



Prevalence of *Helicobacter pylori* Infection in Patients with Dyspeptic Symptoms in Damaturu Metropolitan

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Authors' contributions

This work was carried out in collaboration among all authors. Author GS initiation of the study, design, implementation and write-up, author YI managed the literature searches, author GA wrote the protocol and the first draft of the manuscript. Author SDA performed the statistical analysis and data interpretation. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JAMB/2019/v18i230159

Editor(s):

(1) Dr. Ana Cláudia Correia Coelho, Department of Veterinary Sciences, University of Trás-os-Montes and Alto Douro, Portugal.

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Complete Peer review History: <http://www.sdiarticle3.com/review-history/50894>

Original Research Article

Received 19 June 2019
Accepted 29 August 2019
Published 04 September 2019

ABSTRACT

Aim: To study the prevalence of *Helicobacter pylori* (*H. pylori*) contamination among dyspeptic patients in Damaturu and report on the relationship between *H. pylori* predominance and different age groups in the population under study.

Methods: A sum of 229 volunteers with dyspeptic symptoms (140 females and 89 males; mean period of 43.6 ± 14.2 years) took an interest in the investigation. The status of infection caused by *H. pylori* was determined using serological test. Information was gathered by the utilization of self-managed survey while status of *H. pylori* was resolved dependent on the serological examination

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(fast symptomatic test). The one Step *H. Pylori* serum whole blood rapid test kit was used to detect the presence of IgG antibodies specific to *H. pylori* infections in the participants.

Results: The prevalence of *H. pylori* disease was 51.96%. There was no noteworthy factual relationship between age and contamination rate at p-value (0.1515). In young subjects (under 11 years of age), the *H. pylori* contamination rate was moderately higher (50.00%). The most extreme number of the positive patients was found in the age range of 50-59 years (69.23%) and the base prevalence was in the age range of 10-19 years (50.00%).

The overall prevalence of *H. pylori* contamination between the gender is out of 89 males, 55 were found to be positive to the infection (61.79%), while out of 140 females, 64 were also positive (45.71%). Despite these findings, there was no critical factual relationship between the genders and *H. pylori* infection (p=0.113). The statistical qualities of members at the examination section demonstrate that out of 129 patients having a place with the upper lower class, 85 subjects (66.40%) were found to be positive to *H. pylori*. The lower-middle-class demonstrates that out of 89 subjects 30 were positive (33.70%), while upper-middle outcome demonstrates that out of 12 subjects 4 were confirmed with 33.33%. This demonstrates that subjects living under overcrowded conditions with dense population have a high contamination rate of *H. pylori* and therefore is a noteworthy factual relationship between socio-statistic factors and overall prevalence of *H. Pylori* infection (p = 0.001).

Conclusion: We came to realize the overall prevalence of *H. pylori* contamination in patients with dyspeptic symptoms in Damaturu. The *H. pylori* contamination might be a hazard factor for peptic ulcer and more grounded gastritis.

Keywords: *Helicobacter pylori*; dyspepsia; occupation; sanitary habit; socio-economic status.

1. INTRODUCTION

It has been known for over 100 years that microscopic organisms are available in human stomach [1]. These microscopic organisms, be that as it may, were believed to be contaminants from processed nourishment as opposed to genuine colonizers. Barry Marshall and Robin Warren portrayed the effective disengagement and culture of a winding bacterial species, around 29 years back, later known as *Helicobacter pylori* [2], from the human stomach. Marshall [3] and Moris [4] felt free to lead the self-ingestion examination and later analysis with volunteers [5] demonstrated that these bacteria can colonize the human stomach, in this manner instigating irritation of the gastric mucosa. These underlying information emphatically animated further research which demonstrated that gastric colonization with *Helicobacter pylori* can prompt an assortment of upper gastrointestinal disorders, for example, perpetual gastritis, peptic ulcer illness, gastric mucosa-associated lymphoid tissue (MALT), lymphoma and gastric malignancy.

The genus *Helicobacter* has place with subdivision of the Proteobacteria, order *Campylobacteriales*, family *Helicobacteriaceae*. *H. pylori* is a gram-negative bacterium estimating about 2 to 4 μm in length and 0.5 to 1 μm in width. Although usually spiral-shaped, the bacterium can appear as rod while the coccoid

shapes appear after prolonged *in-vitro* culture or antibiotic treatment [6]. These coccoid cannot be refined *in vitro* and are thought to represent dead cells [6]. It has been recommended that coccoid structures may represent a practical non-culturable state [7]. The organism has 2 to 6 unipolar, sheathed flagella of around 3 μm in long which regularly conveys an unmistakable bulb toward its end [8]. The flagella present motility and permit quick development in gooey arrangement, for example, the mucosa overlying the gastric epithelial cell [8].

The essential consequence which happens after colonization with *H. pylori* is perpetual dynamic gastritis. The condition can be seen in all *H. pylori*-positive subjects. The intra-gastric circulation and intensity of this endless prococative procedure rely upon an assortment of components. For example, qualities of the colonizing strain, host genetics, insusceptible reaction, diet and degree of acid production. *H. pylori*-induced ulcer infection, gastric malignant growth, lymphoma are all together complications of this incessant irritation.

Helicobacter pylori is found down the middle the number of inhabitants on the planet. Its prevalence indicates enormous topographical varieties. In different creating nations over 80% of the populace is *Helicobacter pylori*-positive even at a youthful age [9]. The prevalence in industrialized nations by and large stays under

40% and is significantly lower in youngsters and teenagers than in grown-up. The predominance of *Helicobacter pylori* relates with financial status, specifically in connection to living conditions at young age [10]. While the predominance of the disease in creating nations remains generally consistent. The principal explanation behind this contrast is the financial status that exists between the two populations.

The transmission of *H. pylori* is to a greater extent by oral-fecal route. This is due to the absence of good sanitation, safe drinking water, essential cleanliness, bad eating habits and overcrowding. They all play a certain role in predominance of the contamination.

Various examinations have attempted to utilize the rate and prevalence of *H. pylori* disease, its method of transmission, and any risk factor adding to the advancement of the contamination. The yearly occurrence reports in 3 grown-up adults in creating nations were between 0.3%-0.5% for a considerable length of time [11]. Prevalence evaluations change extraordinarily relying upon the area under investigation and attributes of the populace. By and large, predominance increases with age as well as low financial status during youthful age.

New findings have likewise been distributed from African nations. Such include studies from Morocco and Ethiopia that showed a prevalence of *H. pylori* contamination of 75.5% and 65.7%, respectively. The two investigations additionally found a huge increment with age [12,13]. A review from Nigeria announced higher qualities: the prevalence was 80% when conducted with histology and was considerably higher, reaching 93.6%, when serology was also conducted [14].

Helicobacter pylori play a vital role as the etiologic agent in the pathogenesis of interminable gastritis, peptic ulcer illness, gastric adenocarcinoma, and mucosa-associated lymphoid tissue lymphoma. In any case, the vast majority of the tainted subjects stay asymptomatic.

The examination intends to investigate *Helicobacter pylori* infection in patients with different gastrointestinal manifestations attending Yobe State Specialist Hospital (YSSH). In the overview, we determined the disease rate of *H. pylori* in Damaturu by Rapid Determine Test (RDT), while the status of gastric mucosa was examined based on serology.

2. MATERIALS AND METHODS

2.1 Study Population

A total number of 229 patients of both genders with dyspeptic indications (140 females and 89 males; age range 10 to 80 years of age) constituted the study subjects in 2018. Information was gathered by utilization of self-regulated surveys while the status of *H. pylori* was determined using serological test (rapid diagnostic test). The one Step *H. Pylori* serum whole blood rapid test kit was used to detect the presence of IgG antibodies specific to *H. pylori* infections in the participants.

Patients who had taken proton inhibitor or antibiotics for a month preceding the investigation were excluded.

2.2 Serological examination of *H. pylori* Infection

The test instrument and reagents were brought to the room temperature. The test instrument was laid on a level dry surface and around 2 drops of the readied test were added to the sample well. The reading was taken after 10mins with two-shading groups, one at a test band another at the control band which demonstrate a positive test. The negative test outcome indicated just a solitary one shading band.

2.3 Statistical Analysis

The data was analysed using Statistical Package for Social Science (SPSS) version 20 (SPSS Inc., Chicago, IL, United States). Differences in socio-financial aspects in each gathering were investigated to look at the relationship of factors, for example, age, sex, for *H. pylori* infection using Pearson relationship correlation. P-value < 0.05 was considered to be significant.

3. RESULTS

3.1 Prevalence of *H. pylori* Contamination in Damaturu

Out of 229 patients, 119 were *H. pylori*-positive to immuno-card STAT HPSA test, giving an emergency clinic based predominance of 51.96% (Table 1). Out of 89 males, 55 were positive for *H. pylori* (61.79%), while out of 140 females, 64 were positive (45.71%). The predominance was evaluated in various age

groups (Table 3). The highest number of positive patients was found in the age ranges of 50-59 years (69.23%) and 80-89 years with 100% prevalence, while the lowest was found in the age range of 10-19 years (50.00%). For financial status, out of 128 patients that have a place with upper lower class, 85 subjects were certain for *Helicobacter pylori* giving a level of 66.40%. For lower middle class, out of 89 subjects 30 were positive for *H. pylori* giving 33.70%. Out of 12 subjects within the upper-middle-class, 4 were positive giving a level of 33.3% (Table 4).

Table 1. Prevalence of *Helicobacter pylori*

Total subject	Positive	%
229	119	51.96

Table 2. Number of *Helicobacter pylori* positive patients according to sex

Sex	Total subject	Positive	%
Male	89	55	61.79
Female	140	64	45.71

The statistical attributes of members at the investigation section demonstrate that out of 128 patients in the upper lower class, 85 subjects at 66.40% are positive. In the lower middle class, out of 89 subjects 30 were positive with 33.70%. While for the upper-middle class, out of 12

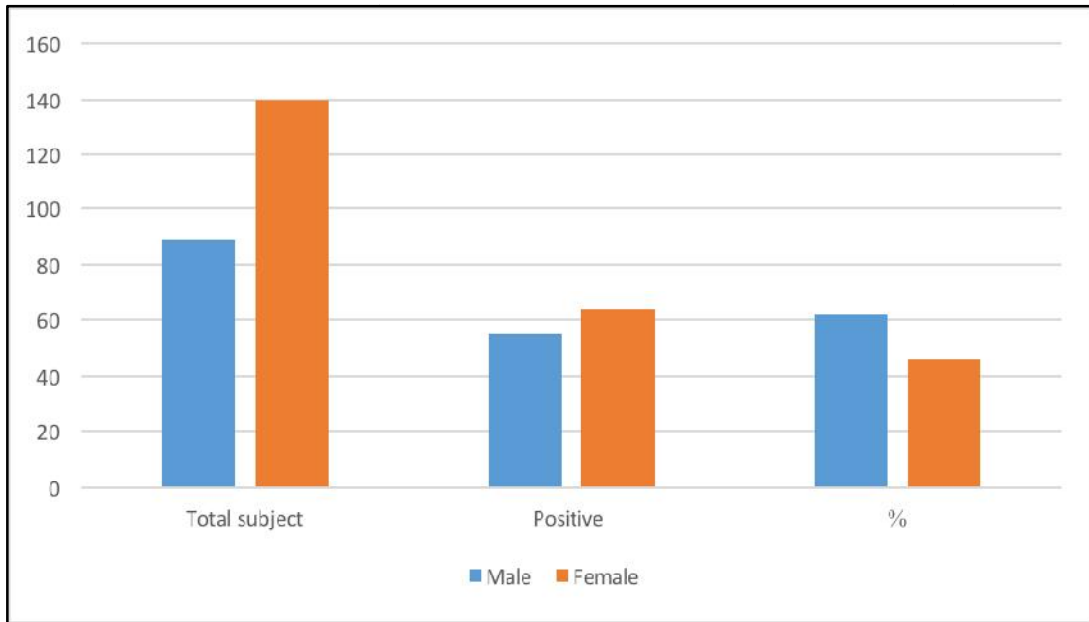
subjects 4 were positive with 33.33%. This demonstrates that subjects within the upper lower class have a higher rate of *H. pylori* infection and therefore means that there is critical factual relationship between socio-economic status and prevalence of contamination with *H. pylori* ($p = 0.001$).

Table 3. Numbers of *Helicobacter pylori* positive patients according to age group

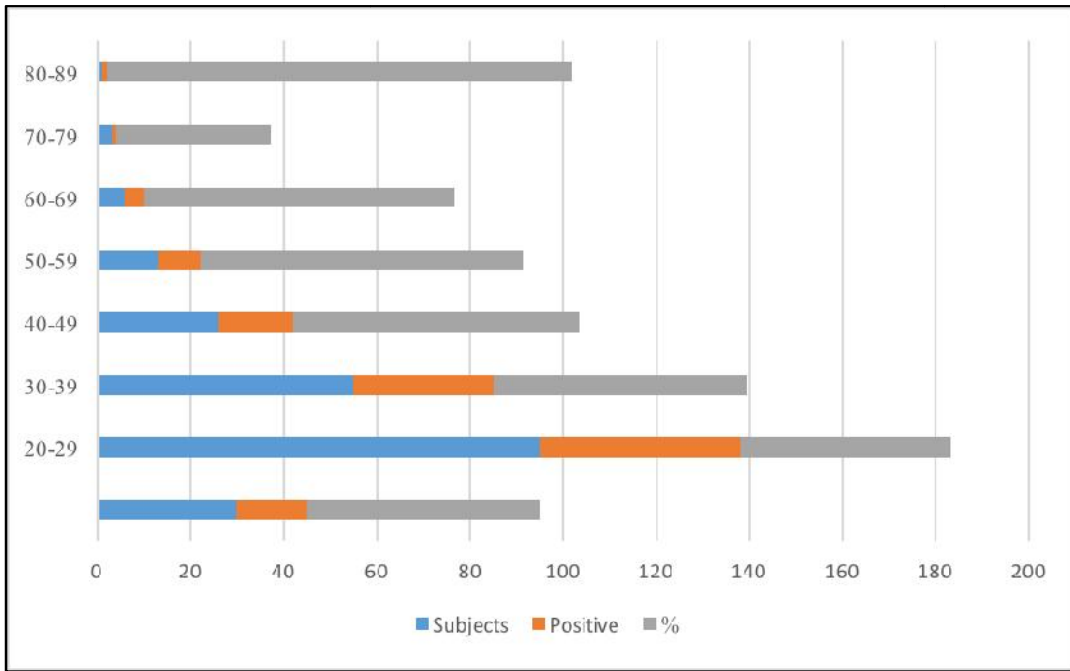
Age group	Subjects	Positive	%
10-19	30	15	50.00
20-29	95	43	45.26
30-39	55	30	54.54
40-49	26	16	61.53
50-59	13	9	69.23
60-69	6	4	66.66
70-79	3	1	33.33
80-89	1	1	100

Table 4. Number of *Helicobacter pylori* positive patients according to socio-economic status

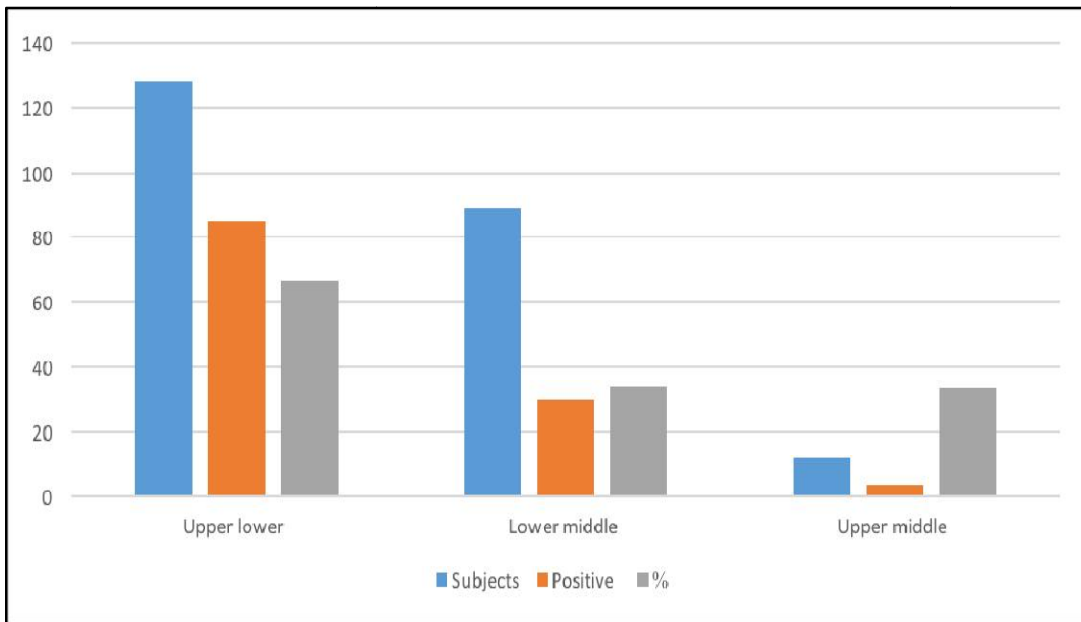
Socio-economics	Subjects	Positive	%
Upper lower	128	85	66.40
Lower middle	89	30	33.70
Upper middle	12	4	33.33



Graph 1. Bar chart showing *Helicobacter pylori* positive patients according to sex (Graph of Table 2)



Graph 2. Bar chart showing number of *Helicobacter pylori* positive patients according to age group (Graph of Table 3)



Graph 3. Bar chart showing number of *Helicobacter pylori* positive patients according to socio-economic status (Graph of Table 4)

4. DISCUSSION

The predominance of *H. pylori* contamination differs around the world. However, higher

colonization rates have been found in developing nations in contrast to developed nations [15]. Our investigation was aimed at finding the predominance of *H. pylori* among dyspeptic

patients attending YSSH. The general prevalence of *H. pylori* among 229 dyspeptic subjects was 51.96%. This is in agreement with what Chandigarh announced that 254 people were screened for *H. pylori* and 56.7% of the asymptomatic individuals were confirmed to be positive [16].

In the present study among *H. pylori*-positive patients, 55 (61.79%) were males and 64 (45.7%) were females. There were shifting reports of higher prevalence of *H. pylori* in either males or females, with no critical relationship between the infectivity and gender [17]. The finding is similar to that seen in a study by Rajesh Kumal et al. [18], which showed higher *H. pylori* positive patients in males with 64.13% than in females with 35.86%.

In our study, the age range that indicates the most predominance is 50-59 years and the least is the age range of 10-19 years with 69.23% and 46.6% respectively. The higher prevalence of 69.23% gotten from this examination was likely the same with that obtained in Morocco by Benajah et al. [13] and in Ethiopia by Mathewos et al. [12] with predominance of *H. pylori* contamination rate of 75.5% and 65.7% of patients of the ages between 60-61 years respectively. Higher rates of peptic ulcer is somewhere in the range of 55 and 65 years old and this clarifies that elderly people are at higher risk of *H. pylori* contamination [12,13]. This is in contrast to an examination by De Giacomo et al [19] who expressed that *H. pylori* is quite often procured at youthful age (ordinarily before the age of 10 years).

The prevalence of *H. pylori* in our examination was observed to be higher in people with lower financial status, with 62% in the upper-lower class and 37% in the lower middle class. This is in consonance with the past report which exhibited that prevalence of *H. pylori* relates conversely with financial status and life style of families having poor cleanliness, poor sanitation rehearses, and stuffing [20,21,22]. A strong relationship between *H. pylori* infection and financial status, destitution or social hardship has been accounted for reliably for a long time by Bauer et al. [23], Sitas et al. [24] and Goh et al. [25]. Increased prevalence rates in some Eastern and Southern European investigations have been related already with higher risk of contamination among the less privileged groups in these nations, with consideration of individuals staying in slums [26,27].

These dangers related with people's life styles and natural conditions, including stuffed living conditions, sharing of bed and poor cleanliness, with strong proof that *H. pylori* for the most part colonized by young kids is acquired from guardians or kin, or through unhygienic water supplies [25,28,29]. Generally, overcrowded living conditions in growing urban communities during industrial development over the most recent couple of hundreds of years prompted the fact that there are increases in *H. pylori* [29].

5. CONCLUSION

In developing nations, *H. pylori* contamination is of great significance. The overall prevalence of 56% and 62% recorded in our examination among dyspeptic subjects with low financial status implies that general wellbeing intercessions are required, such as basic personal cleanliness, improvement of people's life styles and health education.

6. RECOMMENDATION

Defiled nourishment arranged under unhygienic conditions might be the likely component for transmission of the ailments [22]. Hygienic water supply may help with reducing the spread of the infection as revealed by past investigations that water from running metropolitan, underground sources just as hand-burrowed wells have been the repositories of *H pylori*.

CONSENT

Composed educated written and informed consent was preserved by the author from all members.

ETHICAL APPROVAL

Ethical approval was affirmed by the Ethics and Research Committee of Yobe State Ministry of Health preceding the investigation.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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