

ORIGINAL ARTICLE

Clinical profile and spectrum of endoscopic gastritis among patients with dyspepsia in a tertiary health institution



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Abstract

Introduction: Dyspepsia is a major gastrointestinal symptom that often requires Endoscopic evaluation. Therefore, it is necessary to understand the clinical profile and pattern of endoscopic gastritis among patients with dyspepsia.

Method: The study was conducted in Kano, Nigeria, from April 2021 to October 2021. It is a hospital-based cross-sectional descriptive study in which 200 patients with dyspepsia were consecutively enrolled and underwent upper gastrointestinal endoscopy after thorough counselling. Frequencies and percentages were used to describe categorical variables while mean, standard deviation and median were used for continuous variables. Data were presented in tables and charts. Data was analyzed using SPSS 20.

Result: A total of 454 Endoscopy procedures were done during the study period, and only 200 patients (90 males, and 110 females with male to female ratio of 1:1.2) met the inclusion criteria. Most of the study participants 160 (80%) were aged 50 years and below. The Females accounted for 110 (55%) while 90 (45%) were males. Most of the study participants 159 (79.5%) had formal education with 51.5% having attained a tertiary level of education. The predominant symptom of dyspepsia reported by study participants was epigastric pain 171 (85.5%). The prevalence of endoscopic gastritis was 63.5% with the most common type being endoscopic erythematous/exudative gastritis.

Conclusion: In this study, the prevalence of endoscopic gastritis among dyspeptic patients was 63.5%, with pangastritis being the most common form. Gastritis was clinically indistinguishable from non-gastritis dyspepsia and was not influenced by any sociodemographic factors. This highlights the critical role of endoscopy as an essential investigative tool in evaluating these patients.

Keywords: Oesophagogastroduodenoscopy, Endoscopic Gastritis, Dyspepsia, Epigastric pain, *Helicobacter pylori*

Introduction

Dyspepsia is defined as longstanding or recurrent pain or discomfort located in the upper abdomen and it encompasses nausea, vomiting, postprandial fullness, belching or early satiety.¹ It is divided into organic dyspepsia when there is an identifiable cause and functional or non-ulcer dyspepsia when the cause cannot be identified after evaluation.¹ Causes of organic dyspepsia include gastritis, oesophagitis, peptic ulcer disease (PUD), benign

oesophageal strictures, upper gastrointestinal (GI) malignancies, chronic intestinal ischemia, small intestinal bacterial overgrowth, pancreaticobiliary disease and drugs such as non-steroidal anti-inflammatory drugs (NSAIDs), glucocorticoids, colchicine, estrogens, iron, and levodopa.¹ Among the organic causes of dyspepsia, gastritis is the most common accounting for up to 60%.² Gastritis refers to inflammation of the stomach related to mucosal injury. It is the stomach's reaction to injury.³ Endoscopic gastritis is

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referred to as the presence of distinct changes in the mucosal appearance likely resulting from vascular or infiltrative abnormalities.⁴ It is diagnosed when at least one or more of the following are visible either localised or widespread in the stomach: erythema, oedema, exudates, friability, flat erosion, raised erosion, intramural bleeding spots, rugal hyperplasia (hyper rugosity), rugal atrophy (hyporugosity), visibility of vascular pattern and nodularity.⁴ Gastritis has been classified using various systems over the years, evolving alongside advancements in medical knowledge and investigative tools. While each system offers unique strengths and limitations, none has achieved widespread consensus among experts, except for the Sydney system. This system stands out for its comprehensive approach, incorporating aetiology, morphology, and topography.³ Although gastritis is probably the most common finding among dyspeptic patients at endoscopy, over or under-diagnosis of gastritis by endoscopy can lead to erroneous treatment. Few studies in Nigeria studied the pattern of gastritis and none of such studies were previously conducted at Aminu Kano Teaching Hospital (AKTH) which is a major referral centre for patients with dyspepsia, hence the need for this study. It is, therefore, important to confirm the diagnosis of gastritis, its pattern, and possible aetiology to enable effective treatment and the institution of preventive measures. This study aims to determine the clinical spectrum and pattern of endoscopic gastritis among patients with dyspepsia in Aminu Kano Teaching Hospital.

Methodology

The study was conducted at Aminu Kano Teaching Hospital, Kano, Nigeria from 6/4/2021 to 28/10/2021. It is a cross-sectional descriptive study. Patients above 18 years of age with dyspepsia referred for oesophagogastroduodenoscopy (OGD) constitute the study population. The minimum sample size was determined using the formula calculated based on the reported prevalence of endoscopic gastritis at 13.7%⁵ using Fischer's formula:

$$n = z^2pq/d^2$$

$n = 181.7 \approx 182$ plus 10% attrition = 18.2. Therefore 200 patients were recruited for the study.

Patients with dyspepsia referred for oesophagogastroduodenoscopy (OGD) were recruited after signing informed consent. The procedure was carefully explained to the patient, and the removable dentures were temporarily removed. A 10% xylocaine spray was applied to the nasopharynx, followed by the insertion of a dental guard into the patient's mouth. Conscious sedation was administered using titrated intravenous midazolam for selected patients, as deemed appropriate. Throughout the procedure, the patient's vital signs, including pulse rate, blood pressure, heart rate, and oxygen saturation, were continuously monitored using a cardiac monitor. The biodata, clinical presentations, and endoscopic findings were noted, and subsequently recorded. Endoscopic gastritis was classified using the updated Sydney system.

Data was collected and the report of findings at endoscopy was documented and analyzed using the SPSS version 20. Frequencies and percentages were used to describe categorical variables while mean, standard deviation and median were used for continuous variables. Data were presented in tables and charts.

Ethical clearance was obtained from the Ethical Committee

of AKTH, Kano REF no. NHREC/28/01/2020/AKTH/EC/3002 dated 16th March 2021, before the commencement of the study. The provisions of the Helsinki Declaration were respected, and participants were adequately in the language they understood, before obtaining written informed consent. All data collected from the participants was kept confidential.

Results

During the study period, a total of 454 endoscopy procedures were performed. Of these, 200 patients met the inclusion criteria and provided consent to participate in the study. Table I summarizes the socio-demographic characteristics of the participants. The majority of participants, 160 (80%), were aged 50 years or younger. Females comprised 110 (55%) of the study population, while males accounted for 90 (45%). Married individuals made up 121 (60.5%) of the participants. Most participants, 159 (79.5%), had formal education, with 51.5% having attained a tertiary level of education. Regarding employment status, civil servants represented 73 (36.5%) participants, while the unemployed constituted the largest group, making up 89 (44.5%) of the study population.

The predominant symptoms of dyspepsia reported by study participants were epigastric pain 171 (85.5%), belching 102 (51%), and nausea 85 (42.5%). Others are vomiting 63 (31.5%), postprandial fullness 63 (31.5%), and early satiety 27 (13.5%), Table II.

Table I: Socio-demographic characteristics of the study participants

Characteristics	Frequency (n=200)	Percentage (%)
Age (years)		
18-20	17	8.5
21-30	52	26.0
31-40	49	24.5
41-50	42	21.0
51-60	24	12.0
>60	16	8.0
Mean±SD	38.7+ 14.3	
Sex		
Male	90	45.0
Female	110	55.0
Marital status		
Single	59	29.5
Married	121	60.5
Widowed/Separated	20	10.0
Level of formal education		
Non-formal	41	20.5
Primary	8	4
Secondary	48	24
Tertiary	103	51.5
Occupation		
Unemployed	89	44.5
Civil servant	73	36.5
Self-employed	38	19.0

Table II: Clinical characteristics of study participants

Characteristics	Frequency (n=200)	Percentage (%)
Symptoms		
Epigastric pain	171	85.5
Belching	102	51.0
Nausea	85	42.5
Vomiting	63	31.5
Postprandial fullness	63	31.5
Early satiety	27	13.5
Hiccups	1	0.5

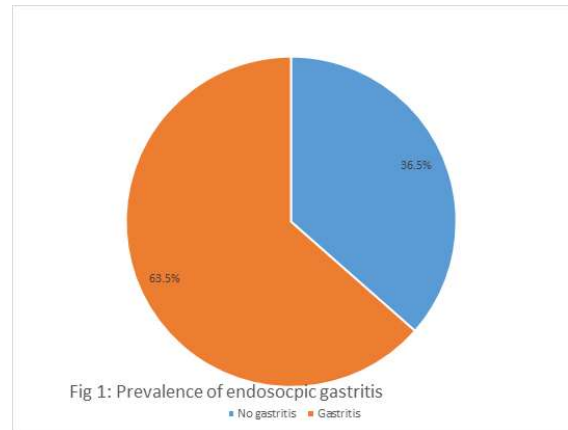
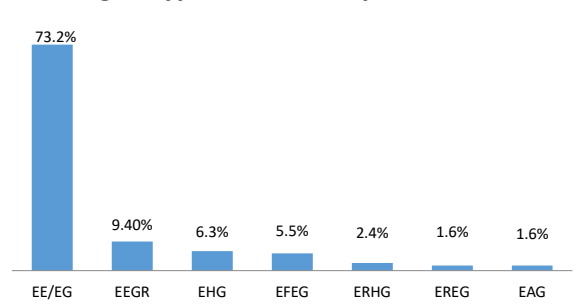


Table III: Pattern of endoscopic gastritis

Characteristics	Frequency (n=127)	Percentage
Pattern		
Antrum	48	37.8
Corpus	28	22.0
Pangastritis	51	40.2

Fig 2: Types of Endoscopic Gastritis



EE/EG = Endoscopic erythematous/exudative gastritis, EEGR = Endoscopic enterogastric reflux gastritis, EFEG = Endoscopic flat erosive gastritis, EREG = Endoscopic raised erosive gastritis, EHG = Endoscopic haemorrhagic gastritis, EAG = Endoscopic atrophic gastritis, ERHG = Endoscopic rugal hyperplastic gastritis.

Table IV: Relationship between socio-demographic characteristics and endoscopic gastritis

Characteristics	Gastritis (n=127)	No gastritis (n=73)	Total (N=200)	p-value
Age group (years)				
≤40	74 (58.3)	44 (60.3)	118 (59.0)	0.945
41-60	43 (33.9)	23 (31.5)	66 (33.0)	
>60	10 (7.9)	6 (8.2)	16 (8.0)	
Mean±SD	39.5±14.0	37.2±14.7		0.276
Sex				
Male	61 (48.0)	29 (39.7)	90 (45.0)	0.256
Female	66 (52.0)	44 (60.3)	110 (55.0)	
Marital status				
Single	37(29.1)	22(30.1)	59 (29.5)	0.931
Married	76(59.8)	45(61.6)	121 (60.5)	
Widowed/separated	14(11.0)	6 (8.2)	20 (10.0)	
Tribe				
Hausa	94(74.1)	51(69.9)	145 (72.5)	0.145
Yoruba	5(3.9)	3(4.1)	8 (4.0)	
Igbo	2(1.6)	6(8.2)	8 (4.0)	
Others	26(20.5)	13(17.8)	39 (19.5)	
Type of education				
Formal	99(78.0)	60(82.2)	159 (79.5)	0.475
Non-formal	28(22.0)	13(17.8)	41 (20.5)	
Level of education				
Nil	28(22.0)	13(17.8)	41 (20.5)	0.617
Primary	4(3.2)	4(5.5)	8 (4.0)	
Secondary	32(25.2)	16(21.9)	48 (24.0)	
Tertiary	63(49.6)	40(54.8)	103 (51.5)	
Employment status				
Unemployed	51(40.2)	38(52.1)	89 (44.5)	0.103
Employed	76(59.8)	35(47.9)	111 (55.5)	

The prevalence of endoscopic gastritis among the study participants was 63.5% (127) (Figure 1). Of these, 51 participants (40.2%) had pangastritis, 48 (37.8%) had

antral-predominant gastritis, and 28 (22.0%) had corpus-predominant gastritis (Table III).

Table V: Relationship between dyspeptic symptoms and endoscopic gastritis

Characteristics	Gastritis (n=127)	No gastritis (n=73)	Total (N=200)	p-value
Epigastric pain				0.802
Yes	108(85.0)	63(86.3)	171 (85.5)	
No	19(15.0)	10(13.7)	29 (14.5)	
Nausea				0.761
Yes	55(43.3)	30(41.1)	85 (42.5)	
No	72(56.7)	43(58.9)	115 (57.5)	
Vomiting				0.751
Yes	39(30.7)	24(32.9)	63 (31.5)	
No	88(69.3)	49(67.1)	137 (68.5)	
Postprandial fullness				0.528
Yes	42(33.1)	21(28.9)	63 (31.5)	
No	85(66.9)	52(71.2)	137 (68.5)	
Belching				0.946
Yes	65(51.2)	37(50.7)	102 (51.0)	
No	62(48.8)	36(49.3)	98 (49.0)	
Early satiety				0.425
Yes	19(15.0))	8(11.0)	27 (13.5)	
No	108(85.0)	65(89.0)	173 (86.5)	

Figure 2 illustrates the types of endoscopic gastritis classified using the Sydney protocol. The most common type was erythematous/exudative gastritis, observed in 93 participants (73.2%), followed by enterogastric reflux gastritis (12 participants, 9.4%), hemorrhagic gastritis (8 participants, 6.3%), and flat erosive gastritis (5 participants, 5.5%). Additional types of endoscopic gastritis are also shown in Figure 2.

There was no statistically significant association between endoscopic gastritis and demographic factors such as age ($p = 0.945$), sex ($p = 0.256$), marital status ($p = 0.931$), tribe ($p = 0.145$), education ($p = 0.475$), level of education ($p = 0.617$), or employment ($p = 0.103$) (Table IV). Similarly, no significant relationship was found between endoscopic gastritis and symptoms such as epigastric pain ($p = 0.802$), nausea ($p = 0.761$), vomiting ($p = 0.751$), postprandial fullness ($p = 0.528$), belching ($p = 0.946$), or early satiety ($p = 0.425$) (Table V).

Discussion

The study population ranged in age from 18 to 78 years, with a mean age of 38.7 ± 14.3 years. This mean age aligns with findings by Olokoba et al⁴ among dyspeptic patients but differs from another study reporting a mean age of 53.02 ± 16.28 years, where most participants were aged 31–60 years. In this study, 80% of participants were aged 50 years or younger, with the largest proportion in the 21–30 age group. This observation is consistent with findings by Feyisa et al⁸ in Ethiopia, who reported a similar age distribution.

The predominance of females in this study mirrors other studies on dyspepsia, which may reflect higher health-seeking behaviours among women. Also, most study participants are 50 years old and below, and the proportion

of those with gastritis seems to be higher in this age group thus, reflecting the established burden of the disease in this age group. Furthermore, consistent with findings from another study,¹² most of the participants are married, given that adult patients were involved in the studies. Although the proportion of subjects with gastritis seems higher among females, those aged less than 40 years and those who are married, the difference was not significant suggesting that other risk factors might be involved.

Regarding education, most participants had formal education with about half of them possessing a tertiary level of education. This observation might reflect better health awareness which would impact health-seeking behaviour positively. However, neither the type nor level of education was significantly associated with gastritis, a finding consistent with the observation from another study conducted in north-central Nigeria.¹² On the contrary, Harun et al¹³ noted that low education levels were significantly associated with gastritis and Genta et al¹⁴ observed a decreasing prevalence with higher education and income levels.

Unemployment was prevalent among participants (44.5%), possibly reflecting cultural norms in northern Nigeria and the larger number of females in the study. Civil servants made up 36.5% of participants. These findings align with a Korean study¹⁵ that found no association between occupation and gastric diseases, although occupational stress and shift work were linked to gastritis in another study.¹⁶

Most participants in this study presented with epigastric pain, followed by belching (51%). Dyspepsia was the most common indication for upper gastrointestinal endoscopy (OGD), consistent with several studies that report epigastric

pain as the predominant symptom.^{11,17-20} None of the dyspeptic symptoms reliably differentiated participants with endoscopic gastritis from those without, underscoring the importance of prioritizing endoscopy as a key investigative tool in the evaluation of these patients.

The prevalence of endoscopic gastritis in this study was 63.5%. This is similar to 62.1%⁹ and 60.5%⁸ reported from southwestern Nigeria among dyspeptic patients, 61.1% reported by Ayana et al in Tanzania,² 67% reported by Carr et al.²² and 57.5% reported by Akande et al¹⁰ in Ibadan. The similarity between this study and the above-referred studies may be explained by our region's high prevalence rate of *H. pylori*. Another study that looked at time trends in upper GI diseases in Nigeria over two study periods 11 years apart, reported the prevalence of endoscopic gastritis to be 56.9% in the first instance and 44.3% in the second instance. The difference in the two reported values in the study was attributed to the widespread and irrational use of proton PPIs and antibiotics in the second study period,²³ however, both reported values are lower than those found in this study. Bojuwoye et al¹² reported endoscopic gastritis to be the most common finding among patients with dyspepsia with a prevalence of 35% in north-central Nigeria. The lower prevalence of endoscopic gastritis in their study may be attributed to the inclusion of other organic findings such as malignancy, and gastric and duodenal ulcers as opposed to this study. Similarly, in a study conducted in Uganda, Endoscopic gastritis had a prevalence of 40.2%, due to the inclusion of patients with other upper GI symptoms in addition to dyspepsia, which increased the prevalence of other organic findings.²⁴ The prevalence of endoscopic gastritis in this study is higher than the 47% reported in Central Europe which may be explained by low levels of *H. pylori* infection in Europe.²⁵ Additionally, Olokoba reported the prevalence of gastroduodenitis to be 63.5% while that of endoscopic gastritis alone was 13.7%.⁵ It is not clear why the study had such a low rate of endoscopic gastritis even though it comes from an environment with high *H. pylori* prevalence.

The most predominant pattern of endoscopic gastritis in this study was pangastritis 40.2% closely followed by antral predominant gastritis 37.8% and then gastritis affecting the corpus 22.0%. This differs from the pattern reported by Jemilohun et al⁹ in which pangastritis accounted for 13.8%, antral gastritis 46% and 2.3% for gastritis affecting the corpus. Also, antral-predominant gastritis was the most common pattern of gastritis reported by Ndububa et al¹⁹ and Akande et al (55.8%).¹⁰ The observed differences might be due to cultural and behavioural differences between the Northern and Southern parts of the country. Similarly, Micheal et al²⁶ reported the commonest pattern of gastritis to be that of antrum and body (49%) in Kampala. Antral predominant gastritis (55%) was also by far the most predominant pattern of gastritis reported by Wakil et al²⁰ in Western populations where there is a low prevalence of *H. pylori* infection.

Conclusion

The prevalence of endoscopic gastritis among dyspeptic patients in this study was 63.5%, with pangastritis being the most common form. Gastritis was clinically indistinguishable from non-gastritis dyspepsia and was not influenced by any sociodemographic factors. This

highlights the critical role of endoscopy as an essential investigative tool in evaluating these patients. Multicenter studies with larger sample sizes are thus recommended for more comprehensive and generalizable findings.

Authors contribution :

AME, AAS and MMB conceptualised and designed this study. AME collected data. AME and FSD analysed and interpreted the data. AME wrote the first draft of the manuscript. All the authors reviewed and contributed to the final manuscript revisions and approved the final version.

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