Prevalence of *Helicobacter pylori* antibodies among attendees of two health facilities in Port Harcourt, Rivers State, Nigeria

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Abstract: Prevalence of *Helicobacter pylori* antibodies among attendees of two health facilities in Port Harcourt, Rivers State, Nigeria was investigated. The study population consisted of 100 patients in the ratio of 0.5 from each hospital. *Helicobacter pylori* rapid test kit (ANTI-HP Rapid) was used for the detection of antibodies to *H. pylori* in serum of the participants. Questionnaires containing information about their age, sex and marital status were employed. Among 100 participants who enrolled in the study, 44.0% were *H. pylori* positive. The study showed no significant difference ($p>0.05$) in the rate of *H. pylori* infection among patients in the two hospitals (BMSH and UPMC) studied. This shows that the infection is predominant in the area irrespective of location. The prevalence reached a peak at the age of 19–37 years (57.4%), females (44.8%) and married subjects (56.5%). The study revealed no significant difference ($p>0.5$) between sexes, though females (44.8) had a higher *H. pylori* infection rate than males (42.9%). However, age and being married were the independent predictors for *H. pylori* infection in this study, as low prevalence was observed in children 0-18 years (23.0%) than in adults 19-37 years of age (57.4%) and there was a slight increase in prevalence of *H. pylori* infection among the married class (56.5%) than the unmarried class (40.3%). Port Harcourt had a high prevalence of *H. pylori* infection and was related to age and marital status. The underlying mechanisms are needed to be further evaluated. [Okonko IO, Barine BM and Solomon L. **Prevalence of *Helicobacter pylori* antibodies among attendees of two health facilities in Port Harcourt, Rivers State, Nigeria.** *J Am Sci* 2016;12(9):60-63]. ISSN 1545-1003 (print); ISSN 2375-7264 (online). http://www.jofamericanscience.org. 10. doi:10.7537/marsjas120916.10.

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1. Introduction

Helicobacter pylori (*H. pylori*) are causally related to serious disorders of the gastrointestinal tract (which includes peptic ulcer diseases, acute and chronic active gastritis) in children and adults (Lee *et al* 2003; Waleed *et al*, 2010). *H. pylori* is a Gram negative bacterium responsible for widespread of stomach ulcer (Bontems *et al.*, 2003). The age at which this bacterium is acquired seems to influence the possible pathologic outcome of the infection: people infected with it at an early age are likely to develop more intense inflammation that may be followed by atrophic gastritis with a higher subsequent risk of gastric ulcer, gastric cancer or both. Acquisition at an older age brings different gastric changes more likely to lead to duodenal ulcer (Brown 2000). Ingestion of bacteria which is the most likely portal of entry may occur by one or a combination of three means: oral-oral, gastro-oral, or feacal-oral (Malfertheiner *et al.*, 2010) routes. Oral-oral transmission can be potentiated by specific eating habits, such as premastication of food by mothers before feeding children in some African countries and the use of chopstick and communal eating in some immigrant Chinese communities.

Although the chopstick hypothesis have been challenged (Malfertheiner *et al.*, 2012), once infection occurs, it persists for years, often for life. About 10.0 to 20.0% of infected patients develop ulcers even though 80% of those infected are asymptomatic (Bontems *et al.*, 2003; Waleed *et al.*, 2010). Studies indicated that 65.0 to 80.0% of patients with gastric ulcers and 95% of those with duodenal ulcers are infected with *H. pylori* (Massarrat *et al.*, 1995; Waleed *et al.*, 2010).

The thinning of the protective mucous layer at the site of infection probably accounts for the development of peptic ulcer of the stomach and duodenum (Nester *et al.*, 1998). It has also been reported that infections are usually acquired in early childhood (Kusters *et al.*, 2006). However, the rate of infection in developing nations is higher than in developed nations, which is likely due to poor sanitary conditions (Solomon and Ibe, 2012).

In developed nations, it is currently uncommon to find infected children, but the percentage of infected people increases with age, with about 50% infected for those over the age of 60 compared with around 10% infection between 18 and 30 years (Pounder and Ng, 1995; Wosu-Kinika *et al.*, 2015). The higher prevalence among the elderly reflects higher infection rates when they were children rather than infection at later ages (Kusters *et al.*, 2006). Despite high rates of infection in certain areas of the world, the overall frequency of *H. pylori* infection is declining (Malaty, 2007). Available primary data obtained from medical personnel revealed incidence of stomach ulcer (caused by *H. pylori)* among Port Harcourt residents. However, there is the need to know the prevalent rate of the *H. pylori* infection as this is necessary if any effort aimed at its treatment and control must be successful.

There is little or inadequate literature on the prevalence of *Helicobacter pylori* infection and associated risk factors in Nigeria. The objective of this study therefore, was to determine the prevalence of *Helicobacter pylori* specific antibodies in attendees of two health facilities in Port Harcourt, Rivers State, Nigeria.

2. Materials and Methods

2.1 Study population

A total of 100 samples were collected from O.B. Lulu Briggs Harcourt Medical Center, University of Port Harcourt (UPMC) and the Braithwaite Memorial Specialist Hospital (BMSH), Port Harcourt respectively. The study population consisted of 100 patients in the ratio of 0.5 from each hospital.

2.1 Sample collection

About 5 ml of samples were aseptically collected from the subjects by venipuncture into anti-coagulant free blood sample bottles. A short questionnaire containing information about the age, sex and marital status were also obtained from patients and recorded.

2.2 Serological test

The blood samples collected were left to clot by centrifuging at 2000rpm for 10miutes. Sera were then separated from the clots and stored at room temperature (25 $\pm 8^0$C) in labeled bottles until it was assayed the same day. Each serum sample was tested for the presence of antibodies to *Helicobacter pylori* using rapid test kit (ANTI-HP Rapid) for the qualitative detection of antibodies to *Helicobacter pylori* in serum samples.

The following quality control mechanisms were adopted in accordance with the test kit manufacturer's instructions; the use of fresh specimen, avoidance of repetitive freezing of blood samples, use of valid test kit (Stanier *et al.,* 1987; Talaro and Talaro, 2002; Cheesbrough, 2004).

2.3 Statistical analysis

Statistical analyses were performed using the SPSS statistical package for Windows; the 95% confidence interval for key proportions was calculated using the exact binomial distribution. The chi square test was used to test the differences in proportion when appropriate; differences with $P<0.05$ were deemed significant.

2.4 Interpretation of result

Results were interpreted based on the criteria contained in the manufacturer's instruction; Negative: only one pink band appears on the test region of the cassette. This indicates that there is no detectable anti-HP in the serum. Positive: Two pink bands appear on the test region of the cassette. This indicates that the serum contains detectable amount of anti-HP. Invalid: if without colour band appears on the test region, this is an indication of a possible error in performing the test. The test was repeated using a new device each time it was done.

3. Results

The results are presented in Tables 1 to 4. These included the prevalence in relation to location (health facility), sex, age and marital status.

3.1 Prevalence in relation to location

Table 1 indicated that 22(44.0%) of the 50 samples collected from BMSH and 22(44.0%) samples of the 50 samples collected from O.B. Lulu Briggs Medical Centre (UPMC) tested positive to *H. pylori* antibodies.

Table 1: Prevalence of *H. pylori* antibodies in relation to health facility

Location	No. tested	No. positive (%)
UPMC	50	22 (44.0)
BMSH	50	22 (44.0)
Total	**100**	**44 (44.0)**

3.2 Prevalence in relation to sex

The study showed no significant difference ($P>0.05$) in relation to sex (males [42.9%]: females [44.8%]) and rate of infection. Eighteen (42.9%) of the 42 males tested positive to *H. pylori* antibodies and 26(44.8%) of the 58 females also positive to *H. pylori* antibodies (Table 2).

Table 2: Prevalence of *H. pylori* antibodies in relation to sex

Sex	No. tested	No. positive (%)
Males	42	18 (42.9)
Females	58	26 (44.8)
Total	**100**	**44 (44.0)**

3.3 Prevalence in relation to age

Age-specific prevalence of *H. pylori* antibodies revealed a significant differences ($P<0.05$). Nine (23.0%) of the 39 participants within the age brackets of 1 to 18 years tested positive to *H. pylori* antibodies. Also, 35(57.4%) of the 61 participants within the age brackets of 19 to 37 years tested positive to *H. pylori* antibodies (Table 3).

Table 3: Prevalence of *H. pylori* antibodies in relation to age

Age group (years)	No. tested	No. positive (%)
0-18	39	9(23.0)
19-37	61	35(57.4)
Total	**100**	**44 (44.0)**

3.4 Prevalence in relation to marital status

Marital status-specific prevalence revealed a significant differences ($P<0.05$) in seropositivity of *H. pylori* antibodies. It indicated that 31(40.3%) of the 77 singles tested positive to *H. pylori* antibodies and 13(56.5%) of the 23 married participants also tested positive to *H. pylori* antibodies (Table 4).

Table 4: Prevalence of *H. pylori* antibodies in relation to marital status

Marital status	N0. tested	No. positive (%)
Married	23	13 (56.5)
Single	77	31 (40.3)
Total	**100**	**44 (44.0)**

4. Discussion

The study focused on the prevalence of *Helicobacter pylori* specific antibodies among attendees of two health facilities in Port Harcourt, Rivers State, Nigeria. *H. pylori* infection is common in developing countries with a very high prevalence (Lee *et al.*, 2003). There are significant differences ($p<0.05$) in the occurrence of infection worldwide and even in various parts of any specific country. This is closely related to socioeconomic status and overcrowding (Abdolvahab *et al*, 2006). It has been reported that in developing countries, the prevalence rate is higher since most of the people belonged to either low or intermediate socioeconomic class (Waleed *et al*, 2010). The prevalence increases generally with age, but decreases have been noted in narrow age ranges in childhood (Prescott *et al.*, 2005). Although *H. pylori* have been widely reported to be co-infected with other infections and diseases such as HIV, dyspepsia, anemia (Ramadas *et al*, 2005; Magdy *et al*, 2012), the study was generally targeted at patients who attended the health facilities on the basis of location, age, sex and marital status.

The results obtained in this study indicated that the infection was present in almost half (44.0%) of the study population from both hospitals, this is in line with the high prevalent rate earlier reported in some developing countries (Lee, 2003). This agrees with the 72.1% overall prevalence of *H. pylori* infection reported by Chen *et al*. (2014).

The results of 42.9% and 44.8% of the male and female participants respectively indicated that *H. pylori* is not peculiar to either the male or female sex but, the infection is common to both sexes. This is similar to a scenario in Bangladesh where it was reported by Lee *et al.* (2003) that there was no significant difference ($P<0.05$) of the infection in relation to sex [males (68.4%): females (70.1%)]. It only depended on who is susceptible to the infection. Chen *et al*. (2014) also reported no significant difference between genders. Zhu et al. (2014) also reported that prevalence of *H. pylori* among male and female was 61.74% and 64.47%, respectively, suggesting that there was a significant difference between sexes ($P=0.026$) and women had a higher infection rate than men.

The susceptibility and risk factors for *H. pylori* infection include socioeconomic status, household crowding, ethnicity, migration from high prevalence regions, and infection status of family members (Atlas, 1995; Abdolvahab *et al.*, 2006).

The prevalence of *H. pylori* shows large geographical variations (Kusters et al., 2006). More than 80.0% of the population is *H. pylori* positive, even at young ages in various developing countries (Perez-Perez *et al*., 2004; Kusters *et al*., 2006). Studies have revealed that the prevalence of *H. pylori* in industrialized countries generally remains under 40.0% and is considerably lower in children and adolescents than in adults and elderly people (Pounder and Ng, 1995; Kusters *et al*., 2006).

The age-specific prevalence of *H. pylori* infection in this study indicated that there is a low prevalence rate of the infection (23.0%) in children (1-18 years) when compared to the prevalent rate of 57.4% obtained in adults (19-37 years). This is in agreement with the report of Joav *et al.* (2004), who found out a similar situation. The study reported that Israel had a low prevalence rate among children (10.0%), but a rapid increase in the second decade of life to 39.0% and reached 79.0% in persons over 60 years of age. Our study indicated an overall prevalence rate of 34.4% for *H. pylori* infection in relation to age. Zhu et al. (2014) reported the highest rate of *H. pylori* infection in 30–39 years than other age groups.

In our study, we found an association between marital status and *H. pylori* infection. The *H. pylori* infection was found to be higher in the marital class (56.5%) than the unmarried class (40.3%) and this can be attributable to stress and family responsibility among other factors. Chen *et al*. (2014) also reported that marital status were associated with *H. pylori* infection. Brenner *et al*. (1999) observed that the risk of *H. pylori* infection increased with the number of years one lived with an infected partner. Marshall (2006) describes the case of a patient who married into a family with gastric ulcers; the patient subsequently developed a duodenal ulcer. Chen *et al*. (2014) also suggest that spousal transfer of *H. pylori* to a *Helicobacter*-free partner might represent a possible route of transmission of *H. pylori* later in life.

5. Conclusion

In conclusion, the prevalence of *H. pylori* antibody was 44.0% in attendees of two health facilities in Port Harcourt, Rivers State, Nigeria. The prevalence of *H. pylori* antibodies was linked to age and marital status. No significant difference ($p<0.05$) in the occurrence of *H. pylori* infection with respect to location and sex. Both sexes ware susceptible to *H pylori* infection in the area, with a low prevalent rate in children than in adults and a slight increase among married couples than in the unmarried class. The study has shown that *H. pylori* infection is common and constitutes a major public health challenge in Port Harcourt, Nigeria. The underlying mechanisms are needed to be further investigated.

Hence, it is recommended that routine screening of blood for *H. pylori* be carried out regularly. Health care personnel should be encouraged to do more in areas of public education and enlightenment campaign on the risk factors associated with *H pylori* infection. Curative measures should be initiated and strengthened by the State Government to cope with existing cases of *H. pylori* infection amongst patients.

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