



Original Article

Assessment of Helicobacter Pylori Infection by Antigen Stool Test in Al Jmail Libyan Patients

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ABSTRACT

Purpose: H. pylori infection is one of the most common bacterial infections worldwide, with a prevalence ranging from 30% to 50% in developed countries and up to 80% in developing nations. The aim of the study is to investigate patients attitudes and practices about H. pylori infection in Aljmail, Libya, as well as investigate associated with a positive attitude and better behavioral practices, and the performance of stool antigen tests for detecting H. pylori infection.

Methods: The cross-sectional study was carried out during the four months from March to June 2024 and used a validated questionnaire, was divided into four parts.

Results: One hundred participants successfully completed the questioner's equations, and they had positive findings associated with a positive attitude, better behavioural practices, and the performance of stool antigen tests for detecting H. pylori infection.

Conclusions: It appears that both genders in Al Jamil City had the same prevalence of H. pylori. Married subjects experienced it more frequently than single subjects. The prevalence of H. pylori infection varies according to age group; nonetheless, stool testing appears to be a simple, readily available low-cost method based on the relatively high detection rates by HpSA.

Keywords: H.pylori bacteria, patients, and stool antigen test.

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INTRODUCTION

Worldwide, *Helicobacter pylori* (*H. pylori*) infection is recognised as the main cause of stomach cancer, gastritis, peptic ulcers, and mucosa-associated lymphoid tissue lymphoma. At 44.3%, *Helicobacter pylori* infection is the most common infection globally.^{1,2} In addition to being linked to several extra-gastric pathologies, gastric *H. pylori* infection has been shown to play a significant role in the pathogenesis of gastritis and peptic ulcers, as well as oncological pathologies like gastric cancer and gastric mucosa-associated lymphoid tissue lymphoma.³

The 2007 national expert consensus report and the Maastricht–Florence recommendations have not been formally implemented in Italy. Rather, the healthcare system's payment policies for prescription drug orders have regulated the clinical practices of general practitioners (GPs) in Italy.³ A 2020 study carried out in Riyadh, Saudi Arabia, found that the incidence of *H. pylori* infection was 34.7%. Furthermore, there are two types of procedures for identifying *H. pylori* infection: invasive and non-invasive.^{4,5} A variety of techniques have been employed to identify *H. pylori* infection. Direct techniques, such as the rapid urease test (RUT), smear microscopy, culture isolation, histopathological evaluation, and molecular diagnosis using polymerase chain reaction, rely on endoscopic gastric biopsy specimens. Urea breath tests and serology for the detection of antigens and antibodies are examples of indirect approaches.⁶

Through colonisation in a very specific area of gastric lactation and the secretion of urease, which converts urea found in the medium to ammonia and has the effect of the stomach lining being acidic, this bacterium has developed resistance to stomach acid. If antibiotics are not administered, this resistance allows the bacteria to remain in the human stomach for life.⁷

The primary objective of the current research is to investigate patients attitudes and practices about *H. pylori* infection in AlJmail, Libya, as well as investigate the sociodemographic predictors associated with a positive attitude and better behavioural practices, and the performance of stool antigen tests for detecting *H. pylori* infection.

MATERIALS AND METHODS

The study was performed in Jumayl, Libya. The cross-sectional study was carried out during the four months from March to June 2024 and used a validated questionnaire. The questionnaire was written in Arabic for fast answers for patients. All participants were collected from Jumayl Hospital and private clinics in AlJmail by outpatient clinic.

Collection data and analysis

One hundred patients completed the questionnaire and answered all the questions. For this study, we used simple statistics. The questionnaire was divided into four parts. The first part was the demographic data of patients or participants, which included three equations: gender, age, and marital status.

The second part was the attitude and medical history of patients, which included five equations: smoking, do you drink any kind of stimulants such as (coffee - tea)?, do you eat fast food?, do you have a history of stomach ulcers or gastritis?, have you heard about stomach bacteria infection (stomach bacteria)?, and Have you ever been diagnosed with a stomach bacteria infection (stomach bacteria) before?.

The third part was symptoms, which included five equations: abdominal pain, nausea and vomiting, anorexia, and tired.

The fourth part was knowledge about stool testing to detect stomach bacteria infection (*Helicobacter pylori*), which included five equations: have you heard about a stool test to detect stomach bacteria (stomach bacteria)?, sources of information, how would you rate your knowledge about infection and testing?, have you taken this test before?, and is this test readily available in AlJmail City - Libya?.

RESULTS

One hundred participants successfully completed the questioner's equations, and they had positive findings associated with a positive attitude, better behavioural practices, and the performance of stool antigen tests for detecting *H. pylori* infection. All the participants were 50% female and 50% male, with the majority >50 years old being 40%, followed

by 38% with ages 30–50, and then 22% were 15–30 years old. 64% of participants were married and 36% unmarried, according to demographic data in [Table 1](#).

Table 1.

Variable	N%
Gender	
Female	50
Male	50
Age	
15-30	22
30-50	38
>50 years	40
Marital status	
Married	64
Unmarried	36

[Table 2](#) showed the attitude and medical history of patients. The majority of the study's nonsmokers were 71%, while only 29% of participants were smokers. Also, the majority of participants, 91%, had drunk tea and coffee, while only 9% were non-drinkers. 66% of the participants ate fast food, and 34% of participants did not eat fast food. 81% had a history of stomach ulcers or gastritis, and 19% had not. 82% heard about stomach bacteria infection (stomach bacteria), while 18% had not heard. 76% had been diagnosed with a stomach bacteria infection before, and only 24% had not.

Table 2.

Variable	Yes (N%)	No (N%)
Smoking	29	71
Do you drink any kind of stimulants such as (coffee - tea)?	91	9
Do you eat fast food?	66	34
Do you have a history of stomach ulcers or gastritis?	81	19
Have you heard about stomach bacteria infection (stomach bacteria)?	82	18
Have you ever been diagnosed with a stomach bacteria infection (stomach bacteria) before?	76	24

The symptoms were diagnosed in this study; 76% of participants had abdominal pain, and 24% had not. 45% of participants had nausea and vomiting, and 55% did not. 60% of participants had abdominal bloating and indigestion, and the following 40% did not. 59% of participants had anorexia, 41% had not, 65% of participants had tiredness, and 41% had not, according to [Table 3](#).

Table 3.

Symptoms	Yes (N%)	No (N%)
Abdominal pain	76	24
Nausea and vomiting	45	55
Abdominal bloating and indigestion	60	40
Anorexia	59	41
Tired	65	35

[Table 4](#), knowledge about stool testing to detect stomach bacteria infection (*Helicobacter pylori*), 84% of participants had heard about a stool test to detect stomach bacteria (stomach bacteria), and about 63% of participants had heard from health care, followed by 9% from friends, 4% from the internet, and 8% from others. The rate of knowledge of participants about infection and testing was 33% very good, followed by 28% good, and then 15% weak. All the participants (100%) had taken this test before, and this test was readily available in Al-Jamil City – Libya.

Table 4. Knowledge about stool testing to detect stomach bacteria infection (*Helicobacter pylori*).

Variable	N%
Have you heard about a stool test to detect stomach bacteria (stomach bacteria)?	84
Sources of information	
Health care	63
Friend's	9
Internets	4
Others	8
How would you rate your knowledge about infection and testing?	
Excellent	24
Very good	33
Good	28
Weak	15
Have you taken this test before?	100
Is this test readily available in Al-Jamil City - Libya?	100

DISCUSSION

This study was done on patients who had been diagnosed with *H. pylori* with stool tests in medicine departments in the AlJmail Hospital and private clinics as outpatients. The majority of participants were 50% from female and male, with age range from 30-50 years and >50 years old. And also 64% of participants had married.

For this study, patients attitude and medical history were factors associated with gastritis, peptic ulcer, or *H. pylori*, as shown in Table 2. An infection with *Helicobacter pylori* is a major cause of hypochlorhydria, gastritis, and is also a major factor in the development of gastric atrophy and eventually stomach cancer. Adherence to preventive measures, such as upholding healthy behaviours, is vital because *Helicobacter pylori* infection is incredibly harmful and has severe side effects that can negatively impair the quality of life of infected people. It is recommended to remove *H.*⁸

The majority of the study focused on the symptoms identified by patients because they were associated with gastritis or *H. pylori* infections and generally the lives of these patients. Another study found patients were questioned about

if they experienced any of the ALARM symptoms, which include anaemia, weight loss, anorexia, dysphagia, odynophagia, melena, and haematemesis. It's generally knowledge that complex gastric ulcer illness causes these symptoms. Compared to those with mild or moderate symptoms, participants with ALARM symptoms performed significantly better in terms of screening, avoidance, and management. This could be explained by the discomfort associated with peptic ulcers, which leads to better attitudes to avoid experiencing these symptoms in the future and avoid risk of developing gastric ulcers or infection with *H. pylori*.⁹ An important causative factor for a number of stomach disorders, including gastritis and peptic or duodenal ulcers, is *H. pylori* infection. Because *H. pylori* can withstand the gastric acid that ordinarily protects against a variety of germs, it is highly connected with gastric and duodenal ulcers.¹⁰

Due to ineffective healthcare systems and limited public knowledge, screening and eradication therapy rates are not sufficient in many countries with high incidence of *H. pylori* infection. *H. pylori* infection can lead to peptic ulcers, and it is thought that a persistent *H. pylori* infection is the primary cause of non-cardia stomach cancer.¹¹ It is essential to understand that a variety of unknowable factors, including crowded living situations, poor hygiene

standards, and untreated water supplies, can influence this link in both wealthy and poor populations.¹⁰

All the participants had good knowledge or information about stool testing to test the *H. pylori* bacteria in Al Jamil, Libya, and the most sources of information in this study came from health care and friends, as well as because this test was available and cheap. According to the study, the stool antigen assay (HpSA) has demonstrated encouraging outcomes for the identification of the *H. pylori* antigen in stool samples.

The stool antigen test is particularly useful if the urea breath test comes back negative. Of all the tests now available, invasive procedures are believed to be the most accurate. Initial screening is done using serological techniques, which are predicated on the identification of *H. pylori*-specific antibodies in serum, saliva, or urine.¹² The HpSA test is a cheap, noninvasive, easy-to-use, and accurate method for identifying *H. pylori* in a stool sample. Monoclonal antibody-based SATs are helpful for both primary diagnosis and evaluating eradication therapy.¹³

CONCLUSIONS

It appears that both genders in AlJmail City had the same prevalence of *H. pylori*. Married subjects experienced it more frequently than single subjects. The prevalence of *H. pylori* infection varies according to age group; nonetheless, stool testing appears to be a simple, readily available low-cost method based on the relatively high detection rates by HpSA. The investigation established that *H. pylori* infection was a significant health issue for Al Jamil. Only a small percentage of the patients who were examined had insufficient information or comprehension about *Helicobacter pylori*. In this study, the most risk factors for *H. pylori* infection were age, marital status, smoking, and family history of peptic ulcer or gastritis.

RECOMMENDATION

The study found that the area's dyspeptic patients had a high prevalence rate of *H. pylori* infection, therefore local government, the district health sector, and local administration should all give this issue careful consideration. They ought to support health education so that people are more aware of how *H. pylori* is transmitted in society. Since the majority of respondents are ignorant of the *H. Pylori* infection and its risk factors, it is necessary to raise awareness of these topics.

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