

Original Research

Assessing Recurrence of H. pylori Infection in Treated Patients

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ABSTRACT:

Helicobacter pylori infection is a globally prevalent bacterial infection linked to various gastrointestinal diseases, the recurrence of H pylori after eradication remains a critical challenge due to factors such as treatment failure, inadequate follow up and exposure to persistent factors. The aim of the study is to evaluate the recurrence rate following H. pylori eradication therapy and evaluate the most risk factors that are associated with H. pylori infection among previous treated patients.. Methods: Data was collected via structured self-reporting in the form of an online questionnaire. The participants must have been previously diagnosed and treated for H. pylori infection at the time of the survey and must have been at least 18 years of age. For access to the sample for the



study, evidence of diagnosis and treatment at least six months in advance of the survey was required. According to the data, the female represents the majority of participants 83%. By 47 of individuals 89% had a previous *H. pylori* infection, 42% had a current infection, and 36% of these cases were recurrent. 92% reported adherence to medical instructions regarding dose and duration of *H. pylori* treatment protocol.. Importantly, 81% of infected family members did not receive proper treatment. In addition, 58% had dental or gum disease. There is a high recurrence of *H. pylori* infection, this study highlights the need for improved diagnostic followup, patient education, screening household contacts, improving oral health and optimizing management strategies.

KEYWORDS: *H. pylori*, Recurrence, Eradication, Reinfection.

INTRODUCTION

(*H. pylori*) infection exerts an influence on over 50% of the global population. The incidence of this infection is markedly elevated in developing nations compared to developed nations. Moreover, *H. pylori* infection is very common in the Middle East and North Africa (MENA) regions. This infection can cause intestinal metaplasia, atrophic gastritis, peptic ulcer disease, and chronic gastritis, all of which are complications of *H. pylori* infection and can put people at risk for stomach cancer. Furthermore, *H. pylori* may play a role in the pathogenesis of autoimmune and hematologic disorders. The eradication of *H. pylori* has been shown to alleviate gastric inflammation and mucosal damage, enhance gastric acid secretion, and restore the microbiome to its normative state (Bahbah et al., 2023). Following recommended eradication therapy, a percentage of patients may test positive for *H. pylori* again, which raises two important clinical and scientific questions: What factors increase the likelihood of recurrence? Does the

recurrence occur as a result of incomplete eradication (recrudescence), or is it a true reinfection? (Li et al., 2021; Zhang et al., 2021) The understanding of the reinfection rates is vital for both epidemiological insights and patient management. Early studies in developed countries indicated high reinfection rates post-treatment, but recent findings suggest that with effective treatment and detection methods, reinfection is rare (Dafr Allah Benajah et al., 2013). In Gharyan, their study examined the relationship between *H. pylori* infection and various lifestyle habits and risk factors among adult patients. The findings suggested a potential link between factors such as stress perception, physical activity frequency, duration, and vitamin D levels with rates of *H. pylori* infection, emphasizing the importance of lifestyle choices in influencing microbial infections among adults (Najia Mahdawi et al., 2024).

The World Health Organization encourages all countries to consider screening for *H. pylori* to reduce the outcome of gastric cancer, especially in asymptomatic populations. However, in epidemiological studies of *H. pylori*, *H. pylori* stool antigen (HpSA) tests

have received a lot of attention. As is known, the transmission of the *H. pylori* infection occurs mainly through the fecal-oral route. Furthermore, a high rate of transmission of the infection to sexual partners of *H. pylori*-infected subjects has been demonstrated. These results clarified the possible risk factors linked to *H. pylori* infection. Socioeconomic conditions have been strongly related to the acquisition of *H. pylori* in developed and developing countries; other risk factors involve educational level, income, living standards, such as crowding index, sanitation, and hygiene; and the source of drinking water (Khoder et al., 2021). Post-eradication testing reduces early detection of treatment failure or recurrence, delaying timely rescue actions and increasing community-level transmission. Studies indicate that test-of-cure rates are low in many primary care settings, indicating a considerable gap between guidelines and clinical practice. (Malfertheiner et al., 2022; Chen et al., 2022) All studies emphasize the importance of evaluating *H. pylori* recurrence in patients who have had treatment to connect bacterial biology with host behavior, environmental factors, and medical procedures. Improving patient outcomes and lowering the worldwide burden of *H. pylori* infection can be achieved by avoiding risk factors and implementing evidence-based follow-up techniques. In this paper we investigated the most common precipitating factors that contribute to recurrence of *H. pylori* infection.

MATERIALS AND METHODS

The study used a cross-sectional design to evaluate the recurrence of infection by *H. pylori* in symptomatic previously diagnosed patients. The data collected using a structured,

self-administered online questionnaire. Participants were 18 years or older who had been previously diagnosed and treated for *H. pylori* infection; criteria for study participation documented prior diagnosis and treatment of at least six months prior to the start of the survey. A questionnaire was developed and distributed online via Google Forms. population recruited through health clinics and social media outlets The data collection consumed over 8 weeks. The data exported to Microsoft Excel for descriptive and statistical analysis to assess recurrence patterns and potential related factors.

RESULTS AND DISCUSSION

1. Effect of Gender on *H. pylori* Infection

Table:(1) presents the distribution of *Helicobacter pylori* infection prevalence by gender. According to the data, out of the total 53 individuals.

Table: (1). Gender Prevalence of *H. pylori* Infection.

The Sex	Count
Female	83%
Risk factors	Percent
Total	100%

2. Prevalence of *H. pylori* Recurrence

Chart: (1) illustrated the correlation between historical and current infections of *H. pylori*; specifically, 47 out of 53 respondents (89%) indicated a previous incidence of *H. pylori* infection, thereby signifying that a substantial proportion had prior exposure to *H. pylori*. Furthermore, 22 individuals (42%) disclosed current infection with *H. pylori*, while 36% of them experienced a recurrent infection.

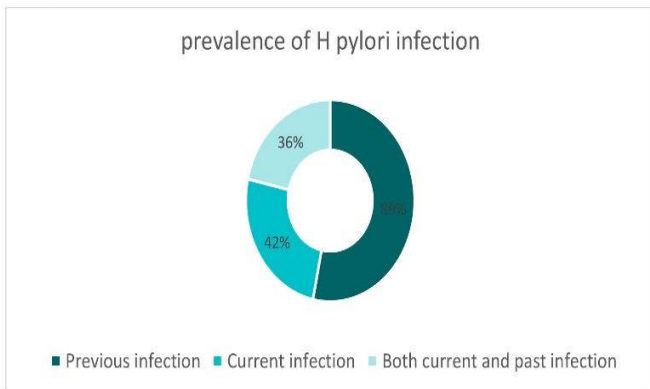


Figure: (1). The Prevalence of H. pylori Recurrence

3. Diagnostic Methods:

The stool antigen assay is reliable for diagnosing active infections; however, the application of serological methods may lead to erroneous interpretations during post-treatment evaluations (chart 2).

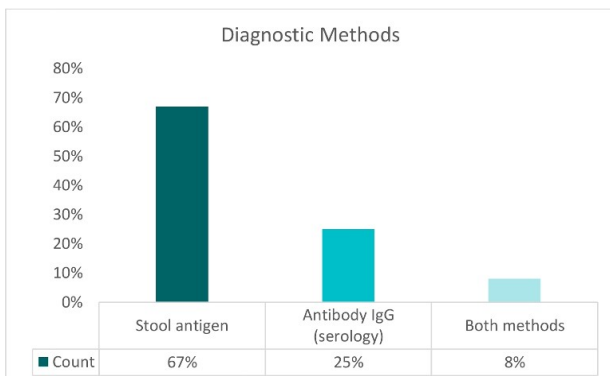


Figure: (2). The diagnostic methods used by patients for post treatment follow up.

4. Treatment Pattern:

The majority of respondents engaged in treatment predominantly involving antibiotic-based therapy in conjunction with proton pump inhibitors (98%), with (61%) of these individuals adhering to an antibiotic regimen for a duration of two weeks and (50%) persisting with proton pump inhibitors for a period of one month.

Based on self-reported data, a significant number of respondents asserted complete compliance with the directives of their healthcare providers, which may potentially lead to an overestimation of the actual adherence levels (table 2).

Table: (2). Adherence to H. pylori treatment

Parameter	Count
1. Combined therapy (antibiotics + omeprazole)	98%
2. Antibiotic duration (about 2 weeks)	61%
3. Omeprazole duration (About 1 month) (About 2 months)	50% 18%
4. Adherence to instructions	92%

5. Household risk factor:

25% of individuals detailed that some of their family members were infected, 81% of those did not receive appropriate treatment (chart 3).

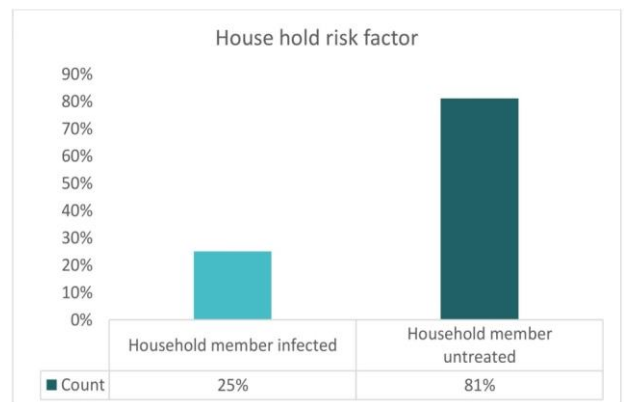


Figure: (3). The household contacts infected individuals.

6. Other Risk Factors:

31 out of 53 individuals (58%) exhibited dental caries or periodontal disease, which may serve as a potential oral reservoir for reinfection.

Approximately 25% of these individuals were administered analgesics for various conditions, which could exacerbate the manifestations of *H. pylori* infection. The majority of respondents maintained a good weight, denied frequent eating outside the home, and reported an average income as shown in table 3.

Table: (3). The risk factors that predispose to recurrence of *H. pylori* infection.

Risk factors	Percent
Oral and dental health	58%
Analgesic intake	25%
Over weight	23%
Eating outside	26%
Income	70% average

DISCUSSION

The results of our study underscore important considerations regarding *H. pylori* infection, particularly recurrence post-treatment. Of the 53 participants, 89% reported a previous *H. pylori* infection, 42% found to have a current infection, and 36% reported experiencing recurrent infections, indicating a significant rate of either ineffective eradication or reinfection. This recurrence rate is consistent with previous research that indicates recurrence rates varying from 5% to more than 30%, influenced by different factors such as geographical region, treatment strategies, and duration of follow-up (Malfertheiner et al., 2002). The notably high recurrence rate observed in our study may be due to difficulties in the eradication efforts, reinfection from environmental sources or household contacts, or the reliability of diagnostic methods used after treatment. Another

remarkable finding is the prevalence of *H. pylori* infection in females (83%) compared to males (17%). Although this study does not clarify the reasons for this disparity, logical explanations may include differences in factors such as healthcare-seeking behaviour, biological tendency, or exposure dynamics within local environments. Prior research has shown conflicting results regarding gender-based susceptibility to *H. pylori*. Some studies showed a higher prevalence in males (Dorman & Bunker, 2000), while other studies in certain areas report increased transmission rates of *H. pylori* from mother to child, likely due to closer family contact (Osaki et al., 2015). This study highlights the necessity of utilising appropriate diagnostic methods following treatment. While 67% of cases rely on the stool antigen test, around 25% of participants use serology (IgG antibodies) for identifying active infections; however, this method can remain positive for several months after successful eradication, potentially causing misclassification of current infection status. The risk of overestimating recurrence due to reliance on serology is a noted limitation in clinical practice (Chey et al., 2017). This focuses on the need for standardized post-treatment follow-up protocols rather than serology, stool antigen testing, and urea breath tests, which are considered the best for confirming a successful eradication. The majority of respondents (98%) received combination therapy involving antibiotics and proton pump inhibitors (PPIs), consistent with current international guidelines (Malfertheiner et al., 2002). Moreover, 61% complete antibiotic

courses in two weeks, and 50% continue PPIs for one month. However, high self-reported adherence to physician instructions (92%) may reflect the risk of overestimation due to social desirability bias. Actually, poor adherence, antibiotic resistance, and short treatment regimens are recognized factors that contribute to treatment failure and recurrent infection (Kang et al., 2009). Some studies highlight the impact of antibiotic resistance on treatment. They observe that resistance rates are extremely high, necessitating the establishment of regional surveillance networks that effectively manage the treatment of *H. pylori* infection. This aligns with the arguments in the work of D. Georgopoulos et al. (2012), who emphasize the importance of reassessing patients post-treatment. Most recently, Kashyap Godavarthy & Puli (2023) addressed the issue of growing antibiotic resistance and the creation of *H. pylori* treatment methods. They emphasize the importance of antimicrobial stewardship in addressing the complexities of *H. pylori* management. This pointed to the need for more efficient treatment strategies due to treatment failure caused by antimicrobial resistance. The study pinpointed the potential reservoirs for reinfection. 25% of participants reported having an infected household member, and most of those household members (81%) remained untreated. Thus, the importance of intrafamilial transmission is highlighted. Furthermore, 58% of participants had dental caries or gingival disease, supporting the hypothesis that the oral cavity could be a reservoir for *H. pylori* and facilitate the recurrence post-treatment

(Dammann et al., 2000). Together, these results emphasize the importance of treating all households and integrating oral health as a part of the *H. pylori* management strategy. Despite the majority of participants having average income, healthy body weight, and limited eating outside the home, as well as 25% reported regular analgesic use, which may worsen gastric mucosal damage and obscure or intensify the symptoms of *H. pylori*. However, it is clear that analgesics (such as NSAIDs) and *H. pylori* interact, which can change symptoms and treatment results (Tsai & Hsu, 2015). (Zhou, 2020) A broader view of diagnostic and therapeutic challenges complements these clinical studies. Current reviews discuss the necessity of ongoing surveillance, repeated testing, and consideration of combination therapies to improve eradication success. They also point to potential efforts from vaccine development; controlling recurrence is part of a larger goal of reducing disease burden and transmission (Elbehiry et al., 2023). The majority opinion further clarifies and distinguishes between persistent infection and true recurrence.

CONCLUSION

Through this study, we conclude that diabetes has harmful effects on many organs of the body, including the kidney,

Especially if an appropriate diet is not followed and appropriate treatment is not taken at the specified times and exercise is neglected, especially after a long time has passed since

contracting the disease.

RECOMMENDATION

Treatment should be made available to all patients who test positive for an active *H. pylori* infection. After treatment, patients should undergo testing to rule out recurrence. Avoid using serological tests for post-treatment follow-up, standardize diagnostic approaches to verify post-treatment eradication, such as stool *H. pylori* antigen or urea breath test, and improve patients' access to these services. Encourage patient education on the necessity and significance of completing the antibiotic and PPI inhibitor regimen and subsequent reassessment. Enforce screening of household contacts for infected patients with *H. pylori* to reduce the risk of transmission. Since the oral cavity is considered a bacterial reservoir, it is necessary to integrate the dental and gum evaluation in the strategy of *H. pylori* management. In the future, we need to investigate the resistance to antibiotics, because it can be a cause of management failure.

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mother for your unconditional love and prayers. To my brothers and sisters, for your endless support. To my husband, for being my partner in life and my supporter in this academic journey. To my wonderful children, you are my motivation and my joy.

ETHICS

This study was conducted in accordance with the ethical principles for medical research involving human subjects. All respondents were provided with a clear explanation of the research purpose and their right to voluntary participation and withdrawal. To ensure participant privacy, all collected data were anonymized; no personal information was retained. Access to the raw data was restricted to the research team, and all digital records were stored on secure password files. The study was conducted with due regard for the sensitivity of the health related information reported by the participants.

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تقييم عودة عدوى جرثومة المعدة (H. pylori) لدى المرضى المعالجين

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الملخص:

عدوى جرثومة المعدة (هيليكوباكتر بيلوري) عدوى بكتيرية شائعة عالمياً، وترتبط بالعديد من أمراض الجهاز الهضمي. ولا يزال تكرار الإصابة بهذه الجرثومة بعد استئصالها يمثل تحدياً كبيراً، وذلك بسبب عوامل عدة مثل فشل العلاج، وعدم كفاية المتابعة، والتعرض لعوامل مستمرة. تقييم معدل تكرار الإصابة بعد علاج استئصال جرثومة المعدة، وتقييم أهم عوامل الخطر المرتبطة بهذه العدوى لدى المرضى الذين سبق علاجهم. جُمعت البيانات من خلال استبيان إلكتروني منظم. اشترطت الدراسة أن يكون المشاركون قد تم تشخيصهم وعلاجهم من عدوى جرثومة المعدة وقت إجراء الاستبيان، وأن لا يقل عمرهم عن 18 عامًا. و للوصول إلى عينة الدراسة، كان من الضروري تقديم ما يثبت التشخيص والعلاج قبل ستة أشهر على الأقل من تاريخ الاستبيان. تشير البيانات إلى أن الإناث يمثلن غالبية المشاركين (83%). أظهرت نتائج الدراسة أن 47% من الأفراد (89%) لديهم تاريخ إصابة سابقة بجرثومة المعدة البوابية، و 42% لديهم إصابة حالية، و 36% من هذه الحالات كانت متكررة. وأفاد 92% من المشاركين بالتزامهم بالتعليمات الطبية المتعلقة بالجرعة و بروتوكول علاج جرثومة المعدة البوابية. ومن الجدير بالذكر أن 81% من أفراد الأسرة المصابين لم يتلقوا العلاج المناسب. بالإضافة إلى ذلك، كان لدى 58% منهم أمراض في الأسنان أو اللثة. هناك معدل تكرار مرتفع لعدوى الملوية البوابية، وتسلط هذه الدراسة الضوء على الحاجة إلى تحسين المتابعة التشخيصية وتنقيف المريض، وفحص المخالطين في المنزل، وتحسين صحة الفم، وتحسين استراتيجيات العلاج.

الكلمات المفتاحية: جرثومة المعدة ، تكرار الإصابة ، فشل العلاج.