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An Assessment of Knowledge, Attitudes, and Risk Factors Related to Helicobacter pylori Infection Among Outpatient Department Patients Attending the Gastroenterology Unit

[1]Balraj Sharma, [2]Priya Choudhary, [3]Dr.P. Vanaja, [4]Dr. V. Revathy, [5]Dr. J. Sathya Shenbega Priya

[1]Assistant Professor, [2]Assistant Professor, [3]Nursing Tutor, [4]Associate Professor, [5]Principal

[1]Liberty College of Nursing, Jaipur, India, [2]Dr. Hedgewar College of Nursing Aurangabad, Maharashtra, India, [3]College of Nursing, Madras Medical College, Chennai, Tamil Nadu, India, [4]Mother Theresa Post Graduate and Research Institute of Health Sciences, Pondicherry University, Puducherry, [5]College of Nursing, Kannur medical college, Anjarakandy, Kannur, Kerala Kerala University of health sciences, Thrissur, India

Abstract:

Background: Helicobacter pylori is a Gram-negative bacillus that colonises the gastric mucosa and is implicated in a spectrum of gastrointestinal pathologies, including gastritis, peptic ulcer disease and gastric carcinogenesis. The infection is at high prevalence worldwide, especially in poor sanitation and socio-economic deprived areas of the world where transmission favouring is.

Aim: This investigation aimed to assess the level of knowledge, attitude, and lifestyle-related risk determinants linked to H. pylori infection of patients attending a gastroenterology outpatient clinic.

Methods: The descriptive, non-experimental survey design was adopted. One hundred and twenty patients who were diagnosed with H. pylori were purposely sampled. Data were collected from October 2025 to December 2025, in Rungta Hospital, Jaipur, Rajasthan. Structured questionnaires and demographic proformas were used to determine the knowledge, lifestyle habits and possible risk factors associated with the infection from the participants.

Results: The cohort comprised of 56.6 percent male participants. Fifty and two per cent of the respondents had fair knowledge about H. pylori, while 48 per cent had limited knowledge. Some 45.83 per cent of the participants reported having a family history of the infection. Identified risk factors from the lifestyle included erratic eating patterns, prolonged fasting, unhealthy diets, psychosocial stress, and eating very hot or cold foods.

Conclusion: The findings highlight the need for an increased public awareness and specific health education campaigns targeting decreases in the prevalence of H. pylori and the adoption of healthier lifestyle behaviors.

Index Terms *- Helicobacter pylori*, Gastrointestinal infection, Knowledge and awareness, Risk factors, Lifestyle factors, Peptic ulcer disease, Gastric health, Outpatient department patients, Health education, Socio-demographic factors.

I. INTRODUCTION

One of the key biochemical characteristics of the Gram-negative, slow-growing bacterium Helicobacter pylori (H. pylori) is its ability to produce large amounts of urease along with the enzyme's catalase and oxidase. This microorganism colonizes the gastric mucosal lining and releases several bacterial and host-mediated cytotoxic substances that lead to inflammation and persistent immune responses in the stomach. The prevalence of H. pylori infection is considerably higher in developing countries than in developed nations, indicating that socioeconomic conditions play a major role in its transmission and occurrence.

Recent pathological investigations and clinical studies have demonstrated that H. pylori infection is strongly associated with the development of chronic gastritis and peptic ulcer disease. Furthermore, evidence suggests that the bacterium is linked to gastric mucosa-associated lymphoid tissue (MALT) lymphoma, particularly the low-grade B-cell type. In addition, infection with H. pylori has been identified as a significant risk factor for the development of both diffuse and intestinal forms of gastric cancer.

The epidemiology of H. pylori infection varies among populations due to several influencing factors, including age, cultural practices, genetic susceptibility, socioeconomic status, and environmental conditions. These factors contribute to both the acquisition and spread of the organism. Preventive strategies such as improved living standards, adequate sanitation, access to safe drinking water, better personal hygiene, balanced nutrition, and avoidance of overcrowded living conditions are important measures for reducing the transmission of H. pylori infection.

H. pylori infection is considered one of the most common bacterial infections affecting humans and is estimated to infect nearly half of the global population. Approximately 50% of individuals worldwide are infected with the bacterium, with prevalence rates ranging from 80–90% in developing countries and about 35–40% in developed nations such as the United States. Among infected individuals, roughly 20% may develop associated gastroduodenal diseases during their lifetime. The annual incidence of infection is estimated to be between 4% and 15% in developing countries, compared to around 0.5% in industrialized nations. Factors such as low socioeconomic status, overcrowding, inadequate sanitation, poor hygiene, and residence in developing regions have been identified as major risk factors for infection.

A large cross-sectional study conducted by Mitchell et al. (1992) suggested that individuals with a history of pulmonary tuberculosis may have a higher prevalence of H. pylori infection. Similarly, a comparative cross-sectional study carried out in 2015 at Jimma Hospitals in Southwest Ethiopia reported that the prevalence of H. pylori infection was 35.2% among patients with tuberculosis compared to 20.4% among non-tuberculosis control participants.

Additional research has indicated a possible relationship between Helicobacter pylori and Mycobacterium tuberculosis. For instance, a study conducted by Filipe and colleagues in Athens, Greece, reported a seroprevalence rate of H. pylori infection of 87.5% among 80 patients, while the prevalence among the control group was considerably lower at 61.4%. Earlier findings by Mitchell et al. also suggested that a history of pulmonary tuberculosis might be associated with increased susceptibility to H. pylori infection.

The genus Helicobacter belongs to the epsilon subgroup of the Proteobacteria, also known as purple bacteria. This group of microorganisms is considered evolutionarily ancient and has coexisted with its hosts for a long period. The extensive morphological diversity and specialization of Helicobacter species for specific hosts provide evidence of their long-term coevolution with host organisms.

II. Review of Literature

Helicobacter pylori infection represents a significant global public health issue and is well established as a major etiological agent in several types of gastrointestinal pathologies such as chronic gastritis, peptic ulcer disease and gastric malignancies (Driscoll et al., 2017). The colonizing bacteria colonize the gastric mucosa and show the ability to remain for extended periods of time and therefore cause chronic inflammation and progressive mucosal damage. If left to be remedied, infection may contribute to the development of severe complications such as gastric adenocarcinoma and mucosa-associated lymphoid tissue (MALT) lymphoma. Consequently, H. pylori infection has become a major concern of research and clinical management in the field of gastroenterology.

Global distribution of H. pylori infection shows significant variation with significantly higher prevalence rates recorded from developing countries compared with developed regions. Poor sanitation, limited access to potable water, overcrowded living conditions and reduced socioeconomic status all help increase the spread and maintenance of the organism in these environments. As a result, H. pylori continues to be a dominant cause of the burden of gastrointestinal diseases in low- and middle-income countries (Alelign et al., 2023). In many of these locales early childhood acquisition is common and it is possible the bacterium will persist into adulthood in the absence of proper diagnosis and treatment.

Recent investigations have further shed light into the size of the problem in certain geographical areas. For example, the studies conducted in Somalia claimed a significantly high rate of H. Pylori infection in adults seeking care in outpatient settings with rates of about 56.5% (Jayte, 2023). Such findings highlight the prevalence of the infection and the need for specific public health measures in high prevalence areas.

Comprehension of H. pylori epidemiology is therefore indispensable, as the organism is currently considered to be the most common chronic bacterial infection plaguing humans around the world (Muhina et al., 2024). Epidemiologic studies provide a useful way to gain insight into transmission dynamics, demographic distribution and associated risk factors. These insights are important for the design of efficacious prevention and control strategies that both address medical and environmental determinants of infection.

Moreover, studies have shown that successful elimination of H. pylori has a significant reduction in the risk of gastric cancer and other related gastrointestinal disease. Accordingly, great effort has been focused on the development of successful therapeutic strategies incorporating regional antimicrobial resistance patterns that may influence eradication success (Attila et al., 2020). Tailoring treatment regimens using local resistance data has been recognized as an increasingly important part of effective clinical practice.

Despite a wealth of scientific knowledge on the role of the pathogen, there are still major gaps in public knowledge and understanding of infection with H. pylori. Studies have shown that many people, including those at high risk, have little knowledge about the etiology of the organism, mode of transmission, clinical presentation, and prevention (Driscoll et al, 2017). Misconceptions and lack of awareness lead to extended diagnostic delays and treatment, and therefore increase the likelihood of disease progression and complications.

One of the most prominent gaps relates to the public's knowledge of H. pylori transmission mechanisms, ways to diagnose the disease, and available treatment options (Alaridah et al., 2022). This deficiency may hinder early detection and proper management of infection. Consequently, it is important to increase the community's knowledge and awareness in order to promote preventive behaviors and promote a timely search for health services.

To counter this problem, researchers have highlighted the need to assess the sources from which people receive health-related information. Identifying the reliable and accessible channels of communication can improve the spread of accurate health education on H. pylori infection (Alaridah et al., 2023). Public health efforts targeting media channels, healthcare professionals and educational institutions may hold a crucial role in complementing the awareness and enhancing preventive practices.

Further, studies investigating H. pylori infection often look at demographic factors, lifestyle factors and environmental factors to determine who is at higher risk. Factors such as dietary patterns, smoking, alcohol consumption, hygiene practices and residential conditions may all contribute to modulate likelihood of infection. Through the analysis of these variables, investigators can identify vulnerable populations and design targeted interventions with the aim of reducing the rate of infection (Boutari et al., 2025; Seid & Demsiss, 2018).

Given the complex nature of the transmission of H. pylori and its link with several socioeconomic and environmental determinants, further research is necessary to investigate the link between socioeconomic status, behavioral patterns, and infection prevalence in outpatient cohorts (Naqid et al., 2023). Such studies could provide useful evidence for the development of effective public health strategies, improved clinical management and community education programmes designed to curb the global burden of H. pylori infection.

III. Methods

Study Design, Setting and Sample

The current study used a non-experimental descriptive survey research design to assess the knowledge, lifestyle patterns and potential risk factors of Helicobacter pylori infection among the patients. The research study was carried out in the Gastroenterology Outpatient Department (OPD) of Rungta Hospital, Jaipur.

A total of 120 participants who confirmed to be infected with H. pylori were recruited. Patients with concomitant gastrointestinal diseases including gastritis and peptic ulcer disease were also considered eligible. The sample included both men and women patients between the ages of 20 and 60 years.

To elicit the required information, self-structured instruments such as socio demographic proforma and structured questionnaire were designed by the researcher. These tools were built to evaluate the demographic characteristics of the participants and the degree of knowledge about lifestyle practices and potential risk factors conceivably related to the infection with H. pylori.

Procedure for Data Collection

Data collection was carried out after obtaining approval from the relevant ethical review committee and administrative bodies. The information was gathered using a self-structured questionnaire distributed by the researcher in a period of three months from October 2025 to December 2025 at the Rungta Hospital, Jaipur.

Participants that met the inclusion criteria were approached during their visit to the gastroenterology OPD. After explaining the purpose of the study, participants were asked to participate voluntarily. The questionnaire was then distributed to obtain information on demographic information, knowledge regarding H. pylori infection, lifestyle behaviors, and risk factors.

Ethical Considerations

Written informed consent was obtained from all participants before being enrolled in the study, after a careful explanation of study objectives and procedures. Participants were assured that privacy, anonymity and confidentiality would be strictly maintained throughout the research process. They were also told of their right to quit at any time without penalty.

Participants were encouraged to ask questions about the questionnaire or study procedures at any time that clarification was needed in order to ensure transparency and ethical practices throughout the investigation.

IV. Results

Socio-Demographic Characteristics of Study Participants

Socio-demographic profiles of the participants were analyzed using a structured questionnaire to define the distribution of the study population to some demographic factors. The results showed heterogeneity in age, gender, marital status and educational background in the group of people diagnosed with Helicobacter pylori infection.

With regard to age distribution, the findings revealed that 18.3% of the participants were aged between 20 and 30 years and 20% were between the age groups of 31-40 years. A more significant percentage was in the 41-50 years age group (29.1 per cent), with the largest (32.5 per cent) being in the 51-60 years age group. These results suggest that the prevalence of H. pylori infection in the sample is comparatively higher in middle-aged and aged compared to the younger people.

In regards to the gender distribution majority of the respondents were male (56.6%) followed by female participants (40.8%). Additionally 2.5% of the participants identified as trans - women. This distribution represents a predominance of male participants in the gastroenterology outpatient department.

Marital status data showed that 80% of participants were married indicating that most of the subjects of the study were from family households. In comparison, 18.3% were unmarried and 1.6% were divorced. The marital status distribution may reflect the demographic characteristics of adults presenting for treatment of gastrointestinal problems in a hospital setting.

There was a marked variation in educational status. About 10.8% of respondents were illiterate, which meant that they did not have any formal education. The majority (51.6%) had a matriculation-level education, 14.1% were undergraduate students and 23.3% had a graduate degree. These results show that a majority of the participants had at least a basic level of formal education, although a significant percentage had a limited level of academic achievement.

Knowledge of Participants on H. pylori Infection

Knowledge and awareness of Helicobacter pylori infection was measured through a set of questions to assess the participant's knowledge of the disease, its symptoms, transmission and the diagnostic procedure.

The results indicated that 27.5% of the participants reported previous knowledge about H. pylori infection while most showed poor awareness of the condition. Only 23.3% of them were aware of the symptoms related to the infection, showing a rather low level of knowledge to the clinical manifestations of the infection.

When asked what the nature of the organism was, 47.5 per cent correctly named H. PCC as a bacterium. Furthermore, 52.5% knew the signs and symptoms of the infection correctly, indicating that approximately half of the respondents had some knowledge of the presentation of the disease.

Regarding specific symptoms, 43.3% of the patients identified nausea as one of the manifestations of H. pylori infection. Additionally, 45% identified low socioeconomic levels as a possible risk factor, indicating some awareness of the social determinants that affect the transmission of disease.

Concerning transmission modes, 55.83 % of the correct modes of transmission such as contaminated food, water or bad hygienic practices are identified. Nevertheless, knowledge of diagnostic investigations was poor with only 20.83% accurately answering questions regarding the methods used to detect H. pylori infection. This is a large knowledge gap in terms of diagnostic procedures in the study population.

Risk Factors of H. pylori Infection

The study looked at several lifestyle-related and environmental risk factors that may contribute toward the development or persistence of H. pylon infection in the participants.

Findings showed that 45.83 per cent of the participants had a family history of H. pylori infection, suggesting household transmission or common environmental exposure. Dietary habits also seemed to be a determining factor; more than half of the participants (56.6 percent) reported to eat unhealthy diets, which may result in susceptibility to gastrointestinal disorders.

Another interesting finding was that 46.67 percent of respondents self-medicated with substances that may lead to gastrointestinal complications and affect the outcome of infection. Moreover, 75.83% reported eating too hot or cold foods that may irritate the gastric mucosa and make gastrointestinal symptoms worse.

One risk factor that particularly stood out was the behavior of leaving one's stomach empty for an extended period of time, which 85.83% of participants reported as the most common behavioral factor to be linked to a current binge episode. Additionally, 20% had irregular meal timings, which may also be a contributing factor to gastric irritation and digestive disturbances.

Psychological and lifestyle factors were investigated, the results showed that 76.67% of participants experienced daily life stress which indicated that psychological stress may exacerbate gastrointestinal symptoms and affect the progression of H. pylon infection.

Relationship Between Knowledge and Socio -Demographic Variables

To determine whether participants knowledge about H. 1090 infection was related to their socio-demographic characteristics, a Chi- square analysis was performed. The relationship between the level of knowledge and some demographic characteristics such as age, gender, education, income level, family type, residential area and occupation was analyzed.

Results showed a statistically significant correlation between knowledge levels and a number of socio - demographic variables. Calculated values of Chi-Square for age, gender, education, income, family type, area of residence and occupation were 1375.8, 2076.03, 1346.2, 1541.8, 1201.32, 1865.63 and 1171.1 respectively. All the values were significant at the $p < 0.05$ level, showing that demographic characteristics have a significant effect on the level of knowledge about H. pylori infection.

Based on these findings, the null hypothesis was rejected, confirming a significant relationship between the knowledge levels of the participants and selected socio - demographic variables. These results suggest that factors such as educational background, socioeconomic status, and living environment influence the awareness and understanding of H. pylori infection of people.

V. Discussion

This study aimed to assess the level of knowledge, lifestyle behaviors and associated risk factors regarding Helicobacter pylori infection in the patients attending gastroenterology outpatient department, Rungta Hospital, Jaipur. The findings give valuable insight into the demographic characteristics, level of awareness and lifestyle of those diagnosed with H. pylori infection.

The demographic analysis showed that most of the subjects were male (56.6%) and females were 40.8% of the study population. This observation is congruent with previous research conducted by Purushothaman Rangaswamy and Shaikh Afzal Rubby which reported that H. pylori infection was more common among males as compared to females (66.67% versus 33.3%). The reason for this difference may be found in differences in lifestyle, occupational exposures, dietary habits, and health-seeking behavior between men and women. Additionally, previous studies have suggested a number of environmental and socioeconomic factors, including overcrowding, poor sanitation and lack of access to safe drinking water, as major factors in the transmission of H. pylori infection. Research has also suggested that there may be a significant influence of demographic variables such as age, gender, occupation, and alcohol consumption on the prevalence of the infection.

The present investigation also evaluated the level of knowledge of the participants on H. pylori infection. The results showed that 52%, 48% had limited or inadequate knowledge of the infection while 52% showed good knowledge. These findings indicate that while a moderate amount of patients have some degree of awareness of the disease, there is still a large divide in the population's understanding. Similar observations were described in a descriptive cross section study done in Saudi Arabia by Taghreed A. Hafiz and colleagues. Their study compared knowledge of H. pylori infection between undergraduate students who were enrolled in health science programs and those who were studying non-health disciplines. The results showed that the health science students attained the knowledge of about 44.44% while the non-health science students attained the knowledge of about 46.75%. This suggests that exposure to general health information in the media or from other sources may contribute to knowledge acquisition even in individuals who do not have a formal medical education.

The present study further found a number of risk factors related to lifestyle in association with H. pylori infection. Approximately 45.83% of participants stated they had a family history of H. pylori infection, which does raise the possibility of intrafamilial transmission or exposure to a common environmental source. More than half the participants (56.6%) reported to have an unhealthy diet, which may contribute to gastrointestinal irritation and susceptibility to infection. Additionally, 46.67% of the participants admitted to the use of unprescribed medications that could potentially worsen the gastric conditions and contribute to the development of gastrointestinal disorders.

Dietary habits also seemed to be important to the risk of infection. The research showed that 75.83% of them are often excessively hot or cold foods, 85.83% say gone on an empty stomach for a long period of time. Such practices may affect the normal functioning of the gastric mucosa and add to digestive complications. Furthermore, 20% of the participants reported chaotic meal patterns, and a relatively large percentage of the sample (76.67%) suggested that they experienced much stress in their everyday lives. Psychological stress has been found to be a factor that can have a negative impact on the digestive health and possibly increase the symptoms associated with gastric infections.

Lifestyle habits such as smoking and intake of beverages were also investigated. The study found that 42.5% of participants were smokers, and the study also found that 79.17% of the participants reported drinking tea or coffee on an empty stomach. However, findings from a related study conducted by Rana M. Abu - Mugesieb suggested that there was no statistically significant difference in the prevalence of H. pylori infection between the smokers and non - smokers. In the said study, it was found that 46.9% of smokers and 49.1% of non- smokers have the said infection. Interestingly, the study also reported that those who drank coffee had a lower prevalence of infection (41.0%) than those who did not drink coffee (54.0%).

Alcohol consumption was another lifestyle factor that was assessed in this study. The results showed that 32.5% of the participants reported frequent intake of alcohol. In contrast, a study taken by Yisak, Belete, and Mahtsentu found that people with alcohol-drinking habits had a significantly higher risk of developing H. pylori infection (74.9%) than people who did not drink alcohol (28.6%). These results indicate that our alcohol consumption may contribute to a higher susceptibility to gastric infections.

Socioeconomic factors have also been widely accepted to be important determinants of H. pylori infection. Poor living conditions as a child, such as inadequate sanitation, overcrowding and lack of access to clean water have been found to be major risk factors in acquiring the infection. Studies performed in developed countries have found that the prevalence of H. pylori infection varies from about 10% in young children to as much as 60% in people more than 60 years of age. Similarly, a large population based survey was conducted in China that investigated H. pylori infection in over 5000 individuals using the carbon 13 urea breath test, specifically in areas with a high incidence of gastrointestinal cancer. Research carried out in India amongst patients with dyspeptic symptoms also recorded infection prevalence rates of between 58% and 62%. These studies indicate a good correlation in determining the prevalence of H. pylori infection in relation to socioeconomic conditions, hygiene practices, and lifestyle factors.

In regard to the methods of diagnosis, different approaches are currently available for the detection of H. pylori infection. Invasive methods of diagnosis, such as the rapid urease test, histological examination and bacterial culture, require endoscopic procedures to obtain tissue samples from the stomach. Although these methods are highly accurate, they are not always practical in the routine clinical environment. Therefore, non-invasively, the carbon-13 urea breath test, the serological testing, as well as tests with the identification of stool antigen are commonly applied for the detection of H. pylori infection. Each method of diagnosis has both advantages and limitations and the decision to which test to use is often dependent on the availability of the test clinically, the cost of the test and the condition of the patient.

VI. Recommendations

Based on the results of the study, it is possible to suggest a few recommendations about the awareness and prevention of Helicobacter pylori infection.

First and foremost, since the study involved a non-probability sampling technique of the convenience kind, the results should be taken with a pinch of salt and may be more to be used as a reference for future work. Further studies should include larger and more diverse populations and age groups, as well as geographical regions, in order to enhance the generalizability of the results.

Second, there is a dire need to promote health education programmes to make the public more aware of the H. pylori infection, its causes, mode of transmission, symptoms and ways of prevention. Public health campaigns, educational workshops and awareness programmes may help individuals to adopt healthier lifestyle practices and improve early detection of infection.

Third, larger sample sizes, control groups, and more advanced laboratory diagnostic techniques should be used in future research to validate the findings of this study. Such research would provide to a more complete understanding of the epidemiology of H. pylori infection.

Finally, further investigations should be directed to the identification of possible sources of infection especially those that are often found to stay on an empty stomach, having irregular eating patterns or other lifestyle behaviours that could make them more susceptible to gastrointestinal diseases.

VII. Conclusion

In conclusion, the present study aimed to estimate the degree of knowledge, lifestyle habits, and risk factors related to helicobacter pylori infection of the patients coming to the gastroenterology outpatient department. The results showed that although a moderate number of the participants had sufficient knowledge about the infection, a large number of the participants still showed poor knowledge about the transmission, the symptoms, and the prevention of the infection.

The study also identified several lifestyle-related risk factors, including unhealthy dietary habits, unhealthy meal pattern, prolonged fasting, psychological stress, smoking and drinking alcohol. In addition, demographic features such as age, gender, educational level, income, family structure, residential area, and occupation were found to have a significant association with the knowledge of the participants about H. pylori infection.

Overall, the results highlight the need to enhance public awareness and foster preventive health strategies to decrease the prevalence and complications of H. pylori infection.

VIII. Funding

The study was self-funded.

IX. Conflict of Interest

The authors declare that there are no conflicts of interest related to this study.

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