Seroprevalence and Determinants of Helicobacter Pylori among Primary Health Care Centers Attendants in AL-Nassiryia City at 2017

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RESEARCH ARTICLE

Seroprevalence and Determinants of Helicobacter Pylori among Primary Health Care Centers Attendants in AL-Nassiryia City at 2017

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Abstract

Background: H. pylori are a gram-negative, spiral shaped; flagellated bacteria adapted to colonized the gastric mucosal layer. It is affects nearly one half of the world population, mainly in the developing countries. Increasing prevalence in developing countries is due to socio-economic status such as poor hygiene, overcrowding household and deficient sanitation. Methods: A cross-sectional study was conducted in Al-Nasiryia city in to twenty primary health care centers among general population for all age groups and both sex. The sample size was 386 individual from 4-75 years old age. In questionnaire we used collect socio-demographic data of studied population. The laboratory test used blood sample to estimate the H. pylori antibody, that by using special kit. Data were analyzed by (SPSS) version 24 to estimated frequency, percentage, Chi-square test, Fisher exact test, and logistic regression , in all cases p-value <0.05 was considered as statistical significant. Results: the overall prevalence of H. pylori infection among studied population of PHC attendants was 49.48%. In this study there was statistical association between H. pylori and some risk factors such as age, sex, marital status, smoking habit, occupation and cardiovascular disease were (0.0001) respectively. Multivariate analysis to showing the effect and association of variable on positivity of H. pylori antibody result in sex, occupation , CVD, smoking habit, difficulty swallowing to solid food, were p-value less than 0,05 and exponential B were 0.343, 0.381, 0.368, 0.401, 0.215, 1.772 respectively. Conclusion: The study shows about half of studied population was infected with H. pylori. the highest prevalence of H. pylori antibody was among age >65 years old, male gender, divorced, illiterate level of education, of retired occupation, of urban residence, family size more than 7, of outer RO water supplement, having CVS disease, and very sever obese .

Keywords: H. pylori, Sero-prevalence, H. pylori antibody test. Thi-Qar.

Introduction

Helicobacter pylori bacteria (H. pylori) "are spiral-shaped bacteria which grow in the digestive tract and have ability to attach to the gastric mucosa [1]. H. pylorus as organism is helicoidally, curved or straight gram- negative bacterium 0.5 to 1.0 micro M wide and.2 to 4. Micro M long.

There are three species significant human pathogens, which are H. pylori, H. fennelliae, and H. cinaedi [2]. H. pylori infection usually harmless, but it is regarded as a major cause of ulcer in stomach and small intestine , main disease which caused by H. pylori bacteria are peptic ulcer and gastric inflammation . H. pylori incidence and prevalence differed by geography and race. The incidence rate means the new infection of the disease, while the prevalence

rate means the total number of people that have a disease at a given time. In general H. pylori prevalence is higher in the developing countries than the developed countries. The incidence of H. pylori infection in developing countries is (3-10%) of the population each year, while in developed countries is (0.5%) [3].

The reasons for these variations involve the socioeconomic differences between populations. The mortality rate to H. pylori infection is not known, but it tends to be minimal, and the mortality is due to complications of infection, such as gastric ulcer perforation or Mucosa Associated Lymphoid Tissue lymphoma (MALT lymphoma) .H. pylori related gastritis is the main cause of MALT lymphoma onset on gastric

mucosa [4]. H. pylori infection is the most infects about one-half of the world population [5]. A positive relationship between age and prevalence of H. pylori infection has been reported in both developed and developing countries. About the gender some studies observed a higher prevalence of H. pylori infection in men than in women. H. pylori seroprevalence have observed and reported among various ethnic and racial groups [6]. H. pylori infection and its complications has high economic burden, like treatment with acid-reducing therapy costs $ 11.000, vagotomy costs more than $ 17.000, and antibiotics therapy which takes 17 days costs less than $ 1.000 [7]. The prevention of H. pylori infection aimed to eradication, elimination, and decreases the incidence and complications of this infection; this is done by specific strategies for prevention and control.

Aims

- To estimate the extent (prevalence) of H. pylori infection among primary health care (PHC) attendants in AL-Nasiriya city.

- To identify, specific clinical predictors for H. pylori infection to diagnosed it regardless of laboratory investigations.

- To identify, are there specific determinants related to H. pylori infection.

Methods and Materials

Profile of Study Area

The governorate of Thi-Qar is divided into five districts: AL-Nasiriya, AL-Chibaysih, AL-Rifa'i, AL-Shatra, and Suq-AL-Shuyukh, its population

It will calculated by the following formula

Dobson formula [9]

(1.96) 2 x p (1-p)

N= ---------------------

d 2

Sampling Procedure

Multistage sampling method had been performed. In the first stage ,after mentioning the percentage of each PHC sector to the total population of AL-Nasiriya city by sample fractioning, which in 1st AL-Nasiriya sector (AL-shamia area) about 26.25% and in 2nd AL-Nasiriya sector (AL-jezeera area) about 73.75%

common bacterial infection in the world. It estimated about (1,742,852), 52% males and 48% females, 62.9% urban and 37.1% rural. It shares internal boundaries with governorate of Basra from south, Wassit from north, Missan from west, and Muthanna from east. [8]

The Study Design

The study is observational, analytical, cross sectional survey. The period of study started from 1 November 2016 to 1 November 2017. A cross-sectional study extended over one year to include (386) primary health care attendants in AL-Nasiriya city to estimate the prevalence of H. pylori infection, which was estimated at (49.48%).

The Study Population

The study had been carried out among PHC attendants in AL-Nasiriya city which is the capital of Thiqar governorate .The study population includes both sexes (male and female) and all age groups. The exclusion criteria include non-participant who refused to participate; those who refused H. pylori antibody test; those who were on PPI in last 2 weeks or on H2 blocker in last 3 days or antibiotics in last 10 days and those who have gastric surgery or gastric tumor. Age will estimate according to individual identification card or from same participants or his relatives.

Refusal Rate

Of the sample size 7% refused the cooperation with researcher mainly after asking them to get 2cc of blood to analyze for H. pylori.

Sample and Sampling Process

N= sample size

P= prevalence rate wich is 50%

d= maximum tolerated error, the value of 0.05

$$N = \frac{(1.96)2 \times 0.5 \times 0.5}{(0.05)2} = \frac{0.9604}{0.0025} = 384.16$$

then will calculated the sample fraction for each PHC center. In the second stage a systemic random sampling conducted for PHC attendants.

The Study Tools: A-The Questionnaire

Special form of the questionnaire planned to collect information's .The form of questionnaire consists of three sections.

Section1: Includes questions about identity information's (name, age, sex, number of family members, occupation, marital status, socioeconomic status, education level, race, religion).

Section2:includes some basic questions about the participant(place of born, parents education),and some questions about hygiene and personal care (brush teeth, mouth wash, shower, water supply, sewage ,domestic animals)

Section3: Includes clinical questionnaire (risk factors, health status, family history of H. pylori disease, clinical features of GIT disorders, drug history, health education)

B-Anthropometric Measurements

- Height: measured by calibrated scale
- Weight: measured by portable instrument
- Body mass index= weight (kg)/ height(m)2

Ethical Considerations

The ethical considerations can be specified as one of the most important parts of research, it included the following principles:

- Research participants should not be subjected to harm in any ways.
- Respect for the dignity of research participants should be prioritized.
- Full consent should be obtained from participants prior to the study.
- The protection of the privacy of participants has to be ensured.
- Adequate level of confidentiality of the research data should be ensured.
- Anonymity of individuals and organizations participating in the research must be avoided.

- Affiliations in any forms, sources of funding, and any possible conflicts of interests have to be declared.
- Any deception or exaggeration about the aim and objectives of the research must be avoided.
- Any type of communication in relation to the research should be done with honesty and transparency.
- Any type of misleading information and representation of primary data finding in a biased way must be avoided.

The forma of research proposal had been proved by the higher ethical committee of research in the department of family and community medicine- Thiqar medical college and ethical committee of the Thi-Qar health directorate to do laboratory investigations. At the beginning the researchers introduced themself to the respondent and then permission, verbal consent had been taken to participate in the study and explain the aims of this study.

Statistical Analysis

Statistical Package for Social Sciences (SPSS) version 24 had been used for data analysis. Descriptive statistics expressed in form of, frequencies, percentages, while inferential statistics for testing of associations by test of significance (Chi-square test, or Fisher exact test were used for analysis variable), means and standard deviations were used to present data of continuous variables. Correlation and logistic regression analysis were performed to recognize the independent predictors of H. pylori infection .A p-value < 0.05 was considered statistically.

Results

Table 1: Distribution of H. pylori antibody test among risk factors A-According to socio-demography

Risk factor	Positive H.pylori test No. (%)	Negative H. pylori test No. (%)	X^2 , P-value
Age :			
< 14 year	10 (20.4%)	39 (79.6%)	**28.850**
14-45 year	130 (49.6%)	132 (50.4%)	**.000[b]**
46-65 year	44 (65.7%)	23 (34.3%)	
>65 year	6 (85.7%)	1 (14.3%)	
Sex :			
Male	97 (60.2%)	64 (39.8%)	**12.808[a]**
Female	94 (41.8%)	131 (58.2%)	**.000**
Marital status :			
Married	154 (55.6%)	123 (44.4%)	**22.557**
Single	30 (30.0%)	70 (70.0%)	**.000[b]**
Divorced	2 (100.0%)	0 (0.0%)	
Widowed	5 (71.4%)	2 (28.6%)	
Education :			
Illiterate	38 (56.7%)	29 (43.3%)	**3.196[a]**
Primary	47 (45.2%)	57 (54.8%)	**.670**
Intermediate	24 (46.2%)	28 (53.8%)	
Secondary	69 (51.9%)	64 (48.1%)	
University & above	12 (42.9%)	16 (57.1%)	
Child	1 (50.0%)	1 (50.0%)	

	Positive	Negative	X², P-value
Occupation :			
Unemployed	10 (62.5%)	6 (37.5%)	**35.138ª**
Employed	88 (61.1%)	56 (38.9%)	**.000**
House wife	71 (51.1%)	68 (48.9%)	
Student	14 (28.6%)	35 (71.4%)	
Retired	2 (100.0%)	0 (0.0%)	
Child	6 (16.7%)	30 (83.3%)	
Residence :			
Urban	186 (50.3%)	184 (49.7%)	**2.373**
Rural	3 (37.5%)	5 (62.5%)	**.369ᵇ**
Semi urban	2 (25.0%)	6 (75.0%)	
Family size(crowding)			
> 7 overcrowding	71 (53.8%)	61 (46.2%)	**1.488ª**
< or= 7 normal	120 (47.2%)	134 (52.8%)	**.223**
Family member away from the house :			
Daily	1 (20.0%)	4 (80.0%)	**6.249ª**
Monthly	24 (66.7%)	12 (33.3%)	**.044**
Null	166 (48.1%)	179(51.9%)	
Total	191(49.5%)	195 (50.5%)	

B- According to specific risk factors

Risk factor	Positive H. pylori test No. (%)	Negative H. pylori test No. (%)	X² , P-value
Source of RO water *			
Outer RO	172 (50.4%)	169 (49.6%)	**1.125ª**
Home RO	18 (41.9%)	25 (58.1%)	**.570**
Sewage or water problem :			
Yes			
No	41 (50.6%)	40 (49.4%)	**.053ª**
	150 (49.2%)	155 (50.8%)	**.818**
Smoking :			
Yes	38 (79.2%)	10 (20.8%)	**19.324ª**
No	153 (45.3%)	185 (54.7%)	**.000**
Chronic disease(CVD)			
Yes	28 (77.8%)	8 (22.2%)	**12.717ª**
No	163 (46.6%)	187 (53.4%)	**.000**
BMI :			
Underweight	13 (54.2%)	11 (45.8%)	**5.925ª**
Normal	51 (40.8%)	74 (59.2%)	**.314**
Overweight	69 (53.9%)	59 (46.1%)	
Obese	45 (54.2%)	38 (45.8%)	
Severe obese	9 (47.4%)	10 (52.6%)	
Very severe obese	4 (57.1%)	3 (42.9%)	
SES			**1.048ª**
Poor	12 (41.4%)	17 (58.6%)	**.592**
Intermediate	105(51.2%)	100 (48.8%)	
Good	74 (48.7%)	78(51.3%)	

*Two participants drinks water from river and tank

There was significant statistical association between age groups and H. pylori positive antibody, where the highest proportion among those who are more than 65 years old (85.7%), regarding the aged groups of 14-45 years old and 46-65 years old about half of them were H. pylori positive antibody (49.6%,65.7%) respectively.

The lowest proportion was among those who are below 14 years old (20.4%). Regarding the sex, also there was very high significant association with H. pylori positive antibody, where the p-value (0.0001), the highest proportion (60.2%) was among males, while females were lesser (41.8%). The marital status showed very high significant association with H. pylori positive antibody, where the p-value (0.0001), the highest proportion (100%) was among the divorced, and nearly 2/3 (71.4%) of widowed were H. pylori positive antibody. A half of married (55.6%) was with H. pylori positive antibody, while the single

were lesser (30%). The occupation also showed very high significant association with H. pylori positive antibody. The highest proportion (100%) was within the retired, unemployed and employed were within the equal proportions (62.5%, 61.1%) respectively. Nearly half of the housewives (51.1%) were with H. pylori positive antibody, the lesser proportion were among student and child (28.6%, 16.7%) respectively. Smoking habit and cardiovascular disease also showing very high significant association with H. pylori positive antibody were (79.2%, 77.8%) respectively.

Family members who spend away from the house showing significant association with H. pylori antibody test, where the p-value (0.044), the highest proportion (66.7%) was among those who are spending monthly. While the other risk factors(education, residence, family size, source of RO water, sewage problem, and BMI) had

been asked about, even though there was a difference in their proportion show no significant statistical association. Even though there is no significant statistical association different category, the highest proportion of intermediate

socioeconomic status with H. pylori positive antibody. The majority of studied population located at intermediate and good level of socioeconomic status, and the minority located at poor level.
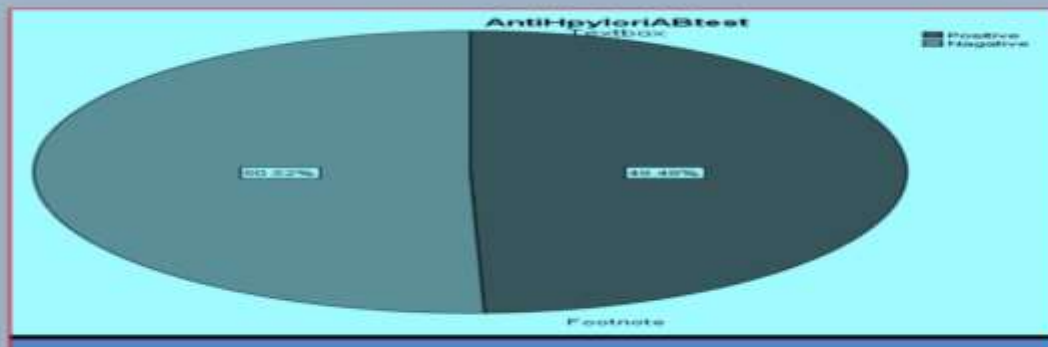

Figure: Prevalence of H. pylori antibody among studied population

There is no obvious difference between expressions of H. pylori antibody in studied population.

Table 2: Distribution of H. pylori infection according to the behavioral characters A- personal hygiene   and factors

Behavioral character	Positive H.pylori test No. (%)	Negative H.pylori test No. (%)	X2, P value
Frequency of brushing teeth:			
No	76 (52.1%)	70 (47.9%)	1.622[a]
Less than once/ week	7 (50.0%)	7 (50.0%)	.899
A few times / week	28 (45.9%)	33 (54.1%)	
Once /day	73 (49.7%)	74 (50.3%)	
Twice /day	6 (37.5%)	10 (62.5%)	
After every meal	1 (50.0%)	1 (50.0%)	
Frequency of mouth washing:			
less than once/ week	0 (0.0%)	1 (100.0%)	3.498
A few times /week	0 (0.0%)	1 (100.0%)	.308[b]
Twice /day	2 (100.0%)	0 (0.0%)	
After every meal	189 (49.5%)	193 (50.5%)	
Frequency of bath or shower:			
once / week	8 (88.9%)	1 (11.1%)	8.222
A few times /week	0 (0.0%)	2 (100.0%)	.011[b]
Nearly every day	182 (48.7%)	192 (51.3%)	
Constantly every day	1 (100.0%)	0 (0.0%)	
Smoking habit :			
Yes	38 (79.2%)	10 (20.8%)	19.324[a]
No	153 (45.3%)	185 (54.7%)	.000
Pack Year Smoke			**1.266, 0.665**
Light smoking <or = 5	4 (66.7%)	2 (33.3%)	
Moderate smoking 5-10	9 (75.0%)	3 (25.0%)	
Heavy smoking >10	24 (82.8%)	5 (17.2%)	

Even though there was no significant statistical association ,The highest proportion of H. pylori positive was among those did not brush their teeth (52%), the other   proportions among those who are brush their teeth where of comparable results ;   near 50% except those who are twice daily (37.5%).   Even though there was no significant statistical association, the highest proportion of H. pylori antibody positive was

among those who are washing their mouth twice daily, while those who are washing their mouth after every meal showing lesser proportion, there was no one of those with less than once per week and a few times per week showing H. pylori positive antibody. Highest proportion of H. pylori antibody test of take bath was once per week (88.9%), and there was significant statistical association. Even though there is no significant statistical association.

Between different categories the highest proportion of smoker with H.py. Positive antibody

B-Home hygiene

Behavioral character	Positive H.pylori test No. (%)	Negative H.pylori test No. (%)	X2, P value
Source of drinking water:			
Water tank	1 (100.0%)	0 (0.0%)	1.870
River water	0 (0.0%)	1 (100.0%)	.745[b]
Other (R.O)	190 (49.5%)	194 (50.5%)	
Domestic animal in house:			
Yes	43 (48.9%)	45 (51.1%)	.017[a]
No	148 (49.7%)	150 (50.3%)	.895
Mice getting in house :			
Yes	72 (51.8%)	67 (48.2%)	.466[a]
No	119 (48.2%)	128 (51.8%)	.495
Sewage or water problem :			
Yes	41 (50.6%)	40 (49.4%)	**.053[a]**
No	150 (49.2%)	155 (50.8%)	**.818**

Even though there was no significant statistical association, the highest proportion of H.pylori antibody positive was among those who are drinking water from tank (100%), while there was a comparable result among those who are drinking RO type of water. Even though there was no significant statistical association, there was a comparable result between those who are having domestic animal and do not have and also a comparable result between those of mice getting in house and without and also between those who are with sewage or water problem and those without.

Table 3: Distribution of accumulative risk factors to H.pylori antibody among studied population

No. of risk factors	Positive H. pylori test No. (%)	Negative H. pylori test No. (%)	X², p-value
1(1-4 symptoms)	32 (42.7%)	43 (57.3%)	2.050[a]
2(5-9 symptoms)	150 (51.5%)	141 (48.5%)	.359
3(10-15 symptoms)	9 (45.0%)	11 (55.0%)	

Even though there is no significant association between these accumulative risk factors ,nearly alf of those who are having 1-4 symptoms,5-9 symptoms, and 10-15 symptoms with H.pylori positive antibody were (42.7%, 51.5%, 45%) respectively.

Table 4: Study the association of risk factors with the occurrence of H.pylori infection by logistic regression analysis

Significance	Variable	B	p- value	Exponential (B)	C.I.	
					Lower	upper
significance	Sex (1)	-1.070	0.002	0.343	0.174	**0.675**
	Occupation		0.022			
	occupation (1)	-0.964	0.220	0.381	0.082	**1.779**
	occupation (2)	-1.208	0.023	0.299	0.105	**0.848**
	occupation (3)	-1.844	0.001	0.158	0.053	**0.475**
	occupation (4)	-0.780	0.191	0.458	0.142	**1.475**
	occupation (5)	-20.804	0.999	0.000	0.000	
	Taken bath or shower		0.239 *			
	CVD (1)	-1.000	0.026	0.368	0.153	**0.887**
	Smoking (1)	-0.914	0.036	0.401	0.171	**0.943**
	Total CM		0.009			
	TotalCM (1)	0.572	0.309	1.772	0.588	**5.345**
	Total CM (2)	0.118	0.836	1.125	0.368	**3.441**
	Total CM (3)	-0.445	0.386	0.641	0.234	**1.753**
Non significance	Age	-0.162	0.528	0.850	0.513	**1.409**
	Marital status	0.369	0.690	1.447	0.235	**8.899**
	Difficulty swallowing for solid food (1)	-1.538	0.082	0.215	0.038,	**1.213**

Logistic regression has been done in form of multivariate analysis to show the effect and association of independent variables on positivity of H. pylori antibody resulting in :sex, occupation, CVD, smoking habit, difficulty swallowing to solid food and total clinical manifestation having a significant association , where the P-value less than 0.05 and exponential B was 0.343, 0.381, 0.368, 0.401, 0.215, 1.772 respectively, while the age and marital status show no significant statistical association *The Odds ratio for the taken bath or shower was very high (80692482.232) because there was no one occupying the nill group

Discussion

Prevalence

The study result was lower than USA (Alaska Native People) study which was(63% at 1998-2005) [10] ,Comparable to other studies, that is reported in EMRO (Eastern Mediterranean Region) were Golestan province (Northeast Iran) 66.4% (2010) [11], Libya 76% (2002) [12], Tunisia 64% (2010) [13], UAE 74.1% (2006) [14], Oman 69.5% (2013) [15],and Shinshai-China 71.7% (2010) [16]]. Lower than this estimate was reported from other studies were KSA 28.3% (2012) [17], Northeastern Peninsular Malaysia 19% (2010) [18], Australian adult 15.5% (2011) [19]. This difference could be attributed to the different methodology, prevalence of common risk factors, criteria of the sample, as well as the specificities of techniques employed in studies. This study employed H. pylori antibody test because its availability and cost.

Determinants

The study shows very high significant statistical association of age with H. pylori positive antibody, the highest proportion was (85.7%) at the age more than 65 years old, then the prevalence shows decrease gradually with deceasing the age groups(46-65 year, 14-45 year, and less than 14 years) were (65.7%, 49.6%, 20.4%) respectively.

This result similar to the results in our region (EMRO) and most of developing countries, which regarded the increasing in the age as a risk factor for H. pylori infection [20]. Our study showed very high significant association of sex with H. pylori positive antibody, the males were with higher H. pylori prevalence (60.2%) than females (41.8%) and the sample was predominantly females. The gender effect on prevalence of H pylori infection in many populations are varied , more recent and more

comprehensive meta-analysis concluded a higher prevalence of H. pylori in men than in women but not in children[21]. Study showed higher prevalence among married than the single. These results agree with a Libyan study which reported that the marital status and H. pylori infection [22], and spouse-to spouse has a major role for H. pylori infection [23].

The occupation showed very high significant association with prevalence of H. pylori infection, the unemployed, slightly had higher prevalence of H. pylori infection than those employed this due to that work factors were not investigated in our study. This result agrees with study done in Mexico (2013) [24]. This study showed very high significant association between smoking habit and prevalence of H. pylori infection, and nearly more than 3/4 of individual who were cigarette smoking had H. pylori positive antibody and this agree with a study in China (2009) [25].

This study shows no significant statistical association between education level and H. pylori seropositive antibody, this result did not agree with some studies in European city (2013) [26]. This may be due to sample and socioeconomic differences. Our result has agreement with study in northeastern Brazil (2001) [27]. Spend a time away from the house showed association with H. pylori positive antibody p-value (0.044) that due to the H. pylori infection considered as contagious disease can be transmitted by saliva, feco-oral route and poor hyiegene. We found no association between H. pylori infection and residence, this result is agreement with study in Iraq among university students [28]. Other studies showing significant association with residence, were in Turkey (2007) [29] and southern Ethiopia (2013) [30], and this reflected to ,most of participants in our study was from urban area. We could not find a significant association between family size and H. pylori seroprevalence, which is in agreement with study in West of Iran (2008)[31],Taiwan (2009) [32].

The distribution of H. pylori infection was repeated to be affected by the sources of water, but in our study did not show any significant association between source of water and H. pylori seropositive antibody. Most of epidemiological studies in many countries such as Lima Peru [33] and Colombia [34] had shown association of prevalence of infection with water sources. This difference may be due to limited sample size in our study. We found a study has same our result which was in Makurdi North

central Nigeria [35]. Our study indicate that BMI was not associated with H. pylori positive antibody, this result is in agreement with some studies in US (2005) [36,37]. This study shows no significant statistical association between sewage problem and prevalence of H. pylori infection, but there are several studies showed minimal differences with access sewage system such as (Olmos et al.2000; Red linger et al .1999; Souto et al. 1998). This may be reflecting to the well-designed septic tanks. Our study shows no significant association between socio-economic status and prevalence of H. pylori infection which agrees with study in India [38].

Limitations

The study conducted in AL-Nasiryia city which was urban area, so most of sample was from urban (95.9%), while rural represented 2.1% which does not give idea about the prevalence in population at rural area. In diagnosis we used serological test (anti H. pylori antibody), this test conducted both acute and chronic cases, but stool antigen test and urea breath test indicated the acute cases and useful for follow up. Most of studies in developing countries showed that the prevalence increased in the 1st ten years of life, in this stud age below 14 years represented 12.69%. Our study was designed to assess the prevalence in general population (asymptomatic), not in specialized hospitals.

Conclusion

- This study reveals that nearly half of studied population in our society suffer from h. pylori infection and its complication, virtually that might have a significant impact on individuals themselves, their family and economic burden.

- The highest prevalence of H. pylori antibody was among age >65 years old, of male gender, divorced, of illiterate level of education, of retired occupation , of urban residence, of family size more than 7, of outer RO water

supplement, , having CVD and very severe obese.

- Most prevalent behavioral factor among HP+veAb were not brushing their teeth , mouth washing after each meal , taking bath or shower every day , drinking water from tank, and smoker.

- The risk factors which had significant statistical association By univariate analysis were age, sex, marital status, occupation, family member away from the house, smoking habit taking bath or shower, and the total clinical manifestations, this may be reflect to high prevalence of risk factors.

- Females tend to have lower infection rates than the males; this may be as a reflection of difference in exposure levels to risk factors.

- Multivariate analysis show significant statistical and epidemiological association were sex, occupation, and smoking habit.

- Most of our study population has at least five risk factors.

Recommendations

- Further studies are required to identify the environmental risk factors, treatment, and preventive measures.

- Because of H.pylori infection in most conditions is asymptomatic and its fatal complication such as gastric cancer, the population need to regular screening for infection or its risk factors.

- Promote health education about mode of transmission of this contagious disease.

- Investigation of H.pylori infection plays important role in managements of occurrence of pepticulcer would be further explored.

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