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OCCURRENCE, ASSOCIATED RISK FACTORS AND NON-PHARMACOLOGICAL HOME MANAGEMENT OF HELICOBACTER PYLORI GASTRITIS AMONG PATIENT ATTENDING THE EHFA FOUNDATION FOUMBOT

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ABSTRACT

Helicobacter pylori gastritis (*H. pylori*) gastritis is a chronic bacterial infection that affects the stomach lining causing inflammation and damages to the gastric mucosa. Globally, Helicobacter pylori gastritis is a significant global health concern, affecting approximately 4.4 billion people worldwide. The occurrence of *H. pylori* infection varies widely across different regions and countries, with the highest rate found in developing counties. The objective of this study was to assess the occurrence, associated risk factors and none pharmacological home management of *H. pylori* gastritis in patients attending EHFA Foundation Foumbot. In this study, an institutional based cross sectional study design was used in which freely consented participants were sampled through convenience sampling. The data collection tool was a well-structured questionnaire divided into 4 sections according to the specific objectives of the study. Statistical tests such as the Chi square test and binary regression analyses were used to analyse for inferential statistics using SPSS version 21. Statistical significance was considered if p value was less than or equal to 0.05. This study involving 105 participants found a 40.0% overall occurrence of *Helicobacter pylori* infection, with all 42 clinically suspected cases testing positive. Socio-demographic characteristics such as age (p = 0.83), gender (p = 0.42), education level (p = 0.21), and place of residence showed no significant association with infection. However, significant risk factors included a history of previous infection (p = 0.004), frequent NSAID use (p = 0.03), and self-reported stress (p = 0.001). Binary logistic regression confirmed history of *H. pylori* (p = 0.002, OR = 0.203) and stress (p = 0.002, OR = 0.185) as strong predictors. Non-pharmacological management mostly involved reducing NSAIDs (64.8%), alcohol (58.1%), and caffeine (53.3%). Water intake showed a statistically significant inverse association with *H. pylori* infection (χ^2 = 10.07, p = 0.018), as infection prevalence decreased from 23.8% among those drinking 1–2L/day to just 3.8% among those consuming 5–6L/day. It is recommended that individuals reduce stress, limit NSAID use, and increase daily water intake to lower the risk of *Helicobacter pylori* infection.

KEYWORDS: Occurrence, associated risk factors, none pharmacological, home management *H. pylori* gastritis, EHFA Foundation Foumbot.

BACKGROUND

Helicobacter pylori (H. pylori) gastritis is a chronic bacterial infection of the stomach lining that induces inflammation and damages the gastric mucosa, contributing significantly to peptic ulcers, gastritis, and gastric cancer.[1,2] *H. pylori* is a spiral, gram-negative rod-shaped bacterium that colonizes the stomach and is highly prevalent worldwide. Globally, nearly half of the population is infected, with prevalence declining from 52.6% before 1990 to 43.9% in adults between 2015 and 2022, though rates in children and adolescents remain high at 35.1%.[3] The infection disproportionately affects developing countries, where socioeconomic and hygiene conditions facilitate transmission.[4]

In Africa, H. pylori infection is endemic, with prevalence rates averaging 70%, often acquired during childhood.[5] Country-specific prevalence varies, such as 70.8% in Nigeria, 69.4% in South America, and 66.6% in Western Asia.[2] In Cameroon, *H. pylori* gastritis affects approximately 65.4% of the population, with higher rates in individuals presenting with gastrointestinal symptoms.[6,7] The infection can manifest clinically as abdominal pain, dyspepsia, nausea, vomiting, bloating, loss of appetite, and, in severe cases, gastrointestinal bleeding.[1,7,10,12]

The discovery and significance of *H. pylori* began with Warren and Marshall in 1982, who isolated the bacterium from patients with gastritis and peptic ulcers, later receiving the Nobel Prize. By 1994, the National Institutes of Health recognized H. pylori as the primary causative agent of peptic ulcer disease.[8] It was subsequently classified as a Group I carcinogen by the World Health Organization due to its strong association with gastric cancer.[9] Chronic infection causes mucosal inflammation, epithelial erosion, and immune-mediated damage, leading to peptic ulcers and potentially gastric malignancy.[1,9]

Risk factors and transmission of *H. pylori* include low socioeconomic status, poor sanitation, crowded living conditions, smoking, NSAID use, blood group O, high body mass index, and family history of gastric disease.[18] Transmission predominantly occurs via person-to-person contact within households, fecal-oral routes, contaminated food and water, and possibly through kissing.[10] Childhood is the critical period for acquisition in developing countries, and untreated infections often persist throughout life.

Diagnosis and management rely on invasive and non-invasive methods, including stool antigen tests and serology for epidemiological studies.[1] Pharmacological management includes combination antibiotic therapy, such as amoxicillin and metronidazole, with proton pump inhibitors like omeprazole.[13] Non-pharmacological home management in Cameroon is widely practiced and includes dietary modifications (avoiding spicy and fatty foods, increasing fruits, vegetables, and whole grains), probiotic intake (e.g., yogurt), garlic consumption, smoking cessation, stress reduction, and regular exercise.[14–17] These strategies are often preferred due to cost, fear of side effects, and cultural beliefs, and may serve as adjuncts to conventional therapy.

Despite governmental interventions, *H. pylori* gastritis remains highly prevalent in Cameroon, with persistent gaps in prevention, diagnosis, treatment, and community awareness.[18,19] Understanding the occurrence, associated risk factors, and non-pharmacological home management practices is critical to identify culturally appropriate strategies that enhance patient compliance, reduce drug resistance, and improve overall outcomes. This study therefore aims to investigate the occurrence, risk factors, and non-pharmacological home management of *H. pylori* gastritis among patients attending the EHFA Foundation Clinic Foumbot.

METHODOLOGY

This study was conducted at the Essential Health for All (EHFA) Foundation, a private non-profit health centre in Foumbot, West Region, Cameroon, which provides both clinical services and health education through its affiliated Essential Health Higher Institute (EHHI). EHFA serves the surrounding communities and is composed of five main units: outpatient, ultrasonography, medical, paediatric, and maternity, operating under a structured leadership hierarchy of director, general supervisor, unit heads, and staff. An institutional-based cross-sectional study was carried out over two months (June–July 2025) to investigate the occurrence of *H. pylori* gastritis, associated risk factors, and non-pharmacological home management among patients attending the facility. The study population included patients diagnosed with gastritis who consented to participate, with a minimum sample size of 105 calculated using Lorentz's formula at a 95% confidence interval. Data was collected using a structured questionnaire divided into socio-demographic characteristics, disease occurrence, risk factors, and home management practices, pre-tested for validity, and analysed using Microsoft Excel and SPSS version 21 with inferential statistics such as Chi-square and binary regression. Statistical significance was considered if p value was less than or equal to 0.05. Ethical approval was obtained from institutional authorities and the Regional Delegation of Public Health, and informed consent was secured from all participants, with confidentiality maintained throughout the study.

RESULTS

Socio-demographic characteristics of research participants

This study involved 105 participants with a fairly balanced age distribution, where the largest group was aged 21–30 years (n = 30; 28.6%), followed by those aged 31–40 years (n = 26; 24.8%), above 40 years (n = 25; 23.8%), and 10–20 years (n = 24; 22.9%). Gender

distribution was nearly equal, with females slightly more represented (n = 55; 52.4%) than males (n = 50; 47.6%). In terms of education, most participants had secondary education (n = 40; 38.1%) or tertiary education (n = 29; 27.6%), while others had only primary education (n = 25; 23.8%) or no formal education (n = 11; 10.5%). Marital status showed that nearly half were married (n = 51; 48.6%), with others being single (n = 37; 35.2%) or divorced (n = 17; 16.2%). Christians formed the majority religious group (n = 66; 62.9%), while Muslims accounted for the remainder (n = 39; 37.1%). Notably, a large proportion of respondents resided in rural areas (n = 79; 75.2%) compared to urban areas (n = 26; 24.8%), indicating a predominantly rural-based population. This is presented in table 1 below.

Table 1: Distribution of respondents according to their socio-demographics.

Variable	Characteristic	Frequency (n)	Percentage (%)
Age range	10-20Yrs	24	22.9
	21-30Yrs	30	28.6
	31-40Yrs	26	24.8
	40+	25	23.8
	Total	**105**	**100**
Gender	Male	50	47.6
	Female	55	52.4
	Total	**105**	**100**
Level of education	Primary	25	23.8
	Secondary	40	38.1
	Tertiary	29	27.6
	None	11	10.5
	Total	**105**	**100**
Marital status	Married	51	48.6
	Single	37	35.2
	Divorced	17	16.2
	Total	**105**	**100**
Religion	Christian	66	62.9
	Muslim	39	37.1
	Total	**105**	**100**
Place of residence	Urban	26	24.8
	Rural	79	75.2
	Total	**105**	**100**

OCCURRENCE OF *H. PYLORI* GASTRITIS IN PATIENTS ATTENDING THE EHFA FOUNDATION FOUMBOT

Out of the 105 respondents who participated in the study, 42 individuals were suspected of having *Helicobacter pylori* infection based on clinical symptoms. All 42 suspected cases underwent diagnostic testing, and all were confirmed positive for *H. pylori*, resulting in a test positivity rate of 100% among the suspected cases. This yields an overall occurrence of *H. pylori* infection of 40.0% (n = 42/105) in the study population. This is presented in figure 1 below.

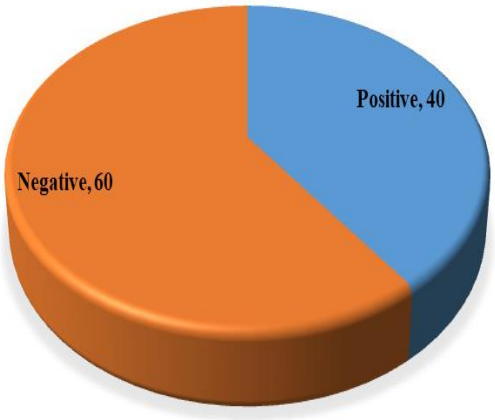

Figure 1: Pie chart showing occurrence of H. pylori gastritis in patients attending the EHFA Foundation Foumbot.

Association between occurrence of H pylori and socio demographic characteristics of respondents

The table 2 below presents the association between socio-demographic characteristics and Helicobacter *pylori (H. pylori)* infection status among 105 participants. The chi-square test results show that none of the examined variables: age, gender, education level, marital status, religion, or place of residence were significantly associated with *H. pylori* positivity ($p > 0.05$ for all). Although minor variations in occurrences were observed across categories, these differences were not statistically meaningful. For example, *H. pylori* positivity was relatively more common among those aged 21–30 years (n = 13; 12.4%) and among males and females equally (each with 20.0% positivity), but the associations were not significant ($p = 0.83$ for age, $p = 0.42$ for gender). Similarly, participants with primary education had slightly higher *H. pylori* positivity (13.3%) compared to those with higher education levels, but the overall effect was not statistically significant ($p = 0.21$). Marital status, religion, and place of residence also showed no significant link with *H. pylori* infection, suggesting that demographic factors alone may not be strong predictors of *H. pylori* infection in this population.

Table 2: Association between occurrence of *H pylori* and socio demographic characteristics of respondents.

Variable	Characteristic	*H pylori*		Chi square (p. value)
		Positive n (%)	Negative n (%)	
Age range	10-20Yrs	10 (9.50)	14 (13.3)	
	21-30Yrs	13 (12.4)	17 (16.2)	0.89
	31-40Yrs	11 (10.5)	15 (14.3)	(0.83)
	40+	08 (7.60)	17 (16.2)	
Gender	Male	21 (20.0)	29 (27.6)	0.15
	Female	21 (20.0)	34 (32.4)	(0.42)
Level of education	Primary	14 (13.3)	11 (10.5)	
	Secondary	12 (11.4)	28 (26.7)	4.52
	Tertiary	11 (10.5)	18 (17.5)	(0.21)
	None	05 (4.80)	06 (5.70)	
Marital status	Married	18 (17.1)	33 (31.4)	3.05
	Single	14 (13.3)	23 (21.9)	(0.22)
	Divorced	10 (9.50)	07 (6.70)	
Religion	Christian	28 (26.7)	38 (36.2)	0.44
	Muslim	14 (13.3)	25 (23.8)	(0.33)
Place of residence	Urban	12 (11.4)	14 (13.3)	0.55
	Rural	30 (28.6)	49 (46.7)	(0.30)

ASSOCIATED RISK FACTORS OF HELICOBACTER PYLORI GASTRITIS IN PATIENTS ATTENDING EHFA FOUNDATION FOUMBOT

Association between occurrence of *H pylori* and risk factors

Table 3 below presents the association between various risk factors and Helicobacter pylori *(H. pylori)* infection among 105 participants. A statistically significant association was observed between *H. pylori* positivity and history of prior infection ($\chi^2 = 8.27$, $p = 0.004$), frequent use of NSAIDs ($\chi^2 = 4.292$, $p = 0.03$), and self-reported stress ($\chi^2 = 11.75$, $p = 0.001$). Specifically, individuals with a history of *H. pylori* were more likely to test positive (n = 29; 27.9%) compared to those without such a history (n = 13; 12.5%). Similarly, those who frequently used NSAIDs had a higher proportion of infection (n = 26; 24.8%) compared to non-users (n = 16; 15.2%). Respondents who reported experiencing stress also showed a markedly higher occurrence of infection (n = 29; 27.6%) than those who did not (n = 13; 12.4%). Other variables such as alcohol consumption, starvation duration before eating, consumption of spicy food, caffeine intake, immunodepression, and eating acidic fruits did not show statistically significant associations with *H. pylori* infection ($p > 0.05$), although variations in percentages were observed across categories. These findings highlight the influence of psychological and pharmacological factors in the epidemiology of *H. pylori* infection.

Table 3: Association between occurrence of *H pylori* and risk factors.

Variable	Characteristic	*H pylori* results		Chi square (p. value)
		Positive n (%)	Negative n (%)	
History of H pylori	Yes	29 (27.9)	25 (24.0)	08.27
	No	13 (12.5)	37 (35.6)	**(0.004)***
Alcohol consumption	Yes	24 (22.9)	30 (28.6)	0.915
	No	18 (17.1)	33 (31.4)	(0.225)
Frequent take of NSAIDS	Yes	26 (24.8)	26 (24.8)	4.292
	No	16 (15.2)	37 (35.2)	**(0.03)***

Stressed?	Yes	29 (27.6)	22 (21.0)	11.75
	No	13 (12.4)	41 (39.0)	**(0.001)***
Starvation before eating	2.4hrs	16 (15.2)	33 (31.3)	2.081
	5-6hrs	16 (15.2)	18 (17.1)	(0.353)
	7-9hrs	10 (9.50)	12 (11.4)	
Spicy food consumption	Yes	33 (31.4)	42 (40.0)	1.750
	No	09 (8.60)	21 (20.0)	(0.135)
Excessive caffeine consumption	Yes	13 (12.4)	19 (18.1)	0.007
	No	29 (27.6)	44 (41.9)	(0.549)
Immunodepressed	Yes	10 (9.50)	13 (12.4)	0.148
	No	32 (30.5)	50 (47.6)	(0.439)
Eating acidic fruits	Yes	33 (31.4)	44 (41.9)	0.982
	No	09 (8.60)	19 (18.1)	(0.223)

-statistically significant at 0.05 significance level

Binary regression analysis between *H pylori* infection and risk factors

The binary logistic regression analysis below assessed the association between various risk factors and the likelihood of testing positive for *Helicobacter pylori*. Among the variables analyzed, a previous history of *H. pylori* infection ($p = 0.002$, OR = 0.203, 95% CI: 0.075–0.550) and self-reported stress ($p = 0.002$, OR = 0.185, 95% CI: 0.064–0.533) were significantly associated with increased odds of infection. This implies that participants with a past infection or who reported stress were 79.7% and 81.5% were more likely, respectively, to test positive for *H. pylori* compared to their counterparts. Although not statistically significant, variables such as NSAID use (OR = 0.442, $p = 0.103$), family history of *H. pylori* (OR = 0.345, $p = 0.069$), and spicy food consumption (OR = 0.387, $p = 0.091$) showed a trend toward increased odds of infection. Other factors, including alcohol intake, excessive caffeine consumption, and immunodepression, had no significant association with *H. pylori* positivity ($p > 0.05$). This is shown in table 4 below.

Table 4: Binary regression analysis between *H pylori* infection and risk factors.

	Sig.	OR	95% C.I. for OR	
			Lower	Upper
History of *H pylori*	**.002***	.203	.075	.550
Alcohol consumption	.294	.603	.234	1.552
Taking NSAIDS?	.103	.442	.165	1.178
Stressed?	**.002***	.185	.064	.533
Excess consumption of spicy foods	.091	.387	.129	1.165
Excess consumption of caffeine	.992	1.006	.332	3.043
Immunodepressed	.617	.751	.244	2.312
Family history of *H pylori*	.069	.345	.109	1.085

***-Statistically significant at 0.05 significance level, OR = Odds ratios, CI = Confidence interval**

NON-PHARMACOLOGICAL HOME MANAGEMENT OF *HELICOBACTER PYLORI* GASTRITIS IN PATIENTS ATTENDING EHFA FOUNDATION FOUMBOT

Figure 2 below presents the non-pharmacological methods used by respondents in managing *Helicobacter pylori* (*H. pylori*) infection. Among the 105 participants, the most commonly reported approach was reducing NSAID use, cited by 68 respondents (64.8%), followed by reducing alcohol consumption with 61 respondents (58.1%), and avoiding caffeine, reported by 56 participants (53.3%). Additionally, 55 respondents (52.4%) reported avoiding stress, while 50 participants (47.6%) avoided acidic fruits as part of their management strategy. Other less frequently reported practices included increasing meal frequency per day, mentioned by 46 participants (43.8%), eating hard foods by 36 respondents (34.3%), and increasing water intake, noted by 26 participants (24.8%).

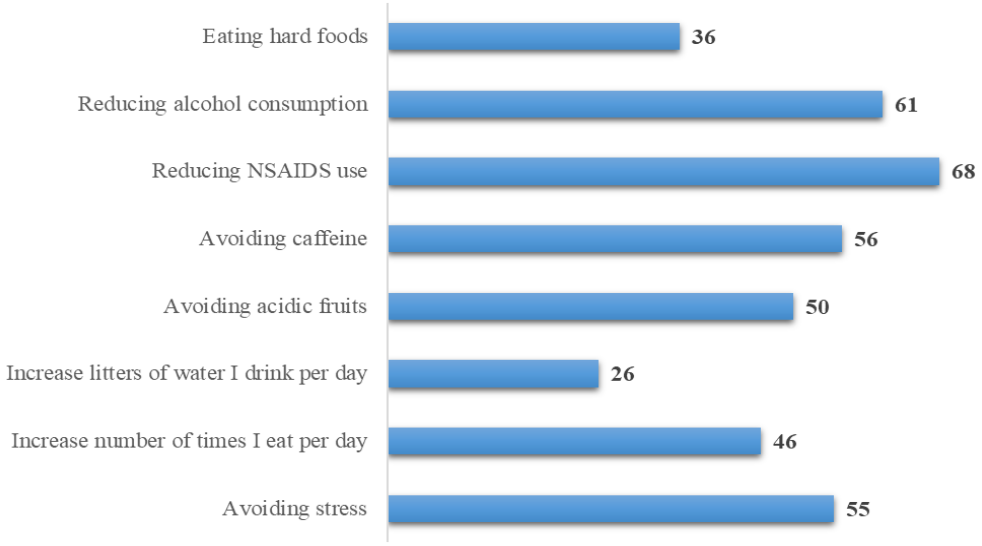

Figure 2: Barr chart showing non-pharmacological methods used by respondents in managing Helicobacter pylori.

From the variables above, only the number of times a respondent drinks water, had a statistically significant association with H pylori results. Figure 3 below examines the relationship between daily water intake and Helicobacter pylori (H. pylori) infection status among 105 participants, with a chi-square value of 10.07 and a p-value of 0.018. The association between daily water intake and Helicobacter pylori infection is statistically significant ($p < 0.05$). The results show that among the 105 participants, those who consumed 1–2 liters of water per day had the highest proportion of H. pylori positivity (25 individuals), representing 23.8% of the total sample. In contrast, participants who drank larger volumes of water daily had noticeably fewer positive cases: only 7 (6.7%) tested positive in the 2–3liter group, 6 (5.7%) in the 3–4liter group, and 4 (3.8%) in the 5–6liter group. Conversely, the proportion of H. pylori-negative individuals increased with higher water intake, particularly in the 2–3L (18.1%) and 3–4L (16.2%) categories.

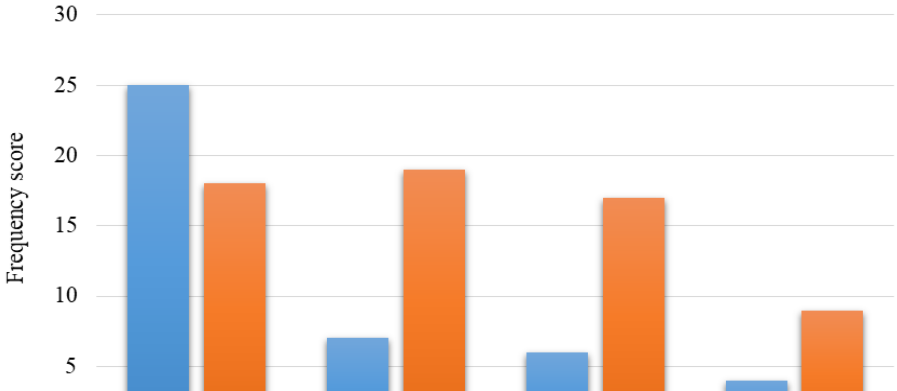

Figure 3: Bar chart showing the association between water consumption per day and H pylori infection control.

DISCUSSION

This study established a prevalence of 40.0% H. pylori infection among the 105 participants, which is comparable to reports from other African countries. In Nigeria, a prevalence of 41.2% was found among dyspeptic patients, closely aligning with our results.[18] Similarly, a study in Ethiopia reported a prevalence of 48%, supporting the high endemicity of H. pylori in sub-Saharan Africa.[19] In contrast, much lower prevalence rates have been reported in developed nations, such as 20% in the United States and 18.9% in Australia.[20,21] These differences can be attributed to disparities in

sanitation, socioeconomic status, access to clean water, and healthcare services. The observed findings reinforce the global trend of H. pylori being more prevalent in low- and middle-income settings, as highlighted in earlier reports.[22]

No statistically significant associations were observed in this study between socio-demographic variables (age, gender, marital status, education level, religion, or place of residence) and H. pylori infection (p>0.05). This is consistent with results from Uganda, which similarly found no significant demographic predictors of infection.[23] However, other studies have reported higher infection rates among younger adults (20–40 years) and individuals with lower educational attainment, attributing this to early-life exposure and poor hygiene practices.[24,25] In our study, although the 21–30-year age group recorded the highest positivity (12.4%), the association did not reach statistical significance.

Three risk factors—previous infection (p=0.004), NSAID use (p=0.03), and self-reported stress (p=0.001)—were significantly associated with H. pylori positivity. The strong correlation with previous infection reflects the recurrent nature of H. pylori when inadequately treated.[26], a finding corroborated by a Kenyan study where 28% of re-infected patients had a prior diagnosis.[27] The association with NSAID use may be explained by mucosal irritation, which facilitates bacterial colonization or exacerbates gastritis symptoms, as supported by earlier evidence.[28] The significant relationship between stress and infection is consistent with an Indian study, which reported that individuals under high psychological stress were twice as likely to test positive for H. pylori.[29] Stress is thought to impair immune responses and alter gastric acid secretion, creating favorable conditions for persistence and reinfection.

Logistic regression confirmed that prior infection (OR=0.23; p=0.002) and psychological stress (OR=0.185; p=0.002) were independent predictors of current infection, reinforcing the chi-square results and underscoring the importance of medical history and psychosocial health in H. pylori management. This is consistent with a study from China, which identified recurrence and psychosocial stress as independent predictors of infection.[30] Although NSAID use and family history demonstrated elevated odds ratios (OR=0.442 and OR=0.345, respectively), their p-values did not reach statistical significance (p=0.103 and p=0.069), suggesting trends that require validation with larger sample sizes.[31]

Non-pharmacological measures reported by participants included reduced NSAID use (64.8%), alcohol reduction (58.1%), and caffeine avoidance (53.3%), aligning with WHO recommendations to minimize irritants in gastritis management.[32] Stress reduction strategies (52.4%) were also common, highlighting the psychosocial component of H. pylori persistence. Interestingly, higher water intake showed a protective effect, with participants consuming more than three liters daily having significantly lower infection rates (p=0.018). This protective association may be linked to gastric dilution and improved mucosal hydration, consistent with studies in Iran that observed reduced infection risks with increased water consumption.[33,34] These findings emphasize the complementary role of lifestyle modifications in the prevention and control of H. pylori gastritis, as also discussed in the introduction.

CONCLUSION

The prevalence of H. pylori gastritis among patients attending EHFA Foundation Foumbot is high, indicating a significant public health concern that requires attention. Poor sanitation, consumption of contaminated food-water, overcrowding living conditions, and unhealthy lifestyles contribute significantly to the transmission of H. pylori in the study population. Many patients use dietary changes, herbal remedies, and lifestyle modifications as primary or complementary management methods, but the safety and effectiveness of these practices remains inadequately validated.

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