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PREVALENCE, AWARENESS AND KNOWLEDGE OF *Helicobacter pylori* INFECTION AMONG RESIDENTS OF SABON PEGI, YOLDE PATE COMMUNITY, YOLA SOUTH LOCAL GOVERNMENT AREA, ADAMAWA STATE, NIGERIA

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ABSTRACT

This study investigated the prevalence, awareness and knowledge of *Helicobacter pylori* (*H. pylori*) infection among residents of Sabon Pegi, Yolde Pate community, Yola South Local Government Area, Adamawa State, Nigeria. A community-based cross-sectional design was adopted, involving 290 respondents selected through a multistage sampling technique comprising cluster, household, and individual selection. Data were collected using rapid antibody testing for *H. pylori* alongside a structured questionnaire covering socio-demographic characteristics, awareness and knowledge of the infection. Data were analyzed using descriptive statistics, chi-square tests at a 5% level of significance. Results showed an overall *H. pylori* prevalence of 55.9% (162 of 290 respondents). Prevalence increased significantly with age ($\chi^2 = 8.64$, $p = 0.013$), rising from 27.8% among respondents aged 1–10 years to 82.6% among those aged 41 years and above, while gender showed no significant association with infection ($\chi^2 = 2.11$, $p = 0.146$) with males and females having prevalence of 53.0% and 58.2% respectively. Although 57.9% of respondents were aware of *H. pylori* infection, awareness was significantly associated with infection status ($\chi^2 = 6.75$, $p = 0.009$), and knowledge of the infection was generally moderate to poor. The study concludes that *H. pylori* infection is highly prevalent among residents of Sabon Pegi, Yolde Pate community and is strongly associated with age, and awareness rather than gender. The moderate to poor knowledge indicates lack of adequate understanding of transmission, symptoms, and prevention of the infection.

Keywords: *Helicobacter pylori*, prevalence, risk factors, Sabon Pegi, Yolde Pate, Adamawa State, Nigeria

Introduction

Helicobacter pylori (*H. pylori*) is a gram-negative, spiral-shaped, microaerophilic bacterium that colonizes the human gastric mucosa. It remains one of the most widespread chronic bacterial infections worldwide, presenting a formidable public health challenge, and affects approximately 43% to 44% of the global adult population, which translates to billions of infected individuals (Wang *et al*., 2026). The distribution of the infection is highly unequal and deeply tied to social determinants of health; prevalence rates soar as high as 70% in regions like Africa, primarily driven by socioeconomic factors such as household overcrowding, lower educational gradients, and poor sanitation infrastructure (Wang *et al*., 2026).

Globally, it is estimated that more than 4.4 billion people are infected with *H. pylori* (Hooi *et al*., 2017). Prevalence varies considerably across regions, with the highest rates recorded in developing nations. For example, studies report prevalence rates above 70% in many Asian and African countries, while industrialized nations such as the United States, Australia, and much of Western Europe report significantly lower rates, often below 40% (Rawla & Barsouk, 2019). Importantly, global trends indicate that the age of acquisition is markedly earlier in developing countries, with many individuals infected during childhood, compared to later-life acquisition observed in developed regions (Bardhan, 1997). This early acquisition pattern in low-income settings prolongs the duration of infection and increases the cumulative risk of associated sequelae, including peptic ulcer disease and gastric malignancy.

Nigeria, the most populous country in Africa, demonstrates a high burden of *H. pylori* infection. Studies from different regions of the country have reported prevalence rates ranging from 48% to over 80%, depending on the diagnostic method used including serology, urea breath test, stool antigen, histology, or culture and the study population (Jemilohun *et al*., 2011; Brown *et al*., 2002). Many African studies reinforce that infection is nearly universal in some rural or underserved communities. Studies among dyspeptic Nigerian patients consistently report very high prevalence. One study using serology found 93.6%, while histology in the same cohort yielded 80%. In Abuja, among adult dyspeptic patients, prevalence was 53.6% using serologic IgG tests, with protective factors including regular fruit and vegetable consumption, good hand hygiene, and higher income, and risk increasing with age. Among patients with chronic gastritis in Kano, *H. pylori* detection in biopsy specimens was 69.5%. More recent studies corroborate similarly high rates in both rural and urban settings (Ndububa *et al*., 2001).

Despite the high prevalence, awareness about the health risks associated with chronic *H. pylori* infection remains limited across much of the continent. Inadequate diagnostic capacity in many African health facilities means that cases are frequently underdiagnosed or misattributed to other gastrointestinal conditions. Consequently, many individuals present late with complications such as peptic ulcer disease, gastrointestinal bleeding, and gastric malignancies. This late presentation contributes to the high morbidity and mortality associated with gastric cancer in sub-Saharan Africa, where diagnostic and therapeutic resources remain poorly developed (Smith *et al*., 2024). This study aimed to determine the prevalence, knowledge and awareness of *Helicobacter pylori* infection among residents of Sabon Pegi, Yolde Pate community, Yola South Local Government Area, Adamawa State.

Statement of problem

Despite several studies revealing high prevalence rates of 48-87% *H. pylori* infection across Nigeria, there is little to no documentation of this burden for Sabon pegi, Yode Pate community. The limited community-based research, particularly in rural and peri-urban areas, leaves local health authorities without evidence-based data to inform intervention strategies for an infection that can progress to serious complications including peptic ulcers, gastritis, and gastric cancer.

Materials and Methods

The study was conducted at Sabon Pegi, Yolde Pate, a peri-urban community situated in Yola South Local Government Area (LGA) of Adamawa State, northeastern Nigeria. The local government area lies at approximately Latitude 9°11'N - 9°13'N and Longitude 12°26'E - 12°28'E (Sadiq *et al*., 2025), within the Middle Benue Valley physiographic zone. Yola South LGA, of which Sabon Pegi, Yolde Pate forms a part, shares a boundary with Yola North LGA to the North, Fufore LGA to the Southeast and Southwest as well. Sabon Pegi, Yolde Pate itself is located a few kilometers southeast of the Yola metropolis, along the Yola–Numan Road corridor.

A community-based cross-sectional study design was adopted for this study. This design allows for the study of multiple variables and group differences simultaneously, and it is ideal for determining the prevalence of a disease, condition, or other characteristics within a population at a specific time. The study was conducted between October, 2025 – February, 2026. The target population consisted of residents of Sabon Pegi, Yolde Pate community aged one year and above who had lived in the community for at least six months. Permanent residents of the community. Individuals aged ≥ 1 year who consent (or whose guardians' consent in case of minors). Residents willing to provide biological samples (blood). Visitors or temporary residents. Individuals currently on antibiotics, proton pump inhibitors, or bismuth compounds (within the past 4 weeks). Severely ill patients unable to participate.

The sample size was determined using the formula for prevalence studies:

$$n = \frac{Z^2 \cdot p \cdot (1-p)}{d^2}$$

Where:

n = sample size

Z^2 = standard normal deviate at 95% confidence level (1.96)

p = expected prevalence of *H. pylori* (assumed at 75% based on previous Nigerian studies (Jajere & Dagona, 2025).

d^2 = margin of error (0.05)

$$n = \frac{(1.96)^2 \cdot 0.75 \cdot (1-0.75)}{0.05^2}$$

$$n = \frac{3.84 \cdot 0.75 \cdot 0.25}{0.0025}$$

$$n = \frac{0.72}{0.0025} = 288$$

Thus, a minimum sample size of 288 respondents was required. However, a total of 290 participants was recruited for this study.

A multistage sampling technique was used:

1. Stage One – Cluster Sampling: Sabon Pegi, Yolde Pate was divided into clusters based on residential quarters.
2. Stage Two – Household Sampling: From each cluster, households were randomly selected using systematic sampling.
3. Stage Three – Individual Selection: Within each household, one eligible participant was selected using simple random sampling (lottery method).

A semi-structured questionnaire was administered through face-to-face interviews. The instrument consisted of three sections aligned with the study objectives:

Section A: Respondent sociodemographic characteristics.

Section B: Knowledge of *H. pylori* infection.

Section C: Awareness of *H. pylori* infection.

The questionnaire was pre-tested, and necessary modifications were made after consultations with Health Surveillance Assistants (HSAs), and district health office staff.

To determine prevalence, biological samples were collected and tested for evidence of *H. pylori* infection:

H. pylori Rapid Antibody Test: Fresh blood samples were collected from consenting participants in sterile containers and analyzed using *H. pylori* rapid test kits under standard laboratory conditions (Ansari & Yamaoka, 2022).

This method was chosen due to its high sensitivity and specificity and feasibility in community-based settings.

Data were analyzed using Statistical Package for Social Sciences (SPSS) version 25. Knowledge and awareness were measured on 5 points Likert scale, descriptive statistics (percentages, mean knowledge scores) were computed and association between knowledge and awareness level with infection was also explored. Statistical significance was set at $p < 0.05$.

Ethical Consideration: Approval was sought from the Adamawa State Ministry of Health Ethical Review Committee; approval no (ADHREC 20/10/2025/58). Written informed consent was obtained from all adult participants; for minors, consent was obtained from parents/guardians. Participant data were coded and kept confidential. Participants were free to withdraw at any point without penalty. Participants who test positive for *H. pylori* were referred to designated healthcare facilities for management.

Results

Table 1 Prevalence of *H. pylori* Infection according to age and gender of the respondents

Variable	Frequency (%)	Positives	Percentage Prevalence	P value
Age in Years				
1–10	18 (6.2)	5	27.8	
11–20	42 (14.5)	10	23.8	
21–30	76 (26.2)	47	61.8	
31–40	68 (23.4)	29	42.6	
41+	86 (29.7)	71	82.6	
Total	**290 (100.0)**	**162**	**55.9**	0.013
Gender				
Male	132 (45.5)	70	53.0	
Female	158 (54.5)	92	58.2	
Total	**290 (100.0)**	**162**	**55.9**	0.146

Age - $\chi^2 = 8.64$, $p = 0.013$, Gender - $\chi^2 = 2.11$, $p = 0.146$

Table 1 shows the laboratory investigation of *H. pylori* according to age and gender and it revealed that 5 respondents between age 1 - 10 tested positive, representing the prevalence of 27.8%, 10 respondents between ages 11 - 20 tested positive, representing the prevalence of 23.8%, 47 respondents between ages 21 - 30 tested positive, representing the prevalence of 61.8%, 29 respondents between ages 31 - 40 tested positive, representing the prevalence of 42.6%, 71 respondents between ages 41 and above tested positive, representing the prevalence of 82.6%, while 70 males out of 132 tested positive, representing a prevalence of 53.0%, and 92 females out of 158 tested positive, representing a prevalence of 58.2%. Furthermore, the chi-square results show a statistically significant association between age and *H. pylori* infection ($\chi^2 = 8.64$ and $p = 0.013$ (< 0.05). Although females show higher frequency and percentage of infection, there is no statistically significant association between gender and infection ($\chi^2 = 2.11$ and $p = 0.146$ (> 0.05).

Table 2 Awareness of *H. pylori* Infection

Response	Frequency (%)	No. infected	Percentage prevalence
Awareness			
Aware	168 (57.9)	82	48.8
Not aware	122 (42.1)	80	65.6
Total	**290 (100.0)**	**162**	**55.9**

Awareness: $\chi^2 = 6.75$, $p = 0.009$ (<0.05)

Table 2 shows the awareness level of respondents. More than half respondents 168 (57.9%) were aware while 122 (42.1%) were not aware. The respondents that were aware had 82 positives (48.8%) while 80 positives (65.6%) was recorded among unaware respondents. Chi-square result $\chi^2 = 6.75$ and $p = 0.009$ (< 0.05) indicating a significant association.

Table 3 Knowledge of *H. pylori* Infection Score Distribution of participants

Knowledge Level	Frequency	Percentage
Poor	96	33.1
Moderate	118	40.7
Good	76	26.2
Total	**290**	**100**

Mean Knowledge Score = 3.42

Table 3 shows the knowledge score distribution of respondents. Moderate knowledge recorded the highest frequency (118; 40.7%), poor knowledge followed with (96; 33.1%) and good knowledge was lowest (76; 26.2%). The mean score of 3.42 (above 3.0) indicates an overall moderate level of knowledge.

Discussion

Prevalence of *H. pylori* Infection

The present study recorded an overall *H. pylori* prevalence of 55.9% (162 of 290 respondents) among residents of Sabon Pegi, Yolde Pate community. This figure is broadly consistent with recent community and hospital-based studies conducted elsewhere in Nigeria. Ibrahim *et al*. (2022), in a five-year retrospective seroprevalence study conducted in Gombe, North-eastern Nigeria involving 11,935 patients, reported an overall seroprevalence of 58.9%, a figure that is remarkably close to the 55.9% recorded in the present study, given the geographical proximity of Gombe and Adamawa States. Similarly, Amadi *et al*. (2026), studying outpatients with gastrointestinal disorders in Aba, South-Eastern Nigeria, recorded a prevalence of 51.4%, again comparable to the present finding.

The prevalence obtained in this study is, however, considerably lower than the 72.4% seroprevalence reported by Okoroiwu *et al*. (2022) among individuals with peptic ulcer disease in Owerri, Imo State, a difference plausibly explained by the fact that the Owerri sample was drawn exclusively from symptomatic peptic ulcer patients, a group expected to carry a disproportionately higher infection burden than a general community sample such as the one used in the present study. Conversely, the present prevalence is markedly higher than the 30.7% reported by Smith *et al*. (2022) among symptomatic children in a tertiary hospital in South-Western Nigeria, a discrepancy attributable to the younger age profile of that study population, since *H. pylori* prevalence is well documented to rise with cumulative environmental exposure over the life course. These variations observed could be attributed to sample size, environmental and behavioral factors, diagnostic method among other factors.

The present study found a statistically significant association between age and *H. pylori* infection ($\chi^2 = 8.64$, $p = 0.013$), with prevalence rising steadily from 27.8% among respondents aged 1–10 years to a peak of 82.6% among those aged 41 years and above. This pattern of increasing prevalence with advancing age is well supported in recent literature. Ibrahim *et al*.

(2022) similarly reported a highly significant association between age and seroprevalence in Gombe ($\chi^2 = 20.86$, $p < 0.0001$). Although the specific age band identified as highest-risk differs slightly across studies, the consistent statistical significance of age as a determinant across studies might be influenced by other factors. Ibrahim *et al*. (2022), and Namyalo *et al*. (2021) supports the widely held explanation that cumulative, long-term exposure to environmental and behavioural risk factors, rather than any single age-specific event, drives the progressive rise in infection with age.

In contrast to age, gender was not significantly associated with infection in the present study ($\chi^2 = 2.11$, $p = 0.146$), even though females recorded a marginally higher positivity rate (58.2%) than males (53.0%). This finding mirrors Smith *et al*. (2022) who reported a higher, though non-significant, prevalence among females (23.3%) than males in their Nigerian paediatric sample. The convergence of these independent studies on the absence of a significant gender effect, despite modest directional differences in either sex, suggests that shared household and community exposure pathways, rather than sex-linked biological susceptibility, primarily account for the gender pattern of *H. pylori* transmission.

Awareness and Knowledge of *H. pylori* infections

The present study found that 57.9% of respondents were aware of *H. pylori* infection, while 42.1% were not, and that awareness was significantly associated with infection status ($\chi^2 = 6.75$, $p = 0.009$): 65.6% of unaware respondents tested positive compared with 48.8% of aware respondents. Knowledge scores were predominantly moderate (mean = 3.42), with poor knowledge recorded among 33.1% of respondents. This substantial gap between awareness and actual knowledge depth is consistent with recent findings elsewhere; even among gastroenterology patients already diagnosed with the infection, a knowledge assessment in Peru found persistent gaps in understanding of transmission routes and prevention, prompting the authors to call for structured educational interventions to close this gap.

The pattern observed in the present study, in which infection positivity is markedly higher among unaware respondents, provides direct local evidence for a recommendation echoed at the continental level by Jaka and Smith (2024), who identify community advocacy on *H. pylori* transmission and prevention as a key, low-cost component of reducing the disease burden across Africa, particularly in settings where diagnostic and treatment resources remain constrained. The moderate-to-poor knowledge distribution found among Sabon Pegi, Yolde Pate residents therefore represents not merely a gap in health literacy but a measurable contributor to the elevated infection prevalence documented in this study, reinforcing the case for targeted health education as a feasible intervention within the community.

Conclusion

The study concludes that *Helicobacter pylori* infection is highly prevalent among residents of Sabon Pegi, Yolde Pate community. Age, rather than gender, is a significant demographic determinant of infection. Furthermore, the level of awareness did not translate into strong knowledge, and the gap in awareness and knowledge is significantly linked to higher infection risk.

Recommendations

Based on the findings of this study, the following recommendations are made:

i. Community-based *H. pylori* screening and treatment services should be integrated into the primary healthcare centre serving Sabon Pegi, Yolde Pate, given the high overall prevalence of 55.9% recorded in this study.
ii. Older adults, particularly those aged 41 years and above, should be prioritized for screening and health education, since prevalence rose significantly with age.
iii. Screening and prevention programmes should target all residents irrespective of sex, since gender was not a significant determinant of infection in this study.

iv. Sustained community health education campaigns should be conducted to close the awareness gap identified, since infection was significantly higher among unaware residents.
v. Health education messages should move beyond general awareness to also deepen knowledge of transmission and prevention, since most respondents demonstrated only moderate to poor knowledge despite majority awareness.

Conflict of interest

The authors declare no conflict of interest.

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