Prevalence of *Helicobacter pylori* Infection in Port Harcourt Using Antibody Diagnostic Technique

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ABSTRACT

Helicobacter pylori have been one major bacterium of concern in the stomach of approximately one-half of the world's population and its capable causing a number of digestive problems, including ulcers and, much less commonly, stomach cancer. Blood samples in this study were collected from patients attending the University of Port Harcourt Teaching Hospital from 8:00am-2:00 pm. Blood samples collected from the One hundred and eighty nine subjects were centrifuged to obtain the serum. Two to three drops of the serum was transferred by a sterile disposable dropper onto the well of the each test kit and read within five minutes. The sero-prevalence of *H. pylori* infection in this study was 19.6% while the study's gender prevalence ratio was 9:10.6. The overall study prevalence of H. pylori infection among the male and female subjects was 19.3% and 19.8% respectively. Proper education of the populace on the modus operandi of transmission and prevention of H. pylori infection is required to halt the trend of infection of this bacterium in our society.

Keywords*: Helicobacter pylori,* Infection, Port Harcourt, Prevalence, Blood.

INTRODUCTION

Helicobacter pylori have been one major bacterium of concern in the stomach of approximately one-half of the world's population and it is capable of causing a number of digestive problems within the gastrointestinal tract, including ulcers and, much less commonly, stomach cancer[13]. The bacterium infects the protective tissue that lines the stomach: This leads to the release of certain enzymes and toxins and activation of the immune system. Together these factors may directly or indirectly injure the cells of the stomach or duodenum to cause chronic inflammation in the walls of the stomach (gastritis) or duodenum (duodenitis)[5]. As a result of these changes, the stomach and duodenum are more vulnerable to damage from digestive juices, such as stomach acid[13]. Most individuals with chronic gastritis or duodenitis have no symptom[12].

However, people develop more serious problems, including stomach or duodenal ulcers. These ulcers can cause a variety of symptoms or still give no symptoms at all[5]. No single drug cures *H. pylori* infection[13]. Most treatment regimens involve taking several medications for 14 days. Most of the treatment regimens include a medication called a proton pump inhibitor[5]. This medication decreases the stomach's production of acid, which allows the tissues damaged by the infection to heal. Examples of proton pump inhibitors include lansoprazole (Prevacid), omeprazole (Prilosec), pantoprazole (Protonix), rabeprazole (AcipHex), dexlansoprazole (Dexilant), and esomeprazole

(Nexium)[5].Two antibiotics are also generally recommended; this reduces the risk of treatment failure and antibiotic resistance. There are increasing numbers of patients with *H. pylori* infection that is resistant to antibiotics[5], so it is important to take all the medications prescribed and to have a test that confirms that the infection has been cleared[4].

H. pylori prevalence from a research, had shown 54% infection prevalence among University students of Nassarawa state University[8] in Nigeria, whereas 81% was recorded in another study done in Kano, Nigeria[15] and 93.6% seroprevalence was recorded from patients in Maiduguri also in Nigeria[16]

Several investigations on this subject matter, had suggested that, poor hygiene and crowded conditions may be a factor facilitating the transmission of *H. pylori* infection among family members and it's consistent with data on intra-familial and institutional clustering of *H. pylori* infection[12]. In contrast, food prepared under less than ideal conditions or exposure to contaminated water or soil, may increase the risk of contracting *H. pylori* infection[13]. *H. pylori* can be diagnosed with a test of the blood, breath, or stool[4].

Nevertheless, for the purpose of this study, we adopted the serological diagnostic technique, because, it is easy to use and readily available. Therefore, this study was designed to investigate the sero-prevalence of *Helicobacter pylori* (*H. pylori*) infection among the unsuspecting patients attending the University of Port Harcourt Teaching Hospital, Rivers State, Nigeria.

MATERIALS AND METHODS

Blood samples in this study were collected from patients attending the University of Port Harcourt Teaching Hospital from 8:00 am-12:00 pm. Blood samples collected from the 189 subjects were centrifuged to obtain the serum. Two to three drops of the serum (approximately 100 µL) were transferred by a sterile dispensable dropper onto the well of the each test kit (*H. pylori* Antigen Kit-Clinotech, USA). The test is observed for two band lines within five minutes. Double band line within the result and the control area indicates a positive result while a single line observed only on the control band area indicates a negative result.

RESULTS

This study showed that out of 189 subjects examined, 19.6% prevalence of *H. pylori* infection was obtained, and while the study's male to female gender prevalence ratio was 9:10.6 (Table 1). The overall study prevalence of *H. pylori* infection among the male subjects was 19.3% (Table 2) and 19.8% (Table 3) for the population of female subjects in this study. However, age group 51-60 years had the highest prevalence (6.88%) (Table 4) of *H. pylori* infection for the general populace. Also, for the male population that were recruited to this study, age group 51-60 years showed the highest prevalence of *H. pylori* infection (11.3%) (Table 2) whereas, the female population of the subjects had their highest prevalence (6.93%)(Table 3) of *H. pylori* infection among the age group 31-40 years and was followed closely by age group 41-50 years with 4.95%(Table 3).

Table 1: Distribution of *H. pylori* among the General Study Population

Sex	Positive	Total	Prevalence
Male	17	88	9.0
Female	20	101	10.6
Total	37	189	19.6

Table 2: Age Distribution of *H. pylori* among the Studied Male Population

Age	Positive	Total	Prevalence
1-10	0	1	0
11-20	0	10	0
21-30	0	2	0
31-40	4	18	4.5
41-50	2	34	2.3
51-60	10	20	11.3
61-70	1	3	1.1
Total	17	88	19.3

Table 3: Age Distribution of *H. pylori* among the Studied Female Population

Age	Positive	Total	Prevalence
1-10	1	9	0.99
11-20	3	14	2.97
21-30	1	3	0.99
31-40	7	35	6.93
41-50	5	20	4.95
51-60	3	17	2.97
61-70	0	3	0.00
Total	20	101	19.8

Table 4: Age Distribution of *H. pylori* among the General Study Population

Age	Positive	Total	Prevalence
1-10	1	9	0.53
11-20	3	21	1.59
21-30	1	4	0.53
31-40	11	42	5.82
41-50	7	47	3.70
51-60	13	24	6.88
61-70	1	5	0.53
Total	37	189	19.58

DISCUSSION

This study had shown a high incidence of *H. pylori* infection among the studied population which was 19.58% even though this result was not to be comparable with the 54% reported by Ishaleku and Ihiabe[8], who sampled 200 students in Nasarawa State, Nigeria, as well as the 81% recorded in Kano[15] and 93.6% reported in Maiduguri[16] Nigeria. Also, it is not comparable with the 50% projected world population prevalence for *H. pylori* infection[10]. However, this seroprevalence rate observed for this study was far less than that reported in Countries like Taiwan[3], and the Urban and Rural Vietnam[1]. Also, age distribution trend of this study with peak values of 6.88% at 51-60 years age group did not conform with the published data of Ishaleku and Ihiabe[8] which showed a peak infection rate of 85.7% among adults aged 31-40 years that dropped to 66.7% among those 41-50 years old, and continuously went down to 28.6% in the 51-year-old and above population[8]. However, the variation in the infection prevalence of *H. pylori* as reported in both cases may be as a result of the difference in method adopted for the diagnosis of the infection, prevailing public health indices of the sampled population and recruitment criteria as was also observed by Magalhales-Queiroz and Luzza[10], and Hoang *et al.,*[7] in some developing countries. Nevertheless, sex distribution of this study result showed that the prevalence of *H. pylori* infection in females

was less than what was observed for the males. This observation was not in conformity with the evidence reported by GonzÃ¡lez *et al*,[7], Zhang *et al.,*[14] and Malaty *et al.,*[11].

CONCLUSION

This study's sero-prevalence of *H. pylori* infection was 19.6% and showed a higher prevalence among females than males. Therefore, it is imperative for proactive action to be taken in our homes, community and societies at large on public hygiene, food hygiene as well as public health and community sanitation. Proper education of citizens on the modes of transmission and prevention of *H. pylori* infection is required to halt the trend of infection of this bacterium in our society.

Authors Contributions

Conception and design of the study; (AMBO and AUU); collection, testing, data collation (AMBO and OGA); analysis and interpretation of data (AUU); manuscript write up (AUU and AMBO); oversight of all the stages of the research (WKT and OGA) and All authors read through and approved the final manuscript.

Conflict of Interest

All authors have declared no conflict of interest.

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