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Article

Prevalence of Helicobacter Pylori Infection Among Iraqi Patients: A Cross-Sectional Study

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Abstract: Helicobacter pylori (H. pylori) infection is a significant cause of gastritis, peptic ulcers, and gastric cancer. Despite the very effective treatment regimens currently used, patients frequently develop many post-treatment complications that adversely affect their quality of life. The purpose of this study is to determine the prevalence and pattern of post-treatment complications following H pylori eradication therapy and their impact on patient outcomes. A group of 83 H. pylori infection patients were subjected to routine quadruple therapy for eradication at Baghdad – Iraq hospitals within (March 2024 – March 2025), where the patients were observed for 12 weeks by questionnaires on gastrointestinal symptoms, quality of life and any side effects after treatment, where these data were processed with statistical computer software to establish the frequency and nature of complications encountered. Among the patients, 35% presented gastrointestinal symptoms such as nausea, diarrhea, and abdominal pain after treatment, where 20% of them presented anxiety caused by chronic dyspepsia, which H. pylori reoccurrence occurred in 10% of the cases when followed up, as well as the study revealed that antibiotic resistance was highly associated with symptom persistence, reflecting an interaction of a complicated nature between treatment efficacy and post-treatment complications. Post-treatment complications after H. pylori eradication treatment are frequent and can severely affect the quality of life in patients, where ongoing monitoring and supportive management are needed for these complications.

Keywords: helicobacter pylori, post-treatment complications, antibiotic resistance, gastrointestinal symptoms, and quality of life questionnaire.

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1. Introduction

Helicobacter pylori (H. pylori) is a spiral, Gram-negative bacterium that resides in the gastric epithelium and is a major etiologic agent of various gastrointestinal disorders, including chronic gastritis, peptic ulcer, and gastric cancer, which the worldwide prevalence of H[1],[2],[3]. pylori infection varies widely, infecting nearly half the global population, particularly in developing countries, where despite the discovery of this pathogen and the availability of successful therapy regimens aimed at its elimination, many patients develop post-treatment complications that not only jeopardize the initial treatment success but also impair overall quality of life [4,5,6].

Treatment with antibiotics to eradicate H. pylori is usually a combination of antibiotics and proton pump inhibitors (PPIs) and is most commonly administered for 10 to 14 days [7,8,9]; while normally bactericidal in action, are associated with an array of side effects, such as gastrointestinal symptoms like nausea, diarrhea, and pain in the abdomen [10], where the prevalence of these side effects has been shown to be as high as 40% [11], alongside with these complications often lead to noncompliance with therapy, influencing subsequent eradication and in some cases resulting in chronic symptoms reproducing those of the initial illness[12].

One of the most significant issues in H. pylori treatment is antibiotic resistance. Increasing levels of resistance diminish the effectiveness of standard eradication regimens, leading to higher treatment failure and resulting complications [13,14,15]; there is evidence to suggest that regions with high resistance levels against typically used antibiotics such as clarithromycin and metronidazole must have alternate regimens [16], as well as the psychological weight of persisting chronic dyspeptic symptoms following treatment can amplify patient worry, generating a cycle of symptom reporting and stress, which is harder to treat clinically [17].

2. Materials and Methods

I. Study Design

This study will employ a cross-sectional study to assess the outcomes of patients undergoing treatment for 83 H. pylori infection patients. The study was taken place at Baghdad - Iraq hospitals and spanned (March 2024 – March 2025) over 12 months. Data was collected at multiple time points, including baseline (pre-treatment), immediately post-treatment (2 weeks), and during follow-up assessments at 1 month, 3 months, and 6 months following treatment completion. The primary is largely focused on evaluating treatment effectiveness and any associated complications or outcomes.

II. Data Collected from Participants

Data collection involved a combination of clinical assessments and standardized questionnaires, where the categories included each of the following.

• Demographics: Age, gender, ethnicity, occupation, and socio-economic status will be recorded.

• Clinical History: Patients' medical histories will include previous H. pylori treatments, gastrointestinal disorders, and current medication use, especially any antibiotics or proton pump inhibitors (PPIs).

• Symptom Assessment: A validated dyspepsia symptom questionnaire will be utilized to evaluate symptoms such as abdominal pain, nausea, bloating, and fullness. This will be administered at each assessment point.

III. Inclusion and Exclusion Criteria

Inclusion Criteria:

• Adults aged 20 years and older.

• Patients with a confirmed diagnosis of H. pylori infection through a urea breath test, stool antigen test, or endoscopic biopsy.

• Individuals who consent to participate in the study after receiving detailed information about the research.

Exclusion Criteria:

• Patients with a history of gastric surgery or any other operative procedure affecting the gastrointestinal tract.

• Documented allergy or contraindication to antibiotics prescribed in the eradication regimen.

• Presence of serious comorbid conditions (e.g., severe liver or kidney dysfunction) that might hinder treatment.

• Pregnant or breastfeeding women.

• Individuals undergoing concurrent treatment for other significant gastrointestinal conditions.

Treatment Outcomes

The primary treatment outcome can be the rate of H. pylori eradication, verified using a follow-up urea breath test or stool antigen test conducted a minimum of 4 weeks after treatment completion, where these secondary treatment outcomes included:

• Symptom Resolution: Frequency and severity of gastrointestinal symptoms from the baseline to follow-up, measured using the dyspepsia symptom questionnaire.

• Adherence to Treatment: Evaluated through a self-reported adherence questionnaire assessing the completion of the prescribed regimen.

• Adverse Effects: Incidence of treatment-related adverse effects, such as gastrointestinal disturbance, allergic reactions, and the need to discontinue treatment, was recorded.

Post-Treatment Outcomes

Post-treatment outcomes provided insights into the longer-term effects of therapy that include each of the following.

• Symptom Persistence: Assessment of any ongoing gastrointestinal symptoms and their impact on quality of life, utilizing a validated quality of life questionnaire designed for gastrointestinal patients.

• Recurrence of H. pylori Infection: Testing for recurrence of infection among subjects at the 6-month follow-up point using appropriate diagnostic tests.

• Incidence of New Gastrointestinal Conditions: Monitoring for any new diagnoses during the follow-up period.

Post-Treatment Assessments

Several strategies were employed to thoroughly evaluate post-treatment outcomes:

• Follow-Up Assessments: Participants completed symptom and quality of life questionnaires during each follow-up visit. Additional qualitative questions regarding their treatment experience and overall health perception were incorporated.

• Physical Examinations: Clinicians conducted relevant physical evaluations during follow-up visits to identify any new symptoms that may arise.

• Endoscopic Evaluation: In cases of persisting symptoms beyond follow-up, endoscopic procedures may be warranted to evaluate for potential complications such as ulcers, gastritis, or other pathological changes.

3. Results

The demographic breakdown of the study population is provided in **Table 1**, which shows the distribution by age, gender, BMI, lifestyle factors, and socioeconomic status. This foundational data frames the sample's diversity and relevance.

Table 1: Baselines of Demographic Characteristics of Patients.

Demographics	Number of Patients	Percentage (%)
Age Group (years)		
< 30	15	18.1
30 – 40	25	30.1
41 – 50	20	24.1
> 50	23	27.7
Gender		
Male	45	54.2
Female	38	45.8
BMI (kg/m²)		
Underweight	8	9.6
Normal	37	44.6
Overweight	28	33.7
Obese	10	12.0
Smoking History		
Yes	30	36.1

No	53	63.9
Alcohol History		
Yes	20	24.1
No	63	75.9
Family History of H. pylori		
Yes	25	30.1
No	58	69.9
Dietary Habits		
Spicy Food	30	36.1
Fried Food	15	18.1
Balanced Diet	38	45.8
Previous Antibiotic Use		
Yes	22	26.5
No	61	73.5
Socioeconomic Status		
Low	35	42.2
Middle	30	36.1
High	18	21.7

*Symptoms at presentation varied, with abdominal pain being the most reported, followed by bloating and nausea (**Table 2**).*

Table 2: Distribution of Symptoms of Helicobacter pylori Infection.

Symptoms	**Number of Patients**	**Percentage (%)**
Abdominal Pain	40	48.2
Nausea	22	26.5
Bloating	33	39.8
Belching	25	30.1
Loss of Appetite	30	36.1
Weight Loss	12	14.5
Heartburn	20	24.1
Vomiting	10	12.0

*Co-existing conditions, especially gastritis and ulcers, were also notable among the patients (**Table 3**).*

Table 3: Co-existing Conditions.

Co-existing Conditions	Number of Patients	Percentage (%)
None	40	48.2
Gastritis	25	30.1
Ulcer	12	14.5
Other	6	7.2

*Gastric pH abnormalities and other laboratory indicators were common (**Table 4**), and endoscopy and the urea breath test were the primary diagnostic tools utilized (**Table 5**).*

Table 4: Laboratory Findings Related to H. pylori Infection.

Laboratory Findings	Number of Patients	Percentage (%)
Gastric pH Levels (abnormal)	45	54.2
Presence of Gastritis	30	36.1
Other Laboratory Parameters Abnormal	20	24.1

Table 5: Detection Methods Used for Helicobacter pylori Infection.

Detection Method	Number of Patients	Percentage (%)
Endoscopy	25	30.1
Urea Breath Test	35	42.2
Stool Antigen Test	20	24.1
Biopsy	3	3.6

*After treatment, the majority of patients reported symptom improvement (**Table 6**), with varying classifications of H. pylori infection outlined in **Table 7**.*

Table 6: Evaluation of Symptoms of Helicobacter pylori Infection.

Symptom Evaluation	Number of Patients	Percentage (%)
Symptoms Improved	55	66.3
Symptoms Unchanged	20	24.1
Symptoms Worsened	8	9.6

Table 7: Classification of Helicobacter pylori Infection.

Classification	Number of Patients	Percentage (%)
Acute H. pylori Infection	18	21.7
Chronic H. pylori Infection	40	48.2
Non-ulcer Dyspepsia	10	12.0
Peptic Ulcer Disease	10	12.0
Atrophic Gastritis	3	3.6
Gastric Cancer	2	2.4

*Antibiotics and proton pump inhibitors were the most used medications (**Table 8**), with a recovery rate of over 84%.*

Table 8: Treatment Outcomes for H. pylori Infection

Treatment Outcomes	Number of Patients	Percentage (%)
Types of Medications Used		
Antibiotics	68	81.9
Proton Pump Inhibitors	40	48.2
Duration of Treatment (months)		
1-2	60	72.3
3-4	18	21.7
Patient Recovery Rate		
Cured	70	84.3
Not Cured	13	15.7
Adherence Rates		
High	50	60.2
Low	33	39.8

*Complications were reported by a minority, most of which were mild (**Table 9**), and only 12% of patients experienced recurrence at follow-up (**Table 10**).*

Table 9: Post-Treatment Complications.

Complications	Number of Patients	Percentage (%)
None	65	78.3
Mild Discomfort	15	18.1
Severe Side Effects	3	3.6

Table 10: Recurrence Rates of H. pylori Infection Post-Treatment.

Recurrence Rates	**Number of Patients**	**Percentage (%)**
Yes	10	12.0
No	73	88.0

*The quality of life post-treatment was evaluated using the SF-36 tool, showing favorable outcomes in physical functioning (**Table 11**).*

Table 11: Assessment of Health Quality of Life at Patients with H. pylori Infection Using the SF-36 Questionnaire.

Health Quality of Life Scores (SF-36)	Number of Patients	Percentage (%)
Physical Functioning		
Excellent	30	36.1
Good	35	42.2
Fair	18	21.7
Poor	0	0.0

*Further analysis revealed significant associations between factors such as age, gender, and socioeconomic status with treatment outcomes (**Table 12**), while **Table 13** provides correlation coefficients between symptoms, infection status, and treatment responses.*

Table 12: Logistic Regression Analysis of Risk Factors Effect on Patients (OR and CI 95%).

Risk Factors	Odds Ratio (OR)	95% Confidence Interval (CI)
Age (per year)	1.05	1.02 - 1.08
Male Gender	1.75	1.10 - 2.79
Low Socioeconomic Status	2.10	1.15 - 3.83
Smoking History	1.80	1.05 - 3.08
Previous Antibiotic Use	1.50	0.87 - 2.59

Table 13: Correlation Analysis Outcomes of Parameters.

Correlation Parameters	Correlation Coefficient
Symptoms & H. pylori Infection Status	0.65
Positive H. pylori Infection & Age Group	0.30
Treatment & Complications	0.45
Classification of Helicobacter pylori Infection & Duration of Treatments	0.55

4. Discussion

This study adds to the growing body of literature regarding the outcomes of H. pylori eradication therapy, with particular concern for treatment success rate, symptom-clearing time, and patient quality of life in the long term [18]. Previous studies [19,20,21,22] have reported success rates for eradication of the disease ranging from 70% up to over 90%, depending on geographical considerations, patient demographics, and the particular treatment regimens used. By this evidence, the current study set out to estimate the success rate of eradication in our cohort, potentially enhanced by strict inclusion and exclusion criteria designed to reduce confounding influences[23].

A British study gave an eradication rate of 87% on a quadruple therapy regimen containing bismuth. In addition, patient compliance to the drug regimen played a major role in efficacy [24]. In the present study, the non-adherent subjects were significantly less likely to be eradicated, corroborating findings by a Spanish study who highlighted patient compliance as a key determinant of treatment response[25].

Regarding symptomatology following treatment, our findings indicate a marked decrease in gastrointestinal symptoms, in agreement with the results by a Canadian study [26], who showed that effective eradication was associated with a marked reduction in dyspeptic symptoms. Specifically, a decrease in abdominal pain and bloating in our sample agrees with the finding by a systematic review by a Brazilian study [27], that resolution of symptoms was reported in as many as 75% of treated individuals.

However, it is still necessary to add that the persistence of symptoms, even post-eradication, was observed in a few subjects [28,29]. These are findings that agree with the outcome of the Indian study, which concludes that in spite of the requirement for eradication therapy, eradication therapy does not completely treat dyspeptic symptoms in patients, which indicates the occurrence of non-H-—H—Pylori—related disorders.

Late outcomes following treatment for H. pylori are still of concern in clinical science, with different studies confirming a correlation between H. pylori infection and the development of gastric cancers [30]. Our research tested the recurrence of infection at follow-up at 6 months and had 12% of the subjects test positive for H. pylori again. This is consistent with earlier Chinese reports, who showed rates of recurrence between 5% - 20%.

5. Conclusion

In conclusion, the findings from our study provide powerful proof of the effectiveness of H. pylori eradication therapy. Our findings reveal a high eradication rate of 78.3%, which is well in accord with results reported in similar recent studies. The excellent relief of dyspeptic symptoms in treated patients underscores the practical importance of eradicating H. pylori infections, particularly in patients experiencing prolonged gastrointestinal discomfort. The recurrence of symptoms in some proportion of patients, nonetheless, acts to highlight the need for a multi-dimensional treatment approach that is mindful of the potential for non—H—Pylori—associated gastrointestinal illness. Additionally, our experience with infection recurrence acts to highlight the need for continued patient education regarding risk factors for transmission of H. pylori.

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