

The Prevalence of *Helicobacter Pylori* Infection among Outpatients Attending Hospitals in Johannesburg South Africa

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ABSTRACT

Background: *H. pylori* is commonly incriminated in most cases of epigastric discomfort and stomach cancer.

Aim: The study determined the prevalence of *H. pylori* infection among patients visiting out patient's clinic.

Methodology: Two hundred patients with age range 10-50 years attending clinics were recruited for the study and screened for *H. Pylori* infection. Ethical approval was obtained from the Ethics Committee of 4 different hospitals in Johannesburg as well as informed consent of the participants. Blood and Stool samples and breath from the Nostril were used for the investigation. Serological, Cultural and Urea Breath Test were methods used for assessment of the Blood, Stool and Expels respectively. Values obtained were statistically analyzed.

Results: Seventy four (37%) patients tested positive to *H. Pylori*. Males had 47% positive cases while female were 53%. 66% of the black race tested positive while the white were 34%. Alcohol and Cigarette Consumers who tested positive were 29 (39%) and 26(35%) respectively. Hand washing after visiting toilet is 10(14%) and hand washing before meal is 9 (12%).

Conclusion: The findings of this study showed that age, sex, race and some food substances consuming may predispose to *H. prlori* infection.

Keywords

H. pylori, Infection, Patients, Alcohol, Cigarettes.

Introduction

Helicobacter pylori formally known as *Campylobacter pylori* is a gram negative curved microaerophilic and motile spiral bacterium which colonizes the human gastric mucosa. The prevalence of *H-pylori* is more than 80% in most developing countries *H-pylori* is usually acquired in childhood, and this may be as a result of crowding, unsafe water supply and sanitation or poor hygiene in childhood. It is a common bacterial infection about half the world's population [1].

There is substantial evidence that it causes chronic gastritis, peptic ulcers, and duodenal ulcers and is also associated involved in the

development of gastric carcinoma [2-4].

Helicobacter pylori was identified in 1984 [5] and further it was classified as carcinogenic to humans by the International Agency for Research on cancers in next 10 years [6].

Gastric cancer is the second leading cause of cancer related deaths worldwide (7) and infection with *H. pylori* has been considered to play a role in the development of gastric cancer such that *H. pylori* has been classified as a type 1 carcinogen by the International Agency for Research in cancer [8].

Once acquired, *Helicobacter pylori* infection generally persists throughout life, unless treated by specific antimicrobial therapy [9].

H. pylori are probably spread by consuming food or water contaminated with fecal matter. It has been also demonstrated that housefly has the potential to transmit *H. pylori* mechanically [10]. Although poor sanitation, such as the lack of sanitary services at home, is believed to be an important risk factor for *H. pylori* infection [11]. The bacteria infect the protective tissue that lines the stomach. These factors may directly or indirectly injure the cells of the stomach or duodenum and causes chronic inflammation in the walls of the stomach (gastritis) or duodenum (duodenitis). These changes cause the stomach and duodenum to be vulnerable to damage from digestive juices, such as stomach acid.

Most individuals with chronic gastritis or duodenitis have no symptoms. Nevertheless, some people develop more serious problem including stomach or duodenal ulcers. Ulcers can cause a variety of symptoms or no symptoms at all with the most Common ulcer symptoms which include Pain or discomfort (usually in the upper abdomen). Others are dark or tar – colored stools, belching, low red blood cell count (anemia), decreased appetite, diarrhea, heart burn and halitosis.

Treatment

H. pylori infection is treated using:

Proton pump inhibitor (PPIs): these drugs stop acid from being produced in the stomach some examples of PPIs are omeprazole. First- line *H. pylori* therapy should ideally be short, easy to administer, well tolerated and relatively cheap [12]. However, over and above these considerations, the prime objective of any treatment is to eradicate the infection in the maximum number of patients [13]. Guidelines for treating monotherapies and dual therapies consisting of a proton pump inhibitor and one antibiotic have generally produced disappointing results [14].

Most current consensus reports recommend triple therapy combining a proton pump inhibitor with two antibiotics, normally clarithromycin plus amoxicillin or an imidazole [1]. The recommended length of treatment ranges from 7 days in Europe, 10 to 14 days in the USA [16].

One of the first effective treatments for *H. pylori* infection was classical triple therapy, comprising a bismuth salt, tetracycline and metronidazole. This treatment achieved eradication rates of between 80% and 90%. However, it was reported to have severe adverse effects [17], and poor compliance because of the complex dosage [18]. Quadruple therapy (classical triple therapy plus a proton pump inhibitor) has been demonstrated to be a safe and very effective second- line treatment after the failure of triple therapy [19].

Histamine (H-2) blockers

These medications block a substance called histamine which triggers acid production.

Bismuth subsalicylate

More commonly known as pepto– Bismol, this drug works by coating the ulcer and protecting it from stomach acid.

This study was designed to find out the prevalence of *Helicobacter pylori* infection among the OPD patient attending four Hospitals in Johannesburg, South Africa.

Materials and Methods

Study design and sampling technique: Prospective and experimental: The study was conducted in the department of Microbiology in the Bobmanuel Pathcare Laboratory located in Johannesburg from January to December 2017. A total of 200 patients who presented in OPD for routine gastrointestinal disorders were screened for *Helicobacter pylori*, patients on medications (proton pump inhibitor or antibiotic) were not screened for the test of *H. pylori*. The patient’s blood and stool sample were collected for the diagnosis of the *H. pylori*.

Inclusion criteria ages of 10-50, exclusion criteria infants are not included because the sample may be difficult to collect.

Tests and Procedures to determine whether there is H. pylori infection include:

Breath test: During a breath test, a pill was swallowed; liquid or pudding that contains tagged carbon molecules. In *H. pylori* infection, carbon is released and the solution broken down in the stomach. The body absorbs the carbon and expels it during exhalation. Exhales were made into a bag and the breakdown products detected in the breath. The urea breath is a rapid diagnostic procedure used to identify infections by *Helicobacter pylori*, a spiral bacterium implicated in gastritis, gastric ulcer, and peptic ulcer disease. It is based upon the ability of *H. pylori* to convert urea to ammonia and carbon dioxide. Urea breath tests are recommended in leading society guidelines as a preferred non-invasive choice for detecting *H. pylori* before and after treatment [20-21]. Stool test were available that detect and *H. pylori* protein were detected in stool [22]. The stool culture was done according to Cheesbrough [23].

Statistical Analysis

Chi square was used for analysis of values. Level of significance was set at $p < 0.05$. The statistical analysis was done using SPSS statistical software package (version 21).

Results

Patients	Positive	% Positive
Total 200	74	37%

Table 1: Prevalence of H-Pylori.

Ages	H-Pylori Isolated	% Isolate
10-20	26	35
21-30	22	30
31-40	15	20
41-50	11	15
Total Isolated	74	

Table 2: *H. Pylori* according to age.

Sex	age	Total Samples	Total <i>H-Pylori</i> Positive	
Male	10-50	100	35	47%
Female	10-50	100	39	53%

Table 3: *H-Pylori* Isolated according to Sex.

Race	Total Samples	No Positives	%
White	90	25	34%
Black	110	49	66%

Table 4: *H-Pylori* Isolated according to race.

Age	<i>H-pylori</i> Positive	% <i>H-pylori</i>
10-20	26	35
21-30	22	30
31-40	15	20
41-50	11	15
	74	100

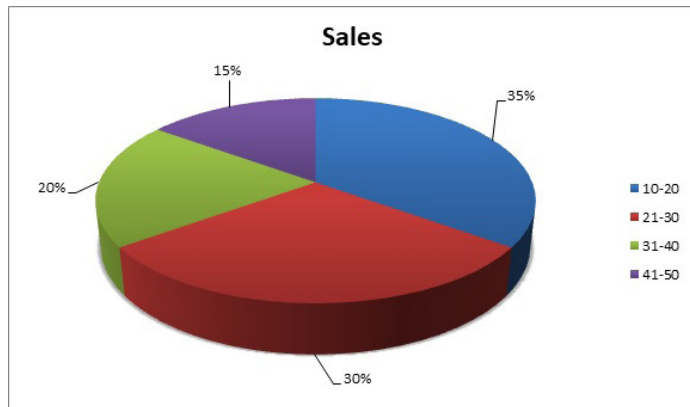


Figure 1: Proportion of patients with H-pylori infection.

	Age	Total tested	Yes	Positive No	% Positive	Negative No	% Negative
Alcohol consumption	10-50	200	70	29	39	41	33
Cigarette smokers	10-50		60	26	35	34	27
Hand washing after visiting toilet	10-50		50	10	14	40	31
Hand washing before meal	10-50		20	9	12	11	9

Table 5: with respect to behaviours.

Discussion

The study documented the prevalence of *H. pylori* and the prevalence varies worldwide but was found to be higher in developing countries, compared to developed countries [24].

Out of 200 patients screened for *H. pylori*, the overall prevalence of *H. pylori* infection in this study was 37% and this is at variance with that of Chandigarh who reported 56.7% (25). Again this study recorded higher prevalence of *H.pylori* in black compared to the white patient. There are conflicting reports on the relationship between age of patients and prevalence of *H. pylori*, Studies

conducted in Bhutan [26] and China [27], documented similar prevalence rate but with no statistically significant difference between *H.pylori* infection and age group. However, [28] found out that the prevalence of *H. pylori* increased with age. In this study, there was a decrease in the prevalence of *H. pylori* with increase in age. In this study also the prevalence of *H. pylori* was slightly higher in females than males. This is similar to a study done in South Africa [29]. Presumably, the variation in prevalence between males and females could be due to the difference in the life styles and habits such as smoking and alcohol consumption [30].

Conclusion

The present study revealed prevalence of *H. pylori* with females being more affected than males. The prevalence is higher between the ages of 10-20. It also recorded higher prevalence in black compared to the white patient. The overall prevalence of *H. pylori* infection was higher in younger patients compare to older patients. Similarly, a higher prevalence of *H. pylori* was noticed among alcohol and cigarette consumers.

Limitations of study

The test was not carried out among pediatrics because of the difficulties in samples collection.

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