

Seroprevalence of *Helicobacter Pylori* Among Students of Nigerian College of Education

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Abstract: *Helicobacter pylori* are known to cause chronic gastritis, peptic ulcer disease, gastric adenocarcinoma and mucosa associated lymphoid tissue lymphoma. There is limited knowledge about the prevalence and associations of *H. Pylori* among students of colleges of education in Nigeria. This study determined the current prevalence and associated factors in apparently healthy Nigeria Colleges of education students. A multistage sampling technique was used to recruit five hundred and fifty three (543) apparently healthy male and female students. The investigation used descriptive cross-sectional study for *H. pylori* infection using a monoclonal serum antigen test. Students were interviewed with guided structured questions. The information on the socio-demographic factors, locality, level, nutritional status and ulcer history were obtained. From the total subjected screened 9% were *H. pylori* seropositive and out of which 7% were female while 2% were male. The sero-prevalence among age group showed higher prevalence between 18 to 22 years. It is recommended that awareness be raised about good hygiene practices and provision of access to proper and continuous screening and treatment for infected individuals associated with *H. pylori* infection.

Keywords: Prevalence, Gastric ulcer, health, nutrition and education

I. Introduction

Helicobacter pylori are the commonest bacterial infection worldwide. This gram negative bacterium infects human gastric mucosa causing long term colonization and inflammation. It has a helix shape, which thought to have penetrated the mucoid lining of the stomach [1]. Colonization with *H. pylori* is not a disease by itself but a condition associated with a number of disorders of the upper gastrointestinal tract [2]. It is linked with the development of duodenal ulcers and stomach cancer [3]. However, over 80 percent of individuals infected with this bacterium are asymptomatic [4]. The way of transmission of *H. pylori* is unclear [5]. Recent studies showed transmission via either faecal-oral or oral-oral route. It may be directly related to the source of drinking water [6]. Infection with *H. pylori* is related to many diseases e.g. iron deficiency anemia, migraine and coronary heart disease [7]. Epidemiological studies demonstrated that *H. pylori* infection increases with age. It is higher in developing countries and among population with low socioeconomic status. This may be due to poor hygiene, crowded living conditions and absence of sanitation. In developed countries, children and adolescents are only infrequently infected, while in adults over 50 years of age the infection ranges from 30–60% [8].

Several risk factors for *H. pylori* infection have been reported in several studies [9]. Most of the studies examined cross-sectional associations between various risk factors and the probability of being infected at the time of screening; this may not distinguish the determinants of persistent infection from the determinants of acquisition. Some of the factors that have been identified to be associated with *H. pylori* include:

Socioeconomic and educational status of parents, In Nigeria [10] found that *H. pylori* infection was significantly associated with the socioeconomic status of the parents. Low socio-economic status was associated with *H. pylori* infection among Israeli children in a day care, but the basis for classifying low status was not specified [11]. A large cross-sectional survey in Pakistan also showed that sero-positivity was associated with lower socio-economic status [12]. This may be attributed to the poor sanitary practices and living condition associated with low socio-economic class facilitating the transmission of infection [13].

Helicobacter pylori (*H. pylori*) is known to cause chronic gastritis, peptic ulcer disease, gastric adenocarcinoma and mucosa associated lymphoid tissue lymphoma and it is acquired in childhood. There is limited knowledge about the prevalence and associations of *H. Pylori* among students of colleges of education in Nigeria. This study aimed to determine the current prevalence and associated factors in apparently healthy Nigeria Colleges of education students. A multistage sampling technique was used to recruit four hundred and fifty three (543) apparently healthy male and female students. The study has the following objectives 1) To determine the prevalence of *H. pylori* infection in the study group by age and gender. 2) To determine the relationship between socio-demographic factors and prevalence of *H. pylori* and 3) To determine the relationship between nutritional status and the prevalence of *H. pylori*.

II. Materials and Methods

This research was carried out in Federal College of Education Katsina. The population of the study includes the students of Federal College of Education Katsina across seven (7) schools of the college. The sample size was calculated using the

formula105: $N = Z^2 PQ / d^2$ Where N = Minimum Sample size Z = Standardized normal deviation, P = Best estimate of population prevalence rate, D = Tolerable error margin, Q= 1-P [5]

Blood sample were collected from fresh blood of the subjects by lancet stick from the right thumb of each student under fully aseptic condition. A blood drop was taken from each student and placed on special kit for detection of *H. pylori* [5]. The test was performed through one step by antigen cassette test (Linear chemicals, S.L, Barcelona, Spain). It is a qualitative immune chromatographic assay using monoclonal antibodies.

The participants were interviewed using structured and guided questions. The first part contained questions regarding the demographic data (age, gender, blood groups and family income). The second part referred to selected features relating to the students' lifestyle such as living conditions, smoking, alcohol, caffeine consumption and the presence of gastric symptoms. The last part of the questionnaire was related to the family history and hygienic behaviours. The questionnaire was filled by the students themselves after short introduction about the study, *H. Pylori* prevalence and it is effect on our health [7].

In statistical analysis, the data were analyzed using SPSS (Statistical Package for Social Science, V 20.0), descriptive statistics were used to determine the prevalence of *H. Pylori* infection in the participants using simple percentage and bar charts [5].

III. Results

To determine the prevalence of *H. pylori* infection in the study group by age and gender.

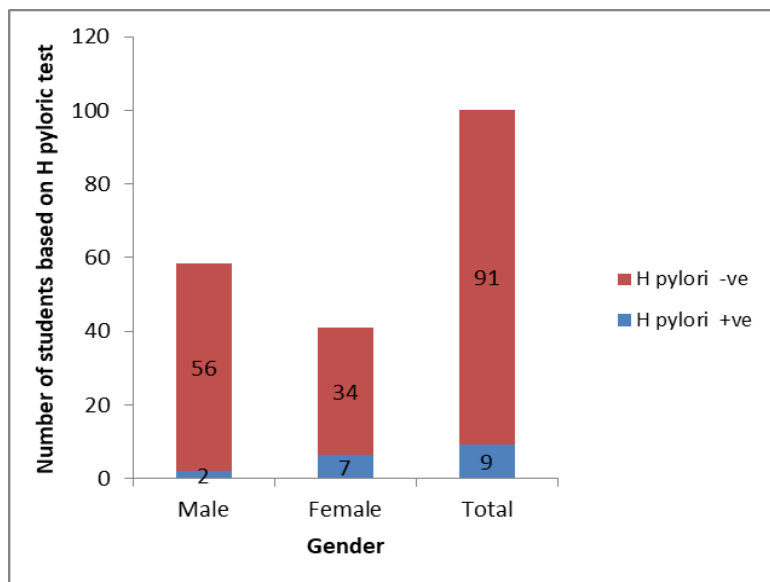


Figure 1: Chart showing the prevalence of *H. pylori* infection in the study group by gender.

To determine the relationship between socio-demographic factors and prevalence of *H. pylori*.

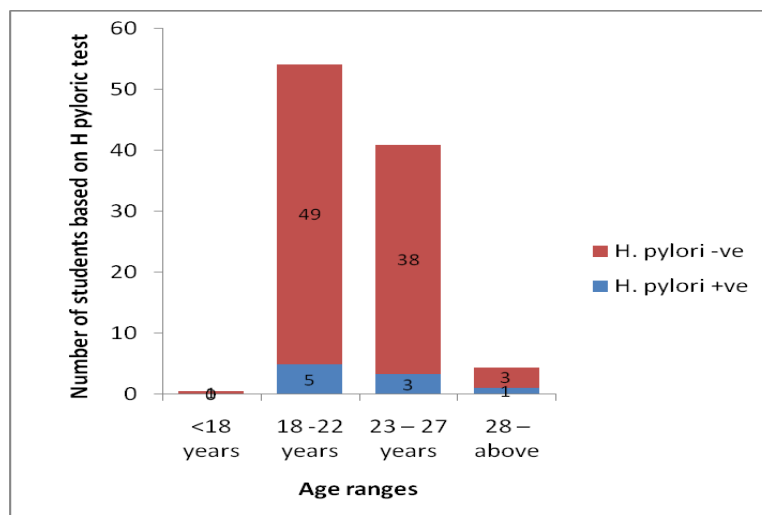


Figure 2: Chart showing the prevalence of *H. pylori* infection in the study group by age.

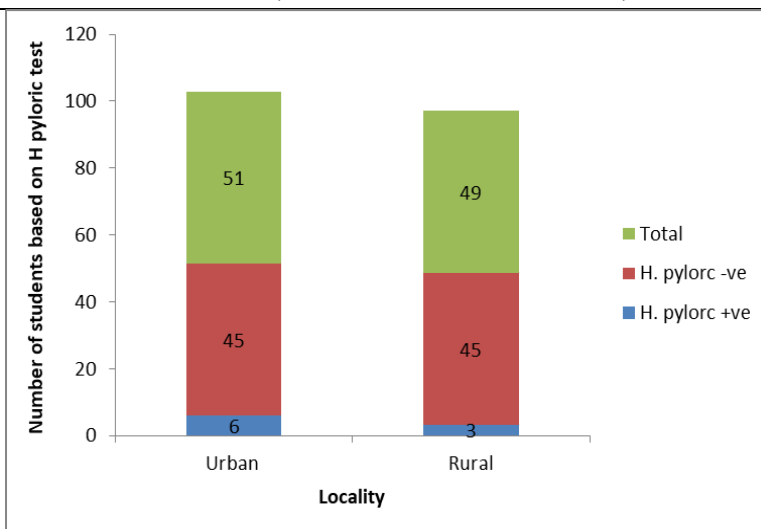


Figure 3: Chart showing the socio-demographic factors and prevalence of *H. pylori*.

To determine the relationship between nutritional status and the prevalence of *H. pylori*.

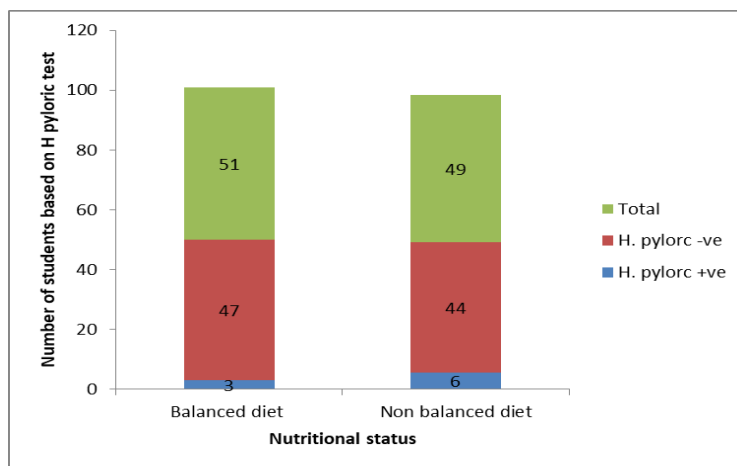


Figure 4: Chart showing the relationship between nutritional status and the prevalence of *H. pylori*.

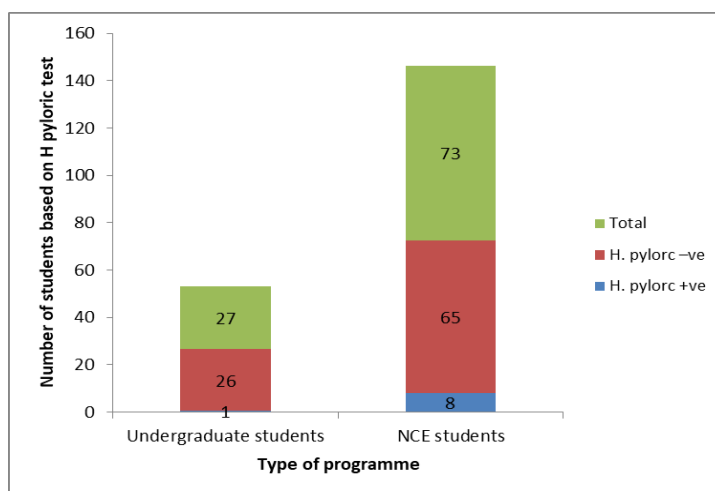


Figure 5: Chart showing the prevalence of *H. pylori* between undergraduate and NCE students

IV. Results and Discussion

The total of 543 college students were screened out of which 91% were tested negative and 9% were *H. pylori* seropositive. Figure1, showed percentage of the student gender out of which 51 students were tested positive. Male and female student

recorded 56% and 34% of *H. pylori* sero-negative respectively. However, 7% and 2% female and male students showed *H. pylori* sero-positive respectively.

This study showed that *H. pylori* is more prevalent in females than male students. This was in contrary to the previous finding [14] it may be due to cultural difference among students in the research area. Moreover, others found no gender related difference in the prevalence of *H. Pylori* infection [15]. This work is similar to research carried out in China, (female 60% and male 45%); Taiwan (Female >59% and male 23%) and Egypt (Female 66% and males 32%). Similarly, in Iraq a higher seroprevalence of 59.72% in females as against 43.75% in males was reported. All these works showed the prevalence of the disease in women to be higher than that of men and was said to be as a result of the high social activities of women in the homes [16]. In addition, the high prevalence of female to males is also similar to work done in Ilorin, Nigeria showed a prevalence of females to be >60% higher than that of the males 30% [17].

Figure 2, revealed *H. pylori* sero-prevalence to be higher in the age range of 18-22 years represented at 5% followed by 23-27 years at 3% the least is 28 and above which showed 1% seropositive. The seropositive were relatively higher at a particular age range 18 to 22 years, which could be due to their exposure to the infection. However, this investigation was in accordance with a research in USA, serologic evidence of *H. pylori* is rarely found before age of 10 years but increases to 10% in those between 18-30 years of age and to 50% in those > 60y [19]. This result is also similar to the findings of various researches done within Nigeria; the research done in Ibadan by [20] showed that age range 25-30 years had a highest prevalence of 60% compared to other age ranges, [21] in Warri Teaching Hospital reported that patients with age range 20-30 had the highest prevalence of 84%. However, its contrary to the study conducted in Bauchi [15] and in Pakistan [12].

Figure 3, the sero-prevalence of *H. pylori* based on locality showed out of 51% students from urban areas 45% were sero-negative and 6% seropositive while 49% of the students were from rural having 45% sero-negative and 3% sero-positive. This showed that the infection is more pronounced among students from the urban centres than those from the rural areas. This may be as a result of the higher population density and level of interaction in the urban centres, where crowded living conditions especially high number of people at home increased the risk [15].

Figure 4, The nutritional status showed 47% students with balanced diet out of which 3% were *H. pylori* sero-positive whereas, 44% of the student were recorded non balanced diet out of which 6% were sero-positive. Thus, the students under non-balanced diet category have comparatively higher percentage of *H. pylori* sero-positive than the students with balanced diet. The result showed no relationship between *H. pylori* and the students' status of balance and non-balance diet. However, some food such lipid, spices and other food stuff with high caffeine content can increase the risk factor of ulcer [15].

Figure 5, Prevalence of *H. pylori* between undergraduate students and NCE students showed that 73% out of which 65% were tested negative and 8% positive. On the other hand, 27% of the students were undergraduates from which 26% and 1% were tested positive and negative respectively. The study showed that *H. pylori* is more prevalent among NCE students than undergraduate students. This could be ascribed to the differences in their educational status that undergraduate students are more enlightened. However, [18] found that seroprevalence of *H. pylori* increases with the level of study in the university, with the highest prevalence of 9.3% in 100 level, followed by 200 level with 6.3% seropositivity. Levels 300 and 400 followed suit with 5.8% and 2.5%, respectively. Moreover, the decrease in seroprevalence progressed from 200, 300 to 400 [19].

V. Conclusion

This work was done using the serology method to ascertain the prevalence of *Helicobacter pylori* infection amongst students of colleges of education Katsina. The findings showed a very low prevalence of this infection among the students which may be attributed to the good sanitary living, good personal and environmental hygiene of the students. However, the study further revealed comparatively higher seroprevalence among female students. It is suggested that colleges of education should raise awareness about the importance of good hygiene practices and to provide access to proper diagnosis and treatment for infected individuals to prevent transmission and potential health complications associated with *H. pylori* infection.

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