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Seroprevalence of Helicobactor Pylori among People in Al-Khoms City, Libya

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Abstract:
Helicobacter pylori *infection is usually acquired in early childhood and related to numerous upper gastrointestinal disorders. Based on regional prevalence estimates, there were approximately 4.4 billion individuals (More than Half) with H pylori infection worldwide in 2015. This study was performed for the determination of antibodies of seroprevalence of H.pylori in people attends Al-Mutawakel Specialized Hospital, Al-Khoms, Libya. Total of 268 cases who attend Al-Mutawakel Specialized Hospital from October 2018 to March 2019 were involved in this study. Seropositivity of IgM and IgG were diagnosed with the standard ELISA kits.*
Like other developing countries, there is a high rate of infection of H. pylori during the study period. This rate should be reduced by taking immediate action by the health departments. Usually more than half the world's population is infected with H.pylori. This study result again is not falling under any of those categories mentioned in the aim of the study. A nationwide epidemiological research is necessary for determining the seroprevalence of H. pylori in Libya.
Key Words: *H. Pylori, prevalence, Al-Mutawakel Specialized Hospital, Al-khoms, Libya.*

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I. Introduction:

Helicobacter pylori (*H. pylori*) are a gram negative, non-spore forming spiral bacterium which colonizes the human stomach and is prevalent worldwide [(1)]. It has been associated with peptic ulcer disease, gastric adenocarcinoma, and type B low-grade mucosal-associated lymphoma [(2)].

Transmission occurred during childhood via the oral-oral or fecal-oral route. Infection once established can persist for life if left untreated, and only 30% of those infected are clinically symptomatic[(3)]. The prevalence of *H. pylori* infection varies between countries; the prevalence is up to 80% in developing and about 30% in developed countries[(4)]. The prevalence of *Helicobacter pylori* infection varies globally according to socioeconomic factors and levels of hygiene. 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 Oceana (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 [(6)]. Seroprevalence of *H. pylori* infection in Libyan population remains important for public health investigations because of high prevalence of this infection and its association with peptic ulcers and chronic dyspepsia[(7)].

The prevalence of *H. pylori* in different countries can generally be divided into two groups [(8)]. The first consists of countries whose population has a high prevalence of infection in children, persisting into adult life and old age, while in the second group, the prevalence in childhood is low, but rises with age. The aim of this study was to find out the seroprevalence of *H. pylori* infection and want to find out position of *H. Pylori* infection in the Khoms' people in Libya among the above groups.

II. Materials And Methods:

The method used in this study is serology testing as non-invasive methods of *H. pylori* detection.

Study place: Al-Mutawakel Specialized Hospital, Al-Khoms, Libya.
Number of samples: 268 cases attended in the Al-Mutawakel Specialized Hospital, Al-Khoms, Libya.
Period of study: From October 2018 to March 2019.

Analysis of Antibodies: Analysis of the Antibodies (IgG and IgM) from the collected samples was done by ELISA method with the following kits.
Kit 1: ELISA method (Bio Check *H. pylori* IgM Enzyme Immunoassay, USA).
Kit 2: ELISA method (Bio Check *H. pylori* IgG Enzyme Immunoassay, USA).
Interpretation:
Negative: Value less than 0.90 is negative for IgG antibody to *H. pylori*.
Equivocal: Value between 0.91 - 0.99 is equivocal. Value is doubtful and Sample should be retested.
Positive: Value of 1.0 or greater is positive for IgG antibody to *H. pylori*.

III. Results And Discussions:

As *H. pylori* is known to be the responsible pathogen in several gastrointestinal disorders, especially gastric cancer, understanding the epidemiology of *H. pylori* in different regions is of great importance. More than 60% of gastric cancers occur in developing countries with great variations in different geographical areas[(9)]. Epidemiological studies have frequently relied on serological tests for *H. pylori* infection detection, including retrospective studies to determine the prevalence or incidence of infection [(10)].

A total of 268 patients were included in the study. Among these, 139 (51.85%) were male and 129 (48.12%) were female. In the present study, the age group of 21-30 years old in male (17.90%) and 31-40 years old in female (15.29%) were more who involved in the study (Table 1).

Table 1: Distribution of Age and Gender in the study.

S.No.	Age	Gender			
		Male	%	Female	%
1	≤ 20	15	05.59	14	05.22
2	21 - 30	48	17.90	24	08.95
3	31 - 40	33	12.31	41	15.29
4	41 - 50	29	10.82	26	09.70
5	51 – 60	08	02.98	19	07.09
6	≥ 61	06	02.24	05	01.87
7	**Total**	**139**	**51.85**	**129**	**48.12**

(% were calculated from the total 268 cases)

Table 2 represents the distribution of acute Antibody IgM and chronic antibody IgG with age and gender. Acute infected cases were 216 (80.6%) and the chronic cases were 127 (47.3%). When compared among the gender, acute female cases (115 cases) were observed more than male (101 cases) whereas in chronic result, male (68 cases) has highest number than female (59 cases). Regarding age groups, acute infection rate is higher in 21-30 years old age group in male (13.5%) followed by 31-40 years old age group with 9.3%. Acute positive cases were increased till the middle age (21-30) and then started declining. This result is not falling in any one group studied by Pounder and Ng (1995). The same trends also were observed in the acute female groups and chronic male and female groups.

There is a correlation of acute infection with age in this study. Middle age group have more infection rate. Seropositivty to anti *H. pylori* IgM was more (80.6%) compared with seropositivty to anti *H. pylori* IgG (47.3%). This result is on contradictory to the findings of Mohammed et al., (2011) [(11)] and Waleed et al., (2010) [(12)]. Among the socio- demographic characteristics age, gender, occupation and alcohol consumption are associated with the prevalence of *H. Pylori* [(13)]. *H. pylori* infection is related to deficiencies in sanitary facilities, overcrowded living and insufficient supplies of water [(14)]. It is believed that this infection is more common among lower social classes and in poor countries [(15)].

Table 2: Distribution of IgM and IgG for *H. pylori* with Age and Gender.

S.No	Age	IgM								IgG							
		Positive				Negative				Positive				Negative			
		M	%	F	%	M	%	F	%	M	%	F	%	M	%	F	%
1	≤20	12	4.5	13	4.9	01	0.4	01	0.4	06	2.2	07	2.6	06	2.2	08	3.0
2	21 - 30	36	13.5	20	7.5	10	3.7	04	1.5	24	9.0	09	3.4	24	9.0	13	4.9
3	31 - 40	25	9.3	35	13.0	06	2.2	02	0.7	14	5.2	17	6.3	09	3.4	19	7.1
4	41 - 50	15	5.6	26	9.7	04	1.5	07	2.6	17	6.3	17	6.3	03	1.1	14	5.2
5	51 – 60	07	2.6	16	6.0	02	0.7	02	0.7	02	0.7	08	3.0	07	2.6	09	3.4
6	≥61	06	2.2	05	1.9	00	00	00	00	05	1.9	01	0.4	01	0.4	02	0.7
7	**Total**	**101**	**37.7**	**115**	**42.9**	**23**	**8.5**	**16**	**5.9**	**68**	**25.3**	**59**	**22.0**	**50**	**18.7**	**65**	**24.2**

(% were calculated from the total 268 cases)

Some cases involved in this study got confused or doubtful result during the analysis of seroprevalance study (Table 3). Here in both acute and chronic infection rate, male numbers were more than the female. Total of 15.6% were fall in this equivocal category. This confused or doubtful result may be human error or non-responses or less responses to the *H. pylori* infection. In every study, some result may arise in this category. These category cases must be retested to confirm their result.

Table 3: Distribution of *H. pylori* infection as equivocal with Age and Gender.

S.No.	Age	Equivocal							
		IgM				IgG			
		M	%	F	%	M	%	F	%
1	≤ 20	02	0.7	01	0.4	03	1.1	00	00
2	21 - 30	02	0.7	00	00	00	00	02	0.7
3	31 - 40	03	1.1	03	1.1	11	4.1	04	1.5
4	41 - 50	02	0.7	01	0.4	01	0.4	03	1.1
5	51 – 60	00	00	00	00	01	0.4	01	0.4
6	≥ 61	00	00	00	00	01	0.4	01	0.4
7	**Total**	**09**	**3.2**	**05**	**1.9**	**17**	**6.4**	**11**	**4.1**

(% were calculated from the total 268 cases)

The prevalence rate is about 80.5% in this study. This result shows there was a high rate were observed in the study area and during that particular period. High prevalence rate of *H. pylori* infection were also observed in other studies in Iran[16], Egypt [17] Libya [18] and Tunisia [19] and United Arab Emirates [20]. This high rate of infection of *H. pylori* may be due to food habits and life style they follow in their life.

IV. Conclusion And Recommendations:

Result shows that there is a high rate of infection of *H. pylori* during the study period. This rate should be reduced by taking immediate action by the health departments. Usually more than half the world's population is infected with *H. pylori*. This study result again is not falling under any of those categories mentioned in the aim of the study. Accurate information of seroprevalence of *H. pylori* infection may help an area-wise eradication. A nationwide epidemiological research is necessary for determining the seroprevalence of *H. pylori* in Libya.

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