ORIGINAL ARTICLE
FREQUENCY AND FACTORS LEADING TO HELICOBACTER PYLORI INFECTION AMONG DYSPEPTIC PATIENTS


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Background: Helicobacter pylori is infecting 50 percent or more of the world's population, putting it the most ubiquitous infection on the world. This study is done with the objective to determine the frequency and risk factors of Helicobacter pylori infection among dyspepsia patients at Patel Hospital Karachi. Methods: This cross-sectional study was conducted at the gastroenterology department at the Patel Hospital in Karachi from 10th Jan to 10th July 2021. All patients with dyspepsia for at least 6 months having age 20-60 years of either gender were included. Three samples from stomach (2 from antrum,1 from corpus) for biopsies were collected from each patient. The specimen was sent to the microbiology department of the hospital and was reported as having histopathological confirmation of Helicobacter pylori infection. Results: Of 111 patients with dyspepsia, mean age of the patients was 44.19±16.41 years. Most of the patients (n=65, 58.6%) were males and 46 (41.4%) were females. The mean duration of dyspepsia was 11.48±5.53 months. Helicobacter pylori was discovered to be present in 93 percent of individuals (83.8% percent). The odds of Helicobacter pylori infection were found to be 7.99 times higher among patients over 40 years old (AOR: 7.99, 95 percent CI: 2.02-31.64, p: 0.003), 3.93 times higher among patients with >9 months of dyspepsia (AOR: 3.93, 95 percent CI: 1.09-14.16, p: 0.036), and 11.85 times higher among smokers as compared to non-smokers (AOR: 11.85, 95 percent CI: 1.42-99.08, p-value 0.023). Conclusion: The rate of Helicobacter pylori infection in patients with dyspepsia was found to be higher. Furthermore, increasing age, increase duration of dyspepsia and smoking is found to be independent risk factors.

Keywords: Dyspepsia; Helicobacter pylori Infection; Smoking


INTRODUCTION

Helicobacter pylori infection is a global problem with a wide range of differences across the globe.1,2 Helicobacter pylori is a gram-negative bacterium with strong links to elevated gastrointestinal problems, such as peptic ulcers and malignant conditions.3 The causes of dyspepsia, ranging from esophagitis to cholelithiasis and gastro duodenitis to peptic ulcer disease, are widespread and severe.4 Helicobacter pylori must be recognized a carcinogenic agent, according to a report issued by the World Health Organization.5 According to published research, Helicobacter pylori is infecting 50 percent or more of the world's population, putting it the most ubiquitous infection on the world.6 Another study has reported that Helicobacter pylori infection resulted in 75% of non-cardia gastric malignancy all over the world.7 The aim of this study was to determine the burden and negative factors in histopathology of Helicobacter pylori infection in people with dyspepsia. The data from this study will provide the basis for estimating the frequency and magnitude of infection by Helicobacter pylori in our population so that better understanding and adequate management of the disease can be offered for dyspeptic symptoms to be reduced.

MATERIAL AND METHODS

This cross-sectional study was carried out in the gastroenterological unit of the Patel Hospital Karachi from 10th Jan to 10th July 2021. This study was carried out after approval by the institute's ethical review committee. Thos who consented were enrolled the Gastroenterology Department, Patel Hospital, Karachi. Consecutive patients with dyspepsia for at least 6 months having age 20–60 years of either gender were included. Whereas non-consenting patients, pregnant females, patients with history of peptic ulcer disease, gastric malignancy or MALT lymphoma, or patients who had previously been treated for Helicobacter pylori infection were excluded.

Using the WHO software, this sample size was calculated. By taking the prevalence of H pylori in dyspeptic patients as 88.3 percent8, margin of error as 6 percent and confidence level (C.I) as 95 percent. The required sample size came out to be 111. Brief history of dyspepsia and demographic data like age, gender was taken. All dyspeptic patients fulfilling inclusion criteria underwent upper gastrointestinal endoscopy performed by gastroenterologist with over five years of experience. Three samples from stomach (2 from antrum,1 from...
corpus) for biopsies were collected from each patient. The specimen was sent to the microbiology department of the hospital and was reported as having histopathological confirmation of *Helicobacter pylori* infection. Dyspepsia is classified as positive if any combination of four symptoms is present: it is severe enough to interfere with daily activities and occurs at least three times per week over the last three months, with a start of at least six months in advance.

Patients having a histopathology finding proven *Helicobacter pylori* infection after endoscopic biopsy were used to label *Helicobacter pylori* infection positive. H&E staining was used to establish the presence of *Helicobacter pylori*, and Giemsa staining was used as necessary. *Helicobacter pylori* infection was detected by curved, spirochete-like bacteria in the superficial mucus layer and along the microvilli of epithelial cells. A smoker was defined as someone who smoked at least five cigarettes a day for at least a year.

The findings of quantitative variables like (age and duration of dyspepsia) and qualitative variable (age, gender, site of biopsy, hypertension, smoking, peptic ulcer disease history in family, and *Helicobacter pylori* infection) was noted. Statistical analysis was carried out using SPSS Version 21. Age and duration of dyspepsia were estimated using mean and standard deviations, whereas gender, smoking status, family medical history of peptic ulcer disease, and *Helicobacter pylori* infection (yes/no) were computed using frequency and percentages. Inferential statistic was explored using binary logistic regression taking active status of *Helicobacter pylori* as outcome variable.

**RESULTS**

The patients were 44.19±16.41 years old on average. There were 58 (52.3%) patients under the age of 40 and 53 (47.7%) patients over the age of 40. Majority of the patients (n=65, 58.6%) were males, while 46 (41.4%) were females. The mean duration of dyspepsia was 11.48±5.53 months. There were 60 (54.1%) patients with ≤9 months of duration of dyspepsia and 51 (45.9%) had >9 months of duration of dyspepsia. Smoking status was found positive in 33 (29.7%) patients whereas family history of peptic ulcer disease was found in 23 (20.7%) patients. The frequency of *Helicobacter pylori* infection was found to be 93 (83.8%). A significant association of *Helicobacter pylori* were found with age (p: 0.004), duration of dyspepsia (p: 0.027), and smoking (p: 0.014). (Table-1)

Regression analysis indicated that the probabilities of *Helicobacter pylori* infection were 5.81 times greater in patients over 40 years of age compared to individuals under 40 years of age (OR: 5.81, 95% CI: 1.58-21.44, p: 0.008). The risk of *Helicobacter pylori* infection was shown to be 3.57 times greater in individuals who had dyspepsia for more than 9 months compared to those who had dyspepsia for less than 9 months (OR: 3.57, 95% CI: 1.09-11.67, p: 0.035). In smokers, the risk of *Helicobacter pylori* infection is 8.92 times higher than in non-smokers (OR: 8.92, 95% CI: 1.13–70.08, p: 0.038). Somewhat similar findings were observed in multivariable analysis as well. The findings of multivariable analysis revealed that after adjustment of all other co-variates, the odds of *Helicobacter pylori* was found to be 7.99 times significantly higher among patients with >40 years of age compared to ≤40 years of age (AOR: 7.99, 95% CI: 2.02–31.64, p: 0.003). The odds of *Helicobacter pylori* were found to be 3.93 times significantly higher among patients with >9 months of duration of dyspepsia as compared to ≤9 months of duration of dyspepsia (AOR: 3.93, 95% CI: 1.09–14.16, p: 0.036). The risk of *Helicobacter pylori* infection was shown to be 11.85 times greater in smokers than in non-smokers (AOR: 11.85, 95% CI: 1.42-99.08, p: 0.023). (Table-2)

<table>
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<th>p-value</th>
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<tbody>
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<td></td>
<td>Positive (n=93)</td>
<td>Negative (n=18)</td>
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<td>Age, years</td>
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<td></td>
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<tr>
<td>≤40</td>
<td>58</td>
<td>43 (46.2)</td>
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<tr>
<td>&gt;40</td>
<td>53</td>
<td>50 (53.8)</td>
<td>3 (16.7)</td>
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<td>Gender</td>
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<td></td>
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</tr>
<tr>
<td>Male</td>
<td>65</td>
<td>54 (51.8)</td>
<td>11 (61.1)</td>
</tr>
<tr>
<td>Female</td>
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<td>39 (41.9)</td>
<td>7 (38.9)</td>
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<td>Duration of dyspepsia, months</td>
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<tr>
<td>≤9</td>
<td>60</td>
<td>46 (49.5)</td>
<td>14 (77.8)</td>
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<td>&gt;9</td>
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<tr>
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<td>20 (21.5)</td>
<td>3 (16.7)</td>
</tr>
<tr>
<td>No</td>
<td>88</td>
<td>73 (82.5)</td>
<td>15 (83.3)</td>
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Dyspepsia

In order to understand the nature of dyspepsia and its potential causes, it is essential to break down the pathophysiology behind it. Dyspepsia is defined as a group of symptoms that are frequently associated with food, but not always. The symptoms are typically experienced within one hour of eating and may include upper abdominal pain, discomfort, or burning sensation. Symptoms are frequently associated with food, but not always. As a result, patients with dyspepsia are now empirically undergoing symptomatic care with prokinetics, antacids, and digestive enzymes that are vulnerable to adverse reactions and an extremely high risk of relapse. Failure to diagnose or delay and the resulting inadequate management lead to greater morbidity, economic loss and even death in patients with malignancy.

The limited sample size was one of the limitations. Secondly, the study lacks inclusion of certain important risk factors. Lastly, the study sample is based on a single private sector hospital. In spite of these limitations, this study is of great importance as it has determined the local burden of disease from the private sector hospital. The finding of this study will ultimately result in improved patient’s outcome and quality of life.

CONCLUSION

The prevalence of Helicobacter pylori infection has been found to be higher. In addition, increased age, elevated dyspepsia duration and smoking are independent risk factors.

AUTHORS’ CONTRIBUTION

SMA, SZUIF: Conceptualization of the study design, write-up. SAHH, ARS, MS, SKN: Data collection, data analysis, data interpretation, proof reading.

REFERENCES

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