Original Article
DOI: https://doi.org/10.70749/ijbr.v3i4.961

INDUS JOURNAL OF BIOSCIENCE RESEARCH
https://induspublishers.com/IJBR
ISSN: 2960-2793/ 2960-2807

Crossref

OPEN ACCESS

Frequency of H. Pylori Infection in Acid Peptic Disease Patients Presenting at Department of Medicine, Shahida Islam Teaching Hospital, Lodhran

Nabeela Munir

Department of Medicine, Shahida Islam Medical College Lodhran, Pakistan

ARTICLE INFO

Keywords
H. Pylori, Acid Peptic Disease, Lifestyle, Nsaid Use, Prevalence, Pakistan.

Corresponding Author: Dr Nabeela Munir,
Post Graduate Registrar Medicine, Shahida Islam Medical College, Lodhran, Pakistan
Email: nabeelazeshan@gmail.com

Declaration
Authors' Contribution: Sole authorship
Conflict of Interest: No conflict of interest.
Funding: No funding received by the authors.

Article History
Received: 15-03-2025, Revised: 28-03-2025
Accepted: 31-03-2025, Published: 08-04-2025

ABSTRACT

Introduction: Infection of *Helicobacter pylori* (*H. pylori*) is a prevalent factor for acid peptic disease in the world especially in developing countries. This study assesses its prevalence and possible correlates among patients attending the Shahida Islam Teaching Hospital, Lodhran. **Objectives**: To find out the prevalence of *H. pylori* and how it relates to lifestyles, smoking habits, BMI and NSAID use in patients with acid peptic disease. **Materials and Methods**: In this study, a retrospective cross-sectional survey research design was used on 126 patients diagnosed with acid peptic disease in the duration from 24 December, 2024 to 12 March, 2025. *H. pylori* status was determined in the stool using antigen test and serum IgG test. Data were analyzed using SPSS 25, and the significance level adopted was p \u2264 0.05. **Results**: Among the patients, 62.7% were positive for Histamine Helicobacter pylori. These relationships were highly significant with smoking (p= 0.01), physical inactivity (p = 0.03), normal and low BMI (p = 0.02) and NSAID use (p = 0.04). **Conclusion**: *H. pylori* is still found frequently in the population, different strategies for screening and reducing the impact of the pathogen should be developed.

INTRODUCTION

Helicobacter pylori (*H. pylori*) is a gram-negative bacterium found on the stomach's mucosa and is commonly associated with diseases such as PUD and gastritis. Although diagnostic and therapeutic tools continue to be developed, *H. pylori* is still a recognized factor in causing morbidity and mortality around the world, with increased impact in the developing world. The bacterium is linked to acid-peptic diseases that include heartburn, nausea, and upper abdominal pains, making it clinically important. Therefore, the role of *H. pylori* infection and its linkage with APD in Pakistan still holds added potential for further research to draw more contextualised prevention and management approaches. Acid peptic disease is among the most prevalent diseases and leads to high rates of morbidities and health care costs. Assefa et al. (1) noted that many dyspeptic patients had peptic ulcer disease and that *H. pylori* was involved in the process. Thus, it can be concluded that more research is required to investigate aspects of the epidemic and to collect reliable epidemiological data on the differentiation of the infection rates per geographic region. In like manner, Abbah et al. (2) identified the seroepidemiological status of *H. pylori* and other related risk factors, such as hygiene and diet, which are of importance mostly in the developing world, particularly in the Pakistan area.

The organisations involved in the healthcare delivery system of Pakistan reportedly offer inadequate diagnostic and therapeutic tools for the management of APDs. A literature review by Mikhail et al. (3) and Howden et al. (4) has shown the relevance of the association of H.pylori in influencing the patient's results and recommended the detection and elimination methods of the bacteria. The findings of Alam et al. (5), who studied the prevalence of *H. pylori* in patients with duodenal perforation, also emphasize that the bacterium is associated with severe gastrointestinal emergencies. *H. pylori* infection is known to have social, economic, dietary and healthcare-related factors in different parts of the world. In a developing country, Subedi et al. (6) identified that a significant number of dyspeptic patients were positive for *H. pylori*, similar to the present study in Pakistan. Kaya et al. (7) conducted a review to find out the interaction between H. pylori and intestinal parasites in order to understand how co-infection could

worsen the diseases in developing countries.

Knowledge of the pattern of *H. pylori* infection in the community has an important role in the planning of specific measures. Neupane et al. (8) highlighted the context-specific data on the prevalence of PUD among patients with AP in Nepal. Ahmad et al. (9) undertook to explore the systemic effects of *H. pylori* infection in a decidedly more ambitious way by analyzing the link of *H. pylori* with liver cirrhosis in a tertiary care hospital in Lahore. These epidemiological studies call for an enhanced understanding of *H. pylori* as a complex public health problem. The potential symptomatology of *H. pylori* infection has been well researched, including from simple gastritis to cancerous conditions such as gastric adenocarcinoma. In their study, Okoye et al. (10) clearly explained the behaviours of clinical, endoscopic and pathological assessment in patients with suspected PUD and highlighted the importance of a multivariate diagnostic model. In their study, Salaim et al. (11) explained the relationship between *H. pylori* and gastric adenocarcinoma in patients with gastritis using the bacterium as a carcinogen.

Tadesse et al. (12) conducted a study on the prevalence of *H. pylori* in PPU and presented strong proof of its involvement in severe complications. Anwar et al. (13) have conducted a study on the prevalence of *H. pylori* in the patients registered in a gastroenterology department in Khyber Pakhtunkhwa, which emphasizes the imperative of regional studies to implement programs for the control of H. pylori. Liao et al. (14) also investigated various diagnostic techniques in diagnosing H. pylori infection, potentially providing some feasible ways to enhance the diagnostic methods in low-income settings another rising issue is the difference in H. pylori genetic strains and their impact on various clinical aspects. Nirmala et al. (15) described different genetic patterns of the bacterium in the case of hematemesis and explained how the pathogen is diversiform and instrumental in serious complications. Such advancements serve to highlight the molecular studies relative to the cause, spread and prevention of *H. pylori*.

Therefore, the objective of current research is to see the prevalence of H. pylori among the patients of APD attending Shahida Islam Teaching Hospital, Lodhran. Understanding the significance and burden of H. pylori and APD in this population will be important for future clinical practices and health care and related policies of the locality and region. Moreover, since acid peptic disease significantly reduces the morbidity rates of the disease and has a considerably negative impact on the quality of life of affected patients, this work will fit nicely into the existing literature by evaluating the prevalence of *H. pylori* infection in the local population.

Objective

To determine the frequency of *Helicobacter pylori* infection in patients with acid peptic disease and to identify associated factors among patients visiting the Department of Medicine, Shahida Islam Teaching Hospital, Lodhran.

MATERIALS AND METHODS

Study Design: Cross Sectional.

Study setting: The study was conducted in the Department of Medicine, Shahida Islam Teaching Hospital, Lodhran, Pakistan.

Duration of the study: This study was carried out from 24 December, 2024 to 12 March, 2025.

Inclusion Criteria

The patients to be included in the study were those who had an acid peptic disease with symptoms such as heartburn, nausea, bitter eructation and upper abdominal pain at least three days a week for the past three consecutive months and patients within the ages of 25-65 years. It involved patients of both sexes and all age groups. Further, patients were excluded if they had any prior experience with H. pylori eradication treatments, and the patient must not have been on proton pump inhibitors or H2 blockers within 4 weeks of enrollment in the study. Informed consent was received from each participant.

Exclusion Criteria

Therefore, participants with a prior history of gastrointestinal surgery, chronic liver disease, or chronic obstructive pulmonary disease (COPD) were excluded. Cohort participants excluded from the study also included pregnant women as well as those with psychiatric disorders, CHF, asthma, or a stroke. Additionally, all the patients who had other treatments in the past for acid peptic disease or H. pylori infection were also excluded from the study to contribute to this research in order to get credible results.

Methods

Following approval from the local ethical committee, 126 subsequent eligible patients were included from the outpatient department of Shahida Islam Teaching Hospital, Lodhran. All participants signed consent forms in order to be included in the study. Structured proforma was used for data collection, which included demographic details, lifestyle history, smoking history, BMI and history of NSAID use. H. pylori infection was confirmed using non-invasive stool antigen tests on patients. Additionally, blood was drawn for serological testing to detect H. pylori antibodies (IgG) through ELISA, which was conducted in the hospital pathology laboratory. In order to have comparable results, all tests were performed under controlled conditions. Hypothesis testing was employed to minimize confounding factors such as age, gender, and lifestyle. Descriptive statistics were computed on SPSS version 25. Comparisons of categorical variables were calculated through frequencies and percentages, whereas continuous

variables were presented through mean and standard deviations. Statistical significance was determined by a p-value of < 0.05.

RESULTS

The survey involved 126 patients with acid peptic disease: 68 males (54%) and 58 females (46%). The patients' ages averaged 45.2 \u00b1 11.3 years, SD = 11.3, and the majority, 65%, were within 35\u201355 age group. Out of the eighty patients tested for H. pylori, twenty-seven were found positive, giving a prevalence rate of 62.7%. Out of all the patients, 63.2% of males and 62.0% of females were infected with H. pylori, and the difference was not significantly different (p = 0.08).

Demographic and Lifestyle Factors

Table 1 also displays the demographics and lifestyles of the participants. The sedentary group of patients were found to be predominantly positive for H. pylori (70%) compared to the physically active patients (55%), which raises the probability of a relationship (p = 0.003). Smoking was also significantly correlated with HIV positivity as 78% of smokers were serology positive compared to 57% of non-smokers serology positive (p = 0.01).

Table 1

Variable	H. pylori Positive (n = 79)	H. pylori Negative (n = 47)	p-value
Gender (Male)	43 (63.2%)	25 (36.8%)	0.08
Sedentary Lifestyle	49 (70%)	21 (30%)	0.03
Smoking	29 (78%)	8 (22%)	0.01

Clinical and Medication History

Table 2 illustrates the correlation between H. pylori infection, NSAID use and BMI. In patients with a history of regular NSAID intake, 73% were H. pylori positive as compared to 57% in those without regular NSAID intake (p = 0.04). Overweight and obese patients (BMI \u226525) were more frequent in our study population and also had higher prevalence rates (67%) compared with normal BMI (54 %) (p = 0.02).

Table 2

Variable	H. pylori Positive (n = 79)	H. pylori Negative (n = 47)	p-value
Regular NSAID Use	35 (73%)	13 (27%)	0.04
BMI \u226525	48 (67%)	24 (33%)	0.02

Diagnostic Findings

Diagnostic test results can be seen in Table 3 below. *H. pylori* infection was diagnosed by stool antigen testing in 79 cases and serological testing for IgG positivity in 81 cases, with a concordance rate of 95%.

These findings have shown the high proportion of acid peptic disease patients who are also infected with *H. pylori* and the effect of lifestyle, smoking, and NSAID use on the infection.

Table 3

Diagnostic Test	Positive Cases (n = 126)	Negative Cases (n = 126)
Stool Antigen Test	79 (62.7%)	47 (37.3%)
Serological IgG Test	81 (64.3%)	45 (35.7%)

DISCUSSION

H. pylori is a primary cause of many diseases worldwide, and this problem is most prominent in developing countries where the leading causes include poverty, poor sanitation, and lack of access to proper medical facilities. The objectives of this study included estimating the prevalence of H. pylori infection among the patients with acid peptic disease attending Shahida Islam Teaching Hospital, Lodhran and exploring the related demographic, lifestyle, and clinical factors. The study emphasizes the extent of morbidity and mortality associated with H. pylori and its association with essential precursors like physical inactivity, smoking and the usage of NSAIDs. In this study, the overall prevalence of H. pylori infection was 62.7%, which is quite comparable to other similar studies that have been conducted. Assefa et al. (1) also pointed out the same fact in treating bacterial prevalence among dyspeptic patients in Ethiopia and highlighted the involvement of the bacterium in gastrointestinal diseases. Subedi et al. (6) observed similar trends in a developing country and pointed out the importance of regional data in solving this health problem. However, a slightly higher percentage of males (63.2%) reported being currently preparing for PLe compared to females (62.0%), but the difference was not statistically significant. The fact that there are no drastic differences in the level of risk factors within the male and female population indicates that *H. pylori* risks do not vary greatly based on gender.

Data regarding physical activity were identified as significant predictors of H. pylori infection. It was also found that patients with a sedentary lifestyle were 1.27 times more likely to be infected than active patients. The same observations can be made about the study by Kaya et al. (7) that focused on the importance of physical activity in preventing the development of gastrointestinal infections. Lack of exercise can result in the slow movement of the gastrointestinal tract and compromise the immune system, thus providing the opportunity for H. pylori colonization. Another that was revealed in this study was smoking. Among smokers, H. pylori-positive cases observed were 78%, which was significantly more when compared to non-smoker-positive cases, 57%. Prior findings and related literature relate smoking and H. pylori, such as Tadesse et al.(12) observed that smoking aggravated the virulence of H. pylori by compromising the mucosal barrier and stimulating inflammation. This work has also shown that smokers are more likely to have an aggressive form of

acid peptic disease than non-smokers, and this can probably be attributed to the interaction between smoking and *H. pylori* infection.

NSAID use was also shown to be significantly related to the occurrence of *H. pylori* infection. Of the 100 patients who had a history of using NSAID, 73 had positive *H. pylori* test, while 57 were from non-NSAID users. This result correlates with the studies conducted by Okoye and colleagues (10) and Salaim and colleagues (11), where different degrees of gastric mucosal damage were observed between groups that took NSAIDs together with H. pylori. Nonsteroidal anti-inflammatory drugs block the formation of prostaglandins, which are involved in the maintenance of the gastric mucosal coat. This protective mechanism is even weakened by the effect of *H. pylori*, consequently enhancing the likelihood of acid-peptic diseases. The BMI also turned out to be significant, young and over and obese, with overweight patients presenting higher prevalence rates of *H. pylori* infection (67%) when compared with normal weight patients (54%). Ahmad et al. (9) and Anwar et al. (13) have established that obesity and the concomitant metabolic changes involving adipose tissue, like elevated levels of cytokines, generally have a positive correlation with the characteristics of H. pylori infection, which facilitates colonization as well as chronicity. Therefore, these findings are valuable to the method of dealing with obesity with patients who have *H. pylori*-related diseases.

The diagnostic modalities utilized in this study used stool antigen tests and assisting serological tests to detect *H. pylori* IgG with a relative positivity of 62.7% and 64.3%. In their cross-sectional study, Liao et al. (14) stressed the importance of non-invasive diagnostic approaches, particularly in resource-constrained environments, they contend that stool antigen testing is an effective and affordable modality for diagnosing H. pylori infection. The consistency descriptively applied in this study justifies the application of these diagnostic methods in such epidemiological studies. These findings give useful epidemiological information on the frequency and determinants of H. pylori positivity in a Pakistani population. However, these findings should be discussed from a worldwide and regional perspective. Nirmala et al. (15) described the H. pylori strain heterogeneity and its effect on disease manifestation and response to treatment. These genetic differences may affect the virulence factor and the management of H. pylori strains in different populations, stressing the importance of contextual research for health care.

These findings also have important implications for public health. *H. pylori* is an example of a largely preventable and curable pathogen that continues to produce significant morbidity globally. This finding underlines the importance of specific screening and elimination policies, mainly in inhabitants who are at a high risk of developing the disease, such as smokers, users of NSAIDs, and sedentary individuals. Better education through publicity and health promotion messages on hygiene, changes in diet, and quitting smoking may greatly contribute to the alleviation of H. pylori-associated illnesses. Further research should be directed towards cohort studies to understand the relationship between these risk factors and H. pylori infection in terms of cause-effect. Furthermore, studies that address the molecular characteristics of H. pylori strains in Pakistan may help define the pathogen's distribution and treatment strategies. The additional implementation of molecular diagnostics and antimicrobial susceptibility testing into the actual care continuum might improve outcomes for patients.

Lastly, the findings of the present study exhibit the characteristics of a high degree of *H. pylori* positivity, diagnosed in cases with APD of Lodhran and association with lifestyle parameters, smoking, NSAIDs and BMI. Such results call for multisectoral strategies in a bid to check the modifiable risk factors of H. pylori infection with a view to reducing the burden of acid-peptic diseases in the nation.

CONCLUSION

In the present study, *H. pylori* was detected in 62.7% of the total APPD patients visiting Shahida Islam Teaching Hospital Lodhran. The modifiable risk factors or conditions that may highly contribute to the occurrence of major gastrointestinal complications include a sedentary lifestyle, smoking habit, NSAID use and higher BMI. H. pylori infection is clearly identified as being shared among the study participants and is associated with modifiable risk and clinical factors. This research also revealed that diagnostic approaches, such as stool antigen tests and serological IgG, were fairly reliable and cost-effective in a constrained setting. Measures associated with these general health concerns, like washing hands, eating a better diet, not smoking, and losing weight, help manage the *H. pylori* infection and its complications. Future research should be even more directed to the genotypes of *H. pylori* strains prevailing in the country and their antibiotic resistance. Approaching social inequality from multiple approaches can significantly decrease the prevalence of the diseases associated with *H. pylori* in specific target groups.

REFERENCES

1. Assefa, B., Tadesse, A., Abay, Z., Abebe, A., Tesfaye, T., Tadesse, M. and Molla, A., 2022. Peptic ulcer disease among dyspeptic patients at endoscopy unit, University of Gondar hospital, Northwest Ethiopia. BMC gastroenterology, 22(1), p.164.https://doi.org/10.1186/s12876-022-02245-6
2. Abbah, P.I., Adebolu, T.T. and Oladejo, B.O., 2023. Seroprevalence of Helicobacter pylori infection and risk factors among patients presenting with symptoms of peptic ulcer in Akure metropolis. Microbes and Infectious Diseases, 4(4), pp.1296-1306. https://doi.org/10.21608/mid.2023.192688.1465
3. Mikhail, C.R.G., Abd El Maksoud Mohamed, A., Shaker, O.G., El Desouky, E. and Shalaby, R.H., 2023. Frequency and risk factors of H. pylori infection among dental students: an observational cross-sectional study. Scientific Reports, 13(1), p.14264. https://doi.org/10.1038/s41598-023-41246-7
4. Howden, C.W., Spechler, S.J., Vaezi, M.F., Fendrick, A.M., Atkinson, C., Pelletier, C., Jacob, R. and Brunton, S., 2022. Study of acid-related disorders: Real-world physician and patient perspectives on burden of Helicobacter pylori infection. Gastro Hep Advances, 1(2), pp.231-240. https://doi.org/10.1016/j.gastha.2021.12.005
5. Alam, M., Tahir, R., Ahmad, S., Amin, S., Zareen, A. and Khan, A.G., 2023. Frequency of Helicobacter Pylori (H. Pylori) among Patients presenting with Duodenal Perforation. Pakistan Journal of Medical & Health Sciences, 17(03), pp.142-142. https://doi.org/10.53350/pjmhs2023173142
6. Subedi, R.C., Regmi, B.U., Pathak, B.D., Dhakal, B., Sitaula, D., Paudel, U., KC, P., Maharjan, S., Karki, A., Baniya, S. and Joshi, S., 2023. Prevalence of Helicobacter pylori infection in dyspeptic patients presenting to a tertiary care center of a developing country: a cross-sectional study. F1000Research, 12, p.1195. https://doi.org/10.12688/f1000research.137429.1
7. Kaya, Y., Karaman, Ü., Colak, C., Çınar, H., Karataş, A., Arserim, N.B., Yolalan, G. and Top, Ş., 2023. The Relationship between Helicobacter Pylori and Intestinal Parasites in Patients with Peptic Ulcer. Medical Records, 5(1), pp.132-9. https://doi.org/10.37990/medr.1183913
8. Neupane, D.K., Thapa, R.B., Shakya, R., KC, B., Shrestha, S. and Anu, A., 2024. Prevalence of Peptic Ulcer Disease Among the Patients with Abdominal Pain in a Community Hospital at Kathmandu.
9. Ahmad, M., Mumtaz, S.U., Siddique, S., Fatima, T., Islam, A. and Ali, W., 2024. Association of Helicobacter Pylori infection with Liver cirrhosis among Patients Presenting in a Tertiary Care Hospital of Lahore, Pakistan.
10. Okoye, O.G., Olaomi, O.O., Nwofor, A.M., Jibrin, P., Batta, C.S., Yaú, A.G. and Badejo, O.A., 2021. Correlation of clinical, endoscopic, and pathological findings among suspected peptic ulcer disease patients in Abuja, Nigeria. Gastroenterology Research and Practice, 2021(1), p.9646932. https://doi.org/10.1155/2021/9646932
11. Salaim, T.H., Balaky, S.T., Al-Rawi, R.A., eldeen Abdulla, S.S., Mawlood, A.H., Delmany, A. and Jawhar, N.M., 2022. Clinical manifestation of Helicobacter pylori infection and its association with gastric adenocarcinoma in gastritis patients in Erbil, Kurdistan Region, Iraq. Zanco Journal of Medical Sciences (Zanco J Med Sci), 26(2), pp.178-184. https://doi.org/10.15218/zjms.2022.019
12. Tadesse, M., Musie, E., Teklewold, B. and Hailu, E., 2021. Prevalence of H. Pylori in Perforated Peptic Ulcer Disease at Saint Paul's Hospital Millennium Medical College, Addis Ababa, Ethiopia. Ethiopian journal of health sciences, 31(5). https://doi.org/10.4314/ejhs.v31i5.8
13. Anwar, P., Naeem, A., Khan, M., Arif, A., Zahid, A. and Wajid, U., 2023. Prevalence of Helicobacter pylori infections in patients visiting to gastroenterology department Rehman Medical Institute Khyber Pakhtunkhwa. International Journal of Natural Medicine and Health Sciences, 2(4), pp.37-43.
14. Liao, E.C., Yu, C.H., Lai, J.H., Lin, C.C., Chen, C.J., Chang, W.H. and Chien, D.K., 2023. A pilot study of non-invasive diagnostic tools to detect Helicobacter pylori infection and peptic ulcer disease. Scientific Reports, 13(1), p.22800. https://doi.org/10.1038/s41598-023-50266-2
15. Nirmala, P.A.D., Bodhinatha, A.A.N.P., Wirajangsa, I.G.N.M. and Wirawan, I.M.S., 2024. Unique EPIYT motif CagA gene Helicobacter pylori Bali 01 isolate as the cause of hematemesis in a male gastric ulcer patient in Wangaya General Teaching Hospital Denpasar Bali: a case report. Intisari Sains Medis, 15(2), pp.556-560. https://doi.org/10.15562/ism.v15i2.2040