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Prevalence of *Helicobacter pylori* Infection Among Some Children Under 16 Years in Maysan Province, Iraq

Muhanad Mahdi Mohammed

College of Dentistry, University of Misan, Amarah, Maysan, Iraq.

Email: muhannad.m.m@uomisan.edu.iq

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Abstract

Background: *H. pylori* is among the most prevalent bacterial infections globally, especially in the Third World. Infection in early life is related to functional inflammatory digestive disorders that may be chronic, i.e., chronic gastritis, peptic ulcer diseases, and an increased risk of gastric cancer. **Objective:** This research was conducted to estimate the frequency of H. pylori infection among children younger than 16 years of age in Maysan Governorate, Iraq, and to assess the association between infection and age category and sex. **Materials and Methods:** A total of 86 sera were obtained from pediatric patients attending Maternity and Child Hospital in Maysan from November 2024 to early March 2025. Whole blood was aseptically collected, and serum was obtained via centrifugation. The presence of anti-*H. pylori* IgG antibodies tested. **Results:** Among the 86 children tested, 43 (50%) had Positive results for *H. pylori* IgG antibodies, and 43 (50%) were negative. Females had a slightly higher frequency than males. In stratification by age, children aged 10–15 years had the highest infection prevalence, implying an age-related increase in exposure or susceptibility.

Conclusion: The results demonstrate a significant prevalence of *H. pylori* infection within children in Maysan, with significant variations according to age group. Such findings underscore the need for early screening programmes, in particular for older children, as well as awareness-raising of routes of transmission and prevention in the community. Additional studies are needed to identify risk factors and formulate public health interventions in the area.

Keywords: *Helicobacter pylori*, prevalence, children, Maysan, Iraq, rapid test cassette.

Introduction

H. pylori is a gram-negative microaerophilic bacterium, is responsible for various upper gastrointestinal disorders, including chronic gastritis, peptic ulcer disease, and gastric carcinoma [1,2]. The global prevalence of *H. pylori* infection has been significant, with an overall infection rate reaching 43.2% between 2011 and 2022 (Figure 1) [3].

Approximately fifty percent of the global population is infected with *H. pylori*, and this colonized demographic is extensively distributed [4,5]. The transmission the presence of this bacteria persists ambiguously; nonetheless, either fecal or oral contact resulting in person-to-person transfer is considered the primary mode of dissemination [5]. *H. pylori* is predominantly prevalent in Asia, Latin America, and Africa, but its occurrence in Oceania and North America is limited to approximately 24% of the population [6,7]. Among individuals infected with H. pylori, 34.7% are located in industrialized countries, whereas 50.8% inhabit resource-limited nations [8]. Furthermore, recent research suggests a consistent decline in the incidence of *H. pylori* infections. Notwithstanding this trend, there has been a concerning rise in antibiotic-resistant strains of *H. pylori* [9].

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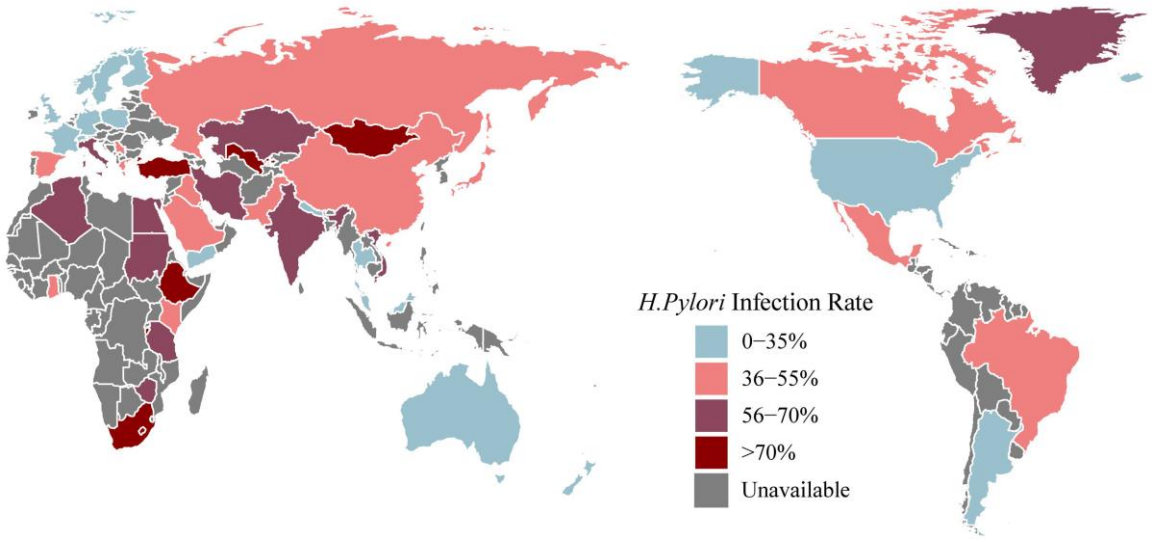

Fig. 1: The most recent prevalence of *H. pylori* infection [Antarctica removed (no data collected) [3].

Children typically serve as asymptomatic carriers of illnesses, subsequently exhibiting symptoms in adulthood. Nonetheless, it is accurate that the overwhelming majority of individuals infected with *H. pylori* do not display symptoms [10]. During outbreaks, the prevalence of *H. pylori* infection varies from 85% to 95% in impoverished nations and from 30% to 50% in affluent nations [11–13]. The precise mechanism of *H. pylori* transmission remains unidentified. Nonetheless, reports are indicating that it is transmitted via the faecal–oral and/or oral-to-oral pathways.

Consumption of water and food contaminated with this bacterium is linked to this mode of transmission [5,10]. Infections are more probable due to inadequate cleanliness, insufficient nutrition, and geographical differences, while the emergence of certain virulent elements enables *H.pylori* to endure at a reduced pH level. As the bacterium is incapable of acid production, Stomach acid is neutralized by the urease enzyme [14].

In Iraq, few data are available on the prevalence of *H.pylori* infection in children, and regional variation is not well documented. Maysan Province, positioned in the southeast of Iraq, is a mixed urban–rural population with different levels of access to healthcare. The prevalence and the demographic distribution of *H.pylori* infection among children in this area indicate that early diagnostic and preventive measures should be planned.

AIMS OF THE STUDY

Due to the lack of studies conducted in Iraq, the purpose of this research is to determine the prevalence of *H. pylori* among children under the age of 16 in Maysan governorate.

Materials and Methods

Approval of ethics and consent for participation

The research has received approval from the university in compliance with ethical standards and from the local health authority. Additionally, permission was obtained from the children's parents or guardians, permitting the data and samples in the research.

Specimen collection

This study aimed to investigate the prevalence of *H.pylori* infection among patients presenting with suspected H. pylori-related symptoms. This cross-sectional study was conducted on 86 children aged below 16 years at the Maysan Maternity and Children Hospital, Maysan Province, Iraq. For the period from November 2024 to early March 2025.

Were collected get around Five milliliters of venous blood were collected from each participant by qualified medical staff using sterile disposable syringes were drawn under aseptic conditions. The samples were then transferred to gel tubes without any anticoagulant substance. The gathered specimens were permitted to coagulate at ambient temperature for 20 minutes. The test tubes underwent centrifugation at 3500 rpm for a duration of 10 minutes to isolate the serum. The serum was carefully pipetted into sterile Eppendorf tubes and stored at 2°C to 8°C for the purpose of testing, and the obtained serum was utilized for the identification of *H.pylori* antibodies [15].

Serological Testing

The H. pylori IgG antibodies were tested by the Accu-Tell® *H.pylori* IgG Rapid Test Cassettes (sourced from AccuBioTech Company Ltd., China). It is an immunochromatographic assay for the qualitative detection of IgG antibody to *H.pylori* in human serum. The test was performed as per the manufacturer's instructions.

Data Analysis

Data were analyzed using Microsoft Excel and basic statistical tools. The results were categorized based on gender and age groups: zero to four, five to nine, and ten to fifteen. Frequencies and percentages were calculated, and results were presented in tables and charts. No advanced statistical software or hypothesis testing was applied, as the study was descriptive.

Results

To check for *H. pylori* IgG antibodies, 86 serum samples were examined using the rapid cassette method. Of these, 43 (50%) samples tested positive and 43 (50%) tested negative.

Distribution by Sex

Out of the 86 children, 46 were females and 40 were males. Among females, 25 (54.3%) tested positive, while 21 (45.7%) tested negative. Among males, 18 (45.0%) tested positive, and 22 (55.0%) tested negative. The results showed a slightly higher prevalence among female children.

Table 1: Distribution by Sex

Gender	Positive	Negative	Total
Female	**25**	**21**	**46**
Male	**18**	**22**	**40**
Total	**43**	**43**	**86**

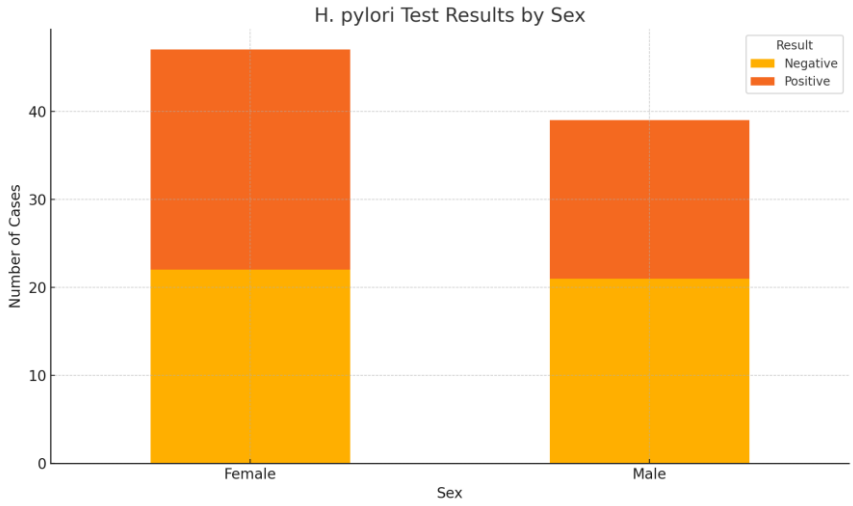

Fig 2: *H.pylori* Test Results by Sex

Distribution by Age Group

Patients were classified into three age 0–4, 5–9, and 10–15 years. The study showed that the age group 10-15 is more affected, while the age group 0-4 years is less likely to be affected.

Table 2: Distribution by Age Group

Age Group	Positive	Negative	Total
0–4	2	14	16
5–9	11	12	23
10–15	30	16	46
Total	43	43	86

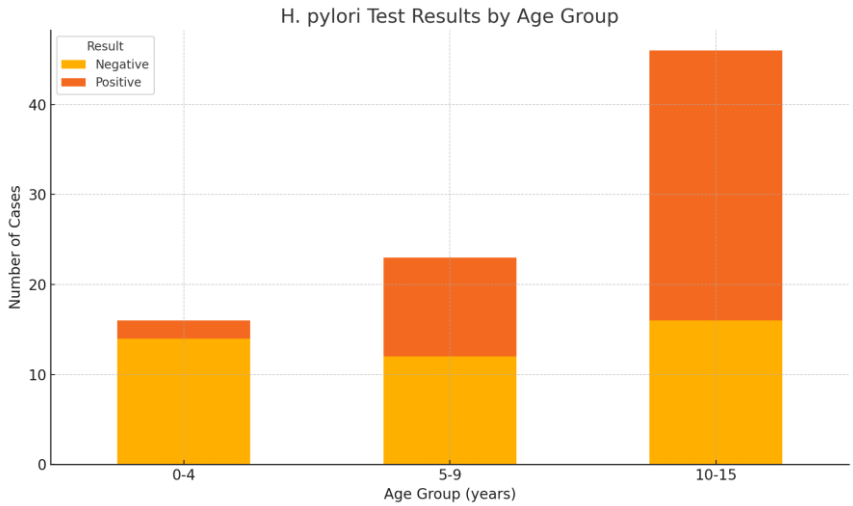

Fig 3: *H. pylori* Test Results by Age Group

These findings are also illustrated in the accompanying bar charts. The figures show that the infection rate increases with age, peaking in the 10–15 years category.

Discussion

H. pylori infection is a global public health problem, affecting more than half of the world's population. The infection is thought to occur early during childhood but can remain asymptomatic, with long-term clinical sequelae including persistent gastritis, peptic ulcer disease [16,17]. The current study provides an updated insight into the prevalence of *H. pylori* infection within children under 16 years of age in Maysan Province, Iraq. Using serological rapid testing, 50% of the 86 samples tested positive.

The gender-based distribution in this study showed that bacterial infections are more prevalent among females (54.3%) compared to males (45.0%). When comparing The findings of the present study at the local level, the results showed that they are similar to studies conducted in Erbil and Iraq, the prevalence of *H. pylori* infection in females was higher than in males, recorded at 40% for male, and (60 %) for female [18], while, the rate was 40.7% in female and male was 38.2%, respectively [19].

In contrast with studies done previously in Babylon province, there were 57.5% of cases for males and the other 42.5% of cases for females [20]. As for the level outside Iraq, the Association of male or female sex with *H. pylori* infection is discussed. A systematic review evaluation conducted by Zamani et al. revealed no disparities in H. pylori infection rates between males and females [8]. Conversely, Ibrahim and associates [21] found that the predominant incidence is in males. In addition to other studies, including two seroprevalence studies from Jordan [22,23]. This is contrary to the results of our study, which showed female dominance.

In terms of age groups, Our study showed that the highest rate of infection (65.2%) occurred in children aged 10-15 years and the lowest rate of infection in the age group 0-4 years, and these results agreed with the findings of Yuan et al [24], indicating that infection increases with age during childhood and adolescence, most likely due to repeated exposure to infection, changes in lifestyle, diet, poor personal hygiene or sharing contaminated tools and eat out of the house frequently [24-26].

Comparative international studies have reported variable prevalence rates. For example, in Germany and the United States, child infection rates are usually below 20% due to strong public health infrastructure, access to clean water, and health education [20, 21]. In contrast, prevalence rates among children in Pakistan and India reached 70% in disadvantaged communities [27].

Additional contributing factors should also be considered. Children with weakened immunity—due to malnutrition, congenital immunodeficiency, or chronic disease—may face a higher risk of colonization and persistence of H. pylori [8].

Dietary habits also play a critical role. Consumption of improperly washed vegetables, untreated water, and frequent intake of food from street vendors are all associated with elevated risk of infection in children [28,29].

In general, the results of this study reinforce the importance of region-specific data on *H. pylori* infection in children. It also highlights the need for local public health policies aimed at early detection, sanitation, food hygiene, nutritional support, and health education targeted at families and schools

Conclusion

1. The results showed a clear age-related trend, with older children (10-15 years old) showing the highest incidence rates while younger children were less affected, indicating increased exposure over time.

2. The study showed that females were more affected compared to males, although the difference was not statistically significant.

3. These results are consistent with regional and international data and confirm the high burden of *H. pylori* infection in children's groups in developing regions.

4. Rapid serological testing has proven to be a practical method of field diagnostics, especially in resource-limited environments.

Recommendations

1. Early screening programs: implement routine screening for *H. pylori* in primary health care centers and schools, especially targeting children aged 10 years and older.

2. Health education: launching awareness campaigns for families and schoolchildren focusing on hygiene, safe handling of food, and the importance of clean water to reduce transmission of infection.

3. Further research: conducting large-scale longitudinal studies throughout Iraq to assess risk factors, recurrence rates, and treatment outcomes in children.

4. Diagnostic capability: improved laboratory infrastructure in regional hospitals to enable more sensitive diagnostic techniques such as urea breath tests or stool antigen tests.

5. Policy integration: encourage the Ministry of Health to integrate *H. pylori* infection control into national child health programs, especially in underserved provinces.

6. Maternal education programs: promoting maternal health and education as indirect strategies to reduce the risk of infection among children.

Conflict of interest: NIL

Funding: NIL

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