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Original Research

Prevalence of *Helicobacter pylori* infections in patients visiting to gestroenterology department Rehman Medical Institute Khyber Pakhtunkhwa

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Keywords: Recurrent abdominal pain (RAP), Helicobacter pylori (H. Pylori), non-steroidal anti-inflammatory drugs (NSAIDS), Mild recurrent abdominal pain (MRAP), Urea breath test (UBT).

Abstract

Gastritis and peptic ulcer is common worldwide as well in Pakistan. *H. pylori* is causative agent and can survive in acidic medium like stomach. *H. pylori* is unique bacteria that capable to cause stomach cancer. The objective of present study was to report the prevalence of *Helicobacter pylori* infections in patients visiting to Rehman Medical Institute Peshawar. In the present descriptive cross-sectional study, a total number of 150 patients visiting to Gastroenterology Department Rehman Medical Institute Peshawar were gone through *H. pylori* screening test by Immunochromatography (BD ICT) method and test was performed to find out prevalence of Helicobacter pylori infection in patients visiting to Gastroenterology Department Rehman Medical Institute Peshawar. Data was recorded and analysed by SPSS-22 and shown here in the form of tables. Total number of patients was 150, out of them 44 (29.3%) patients were *H. pylori* positive and 106(70.7%) were *H. pylori* negative. The prevalence of *H. pylori* infection is higher in the patients visiting to gastroenterology department of Rehman Medical Institute Peshawar. It is more common in males as compared to female patients. We conclude here that patients of gastroenterology should be screened for *H. pylori* to cope with treatment & prevention from further complications.

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Introduction: Recurrent abdominal pain (RAP) is frequently common complaint in school and preschool children and adolescents. At least three severe attacks during three months can disturb the routine life of the person. RAP has two different peaks, the first one affecting the boys and girls with equal frequency is their age between 5 and 7 years about 5-8% of children globally. The second peak, with prevalence of about 25% occurs out between 8 and 10 years of age and it is more frequent in girls [1,2]. The term RAP is the circumstantiality of symptoms but 27% people failed of understanding the RAP criteria, such as gastro intestinal disorders including functional dyspepsia, abdominal margarine or irritable bowel syndrome, functional abdominal pain [3]. About 34% of world's population is affected by RAP [1]. It is the most common ailment which affects about 10-15% of adults worldwide and previous study was collected from hospital clinics indicating that it is more acceptable to check in open community [4]. Helicobacter pylori (*H. pylori*) is a small, micro aerophilic, Gram-negative genius, possess helix-shaped, flagellated pathogen, highly motile about 3µm long with a diameter of 0.5µm. *H. pylori* was first discovered by Warren and Marshall in 1983[1,5,3]. On etiologic basis of RAP, *H. pylori* and giardiasis share two important common factors and both are transmitted by fecal-oral route [2]. *H. pylori* infection leads to gastric ulcers, chronic gastritis, duodenal and, gastric adeno-carcinoma and lymphoma [6]. *H. pylori* is the frequently most common infection throughout the world but in Pakistan there is less literature available [5]. Peptic ulcer and gastritis are commonly caused by *H. pylori* in Pakistan. Previous data shows that the prevalence of *H. pylori* infection in adults ages is about 33%, causing about 85% cases of duodenal ulcer in adults and peptic ulcers between 30 to 50 years of age with a male to female ratio of 6:1. Colonization is the most common cause worldwide [7].

There are several causes of RAP like, abdominal gastro duodenal motility, gastro esophageal reflux, lactose mal-nutrition and irritable bowel syndrome, peptic ulceration and urogenital disease. *H. pylori* is one of the major causes in children and adolescents with RAP and its treatment further leads to symptoms of amelioration. The factors such as Gender, Age, genetic predisposition, nutritional exposure and many others environmental factors can affect RAP in adults [5,8]. It has variable causes in different studies including organic and non-organic [2]. *H. pylori* is a gastric colonizer and causes about 80% to 90% ulcers in the whole world [9]. *H. pylori* codes for CagA gene which is underlined basis for developing gastric ulcers. The infection probably caused by poor hygienic conditions in adults, rates high in developing countries than in developed countries [8]. VacAallele's s1am1 and s1bm1, these are associated with *H. pylori* associated diseases and inflammation [6]. This has been accredited to poor socioeconomic status and overpopulated areas. About 50% of population (over 3 billion) has been infected by this organism worldwide [1]. In adults with gastrointestinal diseases except for duodenal ulcer prevalence and association is uncertain. In Several studies of *H. pylori* and diarrheal diseases, malnutrition has tried to explain its association to abdominal pain [5]. Although relation with symptoms, it is easier to pinpoint in adults as compared to children, *H. pylori* gastritis is associated with symptoms but other causes like, smoking, alcohol and non-steroidal anti-inflammatory drugs (NSAIDS) are also generally extraneous in adults [11]. *H. pylori* infection affected about half of the World's population and spreading continuously from nation to nation [7]. *H. pylori* is a gastric colonizer and causes about 80% to 90% ulcers in the world [9]. In community especially in university students there is less literature available regarding prevalence of H. Pylori. So we decided to plan a study to determine the prevalence of *H. pylori* in students having complaints of RAP.

Recurrent abdominal pain (RAP) is one of the most common complaints in school and preschool children and adolescents. It is defined as, at least three severe attacks during three months which can affect the daily activities of child/person. About 34% of world's population is affected by RAP. *H. pylori* is a gastric colonizer and ulcers about 90% to 80% in world [5]. There is very Scanty data in Pakistan, regarding that issue so we selected about 16 research articles from different researches. Descriptive cross-sectional study at CMH Muree and CMH Rawalpindi, Pakistan on 09 Mar 2015 and its title was "*Helicobacter Pylori* infection in children presenting with recurrent abdominal pain." They declared that *H. pylori* infection is frequent in children with RAP and presentation of epigastric pain in these patients can be contemplated as a caveat sign to screen for *H. pylori* infection. Mean age of the patients was 8.12±3.46 years. Distribution of gender showed that 44 patients (53.1 %) were male while 39 patients (46.9 %) were female. Mean duration of symptoms was 15.8%±3.7 months. *H. pylori* infection was present in 27 (32.5%) patients [1]. Recent studies and evidences show no relation in children between *H. pylori* infection and RAP. According to Apely`s criteria it is not warranted that the proofs until shows usual analysis for *H. Pylori* infection in children who expressed with classical symptoms of recurrent abdominal pain. This was documented a prospective study in September 1999 in Canada and its title was *Helicobacter pylori* infection and childhood recurrent abdominal pain: lack of evidence for a cause and effect relationship, at community health sciences and Paediatrics department [4]. A Chinese conducted a study in 2005 at Departments of Paediatrics in China. His title of study was "Short-term recurrent abdominal pain related to *Helicobacter pylori* infection in children". They declared that *H. pylori* infection along with short term RAP is frequently found in children who present epigastria pain in such cases *H. pylori* infection test should be advised which is threatening. Results showed that the incidence rates of SRAP and RAP in children were 5.5% and 9.8% correspondingly. Children with RAP (25 % vs 5 %) and control (25 % vs 9 %), which had decreased seropositive rate of SRAP. The epigastric pain and *H. pylori* infection is in relation between children affected with SRAP. After year later, 71 percent of the investigated children, 6 of RAP and 15 of SRAP became asymptomatic for *H. pylori* presence. Short term recurrent abdominal pain related to *H. pylori* infection in children was tittle given to the study [5]. In 2005 at Karachi, a study revealed a primitive colonization of infants and an elevated incidence of *H. pylori* in Periurban society in Karachi, Pakistan. The title of study was "*Helicobacter pylori* Colonization in Infants in a Periurban Community in Karachi, Pakistan" [5]. In

November 2009 study was conducted at University of Agha Khan, at Medicine Department, Karachi, Pakistan. They studied that in most patients of non-ulcer disease with H. Pylori infection had negative cagA while peptic ulcer and GC were due tocagA. Inflammation and diseases relate with H. Pylori infection were due to VacA allele`s s1am1 and s1bm1. The title of the study was "Distribution of *Helicobacter pylori* virulence markers in patients with gastro duodenal diseases in Pakistan" [6].

Significance of study: RAP is one of the common complaints in adults, younger and mostly above the age of 20 years and is defined as at least 2-3 severe attacks of pain in three months. There are several causes of RAP like, abdominal gastro duodenal motility, gastro esophageal reflux, lactose mal-nutrition and irritable bowel syndrome, peptic ulcer disease and urogenital disease. One of the most important causes of RAP is *H. pylori* infection and the awareness and clinical data about this issue is lacking in especially adults of university areas. This study will help patients for timely diagnosis and management of their infection after screening for *H. pylori*, whenever they experience the recurrent abdominal pain and other abdominal symptoms. This study will also be a source of awareness for other medical professionals dealing with the issue stated above

Objective: The aim of the study is to determine the frequency of *H. pylori* infection occurring in patients visiting to Gastroenterology Department of Rehman Medical Institute Peshawar.

Materials and methods:

Study Design: The study followed descriptive cross-sectional design.

Study site and setting: The study was designed in Rehman College of Allied Health Sciences and study was performed at the Department of Chemical Pathology / Serology laboratory of the Rehman Medical Institute Peshawar Khyber Pakhtunkhwa Pakistan.

Study duration: The duration of study was 05 months such as from 5th March 2018 to 28th July 2019. All the work related to this study was completed during this time.

Sample selection criteria:

Inclusion criteria: All those patients visiting to Gastroenterology department of RMI having a complaint of RAP with H. Pylori infection. Subject of both genders and all ages visiting to Gastroenterology Department Rehman Medical Institute were included. No age frame was fixed for research. All age patients of *H. pylori* infection were included in study.

Exclusion criteria: Pregnant females were excluded from study. All those patients who were admitted to emergency or ICU wards and patients having other complaints than *H. pylori* infection and RAP were excluded from study. And also, those patients who were not willing to share their data or reports were also excluded.

Study population: Study population included all the patients having RAP and suspected with infection of *H. pylori.*

Sample size & calculator: A total of 150 patients were recruited for the study. We calculated the sample size for this study according to sample size calculator of World Health Organization protocol (By using WHO sample size calculator 150 samples were required for study.

Sampling technique: Non-Probability convenience sampling technique was used in study. Only confirm patients of *H. pylori* and RAP were included in study.

Ethical consideration: Institutional consent was taken from Department of Allied Health Sciences, the Rehman Medical Institute Khyber Pakhtunkhwa Pakistan. Data was intended to kept secret and strictly for educational purpose. Under the supervision and guidance of the supervisor, a Performa was constructed and approved for research. Informed consent was taken from all subjects on that predesigned Performa.

Sample Collection and Laboratory Analysis: Students with RAP along with other gastric complaints and only presence of RAP were referred to the Chemical Pathology department of RMI Laboratory for detection of *H. pylori* IgG antibodies in serum. Samples were taken from subjects after taking consent on inform consent Performa. Samples were taken by expert phlebotomist by using aseptic technique in serum separator tube containing clot activator gel (Red Top Tube). After that serum is separated by centrifugation at 3000 rpm. The test for H. Pylori antibodies in serum is performed on ICT strep method which works on Immuno-chromatography. This test is highly sensitive for diagnosing H. pylori. About 80-95% ICT strep test is sensitive for detection of H. pylori infection. The results interpretation for *H. pylori* test is given in Figure 1.

Statistical Data Analysis: Quantitative statistical plan was design for study. Percentages and distribution were calculated. Data was presented in the form of graphs and charts and analysed using, Statistical Package for Social Sciences (SPSS version 2). One the basis of SPSS results we have presented the results. All ages are reported as mean +- standard deviation. The frequencies mean standard deviation of data was performed by descriptive statistics in SPSS.

Results: A total of 149 subjects of all ages and regardless of gender were conveniently selected for study shown in figure 2. Mean age of all the subjects is 19 years with the standard deviation of 1.936 (Figure 3). The analyses revealed that 44 (29.3%) subjects were *H. pylori* test positive and 105 (70.7%) were *H. pylori* test negative as shown in table 2. Gender wise distribution of Study population shown that out of total 149 patients, 99 were male patients (66%) while 50 (44%) were female patients. Our analyses shown that out of 99 male patients, the frequency of *H. pylori* positive patients is 36 (36.23%) while 63 (63.87%) male patients have negative status for *H. pylori* infection. 0.05 is p value taken for *Helicobacter pylori* positive test. Confidence interval is taken 95%. Similarly, frequency of female patients with positive *H. pylori* infection status were found to be 08 (16 %) out of 50 female patients. as shown in Table 1. Out of 44 subjects having positive status for *H. pylori*, 28 patients belong to urban areas while 16 patients were from rural community. Similarly, patients with a negative status of *H. pylori* 84 are belong to Urban in contrast to 21 patients which were belong to rural areas, as shown in figure 4. We found in our analyses that 18 patients were positive for *H. pylori* with known status of Cigarette smoking while 26 with a negative status of smoking having *H. pylori* infection as shown in table 2. Our analyses stratified that patients who often drink coffee among *H. pylori* with a

frequency of 30 out of 44 positive *H. pylori* infection and 14 patients with positive H. pylori status with no history of Coffee (Figure 5).

Discussion: The frequency of *H. pylori* infection is basically involved by following three factor describe by various studies. These factor are incidence, the rate of loss of the infection, and prolonged residency of bacteria in Gastro intestinal lining especially in between infection and eradication. A variety of studies show the *H. pylori* prevalence is affected by variations in community and socio demographic status of population. Previously certain studies describe and try to find out the etiologic factors which Favors the endemicity of infection. A study previously done [12,13] find possible linkage between tobacco users or alcoholic drinkers and developing of *H. pylori* infection. They found no significant association for alcoholic or tobacco users and *H. pylori* infection. Our study is in concordance with their findings and ratio is also low in our study. The transmission of *Helicobacter pylori* is facilitated by poor hygiene and congested conditions among family members and joint families consistent with data on interfamilial and institutional clustering of *H. pylori* infection. The route of *H. pylori* transmission is important to understanding by people if public health measures to prevent its spread are to be implemented. Various studies conducted on community bases describe as many as 50% of the adults were infected by the age of 15 years, and up to 90% were infected by the time they reach 30. In some developing countries with improvements in industrialization, socioeconomic conditions, and hygiene, infection rates are lower. Epidemiological review of globe stratified difference in prevalence rate like north European and North American populations, about one-third of adults are still infected, whereas in south and east Europe, South America, and Asia, the prevalence of H. pylori is often higher than 50%. *H. pylori* remains highly prevalent in Males population and the same study [1] at Rawalpindi and at china shown similar finding revealed in our study with a high frequency also found in males [14]. A total of 149 subjects were included in the study, out of which 44 (29.3%) subjects were positive for *H. pylori* infection including 36 males and 08 females. Our study shows that male gender has more chances to get *H. pylori* infection as compared to females. Our study is in agreement with a study conducted previously in which prevalence of *H. pylori* infection was reported more in males as compared to females [15]. Recurrent Abdominal Pain (RAP) and gastrointestinal symptoms, the most probable etiologic agent responsible for these severeness is H. pylori and is still controversial and still is debatable.

Conclusion: The prevalence of *H. pylori* infection is higher among patients belong to urban areas visiting to Gastroenterology Department of Rehman Medical Institute Peshawar Khyber Pakhtun khwa Pakistan. It is more common in male patients. These patients should be screened for *H. pylori* to cope with treatment & prevention from further complications. As this study elaborates evidences against male patients are on high risk so males should take preventive measures. The study was conducted only in the laboratory of RMI hospital Peshawar, Pakistan. Therefore, results cannot be generalized. For that, study should be carried out on at least provincial and level. We use Immunochromatography Technique for diagnosis of *H. pylori* which is less sensitive. A more sensitive and reliable test will use further in order to neutralize any analytical biasness.

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Table 1. Gender wise prevalence of *H. pylori* infections count

Gender of the students	*H.pylori*		Total
	Positive	Negative	
Male	36	63	99
Female	8	42	50
Total	44	105	149

Table 2. Cigarette smoking habit * *H. pylori* Cross tabulation

Do you smoke cigarette?	*H. pylori*		Total
	Positive	Negative	
Yes	18	8	26
No	26	97	123
Total	44	105	149

ICT Positive for *H. Pylori* ICT Negative for *H. Pylori*

Figure 1. Diagnostic criteria for *H. Pylori* by ICT method

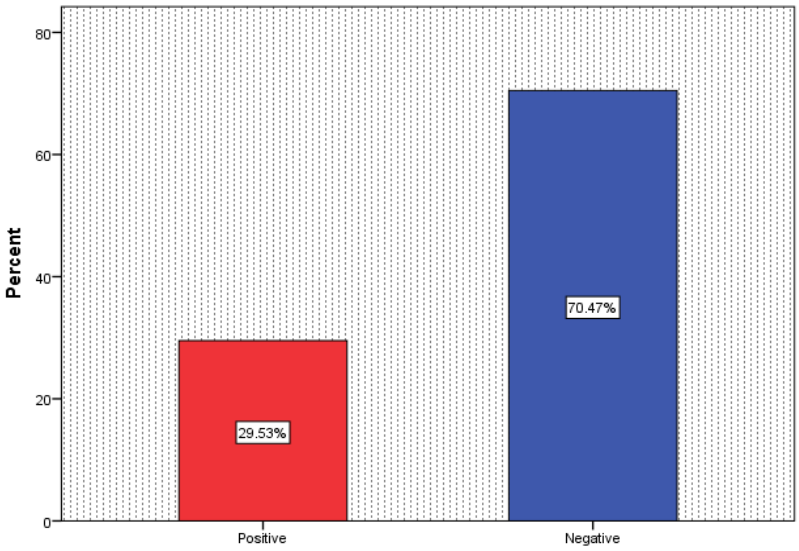

Figure 2. Prevalence of *H. pylori* infection

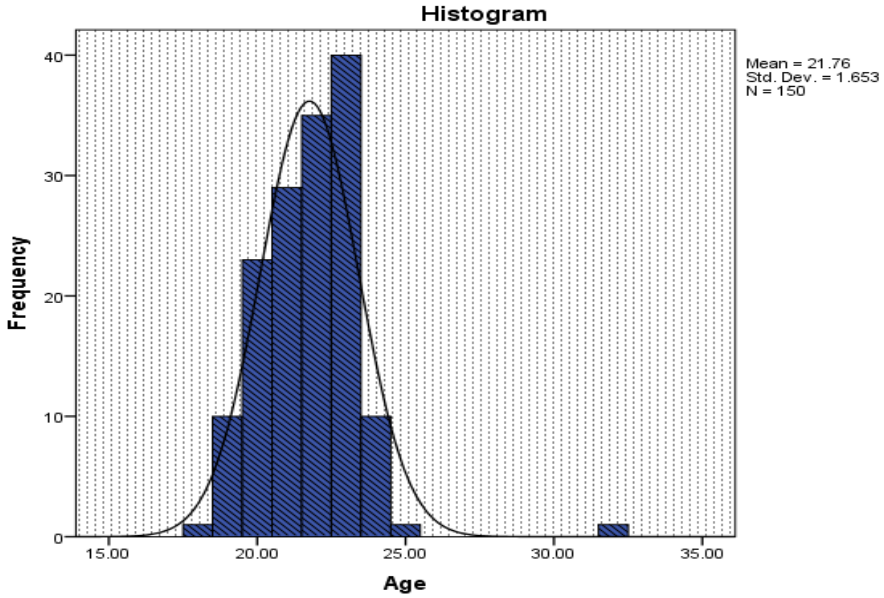

Fig. 3. Age distribution of all subjects

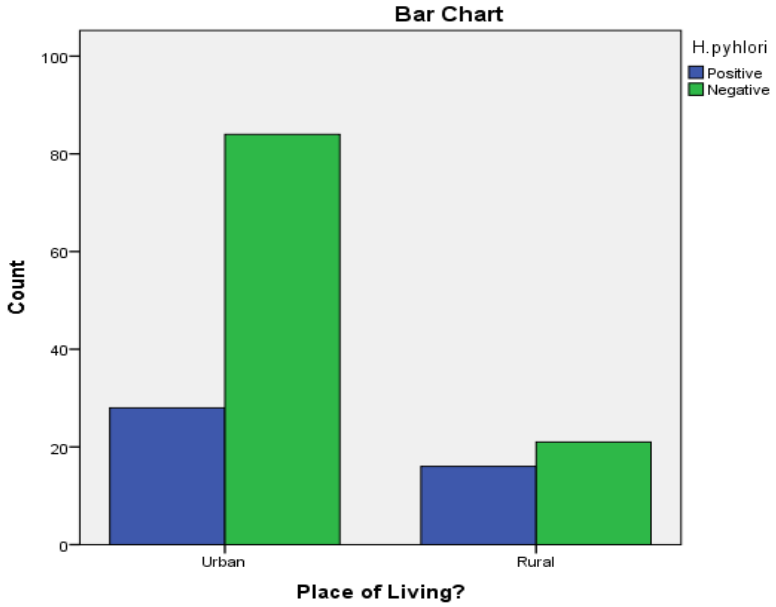

Figure 4. Prevalence of *H. pylori* infection on the basis of place of living

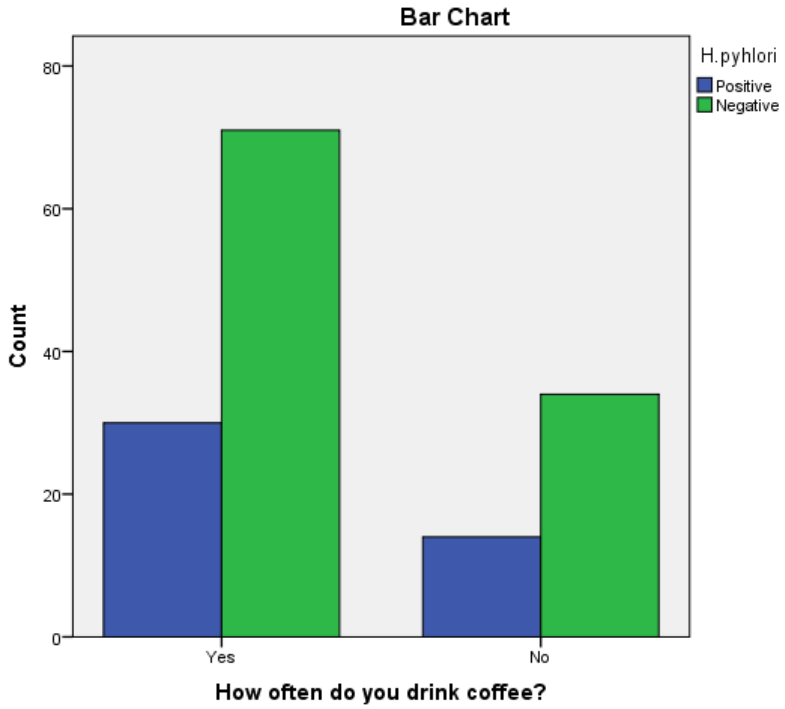

Figure 5. Frequency of taking coffee