Original Article

Diagnostic Lower Gastrointestinal Endoscopy In Warri, Delta State, Southern Nigeria: Spectrum Of Indications And Colonic Abnormalities

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Article History
Submitted: 26/02/2026, Accepted: 06/03/2026, Published: 12/03/2026

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ABSTRACT

Colonoscopy remains the gold standard for the evaluation of lower gastrointestinal (GI) tract, as it offers both diagnostic and therapeutic benefits. However, region specific data on the indications and diagnosis at colonoscopy is limited in Delta State, Nigeria. This study aims to determine the spectrum of indications and diagnostic abnormalities among patients undergoing diagnostic colonoscopy. This study retrospectively reviewed colonoscopy reports of 364 patients obtained from the endoscopy register of a private health facility in Warri, Delta State, between January 2020 and December 2025. The retrieved data comprising patient demographics, clinical indications, comorbidities and colonoscopy findings were entered into a proforma, and this data was analysed. Three hundred and sixty-four colonoscopies were done, and males comprised 64% and females 36%, giving a male-to-female ratio of about 2:1. The mean age in this study was 52.1years. The age range was 19-100 years, and the cluster age group was the 5th to 7th decades (59.3%). Hematochezia was the most frequent indication for a colonoscopy (44.8%), followed by abdominal pain (13.7%), constipation (11.8%) and weight loss (7.1%). The most common comorbidity was hypertension (30.5%). Colitis was the commonest diagnosis (64.0%), followed by haemorrhoids (22.5%) and tumors (12.1%). A high diagnostic yield of 92% from colonoscopy was recorded. Most abnormal findings were found more in males than in females, although not statistically significant (p >0.05). This study concluded that hematochezia was the commonest indication for colonoscopy and colitis is the most common diagnosis. This calls for colonoscopy as an effective means of diagnosing colonic diseases with a high diagnostic yield.

Keywords: Colonoscopy, Colitis, Delta, Gastrointestinal tract, Haematochezia, Haemorrhoids, Nigeria.

INTRODUCTION

The lower gastrointestinal (GI) tract comprises the colon, rectum and anal canal, and it plays a significant role in the process of digestion, absorption and defecation.[1] Disorders of the GI tract account for more than 10% of presentations to general practitioners with a substantial proportion of these conditions requiring specialist gastroenterology services.[2] Colonoscopy is a procedure utilized to examine the colorectum and terminal ileum by inserting a flexible endoscope, which is fitted with a camera and light source, into the anal canal.[3] It is widely regarded as the 'gold standard' for the evaluation of lower GI diseases and is widely employed for both diagnostic and therapeutic purposes.[4]

Common indications for colonoscopy include GI bleeding, unexplained anaemia, abdominal pain, changes in bowel habits, suspected malignancy, and abnormalities detected on imaging studies such as abdominal ultrasound, barium enema, colonic radiography, or computed tomographic scans.[5,6] Findings observed during colonoscopy range from normal mucosa to a wide variety of pathological conditions. Typical abnormalities include inflammatory conditions such as colitis and inflammatory bowel disease, benign lesions including colonic polyps and hemorrhoids, malignant colonic tumors, diverticular disease of the colon, as well as specific inflammatory bowel disease subtypes such as ulcerative colitis and Crohn's disease.[7] Colonoscopy is a cost effective procedure that serves both

Article Access
***Website**: www.wjmbs.org*
doi: 10.5281/zenodo.19187225

How to cite this article
Ogholoh Od, Ogholoh GI, Ikubor JE, Ominde BS, Jeremiah O. Diagnostic Lower Gastrointestinal Endoscopy In Warri, Delta State, Southern Nigeria: Spectrum Of Indications And Colonic Abnormalities, West J Med & Biomed Sci. 2026;7(1):134-138.. DOI:10.5281/zenodo.19187225.

diagnostic and therapeutic purposes.[5,8] Its utilization has been associated with reduced colorectal carcinoma (CRC) incidence and mortality through early detection and timely intervention.[9,10] The burden from lower GI disease has increased[11] and the incidence of colorectal cancer in Nigeria has been on the rise, so the issues that affect the colon are becoming increasingly significant to the Nigerian public health concerns.[12,13]

Demographic factors such as age, sex, and geographic location significantly influence the prevalence and patterns of colonic abnormalities.[14] Contrary to industrialized countries where colonoscopies are often utilized for screening and other diagnostic and therapeutic purposes, colonoscopy services remain limited in Nigeria, resulting in a relative paucity of local data.[15] This gap in evidence hinders the development of effective screening and preventive strategies that are appropriately tailored to the demographic characteristics of these populations.[14]

Previous studies on the indications and findings of colonoscopy have been reported in Northern[16–18] and Southern Nigeria.[8,19,20] However, there is paucity of colonoscopy data from Delta state. Addressing this regional knowledge gap is pertinent since the understanding of the demographic variations in colonic abnormalities can be helpful for developing healthcare policies and allocating medical resources more effectively.[14] This study was conducted among patients who underwent colonoscopy at a private hospital in Delta State, Nigeria with the aim to assess the spectrum of clinical indications and the colonoscopic findings. Hopefully, the findings of this study will reveal the level of utilization of colonoscopy in our environment, possibly buttress its important role in the management of lower GI diseases and assist in the advocacy for improvement of colonic screening practices.

MATERIALS AND METHODS

This was a retrospective descriptive cross-sectional study conducted according to the ethical principles of the Helsinki Declaration, and Ethical approval was obtained from the Research and Ethics Committee of Delta State University Teaching Hospital, Oghara (HREC/PAN/2026/004/0936).

This study was carried out at the Endoscopy unit of (Pharez Hospital and Diagnostics) in Warri, Delta State, Southern Nigeria, from January 1st 2020 to December 31st, 2025. Data for the study was obtained from the endoscopy register of the hospital and the age, gender, indication and colonoscopy findings in the different anatomical locations of the lower GI for each subject were noted and recorded on a proforma. All the patients aged 18 years and above with complete required information were included in the study.

All the colonoscopies were carried out by a single Consultant Gastroenterologist using an Olympus CV-140 (Evis 140) Endoscopy processor. On the day of booking for the colonoscopy, the patient is reviewed and examined by the Consultant Gastroenterologist to ensure that the patient is fit for the procedure and exclude contraindications such as possible intestinal obstruction and perforation. The patient then underwent bowel preparation (for two days prior to the procedure day) using oral ingestion of 500mls of 20% mannitol and consuming low residue diet.

On the day of the procedure, the patient is counseled by the Consultant Gastroenterologist, and signed informed consent form was obtained from the patient. Thereafter, digital rectal examination was conducted to ascertain adequate colonic cleansing, and then the colonoscopy was carried out with the patient in the left lateral position. After the procedure, the patient is observed for about two hours before been discharged home. The post procedure care also included counseling on resumption of oral intake and to immediately report any observed complications such as abdominal pain and distension.

Data analysis was performed using the IBM Statistical package for social analysis (SPSS) version 27 (IBM SPSS Armonk, NY). For quantitative variables, means and standard deviations were used to compare data, while the frequencies of colonoscopy indications, and diagnoses were summarized in tables and figures. Chi-square and Fishers' exact test were used to test the association of the colonoscopic diagnosis with gender and p value was considered significant at <5%.

RESULTS

The colonoscopy reports of 364 patients comprising 233 males and 131 females were reviewed, and their findings recorded for this study. The mean age of the patients was 52.09±15.91 years. The mean ages for male and female participants were 51.26±15.89 years and 53.57±15.89 years respectively. The age of the study participants ranged from 19 to 100 years. Participants aged 51-60 years constituted the largest proportion of the study population (82, 22.5%), while the ≤20 years age group had the lowest frequency (2, 0.5%). The distribution of the patients based on age is displayed in Figure 1. The most prevalent indications for colonoscopy in this study include haematochezia (168, 44.8%), abdominal pain (48, 13.2%), and constipation (43, 11.8%). Other less common indications include weight loss, anaemia, surveillance and perianal pain/discomfort/pressure (Figure 2). Hypertension was the most common comorbidity found in the patients who presented for colonoscopy (111, 30.5%). Others include diabetes, weight loss, obesity, anaemia amongst others (Figure 3). One hundred and nineteen (32.7%) patients did not present with any comorbidity (Figure 3). Table 1 describes the anatomical distribution of colonoscopic findings across different segments of the lower GI tract. In the rectum, haemorrhoids constituted the most common abnormality seen (92, 25.3%). Abnormal mucosa was the most prevalent abnormality in the sigmoid colon (144, 39.6%), descending colon (109, 29.9%) and transverse colon (75, 20.6%). Tumors were seen predominantly within the rectum and sigmoid colon, comprising 26 (7.1%) and 15 (4.1%) respectively of the patients. Figure 4 illustrates the frequency distribution of colonoscopy diagnosis among the study population.

Colitis was the most prevalent diagnosis (233, 64.0%), followed by haemorrhoids (82, 22.5%) and tumours (45, 12.4%). Also, diverticular disease of the colon was observed in 6.3% of cases. Less frequently reported findings include polyp, and pale mucosa. The subsite of distribution of tumours within the colon in patients

undergoing colonoscopy as depicted in Table 2 showed 44.4%(n=20) were in the rectosigmoid junction, followed by the rectum and sigmoid colon with 22.2%(n=10) each. The anal verge and ascending colon were also 4.4 %(n=2) respectively. There was no caecal tumour seen in this study [Table 2]. Majority of the patients with malignant tumour 53.9% (n=21) were in the sixth and seventh decades of life, while 25.8% (n=10) were below 50 years [Figure 5]. The colonoscopy diagnosis among the different age groups are shown in Figure 5. Majority of the colonoscopy findings had greater frequencies among males compared to females. However, there was no statistically significant sex variations in the colonoscopy diagnosis. Haemorrhoids had a high prevalence in the 31-40 years age group followed by the 41-50 years age group. Colitis, haemorrhoids and tumors had higher frequency in the older age group compared to the young adults. The comparison of the prevalence of normal colonoscopic findings with abnormal findings among the study participants is represented in Figure 6.

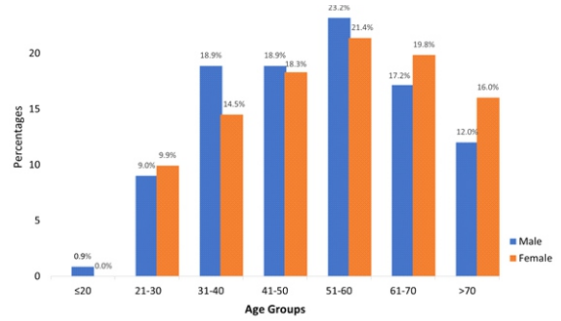


Figure 1: Bar chart showing the distribution of the age and gender among the study participants

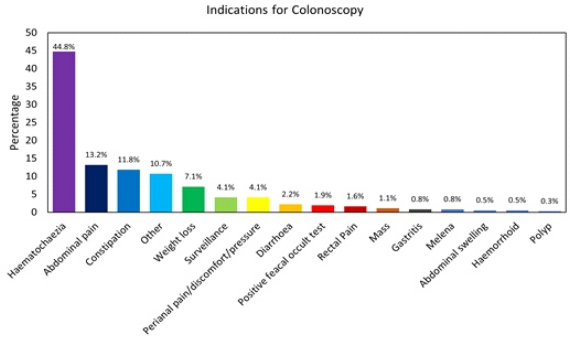


Figure 3: Associated comorbidities of patients for colonoscopy

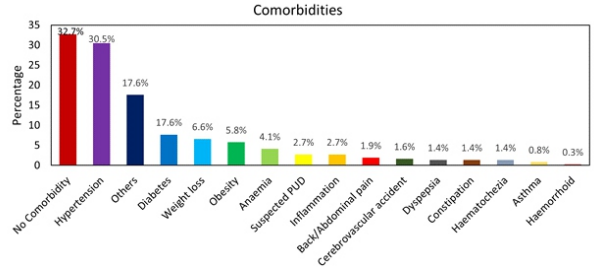


Figure 2: Indications for colonoscopy.

Table 1: Anatomical distribution of the Colonoscopy findings in the lower GI tract (N=264)

Colonoscopy findings	Rectum		Sigmoid Colon		Descending Colon		Transverse Colon		Ascending Colon		Caecum	
	N	%	N	%	N	%	N	%	N	%	N	%
Haemorrhoid	92	25.3	-		-			-		-		-
Tumour/mass	26	7.1	15	4.1	3	0.8						
Colitis	32	8.8	144	39.6	109	29.9	75	20.6	44	12.1	16	4.4
Prominent Submucosal vessels	129	35.4	2	0.5	-			-		-		-
Polyp	-		3	0.8	1	0.3		-		-		-
Diverticulae	-		8	2.2	15	4.1		-	5	1.4		-
Others	12	3.3	15	4.1	3	0.8	3	0.8	2	0.5	1	0.3
Normal	59	16.2	81	22.3	106	29.1	133	36.5	150	41.2	182	50.0

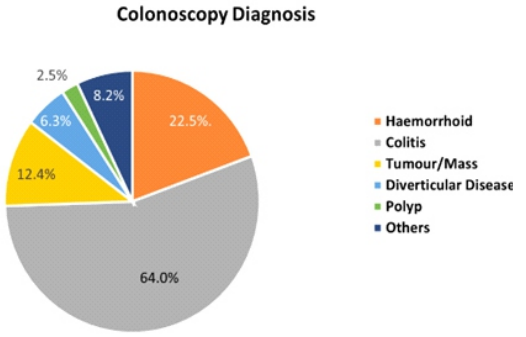
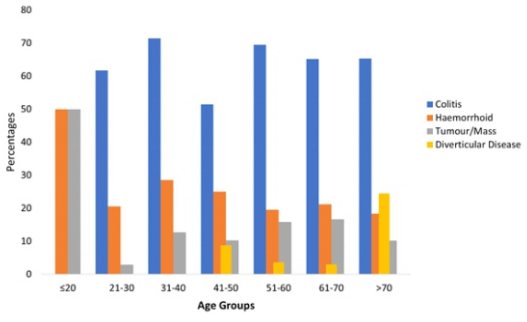
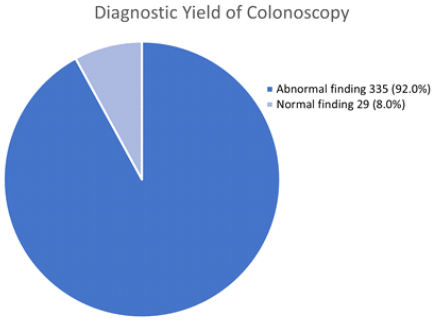


Figure 4: Frequency distribution of colonoscopy diagnosis.

Table 2 Subsites of Tumours within the colon

Tumour Site	N	%
Anal verge	2	4.4%
Rectosigmoid	20	44.4%
Rectum	10	22.2%
Sigmoid	10	22.2%
Descending	2	4.4%
Ascending	NIL	
Caecum	NIL	





DISCUSSION

Colonoscopy has increasingly become the preferred procedure for the assessment of patients with lower GI symptoms, CRC screening and polyp surveillance due to its combined diagnostic and therapeutic abilities. In this study, the 51 to 60 years age group constituted the largest proportion of the study population . This finding is consistent with the report by Bojuwoye *et al.*[18] However, studies by Akere *et al*[20] and Abere *et al*[19] reported a higher frequency among participants aged 61 to 70 years. In contrast, Oghenetega *et al*[11] identified that most of their study subjects fell within the 20-39 years age bracket. This may be attributed to the high prevalence of lower GI diseases in the age group and also the high rate of alcohol consumption, smoking and *Helicobacterpylori* (*H.pylori*) infection which most occurred among the males in their study. Additionally, the location of their study centre, which was predominantly occupied by students within this age range, may have influenced the age distribution.

Male patients underwent colonoscopy more frequently than females in this study. This observation aligns with the reports by several authors.[16–20] This variation may be explained by the greater financial independence among men, which could improve access to specialist procedures like colonoscopy. Differences in health seeking behaviour based on gender as well as the generally more cautious lifestyle adopted by women, may also contribute to this variation.[18,21]

Haematochezia was the most common indication for colonoscopy in this study . This finding corresponds with the reports from previous studies conducted in Nigeria,[16,18,20,22] other parts of Africa[5] and Asia[21]. Abdominal pain with or without distention, as well as constipation was the next frequent indication following haematochezia. Olokoba *et al*[8] reported rectal bleeding, suspected colon cancer, and constipation as the most common indications for colonoscopy in their study. Bhattarai *et al*[21] in Nepal observed bloody diarrhoea and altered bowel habits to be the most prevalent indications for colonoscopy after haematochezia.

Hypertension, diabetes and weight loss were the most predominant comorbidities of the patients who presented for colonoscopy in this study. In contrast, Jabif *et al*[23] identified overweight and obesity in addition to hypertension as the most common comorbidities of their participants. Bhattarai *et al*[21] reported that patients frequently presented for colonoscopy with associated comorbidities like chronic liver disease, chronic kidney disease, and ischemic heart disease.

In the rectum, the most prevalent finding was prominent submucosal vessels followed by haemorrhoids, while colitis was the most common finding in the other parts of the colon . Most studies carried out in other parts of Nigeria[8,15,16,18,20] and Africa[5] did not report specific findings at colonoscopy based on the anatomical distribution of the lower GI tract. Bhattarai *et al*[21]and Irowa *et al*[22] in their studies observed that the rectum was the part of the large intestine most affected with colonic pathologies. Accurate lesion localization inside the colon is crucial for the efficient diagnosis of colonic abnormalities during a colonoscopy. This provides important information about therapy options and clinical prognosis.[24]

Colitis was the most prevalent colonoscopy diagnosis in the index study . This contrasts with the findings by Bojuwoye *et al*,[18]Duah *et al*,[5]Irowa *et al*,[22]and Manko *et al,*[16] where haemorrhoid was the most prevalent finding at colonoscopy among their study subjects in the aforementioned studies, whereas, haemorrhoids were the second most common colonoscopy finding in our study. These variations in the findings at colonoscopy may be attributed to the varying lifestyle, race, geographical location, diets, behavioural and environmental factors.These differences, thus emphasize the significance of regional differences in the interpretation of prevalence data.[14]

In this study, most of the findings at colonoscopy were more prevalent among males than females although the difference was not statistically significant. This is comparable with the findings by Bojuwoye *et al*[18] Contrary to this, Flemban *et al*[14] reported significant sex difference in most of their findings, at colonoscopy. These discrepancies may be attributed to the difference in study design, population characteristics and the criteria for diagnosis. Occupation, physical activity, dietary habit, and variations in anatomy, as well as cultural or regional factors may be possible explanations for this gender-based variation.[14]

Haemorrhoids occurred more frequently among patients within the 31-40 years age group. Colitis had greater representation in the 51-60 years age group. Similarly, Bojuwoye *et al*[18] reported greater prevalence of colitis in patients above 50 years than those in the younger age group (<50 years). Diverticular disease of the colon was common among patients >70 years. This is comparable with the work of Flemban and collaegues[14] that observed a significant increase in the occurrence of diverticular disease with increase in age of their study participants, being more prevalent among participants aged ≥60 years. According to Jevon and Madhur,[25] there is a high incidence of diverticular disease of the colon among older individuals due to age related structural and functional changes in the colon. This finding emphasizes the significant importance of CRC screening and strengthens the recommendation of the procedure at the age of 50 years.[14]

The overall diagnostic yield of colonoscopy in this study was 92%. This was higher than the findings in other parts of Nigeria.[8,17,20] In this present study, a large proportion of the participants had single diagnosis than multiple diagnosis, which is comparable to the findings by Bojuwoye *et al.*[18] The variation in the diagnostic yield may be attributed to the difference in sample size, spectrum of colonic diseases, selection criteria and indications for colonoscopy. Also, the availability and cost of colonoscopy in these different regions may also be a factor.[8]

LIMITATIONS OF THE STUDY

The scope of this study examined only colonoscopy reports. Not correlating with other diagnostic tools such as imaging, laboratory tests and confirmation with histology are major limitations observed in this study.

CONCLUSION

This study has shown that colonoscopy has a high diagnostic yield and is an irreplaceable diagnostic tool of

diagnosing colonic diseases. Haematochezia was the most prevalent indication for colonoscopy, while hypertension was the most common comorbidity among the study population. Colitis was the most frequently diagnosed condition on colonoscopy, while colonic masses were predominantly in the rectosigmoid region. The high diagnostic yield of colonoscopy in this study reveals the importance of colonoscopy as an invaluable diagnostic tool in the evaluation of lower GI disorders.

RECOMMENDATIONS

This study recommends the routine use of surveillance colonoscopy in persons within the 5th to 7th decades. Further studies combining colonoscopy findings with laboratory results and histological confirmation is highly recommended.

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Conflicts Of Interest

There are no conflicts of interests.