

Analyzing the Relationship between Helicobacter Pylori Infection and its Complication in Digestive System Center

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Abstract: Background: Helicobacter pylori infection is a prevalent global health issue, characterized by the bacterium ability to colonize the gastric mucosa and induce chronic inflammation. This spiral-shaped gram-negative bacterium is thought to have evolved to penetrate the stomach mucoid lining, leading to long-term colonization and various gastrointestinal complications.

H. pylori infection is directly associated with peptic ulcer disease, chronic gastritis, gastric cancer.

Methodology: A descriptive analytical study was conducted from March 18th, 2025, to July 19th, 2025, to Analyzing the relationship between Helicobacter Pylori Infection and its Complication in digestive system center. A non-probability convenience sample of 100 patients with H. pylori was selected from Al-Diwaniyah teaching Hospital's Digestive System Center. Data collection and analysis were performed using descriptive and inferential statistical procedures.

Results: study's findings indicate that the majority of H. pylori patients were females aged 27-37 years, residing in urban areas. Notably, 26 patients held graduate or postgraduate degrees, and half of them were unemployed with moderate socioeconomic status. Gastritis was the most common complication, accounting for 55% of the total cases.

Conclusions: The study concludes that patients attending the Gastrointestinal Tract (GIT) center were primarily smokers and did not engage in alcohol or drug abuse, but exhibited poor dietary habits. It is essential to conduct periodic examinations and implement appropriate measures for managing infections consistently and gastritis cases are the most common complications of patients with H. pylori and small ratio (of gastric cancer is associated with

H. pylori bacterial infection.

Key points: Helicobacter Pylori, Complication.

INTRODUCTION

Helicobacter pylori (H. pylori) is a Gram-negative bacterial pathogen that exhibits a selective affinity for the gastric epithelium. The seminal isolation of this microorganism from gastric biopsy specimens in 1983 by Warren and Marshall marked a pivotal milestone in the field of gastric microbiology, which had previously been a neglected area of study⁽¹⁾. Their groundbreaking discovery earned them the prestigious Nobel Prize in Medicine or Physiology, thereby catalyzing a renewed interest in the microbiology of the gastric milieu. In recognition of the pathogen's significance, the National Institutes of Health (NIH) consensus conference in the United States, convened in 1994, formally established an association between H. pylori and peptic ulcer disease⁽²⁾.

Furthermore, in the same year, *Helicobacter pylori* was officially designated as a carcinogen implicated in the development of gastric adenocarcinoma. *Helicobacter pylori* is a carcinogenic agent strongly linked to the development of gastric adenocarcinoma ⁽³⁾⁽⁴⁾. Transmission of this bacterium occurs primarily through person-to-person contact, with the fecal-oral route being the predominant mode of spread. Upon infection, *H. pylori* can cause significant damage to the gastric mucosa, leading to a range of pathological conditions, including peptic ulcers and stomach cancer ⁽⁵⁾. This bacterium is implicated in various gastrointestinal disorders, such as chronic gastritis, gastric and duodenal ulceration, and mucosa-associated lymphoid-tissue lymphoma ⁽⁶⁾. Notably, *H. pylori* is one of the most prevalent infectious agents globally, with an estimated half of the world's population harboring the bacterium in their stomachs ⁽⁷⁾. The geographic distribution and socioeconomic factors influencing the infection rate vary significantly across different regions. Furthermore, emerging evidence suggests that *H. pylori* may also be associated with extra-gastric diseases, including cardiovascular diseases, dyslipidemia, diabetes mellitus, and reproductive disorders. The public health burden of *H. pylori* infection is substantial, resulting in approximately 1 million deaths annually ⁽⁸⁾⁽⁹⁾.

METHADODOLOGY

A descriptive analytical study design is carried to analysis the helicobacter pylori infection and its complication for the period of March 18th, 2025, to July 19th, 2025. The study was conducted in Center of digestive system/AL-Diwaniyah teaching Hospital. Non-probability convenience sample of (100) patients with *H. pylori* from Center of digestive system based on the criteria of patients (diagnosis with *H. pylori* by Serology Test, Stool Antigen Test).

Study instrument: A questionnaire is constructed through extensive review of relevant literature. The questionnaire is used as a tool of data collection which includes the demographic data, and the risk factors which include (Alcohol drinking, Smoking, Drug substance, Fast food, Tea/coffee/per day, Red Meat/per week). Complications of helicobacter pylori including the Diagnosis Laparoscopic examination results and the clinical examination of the patient (Gastritis cancer, Duodenal ulcer, Gastritic ulcer, Gastritis, Duodenitis..

Statistical analysis: The statistical data analysis approach by using (SPSS-ver.20) is used in order to analyze and evaluate the data of the study. A descriptive statistical data analysis approach used to describe the study variables: Frequencies and Percentages.

RESULTS

Table (1): The study sample's demographic characteristics reveal that 33% of patients are within the 27-37 age range. Fifty-one percent of the sample are females who predominantly reside in rural areas. Twenty-six percent of the sample hold graduate or postgraduate degrees, while 51% are unemployed. A moderate socioeconomic status is reported by 49% of the total sample.

Rating	Variables	No. (%)	
Patients Age (years)	16-26	25	25.0
	27-37	33	33.0
	38-48	21	21.0
	49-59	12	12.0
	60-70	8	8.0
	71+	1	1.0
Gender	Male	49	49.0
	Female	51	51.0
Residency	Rural	64	64.0
	Urban	36	36.0
Education	Profession or honors	0	0
	Graduate or	26	26.0

	post-graduate		
	Intermediate or diploma	15	15.0
	Secondary school	12	12.0
	Middle school	14	14.0
	Primary school	18	18.0
	Illiterate	15	15.0
Occupation	Profession	22	22.0
	Semi-profession	5	5.0
	Shop-owner, farmer	10	10.0
	Skilled worker	11	11.0
	Semi-skilled worker	1	1.0
	Unskilled worker	0	0
Socio-economic Status	Unemployed	51	51.0
	High (26-29)	24	24.0
	Moderate (11-25)	49	49.0
	Low (less than 5-10)	27	27.0

Table (2) Distribution the Laparoscopic Examination Complications of H. Pylori Bacteria

Classifications		Frequency	Percent
complication	Gastritis	55	55.0
	Duodenitis	25	25.0
	Gastric ulcer	5	5.0
	Duodenal ulcer	14	14.0
	Gastric cancer	1	1.0
	Total	100	100

This table demonstrates the patients with H.pylori bacteria their complications in terms of frequencies and percentage. Findings reveal that the gastritis is the most complications associated with H. pylori bacterial infection, it constituted that (55%) out of the total number of the study sample. Only a small ratio (1%) of gastric cancer is associated with H.pylori bacterial infection.

DISCUSSION

Demographic data reveal that 33% of patients belonged to the second age group (27-37). Fifty-one percent of the study sample was female and lived in rural areas. Twenty-six and fifty-one percent of the study sample were graduates or postgraduates and unemployed, respectively. Finally, in this table, moderate socioeconomic status constituted 49% of the total study sample. In light of these findings, the prevalence of Helicobacter pylori and its contributing factors were evaluated among university students in Turkey. Data were obtained through the Helicobacter pylori positivity questionnaire, which was collected and analyzed using descriptive statistics using the chi-square test. The results indicated that 76.2% of them were female, aged 21-23, and unemployed ⁽⁷⁾⁽¹⁴⁾.

The results showed that gastritis is one of the most common complications associated with Helicobacter pylori infection, accounting for 55% of the total study sample. Meanwhile, a small percentage (only 1%) of gastric cancers were associated with Helicobacter pylori infection. These results are consistent with a study conducted on patients attending Marjan Specialist Hospital in Babil Governorate, using biopsies taken during endoscopic examination by specialists. The results

revealed that the largest percentage (33.3%) of patients suffered from gastritis as a complication of *Helicobacter pylori* ⁽¹¹⁾⁽¹²⁾⁽¹³⁾.

The results indicate an increasing incidence rate as the month progresses. In March, the incidence rate was at its lowest, then began to rise until it reached its highest rate in April, reaching (34.3%) of the total number of cases in the fourth month. In this decade, a study was conducted in Khorramabad, western Iran, to assess the prevalence of *Helicobacter pylori* infection and its potential risk factors in this area. The results indicate that the overall prevalence of infection was (43%) out of a total of (381) cases. Education plays an important role in preventing the spread of infection. The infection rate has been confirmed to be lower than in other regions of Iran, and it is expected to decline in the future due to the rise in education rates and a decline in unhealthy behaviors, such as mothers chewing food before eating ⁽¹⁵⁾⁽¹⁶⁾.

CONCLUSIONS: The study concluded that patients who visited the Digestive System Center were smokers and did not abuse alcohol or drugs, but rather consumed improper food and drink. Regular screenings should be conducted and appropriate measures taken to address infections on an ongoing basis and gastritis cases are the most common complications of patients with *H. pylori* and small ratio of gastric cancer is associated with *H. pylori* bacterial infection.

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