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Risk Factors of Gastritis and its Prevalence Among Patients Visiting Kalkaal Hospital, Mogadishu, Somalia

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Abstract:- Gastritis is a condition resulting from the stomach's lining being inflamed, and it can either happen immediately (acute) or over a long period (chronic). We performed a hospital-based cross-sectional study from February 2022 to June 2022 at Kalkaal Hospital, Mogadishu, Somalia. 261 male and female patients who consulted in the hospital and had gastritis symptoms were enrolled in the study. Permission was obtained from the hospital administration before conducting the research. Furthermore, the patients were included in the study only after obtaining consent to participate in the study.

A structured questionnaire was designed, and printed copies were used to collect the data and entered into SPSS software version 25 for data analysis. Descriptive statistics were employed to depict the distribution of the data. The Chi-square test was used to identify the risk factors associated with gastritis, with a statistical significance being considered at p<0.05. The study's findings reveal that 28.7 percent of respondents were male, while 71.3 percent were female. Most respondents were younger than 28 years old (39.8 percent). A chi-square test reveals that gender (male and female), age group, place of residence, level of education, marital status, and occupation of respondents were statistically different (p<0.05). Gastritis prevention necessitates changes in behavior, such as consuming cooked food and maintaining a clean environment, managing stress, and being aware that women have a higher risk of developing gastritis. These factors can assist medical professionals in effectively treating gastritis in patients.

Keywords:- *Gastritis.*

I. INTRODUCTION

Gastritis is a condition resulting from the stomach's lining being inflamed, and it can either happen immediately (acute) or over a long period (chronic). [1]The most common symptoms include upper abdomen pain, nausea, bloating, vomiting, loss of appetite, and heartburn. Gastritis can occasionally be asymptomatic and may accompany stomach ulcers, tumors, and bleeding. [2], [1] Gastritis risk is increased by injury to the stomach lining; inflammation may develop due to the harm that digestive juices do to a thin stomach lining. The existence of gastrointestinal bacteria that infects the stomach lining is another risk factor for gastritis. Helicobacter pylori are one of the most prevalent bacteria in chronic and acute gastritis. This bacterium can be spread from person to person and through contaminated water and food sources, putting residents of densely populated places at a high risk of contracting it.

Many other risk factors are associated with gastritis, including medications like ibuprofen and aspirin. Alcohol consumption, smoking, and use of cocaine and tobacco have also been linked to gastritis. Age is also a factor as the stomach lining generally weakens. Other risk factors but less common include stress, surgery, illness, Crohn's disease, and viral infection. [3]The most common signs and symptoms include nausea, vomiting, and a feeling of a full stomach. Diagnosis can be through blood or stool test to check for Helicobacter pylori. Endoscopy can also be used to check for inflammation. X-rays can also be used after the patient is instructed to swallow barium solution, which gives clear distinctions for different regions of concern. [4]

The management of gastritis relies upon the cause of the inflammation. [5] Gastritis associated with bacterial infection can be treated with antibiotics. H. Pylori can be treated with proton pump inhibitors like esomeprazole, lansoprazole, and antibiotics. Nevertheless, prolonged use of these proton pump inhibitors can increase the wrist, hip, and spine fracture risk. It can also increase dementia, nutrient deficiencies, and renal failure. Other treatments include acid-reducing drugs like famotidine, which lowers the amount of acid released into the digestive tract. [5] They relieve pain allowing the stomach lining to heal. Antacid can also help to relieve gastric pain. Avoiding non-steroid anti-inflammatory agents like ibuprofen, aspirin, or other drugs can help relieve symptoms. Untreated gastritis can lead to bleeding and ulcers. People with thin stomach lining and certain forms of gastritis are likely to develop stomach ulcers.[3]–[5]

Presently, few studies on gastritis in Somalia exist, particularly in research settings. This study was conducted to determine the characteristics of gastritis and its prevalence in patients with associated signs and symptoms.

II. METHODOLOGY

- *Study Design and Setting*

From February to June 2022, we conducted a hospital-based cross-sectional study at Kalkaal Hospital in Mogadishu, Somalia.

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Within the capital city of the Federal Republic of Somalia, the hospital occupies a strategic location. People from various districts in the Benadir region and other parts of the country have access to health care services at Kalkaal Hospital.

➢ *Sample Determination and Procedure*

Patients diagnosed with gastritis who visited the hospital during the study were enrolled. This study used stool antigen, serology, and clinical observations for diagnosis.

The minimum sample size (n) was calculated using the formula for a single population proportion:

$n = Z^2 p (1 - p)/d^2$

Z is a normal deviant at the 95% confidence interval of 1.96. The expected prevalence value was set at 78.8%, according to a previous study [6] done within the region. At the same time, precision(d), d is the margin of error acceptable set at 0.05.

$n = 1.96^2(0.788*(1-0.788)/0.05^2$

$n = 256$

261 male and female patients who consulted in the hospital and had gastritis symptoms were enrolled in the study.

➢ *Ethical Consideration*

Permission was obtained from the hospital administration before conducting the research. Furthermore, the patients were included in the study only after obtaining consent to participate in the study.

➢ *Statistical Analysis*

A structured questionnaire was designed, and printed copies were used to collect the data and entered into SPSS software version 25 for data analysis. Descriptive statistics were employed to depict the distribution of the data. The Chi-square test was used to identify the risk factors associated with gastritis, with a statistical significance being considered at $p<0.05$.

III. RESULTS

As shown in Table 1, the study's findings reveal that 28.7 percent of respondents were male while 71.3 percent were female. This result indicates that a more significant proportion of patients with gastritis symptoms were female. 39.8 percent of respondents were under the age of 28. 26.3 percent were between the ages of 29 and 39, 15.1 percent were between the ages of 40 and 50, and 18.9 percent were over 50. Consequently, most respondents were younger than 28 years old (39.8 percent). A chi-square test of goodness of fit reveals that gender (male and female), age group, place of residence, level of education, marital status, and occupation of respondents were statistically different ($p<0.05$).

TABLE I. DESCRIPTIVE STATISTICS

		Frequency	Percent	P-Value
Sex	Male	75	28.7	**0.000****
	Female	186	71.3	
Age Group	<28	103	39.8	0.000
	29-39	68	26.3	
	40-50	39	15.1	
	>50	49	18.9	
Place of residence	Rural	49	18.8	0.000**
	Urban	212	81.2	
	Total	261	100.0	
Educational Level	No formal schooling.	121	46.4	0.000**
	Primary school	42	16.1	
	Secondary School Completed	41	15.7	
	University Level	52	19.9	
	Post graduate(masters level)	5	1.9	
Marital Status	Unmarried	73	28.0	0.000**
	Married	167	64.0	
	Divorced	8	3.1	
	Widowed	13	5.0	
Occupation of respondents	Unemployed	197	75.5	0.000**
	Self-employed	42	16.1	
	Governmental	3	1.1	
	Non-governmental	19	7.3	

**Statistically significant difference

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➢ *Demographic data Bivariate Analysis*

Crosstabulation of acute and chronic gastritis with various variables is shown in table II. The data indicates that 38.2% of the female population had acute gastritis, and 61.8% had chronic gastritis. On the other hand, acute and chronic gastritis affected 42.7% and 57.3% of males, respectively. Below 28 years of age, 52 (51.5%) and 51 (49.5%) of the participants had acute and chronic gastritis, respectively, whereas those between 29 and 39 years of age had 29 (42.6%) and 39 (41.2%), respectively. In addition, participants between the ages of 40 and 50 had 109 (25.6%) cases of acute gastritis and 29 (74.4%) cases of chronic gastritis. Those older than 50 had 11 (22.4%) cases of acute gastritis and 38 (77.6%) cases of chronic gastritis, respectively.

TABLE II. DESCRIPTIVE STATISTICS

		The type of gastritis		**P-value**
		Acute	**Chronic**	
Sex	Male	32(42.7%)	43(57.3%)	.501
	Female	71(38.2%)	115(61.8%)	
Age Group	<28	52(51.5%)	51(49.5%)	0.002**
	29-39	29(42.6%)	39(41.2%)	
	40-50	109(25.6%)	29(74.4%)	
	>50	11(22.4%)	38(77.6%)	
Place of Residence	Rural	17(34.7%)	32(65.3%)	0.448
	Urban	86(40.6%)	126(59.4%)	
Education Level	No formal schooling	35(28.9%)	86(71.1%)	0.015**
	Primary School	17(40.5%)	25(59.5%)	
	Secondary School Completed	22(53.7%)	19(46.3%)	
	University level	26(50%)	26(50%)	
	Postgraduate level	3(60%)	(40%)	
Marital Status	Unmarried	38(52.1)	35(47.9%)	0.025
	Married	61(36.5%)	106(63.5%)	
	Divorced	1(12.5%)	7(87.5%)	
	Widowed	3(23.1)	10(76.9)	

➢ *H-Pylori Infection Bivariate analysis*

The data results, as shown in Table III, indicate that the number of patients diagnosed with h-pylori after stool antigen test was 31.0% and 69.0% for Acute and chronic gastritis, respectively. The results were statistically significant, with p<0.000.

TABLE III. DESCRIPTIVE STATISTICS

		The type of gastritis		**P-Value**
		Acute	**Chronic**	
Is H. Pylori positive	No	51(54.8%)	42(45.2%)	P<0.000
	Yes	52(31.0%)	116(69.0%)	

➢ *The type of gastritis and various signs and symptoms*

As shown in Table IV, nausea and vomiting symptoms were reported by 46.9% and 53.1% of participants with acute and chronic gastritis, respectively; this difference was statistically significant (p = 0.07). Forty percent and sixty percent of participants with dull pain signs or symptoms had acute and chronic gastritis, respectively, but the difference was not statistically significant (p>0.05). 65 (32.7%) and 134 (67.3%) patients with heartburn symptoms had acute and chronic gastritis, respectively, with a statistically significant difference of p0.000.

In patients with signs or symptoms(Table IV) of Appetite loss, 47 (34.3 percent) and 90 (65.7 percent) had acute and chronic gastritis, respectively, and the difference was statistically significant (p=0.073).

Patients who consume spicy foods are more likely to develop such symptoms. 38.6% and 61.4% had acute and chronic gastritis, respectively, but the difference was not statistically significant (p>0.05).

In patients with Stress and anxiety, the practices that lead to the development of such signs and symptoms, 43 (30.1%) and 100 (69.9%) had acute and chronic gastritis, respectively, with a statistically significant difference of p=0.001 between the two groups. Among the participants, regularly eating the same foods is associated with developing such symptoms. 18 (27.3%) and 8 (72.7%) had acute and chronic gastritis, with a statistically significant difference of p=0.019. 21 (30.4%) and 48 (69.6%) patients who did not wash their hands with detergents had acute and chronic gastritis, respectively, with a statistically significant difference of p =.074.

Regarding food, among patients with gastritis symptoms who skipped or delayed meals, 73 (34.8%) and 131 (64.2%) had acute and chronic gastritis, respectively, with a statistically significant difference (p=0.021). There was a statistically significant difference between the proportions of patients with acute and chronic gastritis (acute vs. chronic gastritis, p=0.019) among those who consumed undercooked food and exhibited gastritis symptoms. 11 (28.9 percent) and 27 (71.1 percent) of substance-using patients had acute and chronic gastritis, respectively, with a statistically significant difference of p = 0.151.

TABLE IV. The type of gastritis and various signs and symptoms

		The type of gastritis		P-value
		Acute	Chronic	
Nausea and vomiting	Yes	67(46.9%)	76(53.1%)	0.007**
	No	36(30.5%)	82(69.5%)	
Dull pain	Yes	10(40%)	15(60%)	.954
	No	93(39.4%)	143(60.6%)	
Heartburn	Yes	65(32.7%)	134(67.3%)	0.000**
	No	38(61.3%)	24(38.7%)	
Loss of appetite	Yes	47(34.3%)	90(65.7%)	.073
	No	56(45.2%)	68(54.8%)	
Eating Spicy foods-practices	Yes	93(38.6%)	148(61.4%)	.316
	No	10(50%)	10(50%)	
Stress and anxiety practices	Yes	43(30.1%)	100(69.9%)	0.001**
	No	60(50.8%)	57(49.2%)	
Eating regularly the same food practices	Yes	18(27.3%)	48(72.7%)	0.019**
	No	85(43.6%)	110(56.4%)	
drug that resulted	Yes	32(24.2%)	100(75.8)	0.000**
	No	71(55.0%)	58(45.0%)	
Washing hands without detergent before eating,	Yes	21(30.4%)	48(69.6%)	.074
	No	82(42.7%)	110(57.3%)	
skipped and delayed meals	Yes	73(35.8%)	131(64.2%)	0.021**
	No	30(52.6%)	27(47.4%)	
Eating food that is not well cooked	Yes	32(30.8%)	72(69.2%)	0.019**
	No	71(45.2%)	86(54.8%)	
Being involved in substance use	Yes	11(28.9%)	27(71.1%)	0.151
	No	92(41.3%)	131(58.7%)	

IV. DISCUSSION

The result of this study indicates that 39.5% of the study participants had acute gastritis while 60.5% had chronic gastritis. The data shows that 71.3% of the females had gastritis compared to 28.7% of males. This result shows that the proportion of females with gastritis symptoms who consulted the hospital was higher than that of men. This outcome can be partly attributed to the demographic profile of Somalia, which shows that there are more females than males. A chi-square test of goodness of fit indicates a significant difference between females and males in presenting signs and symptoms of gastritis (p<0.000). This test indicates that female participants were more prone to gastritis than their male counterparts. However, a bivariate Chi-square analysis of the demographic statistics indicated that gender did not have a statistically significant association with gastritis type as evinced by results of earlier works[7].

The geographical distribution of gastritis is associated with the socioeconomic and hygiene status of the people in an area. This study's proportion of people with gastritis was higher in urban dwellers than rural dwellers. In developing countries, the living conditions in urban areas are characterized by poor storage and water sources, which are associated with H pylori and expose people to pathogens that have brought gastrointestinal inflammation[8]. Similar to gender, place of residence was not found to be significantly associated with those types of acute or chronic gastritis.

Furthermore, the study results indicate a higher proportion of (39.8%) gastritis patients under age 28 than other age groups. For participants under 28, there were more acute cases than chronic cases. Older participants showed a disproportionately higher number of chronic gastritis than acute gastritis. The participants with ages between 40 and 50 had 109(25.6%) and 29(74.4%), respectively. Those above 50 years had 11(22.4%) and 38(77.6%) acute and chronic gastritis, respectively. There was a statistically significant association between age and the type of gastritis.

Unemployed participants (75.5%) had a higher proportion of gastritis and were statistically significant. Additionally, in the participants' marital status, married (64.0%) were the majority and had a statistical association with the type of gastritis.

The majority of the participants had no formal schooling (46.4%). This result resonates with a study by Agbor E. et al. [9] in Cameroon, whereby the authors indicated that infection decreased with an increased level of education. The participant's level of education was associated with the type of gastritis, with no formal education associated with chronic gastritis.

The presence of h-pylori was significantly associated with chronic gastritis. There was a statistically significant association between the type of gastritis and the number of patients diagnosed with h-pylori after the stool antigen test with $p<0.000$. Patients with h-pylori were more likely to present with chronic gastritis. A similar result was established in a study by Nolen D et al.. [10]. The researchers indicated that H-pylori positive individuals were more likely to have chronic gastritis than those with negative H. Pylori results.

Although there was no statistical difference between acute and chronic gastritis, most of the study participants with chronic gastritis indicated that they took Spicy food in their meals. According to the results, 38.6% and 61.4% of the patient who took spicy food had acute and chronic gastritis, respectively. These results are similar to a study by author Feyisa T in Ethiopia [11], whose study showed that eating spicy food increased the severity of gastritis and that those who consumed spicy food were more likely to have chronic gastritis. Because of spicy food, the stomach lining can become inflamed and irritated.

The study's results indicated a statistical association between stress and anxiety and the type of gastritis. Participants with stress and anxiety episodes were more likely to have chronic gastritis. There were 30.1% and 69.9% participants with acute and chronic gastritis, respectively, with a statistically significant difference of $p=0.001$. Previous studies [11], [12]have pointed out stress as a significant factor in predicting the occurrence of gastritis. Cortisol hormone produced when someone is under stress can reduce lymphocytes and decrease the immune system to a foreign substance, leading to gastritis[13]–[15]. According to this study, chronic gastritis was high among participants with stress. Stress can be caused by adverse events in life, including poverty and physical health, which are associated with chronic diseases, including chronic gastritis[15]. The adverse events in life are considered stressors, and the factors that can lead to them are categorized into three groups biological, environmental and physiological. The biological category emphasizes the function of various physiological systems in the body that interact with psychological and physically involving conditions. Environmental stressors are situations within the environment that are highly adaptive demands. On the other hand, psychological stress, also known as emotional stress, is about people's evaluation of their experiences in life[15].

Participants who skipped or delayed meals were likely to have gastritis, which is highly associated with chronic gastric with a statistically significant difference of $p=0.021$. Other studies have indicated that skipping or delaying meals is one of the significant factors contributing to gastritis[16]. Authors Lim s et al., in a study about the association of irregular meal timing with Helicobacter pylori and gastritis, indicated that frequently delaying meals was associated with an increased risk of developing both ailments[17].

Gastritis was also associated with eating that is not well cooked, with a statistically significant difference of $p=0.019$ for acute and Chronic gastritis. Many dietary factors have been linked to the role in the transmission of h. Pylori[18]. A study in Chile [19] indicated that a significant proportion of the participants who ate uncooked vegetables had gastritis. Food that has been prepared under unhygienic conditions can lead to transmission and ingestion of microorganisms that lead to gastritis.

V. CONCLUSION

This study shows a significantly high proportion of patients with gastritis among female participants, urban citizens, and less educated participants. A bivariate Chi-square analysis of the demographic statistics and the type of gastritis indicated that age Group and Education Level were found to have a statistically significant association with gastritis. Gastritis was significantly associated with stress and worry, eating the same foods frequently, not washing your hands with detergent before eating, skipping or postponing meals, and eating raw foods. These factors can help healthcare professionals effectively manage gastritis in their patients.

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