



# Prevalence of *Helicobacter pylori* among Patients with Gastritis Attending Nnamdi Azikiwe University Teaching Hospital, Nnewi, Anambra State, Nigeria

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## Abstract

*Helicobacter pylori* (*H. pylori*) causes gastro duodenal ulcer and affects people of all ages, which can lead to morbidity or even mortality if not detected and treated early. The aim of this study was to find the prevalence of *H. pylori* infection among the patients that attend the Gastrointestinal Tract (GIT) clinic in Nnamdi Azikiwe University Teaching Hospital, Nnewi, South East Nigeria. A cross-sectional study of 350 samples of male and female (Children, adults and the elderly) patients visiting the clinic were used. *H. pylori* infection was identified using the Enzyme immunoassay kit for the detection of IgG antibodies to *H. pylori* in human serum (catalog number BC-1051). Negative and positive controls for *H. pylori* were included in the assay and the data were analyzed using the Statistical Package for the Social Sciences (SPSS version 23.0). The prevalence was expressed in percentage. The result found the prevalence of *H. pylori* infection in Nnewi Southeast to be 52% with the infection higher in female (53%) than the male (47%) with no significant difference ( $p=0.232$ ). Among the children, prevalence was 22%, the adults 60% and the elderly 35%. The study in conclusion, suggests routine *H. pylori* assay on all the patients attending the GIT clinic since the symptoms of this bacterial infection can be asymptomatic. This will help in prompt treatment and eradication.

**Keywords:** *Helicobacter Pylori*; Patients; GIT clinic; Southeast Nigeria

## Introduction

Gastritis is an inflammation of the protective lining of the stomach [1]. This can be acute gastritis which involves sudden, severe inflammation or chronic gastritis which involves long-term inflammation that can last for years if it is left untreated. Another one called Erosive gastritis, is a less common form of the condition [1]. People with gastritis frequently experience abdominal pain, often located in the upper-center part of the abdomen, or in the upper-left portion of the stomach and often it radiate to the back. At times there are also bloating and nausea [1]. Gastritis can be caused by irritation due to excessive alcohol use, chronic vomiting, stress, or the use of certain medications such as aspirin or other anti-inflammatory drugs. It may also be caused by *Helicobacter pylori* (*H. pylori*) [2].

*H. pylori* is the major cause of peptic ulcer disease, it is a gram-negative, spiral-shaped bacterium [3]. More than a half of the world's population is infected with *H. pylori*, which is acquired almost always within the first 5 years of life and most infected patients remain asymptomatic, with only minimal inflammation [4]. In the developed world, the prevalence rates of *H. pylori* vary from 1.2% to 12.2%, while in developing countries, the prevalence rates are much higher, about 70% to 90% of the populations harbor *H. pylori* [5-7]. Studies by Bashir and Ali [8] in Kano (Nigeria) reported an *H. pylori* prevalence of 81%, Malu et al. [9] in Jos (Nigeria), found a prevalence of 87%, while Aboderin et al. [10] reported 73% in South-West Nigeria. The prevalence of the infection varies according to different ages, socioeconomic strata and geographical regions [11]. In developing countries the prevalence of *H. pylori* is higher in children, due to lower socioeconomic status, poor hygiene, overpopulation and lack of safe drinking water, and in an older patient, the presentation of *H. pylori* infection may be subtle or atypical, which may delay the diagnosis [12]. With advanced

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age (the Elderly), the increased presence of concomitant diseases and multidrug therapy, especially medications causing gastric mucosal damage and bleeding (e.g. Non-Steroidal Anti-Inflammatory Drugs (NSAID), bisphosphonates, antiplatelet drugs, warfarin), can lead to increased and severe complications of *H. pylori* infection [13].

Infection with *H. pylori* is characterized with these symptoms or patients may remain asymptomatic and its rate and complications are still increasing worldwide, hence the need to evaluate the prevalence of *H. pylori* among patients with gastritis attending the Gastrointestinal Tract Clinic in Nnamdi Azikiwe University Teaching Hospital Nnewi, South-East Nigeria [14,15].

## Materials and Methods

A total of 350 patients attending the GIT clinic of Nnamdi Azikiwe University Teaching Hospital from June 2019 to February 2020 (9 months) were recruited for this study and their age ranged from 8 years to 70 years. Fifty (50) were children (8 years to 17 years), 260 were adults (18 years to 65 years), while 40 were elderly (65 years to 70 years). Among the 50 children 32 were females and 18 males. The 260 adults comprise 136 females and 124 males. The elderly were 16 females and 24 males totaling 40. Ethical approval for this study was sought and obtained. Two milliliter of blood was collected in a clean plain sample bottles and were allowed to clot for the serum to be extracted. Enzyme immunoassay kit for the detection of IgG antibodies to *H. pylori* in human serum (catalog number BC-1051) was used to carry out the assay. Negative and positive controls for *H. pylori* were included in the assay. Serum samples with IgG EIA index less than 0.99 were regarded as seronegative, while samples with IgG EIA index of 1.0 or greater were regarded as seropositive. The statistical packages for Social Science (SPSS version 23) were used to analyze the data. Frequency and percentage were computed for categorical variables and mean and standard deviation were estimated for quantitative variables using student t test. The prevalence was expressed in percentage. Proportions were compared by the chi-square test. The level of significance was set at 5% ( $p < 0.05$ ). GraphPad prism version 6 was used for graphs.

## Result

A total of 350 patients attending the GIT clinic were assayed for *H. pylori*. Fifty were children (260 were adults and 40 were elderly patients as shown on Figure 1. Among the children, 18 were males and 32 were females (50), The 260 adults were made up of 124 males and 136 females, while the elderly were 24 males and 16 females, totaling 40 as shown on Figure 2. One hundred and eighty-two were positive for *H. pylori* (*H. pylori* IgG EIA index  $\geq 1.00$ ), giving a prevalence of 52%, while 168 (48%) patients were negative for *H. pylori* (*H. pylori* IgG EIA index  $< 0.99$ ) see Figure 3. Among the positive samples, 96 (53%) were female and 86 (47%) were male. No significant difference ( $p = .232$ ) were seen between the male and female positive for *H. Pylori* (Figure 4). Eleven (22%) out of the 50 children assayed samples were positive for *H. pylori*, while 39 samples were negative. The adults' serum samples had 157 (60%) positive for *H. pylori* and 103 came out negative. Fourteen (35%) samples of the elderly tested positive while the remaining 26 samples were negative for *H. pylori* (Figure 5). Figure 6 showed that the male children had high positive *H. pylori* than their female counterpart with no significant difference ( $p = 0.565$ ). Among the adults, the female samples positive for *H. pylori* were higher than the male with no significant difference ( $P = .732$ ). The elderly male and female had the same pattern with the children, with the male showing

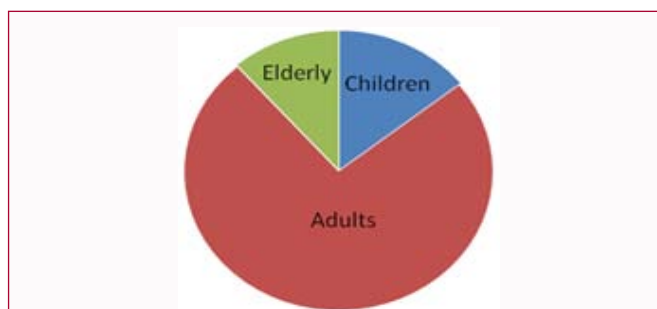


Figure 1: Pie chart representation of the total patients Assayed.

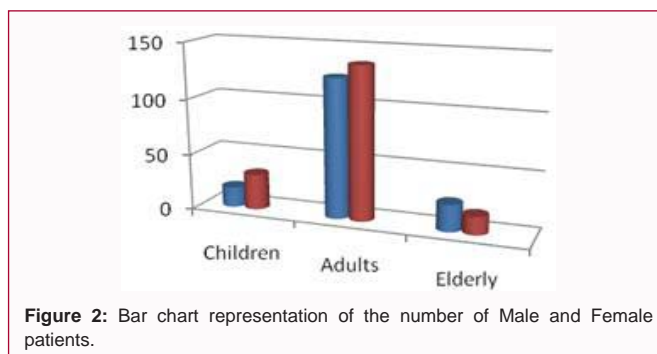


Figure 2: Bar chart representation of the number of Male and Female patients.

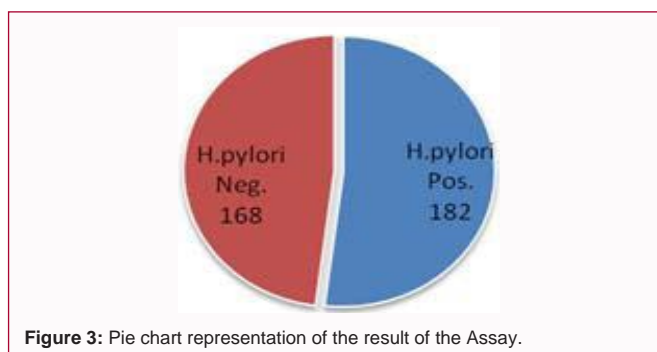


Figure 3: Pie chart representation of the result of the Assay.

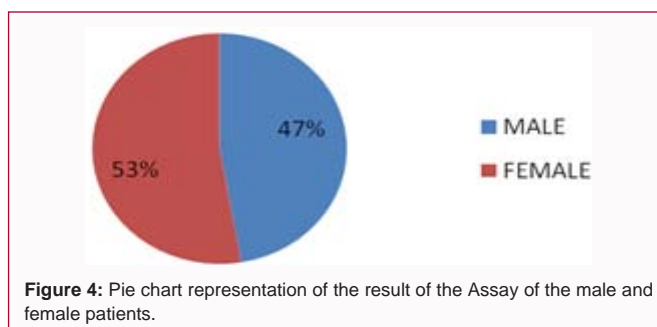
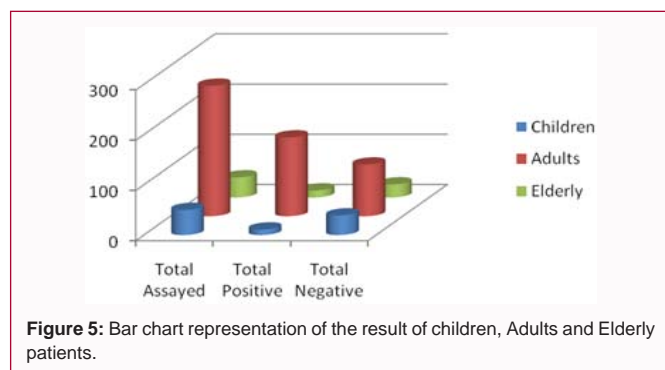


Figure 4: Pie chart representation of the result of the Assay of the male and female patients.

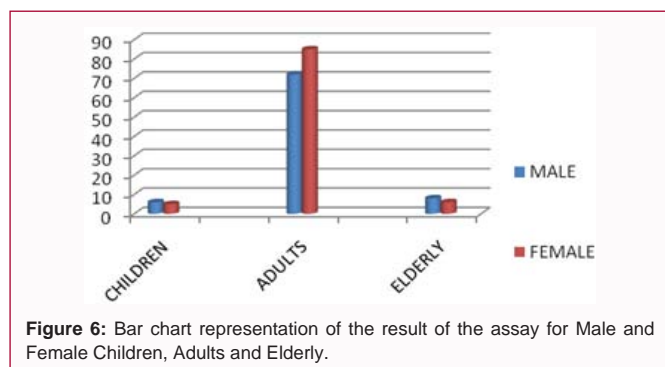
higher positivity than the female also with no significant difference ( $p = 0.312$ ).

## Discussion

Gastrointestinal ulcer is a global health problem in developed and developing countries which Nigeria is one. Since the discovery of *H. pylori* in 1983, the causes and pathogenesis of ulcers are better understood [16]. Various risk factors like living in crowded conditions, living without a reliable supply of clean water, living in a developing country and living with someone who has an *H. pylori* infection are responsible for the infection and it remain a major health



**Figure 5:** Bar chart representation of the result of children, Adults and Elderly patients.



**Figure 6:** Bar chart representation of the result of the assay for Male and Female Children, Adults and Elderly.

problem in the society [17]. This therefore prompted this research for the prevalence of *Helicobacter pylori* among the patients attending the GIT clinic in Nnamdi Hospital Nnewi, Southeast Nigeria.

From the result obtained, the prevalence of *H. pylori* among the patient attending the GIT was 52% as seen on Figure 3. This prevalence was lower than other prevalence rates reported in other Nigerian studies like Bashir and Ali [8] who reported 81% prevalence in Kano, in Gombe [18] *H. pylori* prevalence was found to be 77.1% and Ndububa et al. [19] in Ile-Ife reported prevalence rates of 73%. A study by Malaty and Grahamin [20] in USA, reported that the prevalence of *H. pylori* infection was 82% in the lower social class, 52% in the middle class, and 11% in the higher social class. The low prevalence in the study when compared to other studies in Nigeria may be due the awareness of the risk factors pertaining to *H. pylori*, lifestyles of the people within the area of study.

In this study, the prevalence of *H. pylori* infection is higher in females (53.0%) than the males (47.0%) with no significant difference as seen in Figure 4. Similar report was obtained from a study in Warri, Nigeria [21], which reported a higher *H. pylori* prevalence in females than in males. Odete et al. [22] also reported that the prevalence rate of *H. pylori* was higher in female than in the male. In contrast, Omosor et al. [23] revealed the prevalence of *H. pylori* infection to be higher in males (55%) than females (51.4%). Woodward et al. also reported a higher prevalence of *H. pylori* in men than in women [24]. Ford and Axon observed that male gender is a risk factor for *H. pylori* infection [11]. But Mutaz et al. [25] in their study reported that *H. pylori* Infection rates are similar in males and females.

An age-related increase of the prevalence of *H. pylori*, irrespective of the economic state of the country, was observed by several independent studies across the world [26-28]. This study carried out in Nnewi also considered age in relation to *H. pylori*, and discovered a prevalence rate of 22% in the children. In developed countries, less than 10% of children younger than 12 years are infected but increases

with age at a rate of 0.3% to 1% per year. The incidence is 3% to 10% of the population each year in developing countries compared with 0.5% in developed countries [29].

Children differ from adults with respect to *H. pylori* infection in terms of the prevalence of the infection, *H. pylori* is the most important causes of peptic ulcer in adult population [30].

Studies of seropositivity in adults in developed countries revealed prevalence of 30% to 50%. This study reported prevalence 60% in adults, which is sequel to the report that the prevalence of *H. pylori* is high in developing countries, reasons may be due to social economic difference and lifestyle. Elderly patients suffer from more serious complications resulting in higher hospitalization and mortality rates [31]. Studies conducted in the past decade have reported a high prevalence of *H. pylori* infection within the oldest population, especially in institutionalized old people, with a prevalence ranging from 70% to 85% [32,33]. A marked reduction in the prevalence (35%) of infection was noted in elderly people in this study. Although *H. pylori* infection is important in gastrointestinal diseases affecting all age groups, only a few studies have been published regarding elderly people [33]. Epidemiologic studies report higher prevalence of *H. pylori* infection in elderly with a ratio of over 70% in patients with gastrointestinal diseases and approximately 60% in asymptomatic patients [34,35]. The clinical characteristics and epidemiologic distribution of *H. pylori* infection in children, adults and elderly have been extensively reported by many authors, but in Nnewi, the investigation and medical attention for the *H. pylori* infection in these population remains low [29,30,33].

## Conclusion/Recommendation

Complications of *H. pylori* infection cannot be over emphasized and increases with age [36]. In other words, this infection now has a higher incidence in the later stages of childhood, adolescence, adulthood and elderly [37]. The prevalence of *H. pylori* infection higher in adults than the children and the elderly might be due to reduced number of children and elderly patients. Nevertheless, *H. pylori* testing should be regarded as an important aspect in clinical practice to help in treatment and better eradication of the infection in patients; this will lead to a significant decrease in gastritis in patients of different age group whether with symptoms or asymptomatic.

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