RESEARCH ARTICLE

Helicobacter pylori and related Risk Factors in Paktia, Afghanistan

Fazal H Arabzai, Taj M Khaksar, Noor M Wali
Paraclinic, Paktia Medical Faculty, Paktia University, Paktia, Afghanistan.
Corresponding Author Email ID: arabzai25@gmail.com

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Abstract

Introduction: A recent research that examined data from 62 nations found that more than half of the world's population is infected with *Helicobacter pylori*, According to geographical prevalence estimation, nearly 4. 4 billion persons were infected worldwide in 2015. This study was used to randomly select students enrolled in a university in Paktia province, Afghanistan, for the questionnaire survey.
Material and Methods: Prevalence and characteristics of *H. pylori* infection: a total of 300 people were surveyed and their results showed that the prevalence of *H. pylori* infection was 41% (124/300) in a college in Paktia province, Afghanistan.

Results and Discussion: Showed that *H. pylori* infection was associated with age, education, chronic gastritis, peptic ulcer, frequent epigastric discomfort, frequent acid reflux, type of water consumed and vegetables consumed were related to each other with statistically significant differences ($p < 0.05$). Factors with univariate analysis of $p < 0.1$ were included in the multifactorial logistic regression analysis, and the results showed that age, chronic gastritis and peptic ulcer (OR = 2.981, $p = 0.001$), (OR = 4.876, $p < 0.001$), (OR = 4.057, $p < 0.001$) were independent risk factors for *H. pylori* infection; Other differences did not reach statistical significance such as feeling stressed consumption of spicy food, rice and smoking ($p > 0.05$). Regular consumption of rice (OR = 0.544, p = 0.019) was a protective factor against *H. pylori* infection and may reduce *H. pylori* infection to some extent.

Conclusion: This study will further help to understand the current status, associated risk factors, prevention and intervention of *H. pylori* infection in related region.

Keywords: *H. pylori*, Infection, Risk factors.
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Introduction

Helicobacter pylori is a spiral-shaped, microaerophilic Gram-negative pathogenic bacilli that colonizes human gastric mucosa that ranges in size from 2.5 microns to 4 microns.[1, 2] This pathogenic bacillus has 2-6 coated unipolar flagella which play an important role in the protection against stomach acidic microenvironment.[3] In the stomach, most *H. pylori* reside in the lining of the stomach. However, some adhered to epithelial cells of the gastric mucosa. This bacterium is well suited for surviving the harsh environment of the stomach, where most other organisms cannot survive. There is evidence that *H. pylori* is an extracellular bacillus, but some evidence predicts that *H. pylori* have mechanism for intracellular invasion.[4]

Campylobacter *H. pylori*, a gram-negative bacterium, is distinguished by its cluster of unipolar flagella. Urease, catalase, and oxidase activities may reveal the *H. pylori* biochemistry. There are several methods to detect *H. pylori* bacterium. Every method is either invasive or non-invasive. However, invasive diagnostic methods often include upper GI endoscopy and stomach sample analysis. Non-invasive diagnostic techniques must be prioritized. Histological examination, rapid urease tests, molecular methods, or culture may be used to diagnose *H. pylori* infection in upper GI endoscopy.[5,6] The invasiveness of these methods is the basic limitation and can only analyses a small section of the gastric mucosa. Non-invasive diagnostics include serology, stool antigen tests, the 13 C-urea breath test (UBT), and PCR studies that quantify *H. pylori* DNA in feces,[5] *H. pylori* may be diagnosed using any of the existing methods, urease breath testing is the "gold standard" for *H. pylori* diagnosis.[5,7] The test may identify extremely low *H. pylori* infection. Modern non-invasive *H. pylori* tests are reliable because to their excellent sensitivity and specificity.

A recent research that examined data from 62 nations found that more than half of the world's population is infected with *H. pylori*; according to geographical prevalence estimation, nearly 4. 4 billion persons were infected worldwide in 2015. The prevalence of *H. pylori* varies by country and location. Africa had the greatest incidence rate (79.1%), followed by Latin America and the Caribbean (63. 4%) and Asia (54. 7%). Oceania (24. 4%) and North America have the lowest *H. pylori* infection rates (37. 1% of the population). In the early 21st century, *H. pylori* prevalence declined in highly industrialiser Western nations but remained high in emerging and growing nations.[8]

Asymptomatic peptic ulcer is the leading cause of global

mortality and morbidity. Symptomatic peptic ulcer disease causes epigastric discomfort, bloating, dyspepsia, nausea, early satiety, and fullness.[9] ulcers are mostly occurring in the stomach and proximal duodenum.[10] Most incidences of peptic ulcer disease are linked to NSAIDs or *H. pylori*.[11] Nonatrophic antral-dominant gastritis causes stomach acid and gastrin overproduction due to low antral somatostatin levels, clinically, duodenal ulcers are common in this group.[12] *H. pylori*-induced gastritis is responsible for somatostatin reduction.[13] Atrophic gastritis, which damages the body mucosa and stomach antrum, makes gastric acid difficult to produce. Atrophic gastritis affects both stomach areas (gastric antrum and body mucosa). This trait is linked to proximal gastric ulcers, advanced precancerous lesions, and stomach cancer.[14] *H. pylori* elimination reduces peptic ulcer severity.[15] *H. pylori* may colonize the stomach and duodenum for a long time, this may cause gastritis, gastrointestinal ulcers, and innate and specific immunological responses. Chronic active gastritis is possible even if the infection is eradicated.[16]

Despite the fact that paktia is overcrowded, with high *H. pylori* cases and poor sanitary conditions, there are no previous studies or data concerning the prevalence of *H. pylori* infection and the lack of knowledge about the risk factors associated with *H. pylori* infection. Another vital issue regarding *H. pylori* diagnosis, is the absence of advanced accurate tests in paktia.

The general aim of this study is to evaluate risk factors associated with *H. pylori* infection in the students of a university at Paktia province, Afghanistan. The epidemiological data on *H. pylori* infection in Afghanistan are scarce and there is no similar research study done in Afghanistan on *H. pylori* infection before. This study is innovative and it is expected that data generated from this work would provide an insight on the risk factors associated with *H. pylori* infection. This may contribute to reducing the incidence of such infections.

Materials and Methods

Consulted a large number of literature, learn the design method of a questionnaire survey, and adjust the feasibility of the questionnaire according to the actual situation. The investigators have all undergone standardized training, the respondents must sign an informed consent form, and before participating in this survey, all 300 randomly selected students tested for stool *H. pylori* antigen by a strip which is the non-invasive and commonly available test in Afghanistan, and use a unified self-made questionnaire to conduct the survey. The "Questionnaire on Risk Factors of *Helicobacter pylori* Infection" was distributed hand by hand to all 300 students, and the questionnaire was collected after they completed the questionnaire.

Questionnaire survey content

The content of the questionnaire is mainly about some factors that may be related to local *H. pylori* infection, including personal data, eating habits, living habits, whether there is *H. pylori* infection, history of gastric disease based on symptoms and signs, upper abdominal discomfort, acid reflux and Awareness of *H. pylori*.

Statistical analysis

SPSS 24.0 statistical software was used for data entry. The *H. pylori* infection rate was expressed as a percentage, and the comparison between groups was performed using the chi-square test. Whether *H. pylori* infection was positive or not was used as the independent variable, and each study factor was the dependent variable. Protective factor. $P < 0.05$ indicated that the difference was statistically significant.

Results

Among 300 college students investigated, 124 students were *H. pylori* positive, accounting for 41% of the total. While the remaining 176 students, accounting for 59% were *H. pylori* negative.

Univariate analysis of *H. pylori* infection on general population data

In the Table 1, the difference of age has significant statistical result, with $p = 0.000$ as shown in the table, the positive result was high in people more than 23 years old, which accounts 65 people out of 124 *H. pylori* positive population.

There is no significant difference between married and unmarried with regard to *H. pylori* infection, the percentage of positive results for married and unmarried were 46% and 38% respectively. *H. pylori* positive cases were more common in tajik nation than in pashton and other nations but the statistical result among nations were not significant to be considered as a risk factor for *H. pylori* infection. And also it has been shown that BMI has no significant statistical result regarding *H. pylori* positive and negative cases.

People who live in the rural were infected with *H. pylori* less than those people who live in the city with a percentage 38 and 46%, respectively. Family members have no statistical significance but *H. pylori* positive cases were slightly high in more than ten family members.

Education has significant statistical importance on *H. pylori* infection with $P = 0{,}002$ positive *H. pylori* cases were less in high school students with 17%, and the positive cases were more among above high school students with a percentage of 46%.

Univariate analysis of *H. pylori* infection on clinical symptoms

Chronic gastritis has significant statistical importance as shown in Table 2 *H. pylori* positive cases were high among those people who had the symptoms of chronic gastritis, accounting for 58% and chronic gastritis is considered as a risk factor for *H. pylori* infection.

The symptom of peptic ulcer is also considered as a risk factor for *H. pylori* infection because peptic ulcer had high

Table 1: Univariate analysis of *H. pylori* infection on general population data

Characteristics	*N*	*H.pylori – (%)*	*H.pylori + (%)*	*χ2*	*p*
Age					
≤23	188	129 (69%)	59 (31%)	20.5	0.000
>23	112	47 (42%)	65 (58%)		
Marital status					
Married	115	62(54%)	53 (46%)	1.73	0.187
Unmarried	185	114(62%)	71 (38%)		
Nation					
Pashtun	235	143 (61%)	92 (39%)	2.91	0.233
Tajik	52	25 (48%)	27 (52%)		
others	13	8 (62 %)	5 (38%)		
BMI					
<18	0.00	0.00	0.00		
18–23.9	244	142 (58%)	102 (42 %)		
24–27.9	54	32 (59%)	22 (41%)	1.43	0.487
≥28	2	2 (100%)	0 (0%)	1.51	0.291
Residency					
rural	177	109 (62%)	68 (38%)		
city	123	67 (54%)	56 (46 %)		
Family size					
≤ 10	139	84 (60%)	55 (40%)	0.33	0.564
> 10	161	92 (57%)	69 (43%)		
Close relative stomach cancer					
Yes	34	18 (53%)	16 (47%)	0.51	0.472
No	266	158 (59%)	108 (41%)		
Education					
High School	35	29 (83 %)	6 (17%)	9.56	0.002
Above high School	265	147 (55%)	118 (45%)		

Table 2: Univariate analysis of *H. pylori* infection on clinical symptoms

Symptoms	*N*	*H.pylori –(%)*	*H.pylori + (%)*	*χ2*	*p*
Chronic gastritis					
Yes	180	75 (42%)	105 (58%)	180.61	0.000
No	120	101 (84%)	19 (16%)		
Peptic ulcer				64.01	0.000
Yes	93	23 (25%)	70 (75%)		
No	207	153 (74%)	54 (26%)		
Upper abdominal discomfort					
Yes	128	46 (36%)	82 (64%)	47.56	0.000
No	172	130 (76%)	42 (24%)		
Frequent acid reflux					
Yes	165	77 (47%)	88 (53%)	21.77	0.000
No	135	99 (73%)	36 (27%)		

Table 3: Univariate analysis of *H. pylori* infection on dietary habits

Eating habits	*N*	*H. pylori – (%)*	*H. pylori + (%)*	*χ2*	*p*
Kind of water					
Surface water	12	9 (75%)	3 (25%)	17.30	0.001
Well water	176	87 (49%)	89 (51%)		
Tap water	100	69 (69%)	31 (31%)		
Mineral water	12	11 (92%)	1 (8%)		
Eating spicy food					
Yes	162	88 (54%)	74 (46%)	2.72	0.098
No	138	88 (64%)	50 (36%)		
Eating grilled meat					
Yes	57	31 (54%)	26 (46%)	0.53	0.466
No	243	145 (60%)	98 (40%)		
Eating fried food					
Yes	160	90 (56%)	70 (44%)	0.82	0.364
No	140	86 (61%)	54 (39%)		
Eating vegetables					
Often	142	98 (69%)	44 (31%)	12.89	0.002
Occasionally	147	71 (48%)	76 (52%)		
Very little	11	7 (64%)	4 (36%)		
Eating smoked food					
Often	75	48 (64%)	27 (36%)	3.91	0.142
Occasionally	189	112 (59%)	77 (41%)		
Very little	36	16 (44%)	20 (56%)		
Eating eggs					
Often	119	74 (62%)	45 (38%)	1.23	0.540
Occasionally	156	89 (57%)	67 (43%)		
Very little	25	13 (52%)	12 (48%)		
Eating rice					
Often	158	102 (65%)	56 (35%)	4.80	0.090
Occasionally	126	66 (52%)	60 (48%)		
Very little	16	8 (50%)	8 (50%)		
Eating Garlic					
Often	80	39 (49%)	41 (51%)	4.51	0.105
Occasionally	172	108 (63%)	64 (37%)		
Very little	48	29 (60%)	19 (40%)		
Eating curry					
Often	57	34 (60%)	23 (40%)	0.45	0.796
Occasionally	211	125 (59%)	86 (41%)		
Very little	32	17 (53%)	15 (47%)		
Eating sweets					
Often	146	82 (56%)	64 (44%)	2.30	0.316
Occasionally	121	77 (64%)	44 (36%)		
Very little	33	17 (52%)	16 (48%)		

Eating regularly					
Yes	209	125 (60%)	84 (40%)	0.37	0.543
No	91	51 (56%)	40 (44%)		
Have breakfast					
Do not eat	69	46 (67%)	23 (33%)		
Occasionally eat	103	58 (56%)	45 (44%)	2.36	0.306
Eating every day	128	72 (56%)	56 (44%)		
Have midnight snack					
Often	53	28 (53%)	25 (47%)		
Occasionally	152	88 (58%)	64 (42%)	1.57	0.456
Very little	95	60 (63%)	35 (37%)		

Table 4: Univariate analysis of *H. pylori* infection on living habits

Living habits	*N*	*H. pylori – (%)*	*H. pylori + (%)*	*χ2*	*p*
Smoking					
Yes	69	34 (49%)	35 (51%)	3.25	0.071
No	231	142 (61%)	89 (39%)		
Drinking beverage					
Yes	148	83 (56%)	65 (44%)	0.80	0.370
No	152	93 (61%)	59 (39%)		
Stay up late					
Often	112	63 (56%)	49 (44%)		
Occasionally	147	85 (58%)	62 (42%)	1.87	0.391
Never	41	28 (68%)	13 (32%)		
Having exercise habit					
Yes	211	129 (61%)	82 (39%)	1.79	0.181
No	89	47 (53%)	42 (47%)		
Feel stressed					
Often	108	54 (50%)	54 (50%)		
Occasionally	166	104 (63%)	62 (37%)	5.62	0.060
Never	26	18 (69%)	8 (31%)		

Table 5: Binary logistic regression analysis of risk factors associated with *H. pylori* infection

variable	*B*	*SE*	*Wald*	*p*	*OR*	*95%CI*
Age	1.092	0.318	11.783	0.001	2.981	1.598~5.561
Education	0.802	0.537	2.236	0.135	2.231	0.779~6.388
Chronic gastritis	1.584	0.362	19.207	0.000	4.876	2.401~9.904
Peptic ulcer	1.401	0.361	15.038	0.000	4.057	1.999~8.235
Upper abdominal discomfort	0.437	0.354	1.524	0.217	1.547	0.774~3.094
Frequent acid reflux	0.100	0.353	0.081	0.776	1.105	0.554~2.206
Kind of water	-0.497	0.256	3.767	0.052	0.608	0.368~1.005
Eating vegetables	-0.464	0.274	2.877	0.090	0.629	0.368~1.075
Eating spicy food	0.076	0.326	0.054	0.816	1.079	0.570~2.043
Eating rice	-0.609	0.259	5.539	0.019	0.544	0.328~0.903
Smoking	0.545	0.367	2.204	0.138	1.725	0.840~3.544
Feel stressed	0.118	0.267	0.196	0.658	1.126	0.667~1.900

statistical result with $p = 0.000$. In the following table, the percentage for positive result were 75% in the people of peptic ulcer group and 26% in the non-peptic ulcer group.

High positivity results found in the group of upper abdominal discomfort with $p = 0.000$, people who had the symptom of upper abdominal discomfort also were highly infected with *H. pylori*, accounting for 75% and people without having upper abdominal discomfort were less infected with *H. pylori* infection accounting for 26%.

The Statistical result of frequent acid reflux is very important with $p = 0.000$ as shown in the following table, 53% *H. pylori* infected people had frequent acid reflux and 27% *H. pylori* infected people were not have frequent acid reflux.

Univariate analysis of *H. pylori* infection on dietary habits

From statistical analysis of data, the type of water drunk could be considered as a risk factor with as presented in Table 3 $p = 0.001$. As shown in the following table, the positive results were high in people who drank well water accounting for 51% and the positive results for people drunk surface water, tap water and mineral water were 25, 31, 8%, respectively.

H. pylori infection was high in people who ate spicy food 46%, but this result was not statistically significant. Eating fried food has also been statistically not significant but people who ate fried food were slightly more infected with *H. pylori* 44%.

Eating vegetables was statistically significant with $p = 0.002$. Positive *H. pylori* cases were high in people who ate vegetables occasionally 52% than those people who ate vegetables often 31% and very little 36%.

Eating smoked food and eggs did not have statistical significance. There was no significant correlation between different frequencies of rice consumption and *H. pylori* infection. Eating other food like curry, sweets, and garlic did not have statistical significance. People who ate food regularly or not statistically are not significant.

People who had breakfast every day or occasionally were similarly infected with *H. pylori* infection 44% and positive cases were less in people who do not ate breakfast 33%. Midnight snacks did not have statistical significance, but those people who had midnight snack were infected highly 47% than those people who had midnight snack very little 37%.

Univariate analysis of *H. pylori* infection on living habits

As shown in the following Table 4, there is no difference between smokers and nonsmokers with regard to *H. pylori* infection. The percentage of positive results for smokers and nonsmokers were 51 and 39%, respectively. Beverage drinking has no statistical significance. People who often stay up late were highly *H. pylori* positive 44% than those who never stay up late 32%. Feel stressed has not been considered as a risk factor for *H. pylori* infection, but still positive cases were high in those people who often fell stressed (50%) than those people who never feel stressed (31%).

Binary Logistic regression analysis of risk factors associated with *H. pylori* infection

In order to explore the risk factors of *H. pylori* infection in a university, 12 factors with $p < 0.1$ in univariate analysis were used as independent variables, and unconditional Logistic regression analysis was carried out, respectively. The results showed that Age ($p = 0.001$), Chronic gastritis ($p = 0.000$), and Peptic ulcer ($p = 0.000$) were independent risk factors for *H. pylori* infection, while eating rice was a protective factor ($p = 0.019$). Participants of peptic ulcer symptoms had a significant likelihood of being diagnosed with an *H. pylori* infection compared to participants without peptic ulcer symptoms (OR = 4.057,95% CI: 1.999~8.235, $p = 0.000$). Furthermore, participants of more than 23 years of age were more likely to be infected with *H. pylori* infection (OR = 2.981, 95% CI: 1.598~5.561, $p = 0.001$). It was found that participants with chronic gastritis symptom were highly *H. pylori* positive than without chronic gastritis symptoms participants (OR = 4.876, 95% CI: 2.401~9.904, $p = 0.000$). In addition, eating rice proved to be a protective factor for *H. pylori* infection (OR = 0.544, 95% CI: 0.328~0.903, $p = 0.019$). Statistical data in Table 5 shows that Education, upper abdominal pain, clean water drinking, eating more vegetables, frequent acid reflux, eating spicy food, smoking and feel stressed were not statistically significant at all.

Discussion

H. pylori infection rate varies between 85 and 95% in developing countries and between 30 and 50% in developed countries.[17] In developing countries, the rate of infection remains the highest, and this is related to socioeconomic status and levels of hygiene. After the year 2000, the prevalence of *H. pylori* became lower than before in European countries. However, in Asia, the prevalence remains the same.[18] The mode of transmission and infection of *H. pylori* is still not known exactly, the level of contamination is strongly dependent on the familial and environmental context, with a drastic impact on living conditions with poor hygiene and sanitation. However, faecal–oral and oral–oral routes *via* water or food consumption are thought to be a very common cause.[19] An overview of Afghanistan's national conditions and demographic characteristics shows that the infection rate of *H. pylori* may be relatively high, and the national health awareness needs to be strengthened.

This study is a survey of a young group of college students in a university in paktia province, Afghanistan, with a relatively high level of education. Due to the national education situation in Afghanistan, the college students are almost only male. The population of this survey is biased because people in Afghanistan do not drink alcohol, and unable to analyze the relationship between *H. pylori* and alcohol consumption. Up to our knowledge, this study is the first study conducted in the Afghan population and there is no similar research data available in Afghanistan.

Current report from sixty-two countries estimate that

more than half of the world's population is still infected with *H. pylori*. This means that, based on a 2015 regional prevalence estimation, around 4.4 billion people worldwide are infected with *H. pylori*, and the prevalence of *H. pylori* varies widely between regions and countries. The highest prevalence was found in Africa (79.1%), Latin America and the Caribbean (63.4%) and Asia (54.7%). In contrast, North America (37.1%) and Oceania (24.4%) had the lowest rates of *H. pylori* infection. In the early 21st century, the prevalence of *H. pylori* was declining in highly industrialized Western countries, while it was high in developing and emerging countries. The widening epidemiological gap has important implications for future global *H. pylori*-related disease epidemics. *H. pylori*, including peptic ulcer and gastric cancer. According to Hooi *et al.*, these differences in *H. pylori* prevalence may reflect levels of urbanization, sanitation, access to clean water, and different socioeconomic levels. the risk factors for *H. pylori* infection are not consistent in different studies because of differences in regions, religion, culture, ethnicity and asymmetry of socioeconomic status. In this study infection rate in general population was 41% and the rate of infection was high in rural than in urban students. We also found that the infection rate among Pashtun ethnicity was relatively high than in tajiks and other minor ethnicities present in Afghanistan.

This study showed that there was a statistically significant difference in the *H. pylori* infection rate among different age groups. *H. pylori* positive result was high in people more than 23 years old (58%) and lower in people less than 23 years old (31.4%). In this study, participants with high education levels more commonly had *H. pylori* infection than less educated participants; *H. pylori* positive cases were more among above-high school students (46%) and students of high school were less positive (17.14%), which did not concur with the results of other studies. A reasonable explanation is the active social life of above high school students; they have more opportunities to go to work and participate in social activities (such as eating in public restaurants and participating in various social activities) than others, and these increases the probability to be infected with *H. pylori* infection.

In previous studies, *H. pylori* infection was related to personal diet and living habits, which was also reflected in this study. The survey showed that eating rice was a protective factor for *H. pylori* infection. However, there was no significant correlation between eating more vegetables and the type of drinking water to *H. pylori* infection in this study. Several studies have shown that the intake of fruits and vegetables may have a protective effect on *H. pylori* infection. Zohreh Ebrahim *et al.*, found that higher intakes of fruits, vegetables and vitamin C are protective factors against *H. pylori*.[20] Other studies have also reported the protection role of allium vegetables in gastric cancer associated with *H. pylori* infection.[21,22]

Univariate analysis in this study showed that there was no significant difference between *H. pylori* infection and smoking, staying up late, exercising and stress. However, in previous studies, the above factors were associated with *H. pylori* infection. Studies providing evidence for an increased frequency of infection among smokers, Brenner *et al.*, 1997; Moayyedi *et al.*, 2002; Cardenas and Graham, 2005; Marakoglu *et al.*, 2008; Hishida *et al.*, 2010; Hanafi and Mohamed, 2013; Ozaydin *et al.*, 2013, obtained higher estimates than the ones presented in our investigation. The significant association between smoking duration among younger individuals is compatible with a more important role of smoking in the acquisition of infection, predominantly at an early age (Lunet *et al.*, 2014). The inconsistent conclusion of our study with previous studies is due to insufficient sample size and the selection of the population, as college students have better living habits and fewer smokers, so smoking is not a risk factor for *H. pylori* infection in this study.

Gamboa reported that chronic stress could synergize to worsen *H. pylori*-induced gastric lesions and the presence of *H. pylori* caused significant deterioration of stress-induced gastric mucosal lesions. Oh *et al.* and Gang Guo *et al.*, found that repeated exposure to Psychological stress increases the colonization of the gastric mucosa of BALB/c mice by *H. pylori* and aggravates the mucosal injury caused by this infection. The above finding is not consistent with our study this may be due to insufficient sample size.

Binary logistic regression analysis in this study showed that chronic gastritis peptic ulcer was the risk factor for *H. pylori* infection, and *H. pylori* infection in patients with gastric disease was higher than that in healthy people, indicating that *H. pylori* infection was one of the risk factors for gastric disease. Previous studies have also suggested that *H. pylori* is an influencing factor of gastric cancer. However, *H. pylori* infection and treatment have not received enough attention, which shows the importance of preventing and treating *H. pylori* and reflects the value of this study. A previous study in a meta-analysis reported that children with upper abdominal pain or epigastric pain were two to three folds more infected to *H. pylori* infection than children without these symptoms.[23] Some other studies reported that Inflammation of the gastric mucosa increased with exposure to the bacteria.[24] Irigrácin Lima Diniz Basílio *et al.* found, that the prevalence rate of *H. pylori* was high in patients with dyspeptic disorders and was associated with the severity of gastritis. We found more *H. pylori*-positive patients with chronic gastritis, peptic ulcer and abdominal discomfort and this result is in accordance with the findings showing that *H. pylori* infection increases the chances of gastritis.

Conclusion

This survey was conducted among students enrolled in a college in Paktia province, Afghanistan, belonging to the youth group, and the results showed that the prevalence of *H. pylori* infection in this population was 41%. *H. pylori* infection is associated with chronic gastritis, peptic ulcer and other

factors. Surveillance should be strengthened in people with a history of gastric disease, poor diet and lifestyle habits to reduce susceptibility factors. At the same time, education and science related to *H. pylori* infection should be strengthened to actively prevent the occurrence of *H. pylori* infection.

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