

## Histopathological Profile of Endoscopic Gastric Biopsies at Garki Hospital Abuja, North Central Nigeria

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### ABSTRACT

**Background:** Gastric mucosal diseases, including chronic gastritis and neoplastic lesions, remain a significant cause of morbidity in Nigeria. Histopathological evaluation of endoscopic biopsies is essential for diagnosis, risk stratification, and management.

**Objective:** To determine the histopathological profile of endoscopic gastric biopsies at Garki Hospital, Abuja, Nigeria.

**Methods:** A retrospective descriptive study of 210 gastric biopsies collected between August 2024 and August 2025 was conducted. Histopathological assessment included chronic and other forms of gastritis, *Helicobacter pylori* infection, and neoplastic lesions. Patient demographics and lesion distribution were analyzed.

**Results:** Of the 210 biopsies, 126 (60%) were from males and 84 (40%) from females. The majority of patients were aged 41–60 years. Chronic gastritis was the most common lesion (56.2%), with *H. pylori*-associated chronic active gastritis accounting for 21.9%. Other gastritis types comprised 24.8% of cases. Neoplastic lesions represented 19%, with adenocarcinoma being most frequent (11.4%).

**Conclusion:** Chronic gastritis, particularly *H. pylori*-associated, predominates in gastric biopsies at this center; while neoplastic lesions constitute a significant minority. These findings underscore the importance of routine histopathological evaluation, *H. pylori* management, and targeted surveillance to improve early detection and management of gastric disease.

### Keywords

Gastric biopsy, Chronic gastritis, *Helicobacter pylori*, Gastric Adenocarcinoma, Endoscopy, North-Central Nigeria.

### Introduction

Gastric diseases remain a major contributor to global morbidity and mortality, with substantial geographic variation in prevalence

and outcomes. Gastric cancer, although declining in some regions, remains the fifth most common malignancy worldwide and the fourth leading cause of cancer-related deaths, reflecting the persistence of underlying precursor lesions such as chronic atrophic gastritis, intestinal metaplasia, and dysplasia [1]. These precursor lesions follow the well-established Correa cascade and are closely associated with chronic *Helicobacter pylori* infection,

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which remains the most important modifiable aetiologic factor in gastric carcinogenesis [2]. A 2024 global systematic review reported pooled prevalence estimates of 25.4% for atrophic gastritis, 16.2% for intestinal metaplasia, and 2.0% for dysplasia in biopsy-based studies, underscoring the ongoing global burden of premalignant gastric disease [3]. Endoscopic biopsy with histopathological evaluation therefore remains indispensable for accurate diagnosis, risk stratification, and early detection of gastric neoplasia.

Despite advances in diagnostic technologies, regional disparities persist. High-burden Asian and Latin American countries continue to report higher rates of precursor lesions and *H. pylori*-associated pathology compared to low-incidence regions [3,4]. African countries, though historically considered low-incidence settings show increasing presentations of gastritis, peptic ulcer disease, and gastric cancer, with significant heterogeneity across sub-Saharan Africa [5]. Recent studies from East and West Africa have demonstrated persistently high *H. pylori* prevalence, frequent chronic gastritis, and emerging documentation of premalignant lesions such as intestinal metaplasia and gastric adenomas [6-8]. These trends highlight the importance of region-specific data to guide surveillance and clinical practice.

In Nigeria, multiple endoscopy-based studies have consistently reported chronic gastritis as the dominant gastric mucosal lesion, with variable *H. pylori* detection depending on biopsy protocols and diagnostic methods. A study from Northern Nigeria involving a large gastric biopsy series found chronic gastritis in 71.5% of non-neoplastic lesions and adenocarcinoma as the predominant malignancy [9]. Similar patterns were reported in South-Eastern Nigeria, where 80% of dyspeptic patients had chronic gastritis and 35% were *H. pylori* positive [10]. Recent reports from Kano and Abuja further confirm high endemicity of *H. pylori* infection (53–70%) among symptomatic adults, with a predominance of antral-based chronic gastritis [11,12]. Additional Nigerian studies from the South-South and South-West regions have documented increasing diagnoses of intestinal metaplasia, gastric polyps, and early gastric cancer, though at lower frequencies than in high-incidence countries [13-15].

Despite these contributions, contemporary data describing the full histopathological spectrum of gastric biopsies in North-Central Nigeria remain sparse. Abuja, as a fast-growing metropolitan centre with a diverse, mobile population, may have gastric disease patterns distinct from surrounding regions. Additionally, many previous Nigerian studies are limited by older datasets, small sample sizes, heterogeneous reporting systems, and lack of standardized histological classifications. There is therefore a need for updated, hospital-based evidence to improve understanding of gastric mucosal pathology in this setting.

This retrospective descriptive study addresses this gap by analyzing 210 endoscopic gastric biopsy specimens processed at Garki Hospital, Abuja, between August 2024 and August 2025.

The objectives are to: (i) describe the histopathological spectrum of gastric biopsies; (ii) determine the prevalence of *H. pylori*-associated gastritis and premalignant lesions; and (iii) compare the findings with contemporary global, sub-Saharan African, and Nigerian data. The study provides timely insights into the evolving burden of gastric disease in the Federal Capital Territory and contributes to evidence-based endoscopic and diagnostic strategies in Nigeria.

## Materials and Methods

This retrospective descriptive study analyzed gastric biopsy specimens obtained during upper gastrointestinal endoscopy at Garki Hospital, Abuja, from August 2024 to August 2025, with the objective of characterizing the histopathological spectrum of gastric mucosal lesions in adults. Garki Hospital is a tertiary healthcare facility in Nigeria's Federal Capital Territory, equipped with diagnostic endoscopy services and a functional histopathology laboratory capable of routine tissue processing and staining.

The study population comprised all adult patients ( $\geq 18$  years) who underwent endoscopy during the study period and had gastric biopsies submitted for histopathological evaluation. Eligible cases included those with complete demographic information and adequate tissue samples; poorly preserved specimens, incomplete data, or indeterminate histology were excluded. A total of 210 biopsy specimens met the criteria and were included in the final analysis.

Data were obtained from histopathology laboratory records, capturing patient demographics, biopsy site, and histopathological diagnosis. All identifying information was removed before analysis. Biopsy specimens were fixed in 10% formalin, processed routinely, embedded in paraffin, sectioned at 4–5  $\mu\text{m}$ , and stained with hematoxylin and eosin. Where indicated, Giemsa staining was used to detect *Helicobacter pylori*. All slides were reviewed independently by two histopathologists, with consensus used to resolve discrepancies.

Lesions were classified according to the updated Sydney System for gastritis and the WHO classification for gastric neoplasms, encompassing non-neoplastic lesions such as chronic and atrophic gastritis, intestinal metaplasia, and dysplasia, as well as neoplastic lesions including adenocarcinoma, lymphoma, gastrointestinal stromal tumors, and benign gastric polyps.

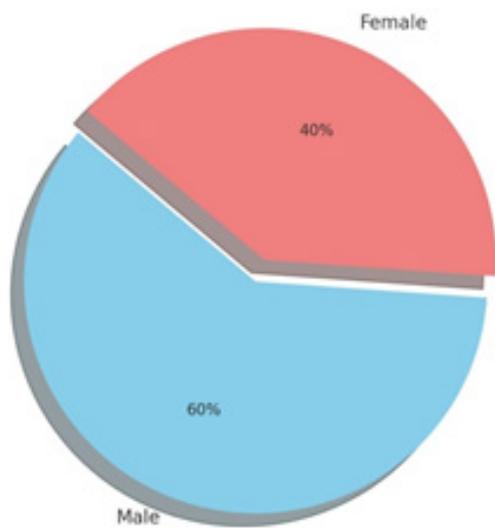
Data entry was performed using Microsoft Excel, and analysis was conducted with SPSS version 26. Descriptive statistics were used to summarize demographic and histopathological patterns. Associations between lesion types and demographic or clinical variables were evaluated using chi-square or Fisher's exact tests, with significance set at  $p < 0.05$ . Ethical approval for the study was obtained from the Institutional Review Board of Garki Hospital, and all procedures adhered to the principles of the Declaration of Helsinki.

## Results

A total of 210 gastric biopsy specimens were received and analyzed in the Department of Anatomical Pathology over the 12-month study period with a predominance of male patients (60%) compared to females (40%), yielding a male-to-female ratio of 1.5:1 (Figure 1). The age distribution demonstrated that the majority of patients were between 41 and 60 years old (46.2%), highlighting the higher prevalence of gastric pathology in middle-aged to older adults. Notably, a substantial proportion of patients were aged  $\geq 71$  years (18.6%), reflecting persistent gastric disease burden in the elderly population (Figure 2).

Histopathologically, chronic gastritis was the most frequent lesion, accounting for 56.2% of biopsies. Among these, *H. pylori*-associated chronic active gastritis was particularly prominent (21.9%), emphasizing the ongoing role of this organism in gastric mucosal injury. Other forms of gastritis, including granulomatous, lymphocytic, and eosinophilic types, collectively represented 24.8% of cases, indicating a spectrum of inflammatory pathology beyond typical chronic gastritis (Table 1).

Neoplastic and pre-neoplastic lesions comprised 19% of the biopsies. Tubular adenocarcinoma was the most common malignancy (11.4%), while gastric polyps and ulcers accounted for smaller proportions (1.9% and 5.7%, respectively). The presence of adenocarcinoma primarily in middle-aged and elderly patients underscores the clinical relevance of early detection and endoscopic surveillance in at-risk populations (Table 1).



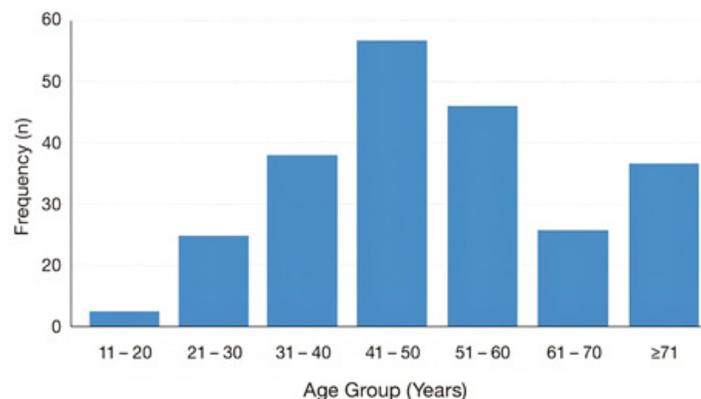
**Figure 1:** Sex Distribution of Patients with Gastric Biopsies (n = 210).

The histopathological figures complement these findings: *H. pylori* colonization was clearly visualized in the crypts of the antral mucosa (Figure 3), while tubular adenocarcinoma demonstrated well-formed glandular structures with nuclear atypia, highlighting the spectrum from inflammatory to malignant lesions (Figure 4). Overall, these results reveal a predominance of chronic inflammatory lesions, with a significant minority

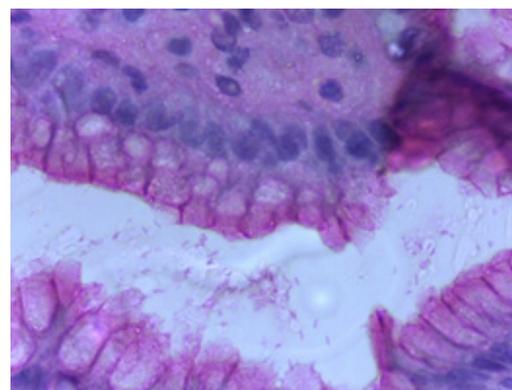
exhibiting neoplastic transformation, emphasizing the importance of histopathological evaluation in guiding surgical and medical management of gastric disease.

**Table 1:** Histologic Patterns of Gastric Lesions (n = 210).

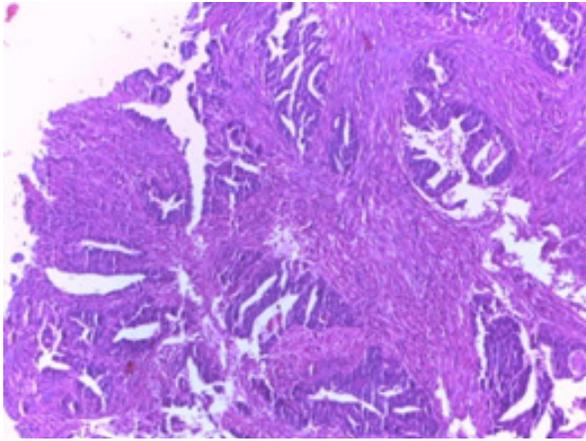
Category / Lesion Type	Frequency (n)	Percentage (%)
<b>A. Chronic Gastritis</b>		
Chronic superficial gastritis	26	12.4
Chronic active gastritis	20	9.5
Chronic atrophic gastritis	11	5.2
<i>H. pylori</i> with chronic active gastritis	46	21.9
<i>H. pylori</i> with chronic gastritis	15	7.1
<b>Subtotal (Chronic Gastritis)</b>	<b>118</b>	<b>56.2</b>
<b>B. Other Gastritis</b>		
Granulomatous gastritis	16	7.6
Lymphocytic gastritis	28	13.3
Eosinophilic gastritis	8	3.8
<b>Subtotal (Other Gastritis)</b>	<b>52</b>	<b>24.8</b>
<b>C. Neoplasm / Other Lesions</b>		
Adenocarcinoma	24	11.4
Polyp	4	1.9
Ulcer	12	5.7
<b>Subtotal (Neoplasm / Other Lesions)</b>	<b>40</b>	<b>19.0</b>
<b>Total</b>	<b>210</b>	<b>100</b>



**Figure 2:** Age Distribution of Patients with Gastric Biopsies (n = 210).



**Figure 3:** Gastric antral mucosa showing *Helicobacter pylori* colonizing the glandular crypts (Giemsa stain,  $\times 20$ ).



**Figure 4:** Gastric antral mucosa exhibiting tubular adenocarcinoma with well-formed glands and nuclear atypia (H&E stain, ×20).

## Discussion

In this retrospective series of 210 endoscopic gastric biopsies from a tertiary referral centre in Abuja, Nigeria, we observed a histopathological spectrum dominated by chronic inflammatory lesions, with a substantial contribution of *Helicobacter pylori*-associated gastritis, other forms of gastritis, and a non-negligible proportion of neoplastic lesions, including adenocarcinoma. This pattern provides important insight into the current burden of gastric mucosal disease in the Federal Capital Territory, adding to regional knowledge and highlighting implications for diagnosis, management, and surveillance.

Chronic gastritis (including superficial, active, and atrophic forms), either alone or in association with *H. pylori*, accounted for 56.2% of all biopsies in our series. When combined with other gastritis types (granulomatous, lymphocytic, and eosinophilic), non-neoplastic inflammatory lesions comprised over 80% of cases. This dominance aligns with the recognized global burden of gastritis as the most frequent outcome of gastric mucosal injury, often driven by *H. pylori* infection and environmental factors [16].

Globally, prevalence estimates for precancerous gastric lesions vary widely. A 2024 systematic review and meta-analysis of 166 studies reported pooled global prevalences of 25.4% for atrophic gastritis, 16.2% for intestinal metaplasia, and 2.0% for dysplasia [17]. This underscores that inflammatory and preneoplastic lesions remain common worldwide even in the era of eradication therapy. Our findings of high chronic gastritis prevalence are therefore consistent, although we did not specifically document IM or dysplasia. Global data show that *H. pylori* remains the common denominator linking precursor lesions to gastric cancer across regions [17,18]. Our local findings of significant *H. pylori*-associated gastritis reinforce this relevance and the need for surveillance and possible public-health action.

Within Nigeria and sub-Saharan Africa, several histopathological series have reported similar patterns. A tertiary-centre study from Northern Nigeria reviewing 543 gastric biopsies reported chronic

gastritis in 71.5% and adenocarcinoma in 20.4% of neoplastic lesions [19]. This aligns with our findings, though differences may reflect regional variation or referral bias. From Owerri (South-Eastern Nigeria), 80% of biopsies showed gastritis, *H. pylori* was present in 35%, and adenocarcinoma accounted for 3.3% [20]. Compared to that study, our neoplastic yield (19%) is higher, likely due to tertiary-referral selection. In Benin City (Niger Delta), chronic gastritis accounted for 82.4%, benign ulcers 6.3%, polyps 2.1%, and malignancies 7.8%; *H. pylori* was present in 55.6% [21]. While our chronic gastritis proportion is lower, our neoplastic proportion is higher (≈19%), possibly reflecting evolving epidemiology or referral patterns. A large Nigerian series (1994–2003) reported intestinal metaplasia in 9.2%, severe atrophic gastritis in 4.3%, and low-grade dysplasia in 0.7% [22]. Although we did not quantify these, our adenocarcinoma rate (11.4%) highlights ongoing malignant transformation requiring improved detection strategies.

Other African studies show similarly high gastritis and *H. pylori* prevalence but variable neoplastic rates, influenced by geography, environmental exposures, strain virulence, host genetics, and diagnostic capacity [23,24].

The predominance of chronic and *H. pylori*-associated gastritis highlights the importance of systematic detection and eradication. Chronic gastritis may progress through atrophy and intestinal metaplasia to carcinoma—known as the Correa cascade [18,25]. Early eradication, especially in middle-aged and older adults, may significantly reduce gastric cancer risk.

The relatively high neoplastic yield in our series supports routine biopsy during endoscopy. Standardized protocols such as the updated Sydney system improve detection even when endoscopy appears normal [26]. Given resource limitations, prioritizing high-risk groups for endoscopy may improve efficiency. Public-health measures improved sanitation, *H. pylori* eradication programs, and community awareness may reduce advanced presentations. The high prevalence of *H. pylori*-associated gastritis is expected, given its central role in gastric inflammation and carcinogenesis. *H. pylori* colonization drives chronic inflammation progressing through the Correa cascade [18,25]. Regions with high *H. pylori* prevalence have higher premalignant lesion burdens [17,18]. Environmental, nutritional, socioeconomic, and genetic factors may influence the progression to carcinoma. Variability in virulence factors, host response, smoking, diet, and healthcare access likely contributes to the high neoplastic rate observed here. Referral bias may also increase the proportion of advanced lesions in tertiary centres.

## Limitations

This single-center retrospective study may be affected by referral and selection bias, potentially overestimating neoplastic lesion prevalence. The histopathological analysis was limited to conventional H&E staining, without systematic use of special stains, immunohistochemistry, or molecular testing, restricting assessment of intestinal metaplasia, dysplasia, and *H. pylori*

virulence factors. Additionally, clinical, endoscopic, lifestyle, and follow-up data were unavailable, limiting correlation with histopathological findings. As a cross-sectional review, the study cannot determine temporal progression from gastritis to preneoplastic or neoplastic lesions.

### Conclusion

This study provides a contemporary snapshot of the histopathological profile of endoscopic gastric biopsies at a tertiary hospital in Abuja, revealing a predominance of chronic gastritis frequently associated with *H. pylori* but also a substantial proportion of neoplastic lesions. The findings reflect both global patterns of gastric mucosal disease and region-specific dynamics, underscoring the continuing relevance of histopathology in diagnosis and the need for targeted clinical and public health strategies. Given the considerable neoplastic yield, reliance on symptom-based management alone may be insufficient; systematic endoscopy with biopsy and *H. pylori* eradication efforts may improve early detection and reduce gastric cancer burden. Future prospective and molecular studies are needed to better define risk, track progression, and guide evidence-based prevention in Nigeria.

### Recommendations

Routine *H. pylori* screening and eradication should be implemented for symptomatic patients, with targeted endoscopic surveillance prioritized for high-risk individuals. Adoption of standardized biopsy protocols is recommended to improve detection of premalignant and malignant lesions. Public health measures to reduce *H. pylori* infection and raise awareness of gastric disease are essential, alongside enhanced training of clinicians and pathologists in gastric disease diagnosis. Prospective and molecular studies should be conducted to monitor disease progression, and health system capacity for timely endoscopy and histopathology services should be strengthened.

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