

Evaluation of the Prevalence of *H. Pylori* Infections in Patients Referred to Kabul Hospitals, 2022

Mohammad Bashir Shahi 1

Saleha Haidari 2 and

Razia Miri 3

1 MSc. Biology Department, Kunduz University,
Collegiate of Education Faculty, Kunduz, Afghanistan

2 Pharm D. Pharmacology Department,
Pharmacy Faculty Rabia Balkhi University, Kabul, Afghanistan

3 Pharm D. Microbiology Department, Pharmacy
Faculty Cheragh Medical Institute of Higher Education, Kabul, Afghanistan

Abstract:

Introduction: *Helicobacter pylori* (*H. pylori*) is a gram-negative bacillus that has naturally colonized humans for at least 100,000 years, and probably throughout human evolution. *H. pylori* colonization induces chronic superficial gastritis, a tissue response in the stomach that includes infiltration of the mucosa by both mononuclear and polymorphonuclear cells. *H. pylori* in advanced stage led to peptic ulcer, Gastritis, Esophagitis, and adenocarcinoma.

Aims, material, and methods: This study is a prospective cross-sectional study by evaluation of *H. pylori* cases in Kabul's hospitals in 2022 the main aim. On the other hand, how many patients referred to hospitals with signs and symptoms of problems that *H. pylori* caused.

Results: In this study, 322 patients were diagnosed infected by *H. pylori*. The majority of patients in this study were between the ages of 21 and 30 years (56.8%), female (53.4%), majority illiterate (40.9%), with gastritis (72.3%), abdominal pain (62.5%), vomiting and nausea (45.7%) reported.

Conclusion: The results of this study, show the prevalence of this bacterium (*H. pylori*) has existed among patients in Kabul, and it requires compliance with health precautions.

Keywords: *H. pylori*, Infection and Kabul, Afghanistan.

Introduction

Helicobacter pylori (*H. pylori*) colonizes the stomach in ~50% of the world's human population, essentially for life unless eradicated by antibiotic treatment. Colonization with this organism is the main risk factor for peptic ulceration (1), (4). As well as for gastric adenocarcinoma and gastric mucosa-associated lymphoid tissue (MALT) lymphoma (5). Treatment for *H. pylori* has revolutionized the management of peptic ulcer disease, providing a permanent cure in most cases. Such treatment also represents first-line therapy for patients



with low-grade gastric MALT lymphoma. Treatment of *H. pylori* is of no benefit in the treatment of gastric adenocarcinoma, but prevention of *H. pylori* colonization or eradication treatment could potentially prevent gastric malignancy and peptic ulceration (2), (3). In contrast, increasing evidence indicates that lifelong *H. pylori* colonization may offer some protection against complications of gastroesophageal reflux disease (GERD), including esophageal adenocarcinoma (6). Recent research has focused on whether *H. pylori* colonization is also a risk factor for some extra gastric diseases and whether it is protective against some recently emergent medical problems, such as childhood-onset asthma and other allergic and metabolic conditions. *H. pylori* is a gram-negative bacillus that has naturally colonized humans for at least 100,000 years, and probably throughout human evolution (11). It lives in gastric mucus, with a proportion of the bacteria adherent to the mucosa and possibly a very small number of the organism entering cells or penetrating the mucosa; the organism's distribution is never systemic. Its spiral shape and flagella render *H. pylori* motile in the mucus environment. The organism has several acid-resistance mechanisms, most notably a highly expressed urease that catalyzes urea hydrolysis to produce buffering ammonia (8). *H. pylori* is microaerophilic (i.e., requires low levels of oxygen), is slow-growing, and requires complex growth media in vitro. Transmission Humans are the only important reservoir of *H. pylori* (9). Children may acquire the organism from their parents (most often the primary caregiver) or from other children. The former is more common in developed countries and the latter in less developed countries (10). Whether transmission takes place more often by the fecal-oral or the oral-oral route is unknown, but *H. pylori* is easily cultured from vomitus and gastroesophageal refluxate and is less easily cultured from stool (7). *H. pylori* colonization induces chronic superficial gastritis, a tissue response in the stomach that includes infiltration of the mucosa by both mononuclear and polymorphonuclear cells. (The term gastritis should be used specifically to describe histologic features; it has also been used to describe endoscopic appearances and even symptoms, but these features do not correlate with microscopic findings or even with the presence of *H. pylori*). Although *H. pylori* is capable of numerous adaptations that prevent excessive stimulation of the immune system, colonization is accompanied by a considerable persistent local and systemic immune response, including the production of antibodies and cell-mediated responses (1). However, these responses are ineffective in clearing the bacterium. This inefficient clearing appears to be due in part to *H. pylori*'s downregulation of the immune system, which fosters its persistence. Most *H. pylori*-colonized persons do not develop clinical sequelae. That some persons develop overt disease whereas others do not is related to a combination of factors: bacterial strain differences, host susceptibility to disease, and environmental factors (10).

The main aim of this study is the evaluation of *H. pylori* prevalence in Kabul in 2022.

Method of Study



This study is prospective, cross-sectional research on patients who were referred to the hospitals (one public and two private hospitals) in Kabul Afghanistan in the first six months of 2022. The required data was collected by questionnaires, which were filled out by medical personnel. After the collection of data, presented in the appropriate table and analyzed by Excel and SPSS. 27. softwares.

Results

In this study, 322 patients visited three hospitals in Kabul during the first six months of 2022, among which the largest number of patients is between 21 to 30 years old, 183 patients (56.8%), the majority of patients, 172 patients were female (53.4%), illiterate 132 patients (40.9%), diagnosed by stool exams (45%), with gastritis (72, 3%) by endoscopic finding, with vomiting and nausea (45.74%) and abdominal pain (62.5%) were reported. General information of patients is provided in the table (1).

Table (1): General information of all 322 patients
General information Frequency (n) Percent (%)

| General information | Frequency (n) | Percent (%) |
|---------------------------------|---------------|-------------|
| Age (years) | | |
| 20≥ | 77 | 23.9 |
| 21-30 | 183 | 56.8 |
| 31-40 | 23 | 7.2 |
| 41-50 | 15 | 4.6 |
| 51-60 | 12 | 3.7 |
| 61≤ | 12 | 3.7 |
| Gender | | |
| Male | 150 | 46.6 |
| Female | 172 | 53.4 |
| Level of education | | |
| Illiterate | 132 | 40.9 |
| Primary | 74 | 22.9 |
| Secondary | 62 | 19.3 |
| High | 54 | 16.9 |
| Methods of diagnosis | | |
| Stool exams | 145 | 45 |
| Blood test | 104 | 32.3 |
| Urea breath test (UBT) | 54 | 16.8 |
| Polymerase chain reaction (PCR) | 19 | 6 |
| Endoscopic finding | | |
| Gastritis | 233 | 72.3 |
| Gastric ulcer | 44 | 13.7 |
| Esophagitis | 23 | 7.1 |
| Not exam | 22 | 6.8 |
| Sign and symptoms | | |
| Abdominal pain | 201 | 62.5 |
| Active bleeding | 57 | 17.7 |
| Anemia | 64 | 19.8 |
| Vomiting and nausea | | |
| Yes | 147 | 45.7 |
| No | 175 | 54.3 |

Discussion



In this study, the required information was used from 322 patients, most of whom were between 21 and 30 years old, while the results obtained from studies in Iran reported that most of the patients were between 30 and 40 years old. In the countries of Mexico and Lebanon, most of the patients were reported in the age groups of 50 and 57 years, respectively. Considering the results obtained from this study, there were more female patients than males, these results are similar to the results obtained from studies in the countries of Iran, Lebanon, and Latvia, but in the countries of Mexico, Turkey, and Pakistan, there are more male patients than female patients. It was reported. According to the results received from this study, the most common detection method was fecal samples (stool exam), but in Iran and Lebanon, PCR tests were used more. The symptoms and signs in the patients of this study are similar to the symptoms and signs of the patients in Iran and Mexico. Also, most of the patients were illiterate, which is similar to the findings of studies in Iran and Pakistan. The reason for the differences can be considered low income, cultural, and geographical factors (12).

Conclusion

Infections caused by *H. pylori* are more prevalent among women, and young and illiterate people, which are associated with symptoms of abdominal pain and nausea. We can play a role in controlling and preventing this disease by providing proper health services and public awareness.

Conflict of interest

None

Financial sponsor

None

References

1. Amieva M, Peek RM: Pathobiology of *Helicobacter pylori*-induced gastric cancer. *Gastroenterology* 150:64, 2016.
2. Arnold IC et al: *Helicobacter pylori* infection prevents allergic asthma in mouse models through the induction of regulatory T cells. *J Clin Invest* 121:3088, 2011.
3. Atherton JC, Blaser MJ: Co-adaptation of *Helicobacter pylori* and humans: ancient history and modern implications. *J Clin Invest* 119:2475, 2009.
4. Chen Y, Blaser MJ: Inverse associations of *Helicobacter pylori* with asthma and allergies. *Arch Intern Med* 167:821, 2007.
5. Chen Y et al: Association between *Helicobacter pylori* and mortality in the NHANES II study. *Gut* 62:1262, 2013.
6. Chow WH et al: An inverse relation between *cagA*+ strains of *Helicobacter pylori* infection and risk of esophageal and gastric cardia adenocarcinoma. *Cancer Res* 58:588, 1998.



7. Ford AC et al: Helicobacter pylori eradication therapy to prevent gastric cancer in healthy asymptomatic infected individuals: Systematic review and meta-analysis of randomized controlled trials. *BMJ* 348: g3174, 2014.
8. Linz B et al: An African origin for the intimate association between humans and Helicobacter pylori. *Nature* 445:915, 2007.
9. Maixner F et al: The 5300-year-old Helicobacter pylori genome of the Iceman. *Science* 351:162, 2016.
10. Marshall BJ, Warren JR: Unidentified curved bacilli in the stomach of patients with gastritis and peptic ulceration. *Lancet* 1:1311, 1984.
11. Plummer M et al: Global burden of gastric cancer attributable to Helicobacter pylori. *Int J Cancer* 136:487, 2015.
12. Kargar M, Souod N, and Doosti A; Epidemiological evaluation of Helicobacter pylori infection in patients with gastrointestinal disorders in Chahar Mahal and Bakhtiari province. 2;4, 2012.

