

The Prevalence of *Helicobacter Pylori* among Iraqi patients in Babylon province

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ABSTRACT

The *Helicobacter pylori* (*H. pylori*) is the major etiological risk factor for this malignancy, which progresses through a multi-step process, developing from gastritis, to gastric atrophy, intestinal metaplasia, dysplasia, and finally to carcinoma. The exact modes and routes of transmission of *Helicobacter pylori* (*H. pylori*) infection remain unproven. Studies showed that *H. pylori* bacteria can spread directly from one person to the other, or indirectly from an infected person to the environment. A variety of gastric diseases, including peptic ulcers, gastric mucosa-associated lymphoid tissue lymphomas and gastric cancers, are strongly associated with *H. pylori*-induced gastritis. A total of (150) blood sample up to 5 ml of blood that used for serum separation and DNA extraction was collected as directions serum sample tested by used rapid test for *H. pylori* infection detection non-invasive techniques 40(26.6%) positive and remaining 110 (73.3%) negative cases as well as the positive samples were confirm by urea breath testing that given also 40(26.6%) positive and 110(73.3%) negative cases. Age and sex distribution of *H. pylori* patients, The mean of the patient's ages was (41.1±3.4) years ranging from (20-65) years old and for healthy controls (40.3±5.1) and differ from male to female in the age range of more frequent cases in the age range (30-40) years and (40-50) years which mean nearly half of cases occur in this range. The current study advises that the wide age range of *H. pylori* patients. This suggests that all age groups were susceptible for *H. pylori* infection, but the rate of infection varies depending on the age.

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INTRODUCTION

Helicobacter pylori (*H. pylori*) infection is one of the most common infection in humans, affecting more than half of the population. The prevalence of the infection varies widely in rural developing areas (more than 80%) compared to urban developed ones (less than 40%), as a consequence of different socioeconomic and hygienic conditions. *H. pylori* infection is usually acquired during childhood; infected people usually remain asymptomatic, but about 30% of individuals may develop mild to severe upper gastrointestinal diseases such as gastritis, peptic ulcer, gastric cancer or MALT lymphoma (Manfredi *et al.*, 2018).

Helicobacter pylori (*H. pylori*) is a gram-negative microaerophilic flagellated bacterium that specifically infects the stomachs at approximately 50% of the world's population (Polk and Peek, 2010; Malfertheiner *et al.*; 2012).

Helicobacter bacteria are the only known microorganisms that can thrive in the highly acidic environment of the stomach. Its helical shape (hence the name *helicobacter*) is thought to have evolved to penetrate and colonize the mucus lining. Colonizes and grows in human gastric epithelial tissue and mucus. In industrialized countries, as many as 50% of adults are infected with the pathogen, while in the developing world, prevalence values of about 90% have been reported. Infection is thought to be acquired in early childhood and persists for life in left untreated, despite triggering vigorous innate and adaptive immune response (Polk and Peek, 2010; Malfertheiner *et al.*, 2012).

Helicobacter pylori (*H. pylori*) infection is regarded as the major cause of various gastric diseases (gastritis, peptic ulcers and gastric cancer) and induces the production of several cytokines. Interleukin-17 (IL-17) is recently recognized as an important player in the pathophysiology of infectious and immune-mediated gastrointestinal diseases. *H. pylori* infection increases IL-17 in the gastric mucosa of humans. IL-17 usually causes secretion of IL-8 through activation of ERK 1/2 MAP kinase pathway. The released IL-8 attracts neutrophils promoting inflammation. T regulatory cells (Tregs) suppress the inflammatory reaction

driven by IL-17, there by favoring bacterial persistence in *H. pylori*-infection (Azadegan-Dehkordi *et al.*, 2015) IL-17A is the most widely studied member of the IL-17 family of cytokines (IL-17A-F), and is produced by Th17 CD4⁺ T cells as well as other subsets of immune cells (Gua and Tato, 2010).

MATERIAL AND METHODS

Study subjects

A case-control study was taken in our study. A total of 150 cases of suspected *H. pylori* infection. A blood samples were collected and diagnosed at private laboratories of all study cases in AL-Hillah / Babylon province, during the period from October 2018 to February 2019. These samples compared with 20 samples of apparently healthy control. Control subjects were frequency-matched with cases on age and sex. Control subjects who had a history of cancer were excluded from our study. Blood samples were collected from each participant. Detailed personal information on demographic characteristics, smoking and drinking status were collected by interview.

Data on demographic information were collected using a standard questionnaire by trained staffs, such as sex, age, dietary habits, alcohol consumption, tobacco smoking and family history of cancer.

Diagnosis of *H. pylori* infection by direct identification of *H. pylori* infection by detection on antibodies in serum. The One Step *H. Pylori* Serum and whole blood Rapid Test is a rapid lateral flow, qualitative immunoassay. It is intended for use at point of care facilities to detect the presence of IgM antibodies specific to *Helicobacter pylori* (*H. pylori*) in human blood or serum, and by using ¹⁴C-urea breath test is a non-invasive, simple and safe test which provides excellent accuracy both for the initial diagnosis of *Helicobacter pylori* infection and for the confirmation of its eradication after treatment.

RESULT

The Prevalence of *Helicobacter Pylori* among Iraqi patients in Babylon province

A total of forty patients were enrolled in the present study. The mean of the patient's ages was (41.1±3.4) years ranging from (20-65) years old and for healthy controls (40.3±5.1) and differ from male to female in the age range of more frequent cases in the age range (30-40) years and (40-50) years which mean nearly half of cases occur in this range as well as 20 matched ages and sex control persons were enrolled in this study.

Table (1): Age distribution among *H. pylori* infection of patients

Age group	<i>H. pylori</i> patients	Controls
	No.	No.
20-30	8	5
30-40	13	8
40-50	10	4

50-60	5	2
>60	4	1
Total	40	20
p-value:0.9, P>0.05		

There is no significant relationship between the age of the patients and susceptibility to *H. pylori* infection (p-value 0.9, p >0.05) there was 23(57.5%) of cases for males and the other 17(42.5%) of cases for females, there is no significant relationship between male and female of the patients and controls and susceptibility to *H. pylori* infection (p-value 0.85, p>0.05) as shown in figure (4-1).

In the present study, we did not get a significant difference in *H. pylori* prevalence according to gender. There was no significant difference in sex- and age-related distribution (<50 years' age group and >50 years' age group) of *H. pylori* infection.

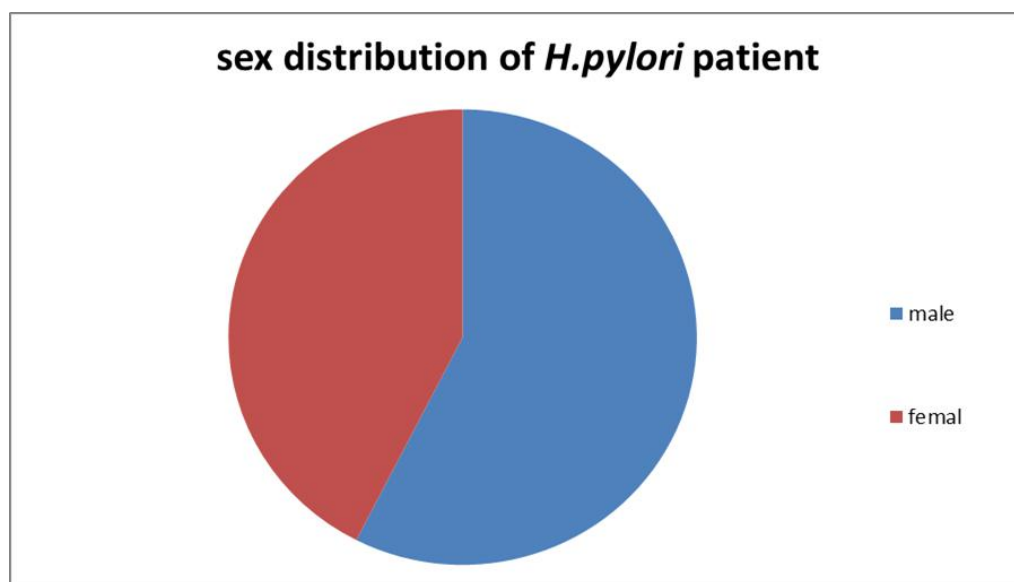


Figure (1): Sex distribution among *H. pylori* patient

DISCUSSION

The results revealed the wide age range of *H. pylori* patients. This suggests that all age groups were susceptible for *H. pylori* infection, but the rate of infection varies depending on the age.

The high rates of infections caused by *H. pylori* were mostly detected in high population densities and low socioeconomic communities, and the prevalence of the bacteria is different between countries (Abu-Sbeih *et al.*, 2014).

The highest rate of infected patients was among ages of over ≥50 years with the percentage of 39.2%. On the other hand, 23.4% of patients with age group 20-29 were also positive for *H. pylori* infection. These data could support the conviction that *H. pylori* infection was developed early in life, leading to multifocal gastritis later in life (Ahang *et al.*, 2019). The results of this study are in disagreement to the results obtained by Brown, 2000 who indicated that the rate of infected people increases with age as 50% of infected people were among those ages of over 60 years. Other studies observed that chronic gastritis detected in relatively younger age group with a mean age of 47 years (Garg *et al.*, 2012). Similar to these results Udoh 2012 (Udoh and Obaseki, 2012) also reported chronic gastritis cases in younger age group with mean age of 48.6 years.

There was a statistically non-significant decrease in the prevalence in 2009-2016 compared with the 2000-2009 period. The observed differences between countries appear to

be due to economic and social conditions. *H. pylori* infection can be a benchmark for the socioeconomic and health status of a country. Further studies are suggested to investigate the natural history of the acquisition of *H. pylori* infection from childhood into adult life (Zammani *et al.*, 2018).

CONCLUSION

The results revealed that the prevalence of *H. pylori* was in high in males individuals (57.5%) more than females (42.5%) and the highest rate of infected patients were among ages (30-40) years as well as due to Alcohol consumption , Smoking and other reseau such as dietary habits also may be to the history of family.

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