Prevalence of *Helicobacter pylori* in Duhok, Iraq

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ABSTRACT

About half of the world's population has *Helicobacter pylori* infection, which is still a major public health concern. Early detection and treatment are essential to stopping the spread of infection since it causes various stomach diseases, such as inflammation, gastroduodenal ulcers, and cancers. This study aimed to determine the prevalence of *Helicobacter pylori* in Duhok City, Iraq. A cross-sectional study was done among 209 samples that were collected from the Vin Private Hospital, Duhok, Iraq. Both the ELISA stool antigen test and the urea breath test were used in this study; the infection rate was higher in females than in males, with an infection rate of 46.4% for the ELISA test and 51.8% for the urea breath test. In order to avoid issues and the emergence of stomach cancer, it is essential to get rid of Helicobacter pylori infections as soon as possible.

Keywords: Helicobacter pylori, ELISA test, Urea breath test, Duhok, Prevalence

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Introduction

Helicobacter pylori (H. pylori) is a gram-negative bacterium and is a prevalent gastrointestinal infection that is closely associated with peptic ulcer disease, chronic gastritis, and gastric cancer [1, 2]. Planning efficient prevention, diagnostic, and treatment strategies requires an understanding of its local epidemiology, particularly in areas with shifting socioeconomic and sanitary conditions [3, 4].

Approximately half of the world's population is infected with *H. pylori*; this infection is more common in developing nations, in individuals with lower socioeconomic level, and in crowded areas [5, 6]. According to estimates, there were around 4.4 billion infected people worldwide in 2015, with significant regional variations [1, 2]. The significance of host and bacterial variables, crowding, and sanitation in determining infection patterns and illness consequences is emphasized by epidemiological reviews [2, 6].

Research from the region of Duhok shows that both adults and children have a high frequency of *H. pylori*. IgG ELISA has revealed an adult seroprevalence of about 40%; males, smokers, people with low levels of education, people with poor hygiene, and people living in crowded households are at higher risk [4,7]. IgG seroprevalence in children has been reported to be between 28 and 31 percent; it rises with age and is linked to living in a rural area and being overcrowded [6]. According to a retrospective multi-age hospital-based investigation, the highest positive was found in people aged 19–39 years, with an overall infection incidence of 63% in Duhok [7]. Using serology, stool antigen, and urea breath testing, non-invasive diagnostic work from Duhok City discovered a prevalence of 35.3%, again with age and sex differences [5,8,9].

Methodology

Study Design and Population

Two hundred patients between the ages of 12 and 65 who were recruited from Vin Private Hospital's outpatient gastroenterology department between [January-March 2026] participated in a cross-sectional study (99 males and 110 females).

Diagnostic Tests

ELISA stool antigen test and breath test were used in the current study.

Results and Discussion

The study examined 209 samples for *H. pylori* utilizing urea breath tests (56 samples) and stool antigen (153 samples), with an overall positivity percentage of 46.4% (97/209). 99 men and 110 women, with an average age of 35, from both urban (150) and rural (59) locations made up the participants. The urea breath test yielded 29 positive results (51.8%) compared to 68 positive results (44.4%) for the stool antigen test. There was no significant difference between the tests at p=0.432, and the overall prevalence was 46.4%.

These results indicate the efficacy of stool antigen and UBT as non-invasive diagnoses in dyspeptic populations, with global meta-analyses indicating sensitivity/specificity of 91–96% and 92–100%, respectively. Wider CIs indicate a lower sample size, but the somewhat higher UBT positivity may be due to its better identification of active infection. Together, the 46.4% overall rate (95% CI: 39.8-53.2%) surpasses Western values (<20%) but is comparable to high-prevalence areas like Iraq and Kurdistan [10, 11].

The majority of participants were urban-based (71.8%, 150/209) and female (52.6%, 110/209), with a mean age of 35. This limited comparisons between rural and rural areas without stratified positive data. The balanced gender here (47.5% male) supports no major sex bias; urban skew may exaggerate prevalence if city congestion drives transmission; literature suggests higher *H. pylori* in males and rural inhabitants due to occupational exposures or poorer hygiene. Future research should use age-stratified analysis since age 35 corresponds with peak acquisition in adulthood [12].

Recommendations

In order to avoid issues and the emergence of stomach cancer, it is essential to get rid of *H. pylori* infections as soon as possible.

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