

# Prevalence of *Helicobacter Pylori* in Dyspeptic Patients: An Observational Study

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## Abstract

**Introduction:** Dyspepsia is derived from the Greek words dys and pepse and literally means “difficult digestion.” It is considered to be important to public health, because it is remarkably common, can be disabling, and can pose a major social and economic burden. People with functional dyspepsia have a significantly reduced quality of life when compared to the general population.

**Aims and Objectives:** The aim of this study is to identify patients presenting with dyspepsia like symptoms and to study the prevalence of *Helicobacter pylori* in patients with dyspepsia undergoing upper gastrointestinal endoscopy.

**Materials and Methods:** Type of study: This was a prospective study, Place of study: This study was conducted at the Department of Surgery, Government of Medical College, Suryapet, Duration of study: The study duration was from November 2019 to April 2020, Sample size: Fifty patients of dyspepsia who satisfied the inclusion criteria were taken into the study.

**Discussion:** After the discovery of *H. pylori* by Marshall and Warren in 1983, many studies were conducted to confirm the association of *H. pylori* with various acid peptic diseases and carcinoma stomach.

**Conclusion:** The background evidence of the association between *H. pylori* and dyspepsia was reviewed, together with methods of diagnosing *H. pylori* infection along with eradication rates with short course regimen.

**Key words:** Dyspepsia; Gastritis, *Helicobacter pylori* infection

## INTRODUCTION

Dyspepsia is derived from the Greek words dys and pepse and literally means “difficult digestion.”

It is considered to be important to public health, because it is remarkably common, can be disabling, and can pose a major social and economic burden.<sup>[1]</sup> People with functional dyspepsia have a significantly reduced quality of life when compared to the general population.<sup>[2]</sup> Annual incidence of dyspepsia is approximately 9–10% and 15% of patients have chronic (>3 months in a year), frequent (>3 episodes/ week), and often very severe symptoms.<sup>[3]</sup> Functional dyspepsia is considered to possess a wide spectrum of

non-specific upper gastrointestinal symptoms without any organic alteration,<sup>[4]</sup> accounting for 60% of patient referrals to gastroenterology clinics.<sup>[5]</sup>

Dyspepsia is chronic and recurrent pain or discomfort centered in the epigastrium.<sup>[6]</sup> Dyspepsia is a symptom or set of symptoms that most physicians consider to originate from the gastroduodenal area, including the following: Postprandial heaviness, early satiety, and epigastric pain or burning. Associated complaints include bloating, nausea, belching, anorexia, and heartburn.<sup>[7]</sup> The symptoms of dyspepsia are directly caused by two major physiological abnormalities: Abnormal gastric motility and visceral hypersensitivity.<sup>[8]</sup>

*Helicobacter pylori* is a known cause of gastric and duodenal ulcers, non-cardia gastric cancer, and gastric mucosa-associated lymphoid tissue lymphoma. The role of this microorganism in causing or preventing a large number of other diseases such as esophageal cancer, functional dyspepsia, gastroesophageal reflux disease, asthma, cardiovascular diseases, iron deficiency anemia, and idiopathic thrombotic purpura is being investigated.<sup>[9]</sup>

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*H. pylori* infection is common in the Indian subcontinent.<sup>[10]</sup> Most global burden of *H. pylori* infection comes from Asia and, therefore, exclusion of this bacterium is an important part of diagnostic exercise in any Asian patients presented with dyspepsia to their physicians.<sup>[11]</sup> *H. pylori* is the most common colonizer in the stomachs of almost half of the world's population. As a result of this colonization, a majority of infected individuals show histological signs of chronic gastritis, only a small fraction of infected individuals develop *H. pylori*-associated diseases, such as peptic ulcers and, rarely, gastric adenocarcinomas.<sup>[12]</sup>

### Aims and Objectives

The aim of this study is to identify patients presenting with dyspepsia like symptoms, to study the prevalence of *H. pylori* in patients with dyspepsia undergoing upper gastrointestinal endoscopy, to eradicate *H. pylori* infection with anti-*H. pylori* treatment in dyspepsia patients, and to see whether resolution of symptoms occurs or not.

## MATERIALS AND METHODS

### Type of study

This was a prospective study.

### Place of study

Department of surgery.

### Duration of study

The study duration was from November 2019 to April 2020.

### Sample size

Fifty patients of dyspepsia who satisfied the inclusion criteria were taken into the study.

### The inclusion and exclusion criteria were as follows

#### Inclusion criteria

1. Patients between 17 and 60 years of age
2. Patients showing dyspepsia for more than 2 weeks.

Dyspepsia includes a series of symptoms: Upper abdominal pain, discomfort, nausea, vomiting, bloating, and early satiety. Patients with any two out of six symptoms mentioned above are included in the study.

#### Exclusion criteria

1. Patients below 17 years and above 60 years of age.
2. Pregnant and lactating women.
3. Patients on proton-pump inhibitors.
4. Patients who are known cases of chronic pancreatitis.
5. Patients on drugs which can alter the symptoms of dyspepsia (NSAIDs, estrogen, steroids, and antacids).
6. Patients who have received antibiotics.

7. Patients with esophageal growths on endoscopy.
8. Unwilling or unfit patients for gastroscopy.

After applying the inclusion and exclusion criteria, all the patients underwent upper gastrointestinal endoscopy.

### Procedure

All the patients in this study group were explained about the study and the procedure of upper gastrointestinal endoscopy and a written informed consent was taken. Patients underwent upper gastrointestinal endoscopy under topical anesthesia. The patients were asked to fast for 12 h before the procedure. Lignocaine viscous or oral lignocaine sprays were given to the patient 5–10 min before the procedure for the local anesthetic effect. The upper gastrointestinal endoscopy was concluded with Pentax 29P, flexible, fiber-optic endoscope with patients in the left lateral positions. On entering the esophagus, any lesions/growths in the esophagus were looked for. On entering the stomach, the presence of any ulcers was looked for any evidence of gastritis or bile reflux from the duodenum was noted. Then, the duodenum was entered, up to its second part and evidence of any duodenitis or ulceration was noted. Two endoscopic biopsies were taken, measuring approximately 2–3 mm each from the gastric antrum and the body of stomach in the area of severe gastritis (maximum redness) or the edge of the ulcer crater depending on the findings. The biopsies from the body and the antrum were randomly taken in cases wherein the endoscopic findings were normal. Biopsy specimens were immediately placed using a sterile handle on a paper containing urea and a color indicator. The adhesive label is sealed firmly and properly and the label over the test paper is pressed to squeeze the fluid out of the biopsy sample.

Positive test for *H. pylori* was indicated by change in color of the medium from yellow to pink or red. The test was read as strongly positive when the change in color occurred within 5–15 min following inoculation. This rapid urease test was taken as positive when the change in color to pink occurred.

### Reporting of Endoscopic Findings

All the 50 patients who underwent upper gastrointestinal endoscopy were divided based on the endoscopic findings as follows:

1. Normal study

This group included the patients who complained of dyspepsia, but the upper GI endoscopy was normal with no signs of inflammation in gastric or duodenal mucosa.

2. Gastritis

The patients included in this group were identified to have an inflamed gastric mucosa.

3. Duodenitis

These patients were identified to have inflamed duodenal mucosa.

#### 4. Ulcer.

#### Principle

*H. pylori* produces large amounts of the enzyme urease which exhibits the ability to hydrolyze urea into ammonium ion and bicarbonate. When a tissue specimen from a patient is put onto the Helico UT Plus kit, the elevated pH level produced by the presence and activity of urease is indicated by a color change of pH indicator in the test paper.



#### REPORTING RESULTS

- Observe whether the outer ring of test paper changes color over an hour. Strong positive results may become visible within 5 min.
- If the outer ring of the paper changes color to pink or red, test of *H. pylori* is positive.
- If it remains yellow in color after an hour, then the test is negative.

#### Treatment Plan

Patients who were tested positive for rapid urease test were considered to have infection and were advised anti-*Helicobacter* triple therapy regimen for 14 days. Patients were asked to review after 2 weeks to check for relief of symptoms.

#### Regimen Advised

- Amoxicillin 1000 mg twice daily
- Metronidazole 400 mg twice daily
- Omeprazole 20 mg twice daily.

Patients were instructed to stop the treatment in case of any urticarial reaction occurs and review immediately.

After 14 days of treatment, patients were reviewed. If there was relief of symptoms, they were reviewed again after 2 weeks to confirm the relief.

Patients who reported no relief of symptom at review were advised salvage regimen which consisted of:

- Omeprazole 20 mg twice daily
- Amoxicillin 1000 mg twice daily
- Levofloxacin 500 mg once daily

#### RESULTS

#### Sex Distribution of Dyspepsia

Out of 50 patients, there were 36 male patients and 14 female patients.

#### Age-sex Distribution of Dyspepsia

Out of 50 patients studied, 36 were male and 14 were female.

Out of 36 males, majority number of patients was seen in 51–60 years age group, that is, 12. Out of 14 females included in the study, the highest prevalence was noted among higher age group, that is, 5. Overall age-sex comparison shows that dyspeptic complaints are more common in males when compared to females.

#### Frequency of Symptoms in Patients with Dyspepsia

All 50 patients included in the study were interviewed regarding the history of symptoms and duration of each symptom.

**Table 1: Illustrating method of reporting rapid urease test results**

Reaction time	5 min	30 min	1 h	1 h
Color of ring	Pink to red	Pink to red	Pink to red	Yellow
Diagnosis	Positive	Positive	Positive	Negative

**Table 2: Prevalence of dyspepsia in age-sex distribution**

Age group	Males	Females
17–30 years	6	2
31–40 years	8	3
41–50 years	10	4
51–60 years	12	5
Total	36	14

**Table 3: Frequency of symptoms in dyspeptic patients**

Clinical features	No. of cases
Discomfort	40
Bloating	32
Upper abdominal pain	26
Vomiting	20
Early satiety	14
Nausea	11

**Table 4: Prevalence of *Helicobacter pylori* in various clinical presentations in patients with dyspepsia**

Clinical features	No. of cases	<i>H. pylori</i> positive	Percentage
Discomfort	40	12	30%
Bloating	32	7	21.8%
Upper abdominal pain	26	9	34.6%
Vomiting	20	5	25%
Early satiety	14	3	21.4%
Nausea	11	1	9%

Maximum number of patients complained of abdominal discomfort, that is, 40 out of 50 patients. This was followed by bloating, upper abdominal pain mostly centered in the epigastrium.

Of all the symptoms enquired, nausea was the least prevalent symptom. Only 11 out of 50 patients complained of nausea occasionally.

### **Prevalence of *H. pylori* in Various Symptoms of Dyspepsia**

All these patients presented to the hospital with upper abdominal pain or discomfort. Detailed history was taken regarding symptoms based on pro forma.

Among 40 patients who had abdominal discomfort, 12 had *H. pylori*. Out of 11 patients who presented with nausea and 20 patients who gave history of vomiting, one and five patients had *H. pylori* infection, respectively.

Thirty-two patients complained of bloating out of which seven patients were positive for *H. pylori*. Out of 14 patients who had early satiety, three had *H. pylori*. Of 26 patients had epigastric tenderness on palpation, nine patients were tested positive for *H. pylori*.

### **Sex distribution of *H. pylori***

Out of 18 patients who tested positive for *H. pylori*, 13 were male and five were female. Out of 36 males who complained of dyspepsia, 13 were tested positive for rapid urease test. Out of 14 females who complained of dyspepsia, five females were positive for rapid urease test.

### **Age-sex Distribution of *H. pylori***

Out of 18 patients who tested positive for *H. pylori*, 13 were male and 5 were female. Maximum number of patients with *H. pylori* were observed in the higher age group, that is, 51–60 years (44.4%) [Tables 1-4].

### **Prevalence of *H. pylori* in Different Age Groups**

Out of 13 males, maximum prevalence was noticed in the older age group (51–60 years), that is, six tested positive out of 13 (46.15%)

Out of five females tested positive for *H. pylori* similar rates of infection were found in almost all age groups.

Age group	Total cases	<i>H. pylori</i> positive	Percentage
17–30 years	8	2	25%
31–40 years	11	4	36%
41–50 years	14	4	28.5%
51–60 years	17	8	47%
Total	50	18	36%

### **Endoscopic Findings**

Depending on the endoscopic findings, all these patients were categorized into groups [Table 5]:

- 1) Normal study
- 2) Duodenitis
- 3) Gastritis
- 4) Ulcer

### **Prevalence of *H. pylori* According to Endoscopic Findings**

#### **Normal study**

There were 38 patients in this group, out of which 12 were found to be positive for *H. pylori* infection (31.5%).

#### **Duodenitis**

In this subgroup, there were six patients, of which four patients tested positive for *H. pylori* (66.6%).

#### **Gastritis**

In this subgroup, there were four patients, of which one was infected with *H. pylori* (25%).

#### **Ulcer**

Patients in this subgroup were identified to have a duodenal ulcer, only two patients were included in this subgroup. Out of which one tested positive for *H. pylori* (50%).

### **Role of Smoking in *H. pylori* Infection**

Out of 50 patients, 18 who were tested positive for *H. pylori* were enquired about the addictions according to the pro forma. Out of 50 patients, 16 were smokers, all being males, that is, 16 out of 36 males were identified to be smokers.

Out of 13 males who tested positive for *H. pylori*, 12 were identified to be smokers and one identified to be non-smoker.

**Table 5: Prevalence of various endoscopic findings (n=50)**

Endoscopic finding	Total no. of patients
Normal study	38
Duodenitis	6
Gastritis	4
Ulcer	2

**Table 6: Prevalence of *Helicobacter pylori* in various groups**

Endoscopic finding	Total no. of patients	<i>Helicobacter pylori</i> positive	Percentage
Normal study	38	12	31.5%
Duodenitis	6	4	66.6%
Gastritis	4	1	25%
Ulcer	2	1	50%

### Role of Alcohol in *H. pylori* Infection

Out of 50 patients included in the study, 30 patients gave a history of alcohol intake, of which six patients tested positive for *H. pylori*. Out of six who tested positive, five were male and one female.

### Response to Treatment

Out of 50 patients studied, 32 were tested negative and 18 tested positive for rapid urease test. All the 18 patients were advised anti-*Helicobacter* regimen as mentioned previously.

Out of 18 patients who received treatment, 13 reported relief of symptoms. Of the rest five patients, three reported improvement of symptoms after receiving treatment but symptoms recurred. The other two patients reported no relief of symptoms. All the above five patients were advised the salvage regimen 65. Out of five patients, four reported relief and one lost for follow-up [Figure 1 and Table 6].

## DISCUSSION

After the discovery of *H. pylori* by Marshall and Warren in 1983, many studies were conducted to confirm the association of *H. pylori* with various acid peptic diseases and carcinoma stomach.

The following observations were made:

1. The treatment of *H. pylori* led to the reversal of gastritis in patients with chronic non-specific gastritis.
2. The eradication of *H. pylori* decreases the relapse of peptic ulcer to 1–3% when compared to 80% relapses in patients with persistent *H. pylori* infections after medical management.

In spite of the above findings, the cause and effect relationship between *H. pylori* and peptic ulcer disease is not proved, and furthermore, many people infected with *H. pylori* did not develop peptic ulceration.

The association of *H. pylori* with non-ulcer dyspepsia is controversial. Therapeutic trials in non-ulcer dyspepsia patients with *H. pylori* infection produced conflicting results.

Thus, at this stage in the history of acid peptic disease and its association with *H. pylori*, the causation or association between the two is still unclear. In case of non-ulcer dyspepsia, this is still more augmented by the conflicting results produced by the workers worldwide.

We at the “Department of Surgery, MediCiti Institute of Medical Sciences” have made an attempt to explore the possibility of proving association between *H. pylori* and dyspepsia.

The present study was carried out in the Department of Surgery at Government of Medical College, Suryapet, duration of study: November 2019–April 2020. The present study was based on dyspeptic patients presenting to us with various symptoms both male and female in the age group of 17–60 years. The diagnosis of *H. pylori* infection was made using rapid urease test.

During the period of study, a total number of 50 patients were studied who fitted in our inclusion criteria. The patients with a history of jaundice, smoking, and alcoholics, age <17 years and more than 60 years, patients who are on medications such as NSAIDs, theophylline, and antibiotics, and patients with cholelithiasis, irritable bowel syndrome, chronic pancreatitis, hiatus hernia, gastric and duodenal ulcer, and gastric and pancreatic cancer were excluded from the study.

### Age

As depicted in observations, majority of the patients with dyspepsia were in the age group of 51–60 years. This was consistent with the study of Mahadeva *et al.* which showed a peak prevalence between the ages 45 and 54 in a Canadian survey, while functional dyspepsia appeared to peak in Chinese subjects 41–50 years and in Japanese adults 50–59 years.

Our results are also consistent with the study of Shah *et al.* conducted in Mumbai, India, and found that uninvestigated dyspepsia was more prevalent in adults >40 years of age. We excluded patients below 17 years and above 60 years of age. Patients in higher age group have disproportionately high percentage of *H. pylori* positivity and also may not complain of symptoms because of increased threshold of pain perceptions, thus above 60 years patients were also excluded from the study.

### Sex Ratio in Dyspepsia

Dyspepsia as a symptom was more common in males as compared to females among 50 patients selected on basis of symptoms. Out of 50 patients examined, 36 were male and 14 were female. In the present study, the symptoms of dyspepsia were common in males as compared with females 72% versus 28%. The difference was highly significant confirming male outnumbered female because females would have not come forward with complaints to seek medical attention. This was consistent with the study of Kawamura who found a similar male preponderance in dyspepsia in a Japanese population.

Most population studies have been able to obtain relatively equal ratios of male: female ratios and the majority of them have shown no differences in dyspepsia prevalence between genders, mostly when uninvestigated dyspepsia

is concerned. Several studies, in different populations, however, have noted a consistent female preponderance with dyspepsia.

### Symptoms

In 50 patients included in the study most of them, that is, 80% had abdominal discomfort, 52% of the patients have epigastric pain. Most of the dyspeptic patients 22% and 40% of them have symptoms of nausea and vomiting, 28% have early satiety, and 64% have bloating. Le and Jishop have shown in their study that 80–90% of the dyspeptic patients have associated symptoms of epigastric pain, anorexia, nausea, vomiting, early satiety, and regurgitation. Desai also discussed that symptoms of dyspepsia are due to diseases of stomach-duodenum and include abdominal pain above umbilicus, retrosternal burning, regurgitation, belching, abdominal distension or bloating, nausea, vomiting, and early satiety after meals.

### UGI Endoscopy is the First Choice of Investigation

In the present study of 50 patients who complained of dyspepsia, all underwent UGI endoscopy under topical anesthesia. Clinical diagnosis of dyspepsia may be unreliable and misleading. Once the decision has been made to investigate, the diagnostic test of choice is endoscopy. Initial endoscopy might be a cost-effective intervention in dyspeptic patients over 50 years of age. Endoscopy is not only the most accurate diagnostic tool but it also has a positive impact on ones' quality with dyspepsia and results in higher patient satisfaction. Out of 50 patients who underwent UGI endoscopy, 38 patients were reported to have normal endoscopic findings. Four had gastritis, six had duodenitis, that is, 10 had inflammatory lesions and two had ulcers in the duodenum. Hence, approximately 76% of patients had normal endoscopic findings and among positive endoscopic findings, inflammatory lesions were the most common. These findings were comparable with the study by OKello who reported 51% of patients having negative endoscopic findings. In the present study, among patients with positive endoscopic findings, inflammatory lesions such as duodenitis and gastritis are the most common (20%). Similar findings were noted by Ahmed *et al.*

### Reliability of Rapid Urease Test

In 50 patients studied, 18 patients tested positive for rapid urease test, these patients were considered to have *H. pylori* infection.

Rapid urease test remains a reliable test for diagnosis of *H. pylori* in patients on NSAIDs as concluded in a study conducted by Foroutan *et al.*

Biopsy urease tests can determine the presence or absence of urease activity in gastric biopsy. This enzyme is produced

by *H. pylori*. The presence of urease activity in biopsy can, therefore, be considered as proof of the presence of this infection. Rapid urease tests have the advantage that they are not operator dependent; they have a high reproducibility worldwide and they are cheaper than culture or histology.

Said *et al.* reported a sensitivity, specificity, positive predictive value, negative predictive value, and diagnostic accuracy of 98, 100, 100, 98, and 99%, respectively, for RUT 84. False-positive rapid urease tests are rare.

### Role of *H. pylori* as a Risk Factor in Dyspepsia

Out of 50 patients who were included in the study, 18 patients tested positive for rapid urease test of which 13 were male and 5 were female. These results are comparable to Mukhopadhyay *et al.* who reported 42% prevalence of *H. pylori* through rapid urease test conducted in North Indian population.

The association of functional dyspepsia with *H. pylori* infection has been widely reported. The reported prevalence of *H. pylori* in patients with functional dyspepsia ranges from 39% to 87%. Many variations in prevalence of *H. pylori* in non-ulcer dyspepsia have been reported. Jain *et al.* reported an overall prevalence of 50.6% in non-ulcer dyspepsia. The prevalence of *H. pylori* infection ranges from 25% in developed countries to >90% in developing countries.

### Role of Smoking and Alcohol as Risk Factors for *H. pylori* Infection

Out of 50 patients included in this study, there were 36 male and 14 females. Out of 36 males, 16 were found to be smokers, there were no smokers among females. Out of 18 patients who tested positive for *H. pylori*, 13 were male and 5 were female. Out of 13 males, 12 were smokers and one non-smoker. Hence, this shows that 75% of male patients who tested positive for *H. pylori* were smokers. This result is consistent with Ogihara *et al.* who showed that current smokers had a 0.82-fold greater risk of *H. pylori* seropositivity.

Most studies reported slightly increased odds of *H. pylori* infection among smokers. On the other hand, there are a few studies which show that there is only moderate but not significant increase in the prevalence of *H. pylori* infection among smokers. The observed net association of smoking with active *H. pylori* infection may result from various mechanisms with partly antagonistic effects on risk of infection.

Out of 50 patients, 30 patients were identified to be alcoholics, of which six tested positive for *H. pylori*. Of the six patients, five were male and one female. About 20%

of patients who gave history of alcoholism were tested positive for *H. pylori*. As the detailed history regarding type of alcohol consumed, grams of alcohol consumed and duration of alcoholism were not taken into account in this study, the exact role of alcohol as risk factor for *H. pylori* infection cannot be assessed. There are few studies which have shown that moderate amount of alcohol consumption would decrease the risk of *H. pylori* infection.

### Response to Treatment

Out of 50 patients, 18 tested positive for *H. pylori* and all were advised eradication regimen which consisted of omeprazole, amoxicillin, and metronidazole given twice daily for 14 days.

After the treatment, patients were enquired about relief of symptoms after 1 month. Out of 18 patients who were given treatment, 13 reported relief of symptoms (72%), three reported improvement in symptoms after treatment but complained of recurrence in symptoms after 1 month. The rest two of 18 patients complained of no relief in symptoms. These eradication results were comparable to study done by Sanchez-Delgado *et al.* who reported an eradication rate of 88.2%. About 100% eradication rates were also reported by Sun *et al.* when treated with similar regimen.

Five patients who had no improvement or relief of symptoms at the end of 1 month were considered to be infected by metronidazole-resistant strains. Antibacterial treatment of *H. pylori* is difficult because of very rapid development of resistance to antimicrobial agents, especially nitroimidazole group of drugs like metronidazole. Amoxicillin resistance was rarely reported. After failure of a combination of PPI-based triple regimen, the use of quadruple therapy has been generally recommended, but is associated with high incidence of adverse effects and is also reported to have failure in eradication in 20–305 patients. All the five patients who reported no relief of symptoms after 1 month were advised salvage regimen as already mentioned in the results. Metronidazole was replaced with levofloxacin 500 mg once daily for 10 days. Several authors have reported that levofloxacin-based second-line therapies represent an encouraging strategy for eradication failures as there is remarkable activity against *H. pylori* and eradication rates of about 90% have been reported.

Out of five patients who were advised salvage regimen, four patients reported relief of symptoms (80%) and one lost for follow-up. Other authors studied this same regimen in patients with one previous eradication failure, with mean eradication rates ranging from 60% to 94%.

A recent systematic paper showed a mean eradication rate of 80% with levofloxacin-based “rescue” regimen and higher



**Figure 1:** *Helicobacter pylori*

cure rates with 10 days than with 7-day regimens, suggesting that the longer therapeutic scheme should be chosen.

### SUMMARY

This was a prospective study conducted in MediCiti Institute of Medical Sciences to determine the role of *H. pylori* in dyspepsia. This study was based on clinical symptoms and endoscopic biopsy of antral mucosa in 50 patients with a history of dyspepsia. Endoscopy-based rapid urease test was used to confirm the diagnosis.

The overall positivity for *H. pylori* was found to be 36%. From the present study, it is evident that dyspeptic symptoms are more common in males than females. The prevalence of dyspepsia and *H. pylori* infection increases with increasing age. Wide range of symptoms for dyspepsia has been noted, with abdominal discomfort being the most common of all (80%). Among all patients who underwent upper GI endoscopy, majority had normal mucosal findings (76%) followed by inflammatory mucosal findings (20%). Rapid urease test remains a reliable test for diagnosis of *H. pylori* and also has the advantage of high reproducibility.

Higher rates of infection have been found in smokers than in non-smokers which are consistent with the literature. Alcohol consumption has not shown any significant risk for infection, rather has been considered to be protective factor in certain studies in literature.

In the present study, rate of response to eradication regimen was found to be 80% and this increased to 94% after salvage regimen.

### CONCLUSION

The background evidence of the association between *H. pylori* and dyspepsia was reviewed, together with methods

of diagnosing *H. pylori* infection along with eradication rates with short-course regimen.

Dyspepsia is defined as persistent or recurring symptoms consisting of upper abdominal pain, discomfort, nausea, or bloating. In the present study, abdominal discomfort and upper abdominal pain were the most common symptoms. Prevalence was more in males.

*H. pylori* is a common occurrence in most people. This bacterium is an important cause of dyspepsia. It can cause persistent gastritis and is directly linked to the development of peptic ulcer disease as well as mucosa-associated lymphoma of the stomach.

The combination of upper GI endoscopy and rapid urease test is a simple method to detect *H. pylori*. This study prevalence rate was 36%. Eradication therapy provided relief of symptoms in most patients.

The search for and eradication of *H. pylori* was discussed in this prospective study. The present findings were in agreement with any other studies.

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