Original Research Article

Frequency of H. pylori infection among Patients with Gastrointestinal Symptoms Attending Somali Sudanese Specialized Hospital (SSSH), Mogadishu, Somalia

ABSTRACT

Background: *Helicobacter pylori* is a human-specific pathogen, which leads to gastric pathologies including gastric cancer. Fifty percent of the world's population from 62 countries is infected with H. pylori infection. making it the most widespread infection in humans. The aim of the study was to determine the frequency of H.pylori infection among patients with gastrointestinal symptoms.

Materials and methods: This study was descriptive cross-sectional Hospital-based study conducted at Somali Sudanese Specialized Hospital (SSSH), Mogadishu, Somalia during the period of December 2022 to March 2023. a total of 1009 subjects were included in the study. Fresh stool samples were collected for antigen detection. The test was done in the ICT of *H. pylori* stool antigen detection (Intec, China; catalog number ITP10003-DS50). The data was gathered using per-designed structural questionnaire and the SPSS 26.0 statistical software (SPSS Inc., USA) was used for statistical analysis.

Results: The age of the study population ranges from 5 months to 62 years with a mean age of 34 ± 27.5 years. 57.4% of them were female patients, where 42.6% were male patients. The study showed no significant correlation between gender and frequency of H.pylori infection with P-value of 0.137. according to the frequency of H.pylori infection among the patients with gastrointestinal symptoms; 44.8% of them had H.pylori infection. Regarding to frequency of H.pylori infection in the recent months, the most frequent period of prevalence was in February (56.5%), followed by January (51.1%), followed by December (43.8%) where the least frequent was in March (26.9%) which showed significant correlation between prevalence period and H.pylori infection frequency with P-value of 0.000.

Conclusion: This study concluded a high frequency of H.pylori infection among patients with gastrointestinal symptoms.

Keywords: H.pylori infecion, ICT, Stool antigen test , gastrointestinal system, Somalia

INTRODUCTION

Helicobacter pylori is a spiral-shaped and flagellated Gram-negative bacterium,and it is a human-specific pathogen which colonizes specifically the human stomach and leads to gastric problems. It is a highly unique bacterium considered as a carcinogenic agent. *H. pylori* remains a major human health problem, responsible for ~90% of the gastric cancer cases. In 1982, Barry Marshall and Robin Warren, have recognized that H.pylori is the most common cause of chronic gastritis and peptic ulcer disease [(1,2)].

Fifty percent of the world's population from 62 countries is infected with H. pylori infection, making it the most widespread infection in humans, which approximately estimated about 4.4 billion cases of H. pylori infection worldwide in 2015 with a wide variation in the prevalence of the disease between regions and countries. In Africa and developing countries, it is estimated that the highest prevalence of H.pylori infection to be around 80% [(3,4)].

A study done by Getachew Alebie in Jigjiga city, Ethiopia Jigjiga, Somali Regional State of Ethiopia in 2016 about the prevalence of H.pylori infection in Jigjiga University reported high prevalence of H.pylori infection among gastritis students [(5)].

There is lack of data about the prevalence of H.pylori infection in Somalia and getting basic data about this disease is important for Health institutions to reduce the burden of the disease. Regarding to this, the present study was designed to determine the frequency of H.pylori infection among patients complaining from gastrointestinal symptoms in Somalia.

MATERIALS AND METHODS

This study was descriptive cross-sectional Hospital-based study conducted at Somali Sudanese Specialized Hospital (SSSH), Mogadishu, Somalia during the period of December 2022 to March 2023. a total of 1009 subjects were included in this study, Patients with Gastrointestinal Symptoms Attending Somali Sudanese Specialized hospital (SSSH) during the aforementioned

period were included in the study, while patients who had no symptoms of H. pylori infection and any patient who refused to give consent were excluded. Fresh stool samples were collected into spoon-cover and outer-labeled stool container for antigen detection. Using a wood stick, a small portion of the stool sample was transferred into buffer, incubated for 2 minutes and then two to three drops of the mixture were poured in the hole of the ICT of *H. pylori* stool antigen detection (Intec, China; catalog number ITP10003-DS50). The color migrated from the well containing the tested sample in the ICT device. The presence of two bands (test band (T) and control band (C)) within the result window, no matter which band appeared first, indicated a positive result. The data was gathered using per-designed structural questionnaire and the SPSS 26.0 statistical software (SPSS Inc., USA) was used for statistical analysis. Finally, the study was licensed by the ethical committee of Somali Sudanese Specialized Hospital (SSSH).

RESULTS

A Total of 1009 samples were collected from the patients with gastrointestinal symptoms, Their age ranged from 5 months up to 62 years with a mean age of 34 ±27.5 years. 57.4% of the study population were female patients, where 42.6% were male patients. The study showed no significant correlation between demographic data (Age and Gender) and frequency of H.pylori infection with P-value of 0.50 and 0.137 respectively. Regarding to the frequency of H.pylori infection among these patients with gastrointestinal symptoms attending Somali Sudanese Specialized Hospital; 44.8% of them had H.pylori infection. In the last three months, the most frequent period of H.pylori infection was in February (56.5%), followed by January (51.1%), followed by December (43.8%) where the least frequent was in March (26.9%) which showed significant correlation between prevalence period and H.pylori infection frequency with P-value of 0.000. The results were shown in tables (1,2,3,4,5,6).

Table 1: Distribution of gender in the study population

Gender	Frequency	Percent	Valid Percent	Cumulative Percent
Female	579	57.4	57.4	57.4
Male	430	42.6	42.6	100.0

Total	1009	100.0	100.0	

Table 2: Distribution of H.pylori infection in the study population

H.pylori infection	Frequency	Percent	Valid Percent	Cumulative Percent
Positive	452	44.8	44.8	44.8
Negative	557	55.2	55.2	100.0
Total	1009	100.0	100.0	

Table 3: Frequency of H.pylori infection in the recent months

Duration period	Frequency	Percent	Valid Percent	Cumulative Percent
March 2023	261	25.9	25.9	25.9
February 2023	232	23.0	23.0	48.9
January 2023	235	23.3	23.3	72.2
December 2022	281	27.8	27.8	100.0
Total	1009	100.0	100.0	

Table 4: Correlation between age and frequency of H.pylori infection

H.pylori infection	N	Mean Age	Std. Deviation	P-value
Positive	452	31.49	17.13	0.50
Negative	557	33.73	19.26	

Table 5: Correlation between gender and frequency of H.pylori infection

			H.pylori infection		Total	P=value
			Positive	Negative		
Gender	Female	Count	271	308	579	0.137
		% within Gender	46.8%	53.2%	100.0%	
	Male	Count	181	249	430	
		% within Gender	42.1%	57.9%	100.0%	
Total		Count	452	557	1009	
		% within Gender	44.8%	55.2%	100.0%	

Table 6: Correlation between Duration period and frequency of H.pylori infection

			H.pylori infection		Total	P-value
			Positive	Negative		
Duration period	March 2023	Count	78	183	261	0.000
		% within Duration period	29.9%	70.1%	100.0 %	
	February 2023	Count	131	101	232	
		% within Duration period	56.5%	43.5%	100.0 %	
	January 2023	Count	120	115	235	
		% within Duration period	51.1%	48.9%	100.0 %	

	December 2022	**Count**	123	158	281	
		% within Duration period	43.8%	56.2%	100.0 %	
Total		**Count**	452	557	1009	
		% within Duration period	44.8%	55.2%	100.0 %	

DISCUSSION

Helicobacter pylori is a human-specific pathogen, which leads to gastric pathologies including gastric cancer. Fifty percent of the world's population from 62 countries is infected with H. pylori infection. making it the most widespread infection in humans. The present study was a descriptive cross-sectional hospital-based study conducted at Somali Sudanese specialized hospital, Mogadishu, Somalia, for the determination of frequency of H.pylori infection among patients with gastrointestinal symptoms.

A Total of 1009 samples were collected from the patients with gastrointestinal symptoms,Their age ranged from 5 months up to 62 years with a mean age of 34 ±27.5 years. 57.4% of the study population were female patients, where 42.6% were male patients. The study showed no significant correlation between demographic data (age and gender) and frequency of H.pylori infection with P-value of 0.5 and 0.137 respectively. these findings disagree with a study done by Kanbay, M., et al who reported that the results of there study demonstrated that *H. pylori* infection can be related to age, gender.[6]

Regarding to the frequency of H.pylori infection among the patients with gastrointestinal symptoms attending Somali Sudanese Specialized Hospital; 44.8% of them had H.pylori infection, The prevalence of H. pylori infection in this study was lower when compared with results reported by Maria P. C., et al, and Bakka et al which show high positive percentage of H.pylori infection in Latin America and the Caribbean populations (adults 69.26%) and Libya (94%), that might be the reason of demographic differentiation as well as characteristics of the populations.[7-8] But the finding of this study was similar with a study done by Mohammed A.I.A., et al in Western Sudan which found that H.pylori positive was 45.8%, [9] also the

frequency of H.pylori infection in this study was similar with results reported by Shuai Ren in mainland china which found that 44.2% (95%CI: 43.0–45.5%) of the population had H.pylori infection.[10]

CONCLUSION

This study concluded high frequency of H.pylori infection among patients with gastrointestinal symptoms attending Somali Sudanese Specialized Hospital, Mogadishu, Somalia.

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