

PREVALENCE OF HELICOBACTER PYLORI AMONG PARAMEDICAL STUDENTS OF PESHAWAR, PAKISTAN

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ABSTRACT

OBJECTIVES

This study aims to determine the frequency of *H. Pylori* infection among Paramedical students and to determine the hygienic environment of their lifestyle.

METHODOLOGY

A cross-sectional population-based study was conducted from March 2022 to Jun 2022 among Paramedical students to determine the prevalence of *h. pylori*. Using the immunochromatographic Test (ICT), *Pylori* collected blood by vein puncture technique and drew blood into a heparinized tube. All obtained data was arranged and analyzed by statistical packages for social sciences on Microsoft excel.

RESULTS

A total of 300 samples were collected from different Paramedical students. Both male and female paramedical students were included in the study. The prevalence of *H.pylori*-positive cases was 173(57.6%), and negative cases were 127(42.3%). The results were positive among 149 (57.5%) males and 24 (58.5%) females. *H.pylori* cases were prevalent in rural areas, i.e., 58.6%, compared to urban ones. With drinking water, the tap water drinking sample had 52.8%, and tea consumption, 66.8% had more infections.

CONCLUSION

H. pylori are highly prevalent in 57.6% of Paramedical students. Infections were highly prevalent in students who were using tap water, and also we compared the students related to urban and rural areas in which the prevalence of *h. pylori* were higher in students related to the rural area.

KEYWORDS: *H. Pylori*, abdominal cramp, Vomiting, Nausea, Peshawar, Pakistan

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INTRODUCTION

The gram-negative, rod-shaped bacteria *Helicobacter pylori* causes stomach ulcers by infecting the stomach's epithelial lining. One of the most bacterial infections in humans that are most common.¹ The *Campylobacter pylori* bacterium

was first reported to be grown in the 1980s by Warren and Marshall from Perth, Australia. The *Helicobacter* Genus was created in 1989, and *H. Pylori*'s name was provided.² It grows optimally between 35 and 37 °C and only flourishes in microaerophilic or carbon dioxide-enriched (5-10%) conditions.³ *H. Pylori* infections affect more than 50% of the world's population. In impoverished countries, *H. Pylori* is relatively frequent and is substantially more prevalent in younger people and those with lower socioeconomic status.⁴ According to the research on infection rates, wealthy nations have a rate of 15.5%, while developing countries have a rate of 93.6%.⁵ However, its prevalence varies by region.

With rising living standards, the frequency of H. Pylori infection has decreased in many countries.⁶ At the beginning of the twenty-first century, the frequency of H. pylori infection has significantly decreased, mainly due to better sanitary practises and perhaps a rise in antibiotic usage.⁷ H. Pylori is a gram-negative bacteria. The human digestive tract's mucosal lining becomes colonized. The duodenum and stomach are two areas where it tends to accumulate.⁸ Numerous investigations have found a connection between H. Pylori infection and illnesses other than those of the gastrointestinal tract, including peptic ulcer disease, atrophic gastritis, and distal gastric cancer.⁹ H. pylori infection is responsible for around 89% of all cases of gastric cancer, and its elimination has been shown to lower the risk of gastric cancer.¹⁰ The eradication of H. pylori can lower the incidence of stomach cancer, and the World Health Organization has classified this as a class I carcinogen since 1994.¹¹ The most common immunoglobulin class in H. Pylori infection, particularly in neonates, is immunoglobulin G (IgG) [subclass 1 and 4].¹² Children can get these bacteria, yet symptoms might not show up until they are adults. Numerous risk factors, such as consuming tainted water, eating filthy or poorly cooked food, living in overcrowded housing, or sharing a residence with someone infected with the bacteria H. Pylori, may hasten the process of bacterial infection. Some contend that the diseases might spread from mouth to mouth or even from faeces to mouth.¹³ Despite significant improvements in identification and treatment, there is still an issue with H. Pylori infection.¹⁴ Endoscopy is an example of an invasive diagnostic technique. Noninvasive tests are also available. The noninvasive diagnostic method for H. Pylori infection is the stool antigen test (SAT). Enzyme immunoassay (EIA) and Immune Chromatography (ICA) are the two different forms of SATs.¹⁵ Serology testing for antibodies against H. Pylori is an illustration of the latter. Positive results cannot distinguish between an existing infection and one that has already been cured, which increases the likelihood of false positives. Therefore, it is not advised to use serology for diagnosis in places where the infection is known to be widespread or when diagnosing minors. The urea breath test (UBT) and stool antigen test are two examples of active H. Pylori testing.¹⁶ Antimicrobial resistance mechanisms are widely understood and apply to H. Pylori. Only a few antibiotics are effective against H. Pylori: levofloxacin, norfloxacin, metronidazole, tetracycline, rifabutin,

clarithromycin, amoxicillin, and more. The rise of metronidazole and clarithromycin resistance is concerning. It is acknowledged that H. Effective treatment for pylori necessitates using two or more antimicrobials for 14 days and an anti-secretory medication to lessen stomach secretion.¹⁷

METHODOLOGY

It is a cross-sectional study conducted from March 2022 to Jun 2022. A questionnaire seeking demographics and clinical characteristics of H. Pylori was field from 300 students after taking their consent. Blood samples of 300 students were collected from paramedical students in Peshawar and were analyzed. Students filled out questionnaires with questions regarding their lifestyle, and then we collected blood by vein puncture technique and drew blood into a heparinized tube. Mix well and then centrifuge at 3500 PPM for five minutes. After centrifugation, open the ICT kit and, with the help of a dropper, put 02 drops of plasma in the kit. After 5 minutes, we noted the result as positive or negative. Sample selection is all positive and negative Samples are included in this study. Bacteria were identified on immunochromatographic Test (ICT) kits. The ethical approval committee approved this study of Gandhara University, Peshawar, Pakistan.

RESULTS

The prevalence of H. Pylori among paramedical students was high. A total of 300 samples were collected from students. Among 300, 41(13.6%) were female and 259(86.3%) were males. The prevalence of H. Pylori was higher in paramedical students using tap water and students from rural areas because of improper sanitation conditions.

Table 1: Gender and H. Pylori

Gender	Negative	Positive
Female	17 (41.4%)	24 (58.5%)
Male	110 (42.4%)	149 (57.5%)

Table 2: H. Pylori Infection Rates with the Residency

Residence of Students	Negative	Positive	Total
Urban	53 (53.8%)	68 (56.1%)	121 (40.3%)
Rural	74 (41.3%)	105 (58.6%)	179 (59.6%)
Total	127 (42.3%)	173 (57.6%)	300 (100%)

Table 3: H. Pylori Infection Rate with the Symptoms

Symptoms	Negative	Positive	Total
Abdominal Cramp	09 (69.2%)	04 (30.7%)	13 (4.3%)
Nausea	13 (81.2%)	03 (18.8%)	16 (5.3%)
Dizziness	12 (66.3%)	06 (33.3%)	18 (6%)
Vomiting	09 (75%)	03 (25%)	12 (4%)
None of These	84 (34.8%)	157 (64.1%)	241(80.3%)
Total	127 (42.3%)	173 (57.6%)	300 (100%)

Table 4: H. Pylori Infection Rate with Drink

	Negative	Positive	Total
Tap water	52 (54.2%)	44 (45.8%)	96 (32%)
Mineral Water	11 (28.2%)	28 (71.8%)	39 (13%)
Both	64 (38.8%)	101 (61.2%)	165 (55%)
H. Pylori Infection Rate to Coffee, Tea and Cola			
Coffee	18 (34%)	35 (66%)	53 (17.6%)
Tea	121 (66.8%)	60 (33.2%)	181 (60.3%)
Cola	34 (51.5%)	32 (48.5%)	66 (22%)

DISCUSSION

H. Pylori infection was found in 57.6% of Paramedical students. The present study shows the prevalence of H. Pylori in almost 13.6% of females and 86.3% of males. Helicobacter pylori (H. pylori) plays a role in the pathogenesis of gastric cancer. The outcome of the infection depends on environmental factors, unhygienic food, water and bacterial and host characteristics. Mori et al. carried out the study and reported that the prevalence of H. Pylori was 28.4% (204/718), and the age group with the most significant infection rate as those between 30 and 39 years old. Infection rates among men were higher than among women. Kadazans had the most remarkable rate of H. Pylori infection (19.1%), followed by Dusuns (15.7%), Bajaus (14.7%), and Rungus (10.8%). According to a binary logistic regression study, Chinese (P=0.026) and Malay (P=0.035) ethnicities were more resistant to H. Pylori infection than other ethnic groups. Although the seropositivity rate for H. Pylori in this study was comparable to the total seropositivity rate in Malaysia, it was shown that people of Chinese and Malay ancestry were more resistant to H. Pylori infection.¹⁸ According to a study by Horiuchi et al., stomach cancer is linked to persistent Helicobacter pylori infection, particularly with cagA-positive strains. So it is necessary to take precautions to avoid H. Pylori infection. This investigation was done to determine the level of H. Pylori infection in the local population, locate the source, and evaluate the risk of H. Pylori infection. In a region in Japan with a high prevalence of stomach cancer, we collected 73 environmental

samples (water, vegetable, and animal faeces), 90 human faeces samples, and these samples from the inhabitants. The cagA virulence gene and the glmM housekeeping gene of H. Pylori were discovered using a polymerase chain reaction test. A questionnaire survey was carried out, and a statistical analysis of the results was done. The glmM gene was found in 18 residents' 90 (20%) faecal samples. The cagA gene was found in 33.3% (6/18) of those samples and in all who had received eradication medication. In samples from the environment, H. Pylori was not found. In contrast, the questionnaire survey found a stronger correlation between the probabilities of having the glmM gene positive and contact with dogs (OR 3.89, 95% CI 1.15-13.15, P 0.05). There were not many residents who had H. Pylori or cagA-positive strains. The study's findings do, however, point to a connection between recurring infections and strains of H. Pylori that are cagA-positive. Although living settings did not include H. Pylori genes, it was discovered that exposure to dogs was associated with a glmM-positive status. H. pylori infection management would need further research focusing on healthy community residents and their living conditions.¹⁹

LIMITATIONS

The major limitation of the study was that other factors were not studied which can be affecting the infection.

CONCLUSIONS

This study concludes that h. pylori are highly prevalent in 57.6% of Paramedical students. Infections were highly prevalent in students who were using tap water, and also we compared the students related to urban and rural areas in which the prevalence of h. pylori were higher in students related to rural areas.

CONFLICT OF INTEREST: None

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3. **Tasbih Ullah** – Critical Revision
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