

Prevalence of *Helicobacter pylori* infection in asymptomatic persons in Algarabolli City, Libya

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Abstract

The present study revealed substantial prevalence of *Helicobacter pylori* in asymptomatic patients with females being more affected than males and a maximum prevalence in the age group of 51-60 years. The prevalence is higher in without salary classes with poor sanitation application, a higher prevalence of *Helicobacter pylori* were found subjects with without education had considerably lower levels of infection (39%) compared with tertiary only (64 %). Our study showed a higher prevalence of *H. pylori* in married 52% than single subjects 48%. The study of medical history status showed a higher prevalence in stomach cancer group, 12 were positive (92 %). The patients were also tested for tea consumption status, among a total of 43 patients belonging to red tea consumption group, 24 were positive for *Helicobacter pylori* (48 %), out of 38 of green, tea consumption group 18 were positive (36%) and out of 13 of red-green tea consumption group with 15 positives.

Key words: *Helicobacter pylori*; infection; prevalence.

Introduction

Helicobacter pylori is a gram-negative and microaerophilic bacterium that colonizes half of the world's population, Present in the stomach of healthy individuals *H. pylori* has been classified by the International Agency for Research on Cancer (a branch of the World Health Organization) as a class I carcinogen [1].

The overall prevalence is high in developing countries and lower in developed countries and within areas of different countries. The principal reasons for these variations involve socioeconomic differences between populations. A lack of proper

sanitation, of safe drinking water and of basic hygiene as well as poor diets and overcrowding, all play a role in determining the overall prevalence of infection.

An earlier study from Riyadh, Saudi Arabia showed an overall 66% prevalence of *H. pylori* infection in asymptomatic subjects. However, recent studies from Libya, Nigeria and Tunis detected 76%, 80% and 83% of anti-*H. pylori* antibodies in asymptomatic subjects, respectively (9), but our results disagreed with Switzerland 11.9%, Australia 20%, USA and Canada 30% [2].

Recent research states that genetic diversity in *H. pylori*, like that of its host, decreases with geographic distance from East Africa. Using the genetic diversity data, researchers have created simulations that indicate the bacteria seem to have spread from East Africa around 58,000 years ago. Their results indicate modern humans were already infected by *H. pylori* before their migrations out of Africa, and it has remained associated with human hosts since that time [3].

Investigators performed a meta-analysis of 184 studies from 1970 to 2016 to examine *H. pylori* prevalence in 62 different countries at different times. The regions with the highest prevalence were Africa (70.1%), South America (69.4%), and Western Asia (66.6%); regions with the lowest prevalence were Oceania (24.4%), Western Europe (34.3%), and North America (37.1%). Countries with the highest prevalence were Nigeria (87.7%), Portugal (86.4%), and Estonia (82.5%); countries with the lowest prevalence were Switzerland (18.9%), Denmark (22.1%), and New Zealand (24.0%) [5]. In North African countries, data were available for Libya and Tunisia with an estimated prevalence of 76% and 64%, respectively [4].

The bacterium was first identified in 1982 by Australian doctors Barry Marshall and Robin Warren.[5,6,7].*H. pylori* has been associated with lymphomas of the mucosa-associated lymphoid tissue in the stomach, esophagus, colon, rectum, or tissues around the eye (termed extra nodal marginal zone B-cell lymphoma of the cited organ)[8,9]and of lymphoid tissue in the stomach (termed diffuse large B-cell lymphoma) [10].

H. pylori infection usually has no symptoms but sometimes causes gastritis (stomach inflammation) or ulcers of the stomach or first part of the small intestine. The infection is also associated with the development of certain cancers occurring in less than 20% of cases [11]. Many investigators have suggested that *H. pylori* causes or prevents a

wide range of other diseases however many of these relationships remain controversial. [12,13,14].

Some studies suggest that *H. pylori* plays an important role in the natural stomach ecology, e.g. by influencing the type of bacteria that colonize the gastrointestinal tract.[5] Other studies suggest that non-pathogenic strains of *H. pylori* may beneficially normalize stomach acid secretion, and regulate appetite[16].

Materials and methods

The samples were carried out on 100 healthy Libyan population attending to Altaha laboratory of the Laboratory Medicine department from Qarabulli region during the period in September 2019 .Blood samples were separation by centrifuge (5,000 RPM) for 3 to 5 min 250µl serum samples were labeled and frozen at -20°C until testing. Detection of anti-*H. pylori* IgG using immunochromatographic rapid method (*H. pylori* Antibody Rapid Test Cassette Right Signs. Blood samples were taken from all the cases and sera were separated. Information was collected on structure. Their ages ranged between 10 to 80 years. They consisted of 11 (44.3%) males and 79 (55.7%) females at various age categories (mean 40 year). Blood samples were taken from all the cases and sera were separated. Information was collected on structure.

Results and Discussion

The effect of age on infection with *H. pylori* In the present study, the percentage of infection with bacteria *H. pylori* is more common in females than in males As the percentage of injury reached 51% and 45%. (Table 1), However, in another study, an attention was given to gender differences indicating that the prevalence of *H. pylori* infection was higher in men with upper and non-upper digestive tract symptoms than that of in women [17].

Table 1. Number of Helicobacter pylori positive patients according to sex

Sex	Total Subjects	Subjects positive for Helicobacter pylori	Percentage %
Female	78	40	51%
Male	22	10	45%

The effect of age group on infection with *H. pylori*

The results of our study showed that the age group between 10 to 80 years. They consisted of 11 (44.3%) males and 79 (55.7%) females. The reached percentage was 75 % in the age group of 51 - 60 years, followed, 67% in the age group of 71 - 80 years, 57% in the age group 10-20 years, 48% in the age group 21-30 years, 44% in the age group 31 -40 years ,42% in the age group from 41 to 50 years, , 33% in the age group of 61 - 70 years, and the lowest percentage 33% in the age group of 61 - 70 years (Table 2)

[18] showed that age-based distribution of HP infection showed maximum prevalence between the third to fifth decades

Table 2. Number of Helicobacter pylori positive patients according to age group

Age group (years)	Total subjects	No. of positive patients	Percentage (%)
10-20	7	4	57 %
21-30	29	14	48%
31-40	34	15	44
41-50	12	5	42
51-60	12	9	75
61-70	3	1	33
71-80	3	2	67

The effect of socioeconomic status on infection with *H. pylori*

Economic status was found to be an important factor in the acquisition of *H. pylori* by our subjects. Several other reports correlated high frequencies with low economic status. The risk factors of *H. pylori* infection are linked to living conditions, during childhood, especially to a low economic level [18]. Similarly, in another report, it was stated that economic class is likely the most important determinant, which affects living conditions and sanitation (Fallone, 1999). Fifteen out of 100 (50%) HP positive patients, 24 patients in without salary status, 18 patients in Low economic status, 5

patients in Low-moderate socioeconomic status, 3 patients in high moderate-high economic status (Table 3).

[19] shows that an upper socioeconomic enclave in the city of Istanbul has a lower prevalence of HP (comparable to HP prevalence in developed countries) compared to prevalence in the endemic greater Turkey.

Male gender, living with a partner and poor adult socioeconomic conditions are associated with increased risk of H. pylori infection [20].

Table 3. Number of Helicobacter pylori positive patients according to economic status

SE status	Total subjects	No. of positive patients	Percentage (%)
Without salary	43	24	56
Low (400 – 800)	38	18	47
Low-moderate (801 – 900)	13	5	38
High Moderate-high(901 – 1200)	6	3	50

The effect of Level of Education on infection with H. pylori

There was a significant correlation between the prevalence of H. pylori infection and education status. The maximum Percentage was showed 44% positivity for anti-H. pylori antibodies in without education, while those who had secondary, primary or tertiary showed 64%, 61 % and 39% positivity respectively (Table 4).

High prevalence of infection with H. pylori was found in our illiterate subjects as compared to those with different education levels. This is similar to the report from Saudi Arabia were higher prevalence of infection occurred in adults with less than secondary education than those with higher education [21]. In the EUROGAST study (1993), subjects with tertiary education had considerably lower levels of infection (39%) compared with secondary education only (64 %).

Table 4. Number of Helicobacter pylori positive patients according to Level of Education

Level of Education	Total subjects	No. of positive patients	Percentage (%)
Without education	4	3	75
primary	18	11	61
secondary	22	14	64
tertiary	56	22	39

The effect of marital status on infection with H. pylori

We found that married subjects had higher infection rates than singles, our study showed a higher prevalence of H. pylori in married 52% than single subjects 48% (Table 5).

Table 5. Number of Helicobacter pylori positive patients according to marital status

Marital status	Total subjects	No. of positive patients	Percentage (%)
Unmarried	27	13	48
Married	71	37	52

The effect of medical history on infection with H. pylori

For marital status status, the groups were classified according to medical history on infection with H. pylori .Out of 70 patients belonging to (No medical history), 28 were positive for Helicobacter pylori (40%), out of 13 of stomach cancer group,12 were positive (92 %) , out of 5 of diabetes mellitus group, with 3 positive (60%) , out of 3 of diabetes mellitus group, with 2 positive (67%) , out of 3 of Hypertension group with 2 positive (67%) , out of 2 of Chest sensitivity group, with 1 positive (50%) (Table 5).

These data support the belief that *H. pylori* infection was acquired early in life, leading to multifocal gastritis and thus predisposing the patients to gastric cancer later in life [21].

Table 6. Number of *Helicobacter pylori* positive patients according to medical history

Medical history	Total subjects	No. of positive patients	Percentage (%)
No	70	28	40
Stomach cancer	13	12	92
Diabetes mellitus, Hypertension	5	3	60
Diabetes mellitus	3	2	67
Hypertension	3	2	67
Chest sensitivity	2	1	50

The effect of tea consumption on infection with *H. pylori*

For tea consumption status, out of 43 patients belonging to red tea consumption group, 24 were positive for *Helicobacter pylori* (48 %), out of 38 of green, tea consumption group 18 were positive (36%) and out of 13 of red-green tea consumption group with 5 positive (10 %) (Table 7).

(23) showed that green/black tea was also linked to a reduced *H. pylori* positivity risk.

Table 7. Number of *Helicobacter pylori* positive patients according to tea consumption

Kind of tea	Total subjects	No. of positive patients	Percentage (%)
Red	43	24	48
green	38	18	36
Red-green	13	5	10

Conclusion

In conclusion, *H. pylori* infection is prevalent in the asymptomatic Libyan subjects. Infection starts early in childhood and increases with age. There was a significant increase in the association between the prevalence of *H. pylori* infection and marital status, education and socioeconomic status.

Identification of populations, who do not show symptoms of *Helicobacter pylori* infection, but still harbour it, is essential for controlling the infection and it still remains a challenge for the clinicians. A non-national epidemiological research is necessary for determining the seroprevalence of *H. pylori* in Libya.

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