had a positive result. If the stool sample tests positive for Helicobacter pylori antigen, it indicates the presence of H. pylori infection in the patient. A predesign questionere were used to collect data.

DATA ANALYSIS PROCEDURE

Gathered data were entered and analyzed by the computer software Statistical Package for Social Sciences (SPSS) Version 25. The results for all Quantitative variables: age and duration of symptoms was expressed as mean ± standard deviation/ Shapiro-Wilk Test. Frequency and percentage was presented for qualitative data like gender and H-pylori infection, residence, education and smoking . Effect modifier such as age, duration of symptoms, gender income, residence, education and smoking were controlled through post stratification. Post stratification the chi-square test/ Fisher's Exact Test were applied and p-value ≤0.05 was considered as significant.

RESULTS

The mean age of the enrolled patients was 36.50 years, with a standard deviation of 6.87 years. The mean duration of symptoms was 24.93 weeks with a standard deviation of 8.44. The age distribution of patients with dyspepsia at SSG Hospital shows that 15.9% (24 patients) were between 18-30 years, 51.0% (77 patients) were between 31-40 years, and 33.1% (50 patients) were over 40 years, totaling 151 patients, or 100% of the sample population. Out of the 151 dyspeptic patients evaluated, 49.0% (74 patients) tested positive for H. pylori infection, while 51.0% (77 patients) tested negative. The distribution of H. pylori infection among patients reveals that 45.7% (69 patients) had an income of less than 70,000 Rs, while 54.3% (82 patients) reported an income of more than 70,000 Rs. The gender distribution reveals that 58.3% (88 patients) were male, while 41.7% (63 patients) were female. Regarding the residence distribution of dyspeptic patients, 66.2% (100 patients) were from urban areas, while 33.8% (51 patients) were from rural areas. The educational background of dyspeptic patients shows that 29.1% (44 patients) had primary education, 11.9% (18 patients) had secondary education, 24.5% (37 patients) reached intermediate level, and 7.9% (12 patients) attained higher education. Additionally, 26.5% (40 patients) were uneducated. The smoking status of dyspeptic patients indicates that 26.5% (40 patients) were smokers, while the majority, 73.5% (111 patients), were non-smokers. The stratification of H. pylori infection based on age groups among dyspeptic patients shows the following distribution: in the 15-30 years age group, 13.5% (10 patients) tested positive for H. pylori, while 18.2% (14 patients) tested negative; in the 31-40 years age group, 55.4% (41 patients) were positive, and 46.8% (36 patients) were negative; in the >40 years age group, 31.1% (23 patients) were positive, and 35.1% (27 patients) were negative. The

total number of H. pylori-positive patients was 74, while the H. pylori-negative group comprised 77 patients. The p-value for this age-based stratification was 0.53, indicating no statistically significant difference in H. pylori infection across the age groups. The stratification of H. pylori infection by gender among dyspeptic patients reveals that, among males, 54.1% (40 patients) tested positive for H. pylori, while 62.3% (48 patients) tested negative. In the female group, 45.9% (34 patients) were H. pylori-positive, and 37.7% (29 patients) were negative. The total number of H. pylori-positive patients was 74, and the number of negative cases was 77. The p-value for this gender-based stratification was 0.30, indicating no statistically significant association between gender and H. pylori infection status. The stratification of H. pylori infection by education level among dyspeptic patients shows that, among those with primary education, 28.4% (21 patients) tested positive for H. pylori, while 29.9% (23 patients) tested negative. In the secondary education group, 25.7% (19 patients) were positive, and 27.3% (21 patients) were negative. Among intermediate-level educated patients, 10.8% (8 patients) were positive, while 13.0% (10 patients) were negative. For those with higher education, 27.0% (20 patients) tested positive, and 22.1% (17 patients) tested negative. Finally, among the uneducated patients, 8.1% (6 patients) were positive, and 7.8% (6 patients) were negative. The p-value for this education-based stratification was 0.96, indicating no statistically significant association between education level and H. pylori infection status. The stratification of H. pylori infection based on smoking status among dyspeptic patients indicates that among smokers, 25.7% (19 patients) tested positive for H. pylori, while 27.3% (21 patients) tested negative. In contrast, among non-smokers, 74.3% (55 patients) were H. pylori-positive, and 72.7% (56 patients) were negative. The total number of H. pylori-positive patients was 74, with 77 patients testing negative. The p-value for this smoking-based stratification was 0.82, suggesting no statistically significant association between smoking status and H. pylori infection. The stratification of H. pylori infection based on the duration of symptoms among dyspeptic patients reveals that for those with symptoms lasting 11-20 days, 36.5% (27 patients) tested positive for H. pylori, while 36.4% (28 patients) tested negative. In the 21-30 days group, 20.3% (15 patients) were positive, and 16.9% (13 patients) were negative. Among patients with symptoms lasting more than 30 days, 43.2% (32 patients) tested positive, while 46.8% (36 patients) tested negative. The total number of H. pylori-positive patients was 74, and 77 patients tested negative. The p-value for this symptom duration-based stratification was 0.84, indicating no statistically significant association between the duration of symptoms and H. pylori infection status. Stratification of H. pylori infection based on income reveals that among patients earning less than 70,000 Rs, 79.7% (59 patients) tested positive for the infection, while only 13.0% (10 patients) were negative, yielding a p-value of 0.000. In contrast, among those with an income greater than 70,000 Rs, only 20.3% (15 patients) were infected, with a significant majority, 87.0% (67 patients), testing negative.

TABLE 1: MEAN AND STANDARD DEVIATION OF AGE AND DURATION OF SYMPTOMS *(N=151)*

Variables	
Age (Years)	36.50± 6.87
Duration of symptoms	24.93±8.4

TABLE 2: FREQUENCIES AND PERCENTAGES OF SOCIODEMOGRAPHIC AND CLINICAL VARIABLES AMONG STUDY PARTICIPANTS *(N=124)*

Variables	Frequency (%)
Gender	
Male	88(58.3%)
Female	63(41.7%)
Age Groups	
18-30 years	24(15.9%)
31-40 years	77(51.0%)
>40 years	50(33.1%)
H-pylori infection	
Yes	74(49.0%)
No	77(51.0%)
Monthly income	
≤70000 Rs	69(45.7%)
>70000 Rs	82(54.3%)
Residence	
Urban	100(66.2%)
Rural	51(33.8%)
Education	
Primary	44(29.1%)
Secondary	18(11.9%)
Inter	37(24.5%)
Higher	12(7.9%)
Uneducated	40(26.5%)
Smoking	
Yes	40(26.5%)
No	111(73.5%)

TABLE 3: ASSOCIATION OF SOCIODEMOGRAPHIC AND CLINICAL VARIABLES WITH DEPRESSION AMONG STUDY PARTICIPANTS *(N=124)*

Variables	H-pylori infection		p-value
	Yes	No	
Gender			
Male	40(54.1%)	48(62.3%)	0.30
Female	34(45.9%)	29(37.7%)	
Age Groups			
18-30 years	10(13.5%)	14(18.2%)	
31-40 years	41(55.4%)	36(46.8%)	
>40 years	23(31.1%)	27(35.1%)	0.53
Residence			
Urban	23(53.5%)	51(63.0%)	0.30
Rural	20(46.5%)	30(37.0%)	
Profession			
Employed	16(37.2%)	35(43.2%)	

Unemployed	27(62.8%)	46(56.8%)	
Education			
Primary	22(51.2%)	34(42.0%)	
Secondary	19(25.7%)	21(27.3%)	0.96
Inter	8(10.8%)	10(13.0%)	
Higher	20(27.0%)	17(22.1%)	
Uneducated	6(8.1%)	6(7.8%)	
Monthly income (Rs)			
<70000 Rs	59(79.7%)	10(13.0%)	
>70000 Rs	15(20.3%)	67(87.0%)	0.00
Smoking			
Yes	19(25.7%)	21(27.3%)	0.04
No	55(74.3%)	56(72.7%)	
Duration of symptoms			
11-20 days	27(36.5%)	28(36.4%)	0.84
21-30 days	15(20.3%)	13(16.9%)	
>30 days	32(43.2%)	36(46.8%)	

DISCUSSION: The present study seeks to determine the prevalence of *Helicobacter pylori* (*H. pylori*) infection among patients presenting with dyspeptic symptoms at SSG Hospital. *H. pylori* is a Gram-negative bacterium widely recognized as a major contributor to gastrointestinal conditions such as chronic gastritis, peptic ulcer disease, and gastric malignancies. Assessing its frequency in dyspeptic individuals is essential for improving diagnostic accuracy and informing effective treatment and management approaches.

H. pylori is a globally prevalent infection, affecting nearly half of the world's population, with an even higher burden—over 80%—in low- and middle-income countries. Despite its widespread nature, the majority of infected individuals remain asymptomatic throughout their lives. Humans are the only known reservoir for the bacterium, and its exact mode of transmission remains unclear. Key risk factors for *H. pylori* infection include inadequate sanitation, lack of access to clean drinking water, poor personal hygiene, and substandard living conditions typically associated with low socioeconomic status.(5, 6)

The primary objective of the study is to determine the frequency of H. pylori infection in patients presenting with dyspepsia presenting to SSG Hospital. In the present study we have found that out of the 151 dyspeptic patients evaluated, 49.0% (74 patients) tested positive for H. pylori infection, while 51.0% (77 patients) tested negative. our study was supported by another study stated that Helicobacter pylori was found in 86 (50.89%) and it was absent in 83 (49.11%) patients.(7). The H. pyloriprevalencein dyspeptic patients appears to vary widely across research conducted around the world.(8) A study conducted by Niknam et al. in Iran have reported 31.2% H. pyloriinfected casesin dyspeptic patients.(9) Hamrah et al. reported H. pyloriin 75.6% dyspeptic patients in Afghanistan.16A study conducted in Indiaby Satpathi et al. reported 58.8% frequency of H. Pylori infection in dyspeptic patients.17While two studies conducted in Pakistan have reported 50-51% frequency of H. pylori in dyspeptic patients.(10, 11)

Our research findings align with this understanding, as we observed an increased prevalence of H. pylori infection among the study population. This trend supports the notion that H. pylori is

a disease that is disproportionately common in less developed nations, where the overall burden of gastrointestinal disorders is often higher. The socio-economic challenges faced by populations in LMICs contribute to a cycle of infection and illness that can have long-lasting impacts on public health.

Furthermore, the implications of these findings extend beyond just the prevalence of infection. Higher rates of H. pylori are associated with an increased risk of developing more severe gastrointestinal conditions, such as peptic ulcers and gastric cancer. This underscores the importance of addressing H. pylori as a public health concern, where effective interventions and treatment strategies can significantly reduce the burden of disease.

The enrolled patients had a mean age of 36.50 years with a standard deviation of 6.87 years, indicating that most were in their mid-thirties and that their ages were relatively homogenous, which can assist healthcare providers in identifying age groups more likely to seek treatment for dyspepsia and in developing targeted outreach strategies. Additionally, the mean duration of symptoms was 24.93 weeks, with a standard deviation of 8.44 weeks, suggesting that patients typically experienced dyspeptic symptoms for nearly six months before seeking medical attention; the variability in symptom duration may imply some patients experienced shorter or longer durations, an important factor for clinicians as prolonged symptoms could be linked to more severe underlying conditions affecting treatment decisions. The age distribution revealed that 15.9% (24 patients) were aged 18-30 years, 51.0% (77 patients) were 31-40 years, and 33.1% (50 patients) were over 40 years, highlighting that the majority (51.0%) of patients fell within the 31-40 years age group, suggesting a higher prevalence of dyspepsia among individuals in their thirties, potentially due to lifestyle factors, dietary habits, or stress levels. Meanwhile, older patients also represented a significant portion (33.1%) of the sample, likely influenced by age-related changes in gastrointestinal function, whereas the younger group (18-30 years) had the smallest representation (15.9%), indicating they may be less affected by dyspeptic symptoms or less inclined to seek treatment due to differing health-seeking behaviors or perceptions about the condition. In terms of residence distribution among dyspeptic patients, a significant majority, 66.2% (100 patients), were from urban areas, whereas 33.8% (51 patients) came from rural regions. When examining the educational background of these patients, 29.1% (44 patients) had completed primary education, 11.9% (18 patients) had secondary education, 24.5% (37 patients) achieved an intermediate level, and 7.9% (12 patients) attained higher education, while 26.5% (40 patients) were uneducated. Regarding smoking status, 26.5% (40 patients) identified as smokers, leaving the majority, 73.5% (111 patients), as non-smokers.

CONCLUSION: It was concluded that Helicobacter pylori infection is highly prevalent among dyspeptic patients at SSG Hospital, highlighting its significant role in causing gastrointestinal symptoms. Routine screening and timely treatment are recommended to prevent complications like peptic ulcers and gastric cancer. Understanding patient demographics and symptom duration can help guide more effective, targeted care and reduce the overall burden of dyspepsia-related conditions in the community.

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