

# HELICOBACTER PYLORI INFECTION; DYSPEPTIC PATIENTS UNDERGOING ENDOSCOPY: A HOSPITAL BASED STUDY

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## DR. NABIHA FAISAL

MBBS, MCPS, FCPS (GASTRO)  
Senior Registrar Gastroenterology  
Department of Gastroenterology,  
Liaquat National Hospital, Karachi

## DR. MUHAMMAD MANSOOR UL HAQ

FCPS (MED), FCPS (GASTRO)  
Consultant Gastroenterologist and Hepatologist  
Department of Gastroenterology,  
Liaquat National Hospital, Karachi

## DR. HAFEEZULLAH SHAIKH, MBBS

Registrar, Gastroenterology  
Department of Gastroenterology,  
Liaquat National Hospital, Karachi

## Dr. Pervez Ashraf

FRCP (GLASGOW), FRCP (EDIN)  
Consultant Gastroenterologist and  
Hepatologist and Head of Department  
Department of Gastroenterology,  
Liaquat National Hospital, Karachi

## DR. Jamila. H. Esmail

Consultant Gastroenterologist and  
Hepatologist, MD (BOMBAY)  
Aga Khan Hospital,

**ABSTRACT... Objective:** To determine the frequency of H. pylori infection in dyspeptic patients undergoing endoscopy at a tertiary care center in Karachi. **Data source:** Patients undergoing endoscopy at Liaquat National Hospital, Karachi. **Design of study:** Cross sectional descriptive study. **Setting:** Department of Gastroenterology, Liaquat National Hospital, Karachi. **Period:** May 2008–October 2008. **Material and methods:** All adult patients with symptoms of dyspepsia for more than 1 month duration were included. Patients with upper gastrointestinal bleed, anemia or weight loss were excluded. Upper gastrointestinal endoscopy was performed in all patients and biopsy specimens two each from antrum and body and one from fundus were taken for histology. **Results:** A total of 123 dyspeptic patients were included in the study. 76 (61.8%) patients were males and 47 (38.2%) were females. H pylori was detected in mucosa of 49 (39.8%) patients. The mean age of the patients was  $41.41 \pm 13.15$  Years (95%CI; 39.06 to 43.75). Rate of H.pylori infection was not found statistical significant with age, gender, duration of symptoms and BMI. **Conclusions:** The prevalence of H pylori infection in dyspeptic patients was lower than reported in previous studies from other centers in Pakistan. Other environmental factors should be evaluated in every patient especially who is negative for H. pylori in our setup.

**Key-words:** H. pylori, dyspepsia, endoscopy, Pakistan, prevalence

## INTRODUCTION

The dictum “No acid no ulcer” has changed after the discovery of Helicobacter pylori by Marshal in 1984<sup>1</sup>. H. pylori infects the stomachs of more than 50% of people world wide, and is responsible for most peptic ulcer disease, gastritis and gastric malignancy<sup>2</sup>. The prevalence of H.pylori infection in developing countries is approximately 80-90%<sup>3</sup>. The annual incidence of new H.pylori infection in the developing country is approximately 3 or more per 100 persons<sup>4</sup>. In Pakistan, the rate of H.pylori infection was about 80-85% in adult population<sup>5</sup>. Risk factors for acquiring H. pylori infection include residence in a developing country, poor socioeconomic conditions, family overcrowding and possibly ethnic or genetic predisposition<sup>2</sup>.

Dyspepsia is defined as chronic or recurrent pain or

discomfort centered in the upper abdomen<sup>6</sup>. Approximately 80-90% of patients with dyspepsia in the developing world are infected with H. pylori<sup>1</sup>. The recommendation for dyspeptic patients of high prevalent areas of H. pylori is to test and treat, as no study has been done yet at our tertiary care center to determine the prevalence of H. pylori infection in dyspeptic patients. The purpose of this study is to find out the rate of H. pylori infection in the dyspeptic patients in our tertiary care center.

Since in Pakistan enough work has not been done to determine the presence of H. pylori associated gastritis in adult dyspeptic patients, therefore in this study, we have investigated the frequency of H.pylori infection in dyspeptic patients undergoing endoscopy. We have taken multiple biopsies from antrum, body and fundus, in

order to document the true burden of the disease, as *H. pylori* gets migrated to other parts of stomach.

Thus the objective of this study is to determine the frequency of *H. pylori* in symptomatic patients. This will guide us to either test every dyspeptic patient for *H. pylori* or to give trial of symptomatic treatment and test only those patients who remain symptomatic. This methodology will decrease the financial burden of the patients as well.

## MATERIALS AND METHODS

Cross sectional descriptive study Department of Gastroenterology, Liaquat National Hospital, Karachi. One hundred-twenty three consecutive patients with dyspeptic symptoms of more than 1 month attending the endoscopy suite of gastroenterology section of Liaquat National Hospital, from May 2008–October 2008 were enrolled. Patients with complaints of weight loss, anemia, hematemesis, coffee ground vomiting and melena were excluded. None had evidence of any systemic disease, GI or other malignancy. Patients who were on proton pump inhibitors or antibiotics in the last 2 weeks were also excluded. Duration of clinical symptoms at the time of presentation and BMI were also noted with endoscopic findings. An informed consent was taken from all patients. Five gastric biopsy specimens were collected at endoscopy from each patient for histopathology.

The endoscopies were performed in the Liaquat National Hospital, at the Department of Gastroenterology. At the endoscopy, two biopsies each from corpus, antrum and one from the fundus were taken. *H. pylori* infection was considered positive if histology was positive. Gastritis was graded according to the Sydney System (Price 1991)<sup>7</sup>.

The biopsies were first fixed in 10 % buffered formalin, dehydrated in an increasing series of alcohols and xylol, and then embedded in the paraffin. Prior to embedding, the specimen was oriented in such a manner that histological sectioning was carried out perpendicular to plane of the mucosal surface. After deparaffinization, the 4- micronmeter thick sections were stained with hematoxylin and eosin (H&E). For detection of *H. pylori*

Warthon –Starry –Silver-Stain was also performed on each specimen. Histological feature of gastric mucosa were recorded as the Sydney System definitions.

Statistical packages for social science (SPSS-10) was used to analyze data, Frequency and percentage were computed for categorical variables like age groups, gender, BMI categories, duration of symptoms, endoscopic finding and *H. pylori* infection.

Mean, standard deviation and 95% CI were computed for categorical variables like age. Chi square test applied to find proportion difference in *H. pylori* infection with age groups, sex and BMI.  $P < 0.05$  was considered level of significance.

## RESULTS

A total of 123 dyspeptic patients were included in the study. The average age of the patients was  $41.41 \pm 13.15$  Years (95%CI; 39.06 to 43.75). The youngest patient included was 20 years and the oldest being 68 years old.

Out of 123 patients, 76(61.8%) were males and 47(38.2%) were females, with 1.62:1 male to female ratio.

Thirteen patients (10.6%) had body mass index greater than 30 while 110(89.4%) had body mass index less than and equal to 30.

Regarding duration of symptoms, 56(45.5%) patients were tolerating disease between 6 to 12 months, 41(33.3%) patients were less than six month and 22(17.9%) patients were suffering for more than two years.

The main endoscopy findings were gastritis 95.9% (118/123), two patients (1.6%) were gastritis with esophagitis and three patients showed normal finding.

Frequency of *H. Pylori* infection in the dyspeptic patients was 39.8% (49 patients out of 123 patients) and histopathology negative in 74 (60.2%) patients.

Rate of *H. pylori* infection was not found statistically significant difference in different age groups (Chi-Square

Value= 6.56 df=3; p=0.08) and gender (Chi-Square Value= 3.21, df=1; p=0.073) as shown in table I and II.

**Table-I. Helicobacter pylori infection according age groups (n=123)**

Age groups	Helicobacter Pylori	
	Positive (n=49)	Negative (n=74)
20-30 years	16 (32.7%)	17 (23%)
31-40 years	12 (24.5%)	20 (27%)
41-50 years	10 (20.4%)	07 (9.5%)
> 50 years	11 (22.4%)	30 (40.5%)

*Column wise percentages were computed  
Chi-Square Value = 6.56 df=3; P=0.08*

**Table-II. Helicobacter pylori infection according gender (n=123)**

Gender	Helicobacter Pylori	
	Positive (n=49)	Negative (n=74)
Male	35 (71.4%)	41 (55.4%)
Female	14 (28.6%)	33 (44.6%)

*Column wise percentages were computed  
Chi-Square Value = 3.21 df=1; P=0.073*

Similarly rate of H. pylori infection also was not found statistically significant between BMI < 30 and BMI > 30. Rate of H. pylori infection was also not found statistically significant with the duration of symptoms.

## DISCUSSION

This study examines the frequency of H. pylori infection in a group of symptomatic patients who underwent endoscopy. The frequency of H. Pylori infection in the present study was found to be 39.8% in dyspeptic patients. This showed that higher proportion (60.2%) of our patients was H. pylori negative. Previous studies have estimated a prevalence of 80 -90 percent in the developing world<sup>3</sup> and local data had estimated prevalence from 60 to 85 percent, by Fareed et al and Afzal S et. al<sup>8,9</sup>. Although there are few other Pakistani studies in which the prevalence had ranged from 40 to 57

percent as well by Butt AK et al<sup>10</sup>. However, H. pylori frequency of 39.8% in the present study is even lower than 43.6% reported by Mohsin L et. al<sup>11</sup> elsewhere. It is also lower than 60.5% reported by Baqai R et al<sup>12</sup>. in another local study.

This may be explained as both of these studies were conducted at Government hospitals in Lahore and Karachi respectively where health care facilities are free. The higher frequency of H.pylori in lower socioeconomic group is mainly due to over crowding, unavailability of portable water, poor sanitation and lower education level<sup>13</sup>. Since my study was conducted at a private hospital where patients paid for the health care, it could be presumed that these individuals are from a higher socioeconomic background and they are better educated and come from cleaner environment. All these factors may attribute for lower frequency of H. pylori (39.8%) in my study.

Another plausible factor for higher prevalence of H.pylori in previous studies was that they did not exclude the patients with alarm symptoms which was reflected in their endoscopic findings revealing significant number of gastric malignancies<sup>14</sup>.

The current study implicates that higher proportion (60.2%) of our dyspeptic patients was not infected with H. pylori and the symptoms of dyspepsia in these patients may not be ascribed to infection with the bacterium, suggesting the involvement of other etiological factors.

We also contemplate that in our society there are multiple environmental factors which can be attributed to the symptoms of dyspepsia in the absence of H pylori. The extensive use of tobacco in the form of smoking, tobacco chewing, supari/betal nuts, pan (betal leaf) and even guttka and naswar can cause gastritis. It appeared to be the possible determinants of increased plasma free radical activity in dyspeptic subjects, rather than H. pylori infection<sup>15</sup>. Tobacco dyspepsia is a recognized identity in the developing world and a potential risk factor for gastroduodenal disease<sup>16</sup>. Other factors include helminthes infestation which is also very common, especially in younger age group and may present as dyspeptic symptoms<sup>17</sup>.

For dyspeptic patients without H. pylori infections, gastric dysmotility, modifications of gastric output or altered visceral sensibility, psychological factors, gastroesophageal reflux, diabetes and irritable bowel may be responsible for the symptoms of dyspepsia<sup>18</sup>. Also, some lifestyles such as heavy drinking or smoking, poor diet or prolonged NSAID use have been associated with symptoms of dyspepsia but not of H. pylori infection<sup>19</sup>.

Therefore in my opinion it is wiser that any patient who seeks medical advice for dyspepsia should be evaluated for other causes as well beside H.pylori, by taking prudent history. All of these environmental factors can easily identify on the basis of history (addiction to tobacco products, over the counter use of NSAIDs) and should be adequately addressed. Beside this all symptomatic patients should be treated empirically with PPI and only those patients who remain symptomatic despite of antisecretory therapy should ideally be proceeded for H.pylori test and treat strategy. This strategy would definitely be helpful in decreasing the economical burden of the dyspeptic population and would also enable us to treat this group of people in a better fashion.

We also believe that the cost of diagnosing H.pylori even non-invasively is very expensive as the per capita income of an average Pakistani is 940 US \$ (75,000 Rs per annum) and UBT costs Rs.19,00 whereas H. pylori stool antigen costs 15,00 – 29,00 Rs. An average Pakistani citizen cannot afford the cost of H. pylori testing as it itself cost a lot. As this current study showed a lower frequency of H.pylori, we propose that proceeding for test and treat policy for every dyspeptic patient would not be cost effective. One can identify other potential risk factors for dyspepsia which might be more prevalent than H. pylori in our setup. Therefore we speculate that this methodology would help us in decreasing the financial burden of our patients.

Further the rate of H. pylori infection was not found statistically significant difference in different age groups ( $p=0.08$ ) in the present study although earlier reports had showed higher prevalence in elderly population. Although higher number of patients (30/41, 40.5%) were

positive for H. pylori in age more than 50 years in my study, as compare to 11/41(22.4%) patients who were negative. But the difference appeared to be insignificant statistically. Available evidence has shown that although H. pylori is acquired early in life through personal contact (children) in their environment (especially in developing countries) and from one family member to another, possibly by the faecal-oral route, or by the oro-oral route, the bacterium tends to persist for life time if not treated<sup>20</sup>. H pylori has the propensity to become a coccoid form which may represent a persistent form in which it can exist in the environment and may partly explains the higher prevalence of the bacterium in older patients (as exposed in childhood).

The rate of H. pylori infection was not found statistically significant between BMI <30 and BMI > in the current study, although obesity in an established risk factor for gastro-oesophageal reflux disease and dyspepsia<sup>25</sup>. The present study showed no statistical difference between the either sex( $p=0.073$ ) and nor with the duration of symptoms ( $p=0.083$ ).

The frequency of H. pylori infection in dyspeptic patient was found to be 39.8%. The test and treat strategy would not be cost effective in our population. Thus we concluded that all dyspeptic patients should be evaluated for other causes of dyspepsia besides H. pylori by taking detail history and if potential factors are identified they should be adequately addressed. Initially all patients should be treated empirically with PPI and only those who remain symptomatic should proceed for test and treat strategy. This would definitely bring down the economical burden of our society as testing for H. pylori itself is expensive.

## CONCLUSIONS

Thus we concluded that all dyspeptic patients should be evaluated for other causes of dyspepsia besides H.pylori by taking detail history and if potential factors are identified they should be adequately addressed. Initially all patients should be treated empirically with PPI and only those who remain symptomatic should proceed for test and treat strategy. This would definitely bring down the economical burden of our society as testing for H. pylori itself is expensive.

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**Correspondence Address:**

Dr. Nabiha Faisal  
A-5, Block 13-D, Gulshan e Iqbal  
Karachi  
[nabiha.faisal@gmail.com](mailto:nabiha.faisal@gmail.com)

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