

Five Years Trend of *Helicobacter Pylori* Infection Among Dyspeptic Patients in Asella Teaching and Referral Hospital, Arsi University, Ethiopia

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To cite this article:

Million Getachew Mesfun, Shimels Teshome, Desalegn Alemu. Five Years Trend of *Helicobacter Pylori* Infection Among Dyspeptic Patients in Asella Teaching and Referral Hospital, Arsi University, Ethiopia. *Science Journal of Clinical Medicine*. Vol. 7, No. 5, 2018, pp. 37-40.

doi: 10.11648/j.sjcm.20180705.11

Received: October 9, 2018; **Accepted:** November 29, 2018; **Published:** December 18, 2018

Abstract: Infectious diseases such as *H. pylori* infection are major public health problems in Ethiopia. Even though there are a considerably large number of dyspeptic patients in Asella teaching and referral hospital, there is no study done to assess the trend of *H. pylori* infection among dyspeptic patients. The objective of this study was to assess a five years trend of *H. pylori* infection among dyspeptic patients in Asella teaching and referral hospital. A retrospective cross-sectional study design was used to assess the trend of *H. pylori* infection from January 1, 2013 until October 30, 2017 among dyspeptic patients by counting stool antigen test results from the laboratory log book. It was found that a total of 9,493 dyspeptic patients with the mean age of 33.9 (SD+15.1) years were test for *H. pylori* infection in the last five years in Asella teaching and referral hospital. The total prevalence of *H. pylori* was 1,444 (15.2%) in which 863 (59.8%) of them were females and 581 (40.2%) were males. There was a fluctuating trend of *H. pylori* with annual total cases of *H. pylori* ranged from 19.3% in 2017 to 6.1% in 2015. The study showed that there was low prevalence of *H. pylori* infection among dyspeptic patients in Asella teaching and referral hospital, Ethiopia. The low prevalence reported from this study could be also due to the quality of the test kits, therefore, there is a need to validate the test kits used by the hospital laboratory.

Keywords: *H. pylori*, Trend, Dyspeptic Patients, Asella, Ethiopia

1. Background

Helicobacter pylori (*H. pylori*) is a spiral shaped gram negative bacillus. The ecological niche of *H. pylori* is the stomach where the organism establishes long term colonization of the gastric mucosa [1]. Chronic *H. pylori* infection is associated with chronic gastritis, peptic ulcer disease, Mucosal Associated Lymphoid Tissue (MALT) lymphoma and gastric adenocarcinoma. *H. pylori* is also classified as a class 1 carcinogen because of its causal relationship to gastric adenocarcinoma, one of the world's deadliest cancers [2].

More than half of world's population is chronically infected with *H. pylori*, with the highest prevalence in developing countries, reaching up to 90% in some

populations. *H. pylori* infection is strongly associated with poor socioeconomic standard and is considered as poverty-related disease. The acquisition of *H. pylori* infection occurs mainly in childhood and persists lifelong in the absence of effective eradication treatment [3]. In Gambia, 84% of children were colonized by 30 months of age [4]. The exact route of transmission is not clear, but person-to-person transmission is likely to be a combination of fecal-oral and oral-oral routes. *H. pylori* strains are usually isolated from gastric biopsy tissue, but it is also possible for the bacterium to be isolated from saliva, gastric reflux fluid, and vomits [5].

Infectious diseases such as *H. pylori* infection are major public health problems in Ethiopia and dyspepsia is one of the commonest complaints in any Ethiopian hospital outpatient department. The overall sero-prevalence of *H.*

pylori infection in adult dyspeptic patients in Ethiopia ranges from 52.4% [6] to 83.3% [7]. As the number of gastrointestinal complaints is increasing there is a need to systematically assess the trend of the disease and plan better strategies to at least minimize the incidence rate of the disease among the community.

There was no data about the prevalence and trend of *H. pylori* infection in the study area. Therefore, the aim of this study was to assess the trend of *H. pylori* infection in the last five years among dyspeptic patients in Asella teaching and referral hospital.

2. Methods

2.1. Study Design and Area

This study was conducted in Asella teaching and referral hospital which is located at 175 km to the south east of the capital city, Addis Ababa. The hospital provides different inpatient and outpatient services to more than 3 million people in the region. A retrospective cross-sectional study design was used to assess the trend of *H. pylori* infection among dyspeptic patients in the hospital.

2.2. Study Population and Sample Size

Data of all dyspeptic patients who were tested for *H. pylori* stool antigen test from January 1, 2013 until October 30, 2017 were collected. Laboratory data which were not fully documented were excluded.

2.3. Laboratory Test

H. pylori test was done in Asella teaching and referral hospital laboratory based on the detection of *H. pylori* derived antigens from stool sample using different rapid tests. Wondfo one step *H.pylori* feces Test (Guangzhou Wondfo Biotech Co., Ltd. China) was commonly used in the hospital laboratory in the last five years.

2.4. Data Collection and Statistical Analysis

Data including *H. pylori* test result, age, sex and the department which orders the *H. pylori* test were collected from the log book of the parasitology laboratory. Collected data was entered in SPSS version 20 for analysis. Prevalence of *H. pylori* infection among different age groups and sex was analyzed by simple frequency distribution. Chi-square analysis was used to identify significant predictors. A *P*-value of < 0.05 was considered as statistically significant.

2.5. Ethical Consideration

Ethical clearance was obtained from Arsi University, college of health science ethical review committee and data was used only for this study purpose.

3. Results

3.1. Demographic Characteristics and Prevalence of *H. Pylori* Among the Study Participants

A total of 9,493 dyspeptic patients were test for *H. pylori* infection in the last five years in Asella teaching and referral hospital. Among them, 5,956 (62.7%) were females and 3,537 (37.3%) were males. The mean age of the study subjects was 33.9 (SD \pm 15.1) years with age ranging from 1 to 96 years. More than half of those dyspeptic patients 5,151 (54.3%) were young adults under 30 years (Table 1).

3.2. Prevalence of *H. Pylori* Infection Among Dyspeptic Patients

The total prevalence of *H. pylori* was 15.2% (n=1,444) in which 59.8% (n=863) of them were females and 40.2% (n=581) were males. There was higher *H. pylori* prevalence among male patients (16.4%) than female patients (14.5%) and this difference in *H. pylori* prevalence between male and female patients were statistically significant (*p* = 0.012). Highest prevalence of *H. pylori* was recorded among dyspeptic patients with age less than or equal to 20 years (18.0%) and lowest prevalence of *H. pylori* infection was recorded among patients older than 60 years (10.9%) (Table 1).

Table 1. Prevalence of *H. pylori* infection among dyspeptic patients in Asella teaching and referral Hospital, Ethiopia, 2017.

Variable	<i>H. pylori</i>		P-Value
	Positive N (%)	Negative N (%)	
Sex			
Female	863(14.5)	5093(85.5)	0.012
Male	581(16.4)	2956(83.6)	
Age group			
<=20	338(18.0)	1540(82.0)	<0.001
21-30	482(14.7)	2791(85.3)	
31-40	270(14.9)	1546(85.1)	
41-50	193(16.2)	1002(83.8)	
51-60	99(13.0)	661(87.0)	
>60	62(10.9)	509(89.1)	
Year			
2013	133(10.6)	1121(89.4)	<0.001
2014	128(11.1)	1023(88.9)	
2015	37(6.1)	574(93.9)	
2016	634(16.6)	3184(83.4)	
2017	512(19.3)	2147(80.7)	
Department of examination			
Emergency OPD	332(18.9)	1426(81.1)	<0.001
Gyn OPD	10(27.0)	27(73.0)	
Medical OPD	986(13.6)	6258(86.4)	
ART clinic	57(30.8)	128(69.2)	
MCH	3(75.0)	1(25.0)	
Pediatric ward	7(26.9)	19(73.1)	
Medical ward	38(20.7)	146(79.3)	
Gyn ward	11(20.0)	44(80.0)	

3.3. Five Years Trend of Helicobacter Pylori Infection Among Dyspeptic Patients

There was a fluctuating trend of *H. pylori* infection in the last five years, with annual total cases of *H. pylori* ranged from 6.1% in 2015 to 19.3% in 2017. There was statistically

significant inter-annual variation of *H. pylori* occurrence in the study area ($p < 0.001$). There was a significant incline in the prevalence of *H. pylori* in 2017 compared to 2013 ($p < 0.012$). There was successive increase in prevalence from 2013 onwards with an exceptional decline in 2015 (Figure 1).

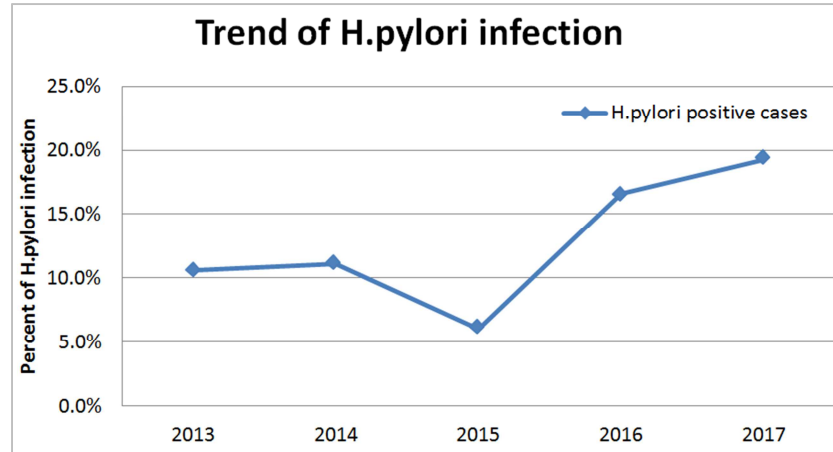


Figure 1. Trend of *H. pylori* from 2013 to 2017 among dyspeptic patients in Asella teaching and referral hospital, Arsi University, Ethiopia.

In each year the prevalence of *H. pylori* was higher among male than female patients (Figure 2)

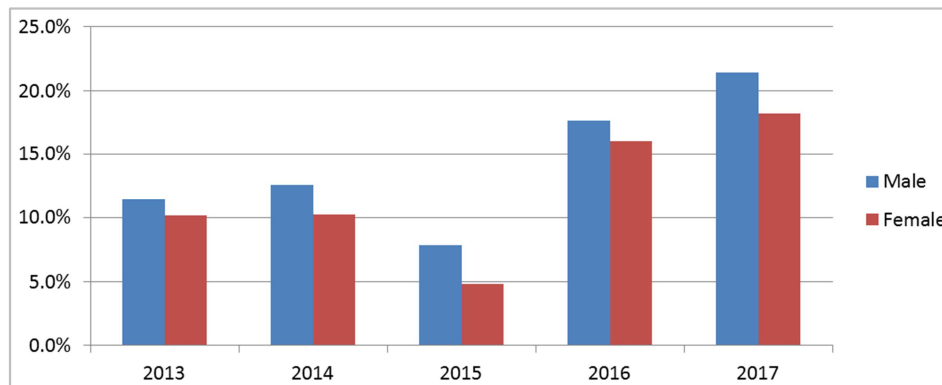


Figure 2. Distribution of *H. pylori* infection among male and female dyspeptic patients from 2013 to 2017 in Asella teaching and referral hospital, Arsi University, Ethiopia.

4. Discussion

From 2013 – 2017, a total of 9,493 dyspeptic patients were tested for *H. pylori* infection in Asella teaching and referral hospital using stool antigen test. This retrospective data showed that only 15.2% of the dyspeptic patients were positive for *H. pylori* infection. This prevalence was very low in contrast to previous sero-prevalence reports from various hospitals [8-12]. It was also lower than the report from Tikur Anbassa University Hospital, where the prevalence of *H. pylori* among adult patients with dyspepsia using stool-antigen tests was 81% [13]. This difference could be due to a lack of sensitivity in the test kit used by our hospital laboratory.

Many studies showed that the prevalence of *H. pylori* was higher among older age groups [8, 14, 15] and this was different to the current study result in which prevalence of *H.*

pylori infection was higher among young age participants ($p < 0.001$). *H. pylori* infection was more frequent among male participants and this finding was similar to the finding from Korea [14], Gondar, Ethiopia [8], and Bahr Dar, Ethiopia [10].

The majority of the *H. pylori* positive patients 1,388 (96.1%) were from the outpatient department and only 56 (3.9%) were admitted patients. It has been reported that the prevalence of *H. pylori* related complications are lower in developing countries than developed countries. Huge number of patients carries the bacteria but don't experience its consequences in developing countries [16].

There was an annual fluctuation of *H. pylori* prevalence with minimum (6.1%) and maximum (19.3%) prevalence in 2015 and 2017, respectively. There was statistically significant incline in the prevalence of *H. pylori* from 2015 to 2017 ($p = 0.011$). This was a different finding compared to other similar studies done in Ethiopia [10, 13].

5. Conclusion

Compared to the national report, there was very low prevalence of *H. pylori* infection among dyspeptic patients in Asella teaching and referral hospital, Ethiopia. The low prevalence reported from this study could be due to the technical errors or low quality of the test kits; therefore, there is a need to validate the test kits used by the hospital laboratory.

Acknowledgements

The authors would like to thank all the laboratory staff at the Asella teaching and referral Hospital for their invaluable support during data collection.

Author Contributions

All authors listed, have made substantial, direct and intellectual contribution to the work, and approved it for publication.

Conflict of Interest

The authors declare that they have no competing interests.

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