International Journal of Medical and Health Research
www.medicalsciencejournal.com
ISSN: 2454-9142
Received: 15-08-2021, Accepted: 30-08-2021, Published: 15-09-2021
Volume 7, Issue 9, 2021, Page No. 13-20

# Lower gastrointestinal endoscopy in a tertiary healthcare facility in south-west Nigeria-a five year review of the spectrum of indications and endoscopic abnormalities

**Oguntoye Oluwatosin Oluwagbenga**
Consultant Gastroenterologist, Department of Medicine, Federal Teaching Hospital Ido-Ekiti, Ekiti State, Nigeria

**Abstract**
**Background:** Complaints of lower gastrointestinal symptoms are common in everyday clinical practice; the underlying aetiology varies widely. Lower gastrointestinal endoscopy (Colonoscopy) is the gold standard investigation for evaluating lower gastrointestinal symptoms. It is very useful in the proper diagnosis and determination of the appropriate treatment, including endotherapy, of the underlying pathology.
**Aim/Objective:** To determine the spectrum of indications and endoscopic abnormalities in the patients undergoing lower gastrointestinal endoscopy at a tertiary healthcare facility located in a rural community in south-west Nigeria.
**Methods:** This was a retrospective cohort study of all patients who had lower gastrointestinal endoscopy between February 2016 and February 2021 (a period of 5 years). The Age, Gender, Indication and the Endoscopy findings were obtained from the endoscopy register. A total of 48 lower gastrointestinal endoscopies had been performed over the period. The data obtained was analyzed using the Statistical Package for the Social Sciences (SPSS) version 21.0. Descriptive statistics used included frequency tables, means and standard deviations.
**Results:** A total number of 48 lower gastrointestinal endoscopies were performed during the period under review, out of which 34 (70.8%) were males and 14 (29.2%) were females with a male to female ratio of 2.4 to 1. The age range of the patients was 35 to 86 years with a mean (±SD) of 61.7(±14.03) and median of 62.5 years. The highest number of lower gastrointestinal endoscopies were performed on male individuals above 60 years of age.
Symptoms of lower gastrointestinal bleeding (haematochezia/melaena) constitute the most common indication for lower gastrointestinal endoscopy (27.1%), followed by a clinical suspicion of a rectal tumour 12.5%, documented abnormality on an imaging study 10.4% and tenesmus 10.4%. The caecal intubation rate from this study was 87.5%.
The commonest endoscopic abnormality detected from this study was Large bowel tumour (45.8%) with the following distribution: Rectum 14.6%, Rectosigmoid 10.4%, Sigmoid colon 10.4%, Ascending colon 6.2%, Descending colon 2.1% and Caecal pole tumour 2.1%. The other abnormalities detected include Colon polyps 12.5%, Haemorrhoids 6.2%, Diverticulosis 6.2%. Ulcerative colitis 4.2% and Rectal polyp 4.2%. Normal endoscopy findings were found in 27.1% of the patients. Large bowel tumours were the commonest cause of lower gastrointestinal bleeding in this study followed by haemorrhoids and diverticulosis.
**Conclusion:** The commonest indication for lower gastrointestinal endoscopy in this study was lower gastrointestinal bleeding while the commonest endoscopic abnormality was large bowel tumour. Large bowel tumours were the most common cause of lower gastrointestinal bleeding and left-sided bowel tumours were the more commonly found tumours in this study. It may therefore be concluded that, large bowel tumours are the commonest underlying gastrointestinal pathology of patients' symptomatology necessitating lower gastrointestinal endoscopic evaluation. Certainly, the importance of lower gastrointestinal endoscopy in the evaluation of patients with lower gastrointestinal symptoms cannot be overemphasized.

**Keywords:** lower, gastrointestinal, endoscopy, colonoscopy, indications, findings, Nigeria

## Introduction

Lower gastrointestinal endoscopy also known as Colonoscopy is an endoscopic procedure in which a flexible endoscope is introduced through the anus for visual inspection of the entire large bowel; it is advanced through the rectum, sigmoid colon, descending colon, transverse colon, ascending colon and the caecum [1]. Lower gastrointestinal endoscopy is the gold standard investigation for lower gastrointestinal symptoms [2]. It provides an additional benefit of enabling mucosal biopsy sampling and brush cytology for histopathologic diagnosis and therapeutic interventions can also be carried out [3].
Some indications for lower gastrointestinal endoscopy include: Screening at risk individuals for colorectal cancer [4, 5], Diagnostic evaluation for signs or symptoms suggestive of lower gastrointestinal (GI) disease (such as constipation, diarrhea, abdominal pain, altered bowel habit, haematochezia or melaena): Surveillance, evaluation, and follow-up of colorectal cancer (such as family history of colorectal cancer, familial adenomatous polyposis or hereditary non-polyposis colorectal cancer); Biopsy for suspected lower GI disease (such as in inflammatory bowel disease); and Therapeutic intervention (such as control of hemorrhage, dilatation or stenting of stricture, ablation of neoplasms or removal of polyps) [6, 7]. Symptoms of lower gastrointestinal diseases are common and accurate diagnosis is usually made after an adequate clinical, laboratory and imaging assessment.[1] In resource poor countries such as in Nigeria, diagnosis is often largely based on clinical assessment [8, 9]. Accurate localization and diagnosis of gastrointestinal pathologies is necessary for proper evaluation, treatment and follow-up of patients. The importance of lower gastrointestinal endoscopy in patient management thus cannot be overemphasized.

Several studies have been published in the literature internationally on the findings at lower gastrointestinal endoscopy in patients presenting with symptoms of lower gastrointestinal diseases [10-13]. Some of the findings include colorectal cancers, colitis, proctitis, colon polyps, rectal polyps, diverticular disease, ulcerative colitis, crohn's disease, vascular malformations and haemorrhoids with varying prevalences in different study populations [10-13]. Some studies have also reported Normal findings at lower gastrointestinal endoscopy despite the patients having lower gastrointestinal symptoms [10, 11, 13].

Studies conducted in Nigeria have also shown similar findings with varying prevalences [8, 9, 14-17]. There is however paucity of data on the pattern of endoscopy findings in patients undergoing lower gastrointestinal endoscopy in the rural environments in Nigeria. This is because lower gastrointestinal endoscopy services are not available in most rural communities in Nigeria and the few published studies were conducted in urban communities where lower gastrointestinal endoscopy is available. This is sadly the trend across the country and also in other developing countries [8, 18, 19].

The aim of this study is to determine the characteristics of the patients undergoing lower gastrointestinal endoscopy in a rural community in south-west Nigeria. The objective of this study is to determine the spectrum of indications and endoscopic abnormalities in the patients undergoing lower gastrointestinal endoscopy at the Federal Teaching Hospital, Ido-Ekiti, Ekiti state in south-west Nigeria. The institution started offering lower gastrointestinal endoscopy services in February 2016 till date and this study is an audit of the endoscopy practice.

Knowledge of the common indications for and findings at lower gastrointestinal endoscopy in our environment will help to improve clinical practice and overall patient care. This study will also provide much needed scientific data on the subject among rural dwellers and it will contribute to the pool of the already available data which can be used to build a national database on endoscopy findings across the different communities in Nigeria. This can then form a template upon which more extensive research can be carried out in our population and can also be used for the development of a national colonoscopy guideline.

## Methodology

### Study design

This was a retrospective cohort study of all patients who had lower gastrointestinal endoscopy between February 2016 and February 2021 (a period of 5 years) at the Federal Teaching Hospital, Ido-Ekiti, Ekiti state in south-west Nigeria.

### Study location

The study was conducted at the Federal Teaching Hospital, Ido-Ekiti, Ekiti state in south-west Nigeria. Ido-Ekiti is one of the rural communities located in Ido-Osi local government area of Ekiti state which has an estimated population of 159,114 people. The Federal Teaching Hospital, Ido-Ekiti is a tertiary health institution that started providing endoscopy services for patients since February 2016 till date.

The Lower gastrointestinal endoscopy procedures were carried out in the endoscopy suite which is located within the Operating Theatre complex of the Federal Teaching Hospital, Ido-Ekiti. The Gastroenterology unit of the Department of Medicine is in charge of all gastrointestinal endoscopies in the institution.

### Patient population

Referrals for endoscopies are received by the Gastroenterology unit from the hospital's outpatient clinics, wards, emergency department, other various specialized units within medicine department as well as from other departments in the hospital such as Obstetrics and Gynaecology and General Surgery. The hospital runs an "open access" endoscopy policy whereby the patients are directly referred to the endoscopy room by their physicians based on their perceived need without prior review by a gastroenterologist. Nevertheless, the patients would be properly prepared for the procedure following standard protocols.

### Procedure

Patients presenting for Lower gastrointestinal endoscopy would have been booked and undergone adequate bowel preparation which commences usually 3 days before the procedure. A combination of dietary modifications, liberal fluid intake, two laxatives (Castor oil 15mls and Bisacodyl 20mg twice daily) and a bowel cleansing agent (such as MOVICOL®, PICOLAX®) were used for the bowel preparation. The patients were also fasted for a minimum of 8hours before the procedure. The procedure was explained to them and a written informed consent obtained before the procedure. The patients' socio-demographics and indication for lower gastrointestinal endoscopy were documented in the endoscopy register.

Patients were placed on a dextrose containing intravenous fluid and an anti-motility agent (Hyoscine butyl bromide 20 -40mg) administered before the procedure. Patients were also administered a combination of Pentazocine 30mg and Diazepam 10mg with the doses titrated for optimal conscious sedation. General anaesthesia was not administered to any of the patients. Continuous monitoring of the patient was done by a nurse throughout the procedure. Patients were placed in the left lateral decubitus position. A systematic examination was done by the endoscopist (a Gastroenterologist). The Lower gastrointestinal endoscopy was done using a forward viewing Olympus CV-170 series video scope (Olympus America Incorporated) according to standard procedures. Endoscopic images of important views were taken for documentation and for further review after the procedure.

Samples of mucosal biopsies were taken as indicated and the specimens were transported in a formalin solution for histopatho logical evaluation. There was observation of the patient for a minimum period of 30minutes after the procedure and subsequently discharged home or taken to the wards once the vital signs were satisfactory. The endoscopy findings were documented in the endoscopy register and an endoscopy report was issued to the patients.

### Data collection

The endoscopy room register was used to obtain the data for a five-year period; February 2016 to February 2021. The following information was obtained from the register: Age, Gender, Indication and the Lower gastrointestinal endoscopy findings. A total of 48 lower gastrointestinal endoscopies had been performed over this period.

### Ethical Approval
Ethical approval was obtained from the Ethics and Research Committee of the institution.

### Data Analysis
The data obtained was analyzed using the Statistical Package for the Social Sciences (SPSS) version 21.0 computer software package (SPSS Chicago Inc. IL U.S.A). Descriptive statistics used included frequency tables, means and standard deviations.

### Results
A total number of 48 Lower gastrointestinal endoscopies were performed during the period under review (February 2016 to February 2021 – a five year period), out of which 34 (70.8%) were males and 14 (29.2%) were females with a male to female ratio of 2.4 to 1 (Figure 1). The age range of the patients was 35 to 86 years with a mean (±SD) of 61.7(±14.03) and median of 62.5 years (Figure 2).

The highest number of lower gastrointestinal endoscopies were performed on male individuals above 60 years of age (Table 1). There had been a gradual rise over the years in the number of lower gastrointestinal endoscopies performed with 15 (31.2%) procedures performed in 2019 but 14 (29.2%) procedures were performed in 2020 (Figure 3).

Symptoms of lower gastrointestinal bleeding (haematochezia/melaena) constituted the commonest indication for lower gastrointestinal endoscopy (27.1%), followed by a clinical suspicion of a rectal tumour 12.5%, documented abnormality on an imaging study 10.4% and tenesmus 10.4% (Table 2). The imaging modalities considered in this study include any of Barium enema, Abdominal X-ray, Abdominal ultrasound scan or Abdominal CT scan.

The caecum was intubated (confirmed by insertion of the tip of the colonoscope into the caecal caput; permitting examination of the medial aspect of the caecum proximal to the ileocaecal valve) in 42 patients, giving a caecal intubation rate of 87.5% (Table 3).

Various endoscopic abnormalities were detected in this study and some patients had multiple abnormalities (Table 4 and Figures 4-6). The commonest endoscopic abnormality detected from this study was Large bowel tumour (45.8%) with the following distribution: Rectum 14.6%, Rectosigmoid 10.4%, Sigmoid colon 10.4%, Ascending colon 6.2%, Descending colon 2.1% and Caecal pole tumour 2.1%. The other abnormalities detected include Colon polyps 12.5%, Haemorrhoids 6.2%, Diverticulosis 6.2%. Ulcerative colitis 4.2% and Rectal polyp 4.2%. Normal endoscopy findings were found in 27.1% of the patients.

In this study, Large bowel tumours were the commonest endoscopy findings and they constituted 30.8% of the abnormalities seen in patients who had lower gastrointestinal endoscopy done on account of symptoms of lower gastrointestinal bleeding (haematochezia/melaena) as depicted in Table 5. The other common causes of lower gastrointestinal bleeding from this study include Haemorrhoids 23.1%, Diverticulosis 23.1%, Ulcerative colitis 15.4% and Colonic polyps 7.7%.

**Table 1:** Age and gender distribution

| | Gender | | |
|---|---|---|---|
| **Age group** | **Male(s)** | **Female(s)** | **Total (%)** |
| < 30 | 0 | 0 | 0 (0) |
| 30-39 | 2 | 1 | 3 (6.2) |
| 40-49 | 2 | 5 | 7 (14.6) |
| 50-59 | 8 | 3 | 11 (22.9) |
| 60-69 | 6 | 4 | 10 (20.8) |
| 70-79 | 12 | 0 | 12 (25.0) |
| ≥ 80 | 4 | 1 | 5 (10.4) |
| Total (%) | 34 (70.8) | 14 (29.2) | 48 (100.0) |

**Table 2:** Indications for lower gastrointestinal endoscopy.

| Indication | Frequency | % |
|---|---|---|
| Haematochezia/Melaena | 13 | 27.1 |
| Suspected Rectal Tumour | 6 | 12.5 |
| Abnormality on other Imaging Tests | 5 | 10.4 |
| Tenesmus | 5 | 10.4 |
| Altered Bowel Habit | 4 | 8.3 |
| Suspected Colonic Tumour | 4 | 8.3 |
| Localized Abdominal Swelling | 3 | 6.2 |
| Abdominal Pain | 2 | 4.2 |
| Screening Colonoscopy | 1 | 2.1 |
| Constipation | 1 | 2.1 |
| Chronic Diarrhoea | 1 | 2.1 |
| Unexplained Weight Loss | 1 | 2.1 |
| Unexplained Anaemia | 1 | 2.1 |
| Positive FOBT | 1 | 2.1 |
| Total | 48 | 100.0 |

**Key:** FOBT-Faecal occult blood test

**Table 3:** Caecal intubation rate.

| Caecal intubation | Frequency | % |
|---|---|---|
| Yes | 42 | 87.5 |
| No | 6 | 12.5 |
| Total | 48 | 100.0 |

**Table 4:** Lower gastrointestinal endoscopy findings.

| Findings | Frequency | % |
|---|---|---|
| Large Bowel Tumour | 22 | 45.8 |
| Rectal Tumour | 7 | 14.6 |
| Sigmoid Colon Tumour | 5 | 10.4 |
| Rectosigmoid Tumour | 5 | 10.4 |
| Ascending Colon Tumour | 3 | 6.2 |
| Descending Colon Tumour | 1 | 2.1 |
| Caecal Pole Tumour | 1 | 2.1 |
| Normal Findings | 13 | 27.1 |
| Colonic Polyp | 6 | 12.5 |
| Haemorrhoids | 3 | 6.2 |
| Diverticulosis | 3 | 6.2 |
| Ulcerative Colitis | 2 | 4.2 |
| Rectal Polyp | 2 | 4.2 |
| Crohn's Disease | 0 | 0 |
| Total | 51 | 106.2 |

**Table 5:** Lower gastrointestinal endoscopy findings in patients with lower gastrointestinal bleeding.

| Findings | Frequency | % |
|---|---|---|
| Large Bowel Tumour | 4 | 30.8 |
| Sigmoid Colon Tumour | 2 | 15.4 |
| Ascending Colon Tumour | 1 | 7.7 |
| Rectal Tumour | 1 | 7.7 |
| Haemorrhoids | 3 | 23.1 |
| Diverticulosis | 3 | 23.1 |
| Ulcerative Colitis | 2 | 15.4 |
| Colonic Polyp | 1 | 7.7 |
| Normal Findings | 1 | 7.7 |
| Total | 14 | 107.8 |

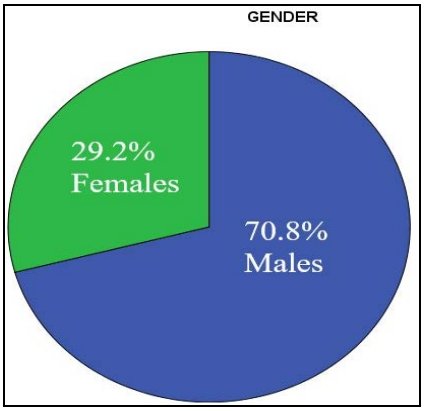


**Fig 1:** Gender distribution.

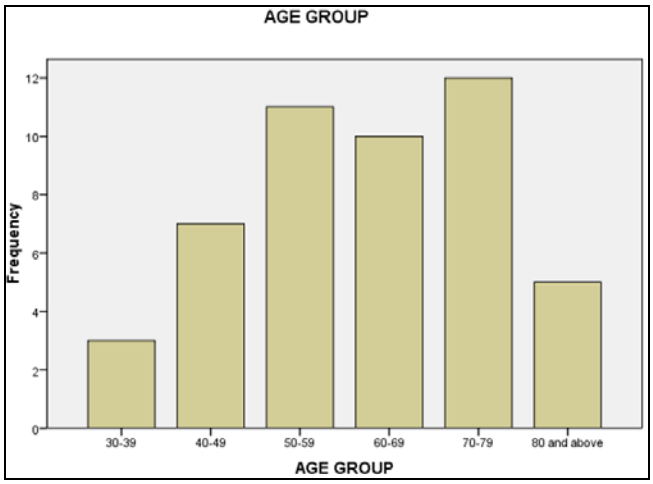


**Fig 2:** Age group distribution.

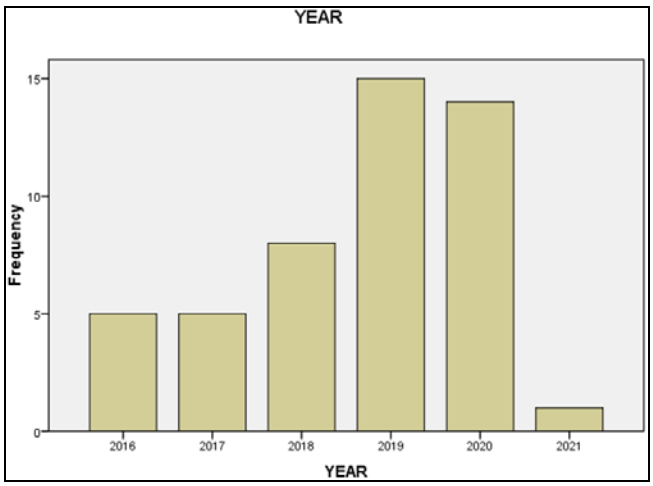


**Fig 3:** Frequency of lower gastrointestinal endoscopies over a five-year period (Feb. 2016 to Feb. 2021).

**Fig 4:** Endoscopic image of an advanced rectal tumour causing significant luminal narrowing in a patient presenting with tenesmus.

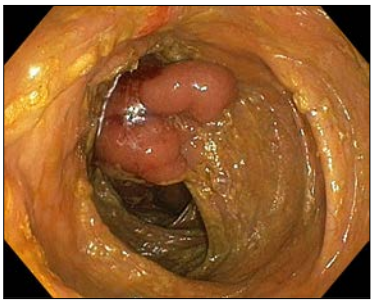

**Fig 5:** Endoscopic image of a tumour in the descending colon of a patient presenting with change in bowel habit.

## Discussion

Patients presenting with symptoms of lower gastrointestinal disorders are commonly encountered in routine clinical practice and lower gastrointestinal endoscopy can play a major role in the diagnosis of the underlying pathology [2, 3]. It is therefore expected that a large number of lower gastrointestinal endoscopies would be performed as a result. In this study, the total number of lower gastrointestinal endoscopy procedures performed over a 5-year period was quite small when compared with similar studies in Nigeria but which were conducted in urban communities [8, 9, 14-17].

Although there was an increase in the number of the lower gastrointestinal endoscopy procedures performed from 5(10.4%) in 2016 to 15(31.2%) in 2019 but 14(29.2%) in 2020, the number is relatively small. This could be due to a number of reasons which include the fact that the hospital is located in a rural environment which has a small population compared to an urban community. Also, the low educational status of the populace and their preference of traditional remedies to orthodox treatment are additional contributory factors.

The low socio-economic status of the residents, whom are mostly retirees and elderly, also prevents them from patronizing the hospital considering the high cost of services and treatment which they cannot afford. A large proportion of the residents are self-employed; artisans, farmers and traders, and they are not registered under the National Health Insurance Scheme which could have considerably reduced the cost of accessing a Lower gastrointestinal endoscopy service in the hospital.

Furthermore, the COVID-19 pandemic also contributed to the decline recorded in the number of the lower gastrointestinal endoscopy procedures performed in the year 2020 otherwise more procedures should have been recorded than that of 2019 going by the upward trend in the number procedures performed before the pandemic.

This study found a male: female ratio of 2.4:1 among patients who had lower gastrointestinal endoscopy. This is similar to the findings of Ismaila *et al* [8]. in Jos, Olokoba *et al* [15]. in Ilorin, Alatise *et al* [14]. in Ile-Ife, Osinowo *et al* [20]. in Lagos and Ray-Offor *et al* [21]. in Port Harcourt. The conservative nature of women might explain the gender difference.

In this study, the mean(±SD) age of the patients was 61.7(±14.03) years which is higher than what was reported by Ismaila *et al* [8]. (43.5 years), Osinowo *et al* [20]. (46.9 years) and Olokoba *et al* [15]. (53.4 years). The mean age reported by Ray-Offor *et al* [21]. (54.8 years) and Akere *et al* [16]. in Ibadan (57.9 years) was also less compared with our study. Sixty percent of the patients in our study were above 60 years of age; reflecting the age when majority of our

population would likely require a lower gastrointestinal endoscopy. The age difference may be because this study was conducted in a rural community with a lot of retirees and elderly individuals unlike the other studies which were conducted in urban communities with much younger population.

The commonest indication for lower gastrointestinal endoscopy from this study was lower gastrointestinal bleeding (27.1%) followed by suspected rectal tumour (12.5%). Olokoba *et al* [15]. also reported that the commonest indications for lower gastrointestinal endoscopy in their study were rectal bleeding, suspected colorectal cancer and an unexplained change in bowel habit. A similar study by Alatise *et al* [14]. in Ile-Ife also reported lower gastrointestinal bleeding as the commonest indication for lower gastrointestinal endoscopy followed by change in bowel habit. Studies across the world also showed that lower gastrointestinal bleeding is the commonest indication for lower gastrointestinal endoscopy in the works carried out by Berkowitz and Kaplan [22] South Africa, Sahu *et al* [23]. India and Kassa [18] in Ethiopia.

The cause of a lower gastrointestinal bleeding should be determined during a lower gastrointestinal endoscopy. In this study, large bowel tumours were the most common cause of lower gastrointestinal bleeding followed by haemorrhoids and diverticular disease whereas Alatise *et al* [14]. reported haemorrhoids, diverticulosis and polyps as the most common causes of lower gastrointestinal bleeding in their study.

Screening endoscopy was the indication for lower gastrointestinal endoscopy in 2.1% of the patients in this study which is quite low. Similarly, Akere *et al* [16]. Osinowo *et al* [20]. reported that 3.2% and 4% respectively of the patients in their study had screening lower gastrointestinal endoscopy. This low screening rates is a reflection of a weak national colorectal screening programme and poor public awareness about colorectal cancer and its prevention. It will therefore not be surprising if the incidence of colorectal cancer in the populace continues to rise.

In this study, the commonest endoscopic abnormality was large bowel tumour (45.8%) followed by colonic polyps (12.5%) and haemorrhoids (6.2%). Olokoba *et al* [15]. in Ilorin and Lee *et al* [24]. Jamaica also reported colorectal cancers as the most common pathology at lower gastrointestinal endoscopy. In contrast, Akere *et al* [16]. in Ibadan, Ray-Offor *et al* [21]. in Port Harcourt and Mahomed *et al*.[12] in South Africa all reported colonic polyps as the most common pathology at lower gastrointestinal endoscopy while Ismaila *et al* [8]. in Jos and Alatise *et al* [14]. Ile-Ife, reported hemorrhoids as the most common pathology at lower gastrointestinal endoscopy. Alatise *et al* [14]. however also reported in addition that the second most commonly found endoscopic abnormality in their study was colorectal cancer.

In other parts of the world, Dakubo *et al* [13]. in Ghana, Cahyono *et al* [10]. in Indonesia, and Al-Shamali *et al* [11]. in Saudi Arabia, reported hemorrhoids, colorectal cancer, and inflammatory bowel disease, respectively as the most common diagnosis at lower gastrointestinal endoscopy. Reasons for varying findings at lower gastrointestinal endoscopy may be explained by differences in lifestyle, diets, behavioral, race, geographic locations and environmental factors as well as the experience of the endoscopist.

Accurate endoscopic localization of the site of a large bowel tumour and the extent of the tumour during a lower gastrointestinal endoscopy is extremely important, as this would determine the type of interventions that would be necessary in the management of the patients. In this study, rectal tumours (14.6%) were the commonest large bowel tumours followed by sigmoid colon tumours (10.4%) and rectosigmoid tumours (10.4%). Thus, left-sided bowel tumours were the more commonly found tumours in this study.

Colorectal cancer is a major cause of morbidity and mortality all over the world and it is the most common type of gastrointestinal cancer [25]. Studies have shown that colorectal cancer accounts for 10-56% of all gastrointestinal malignancies in Nigeria [26-28]. and the lifetime incidence for patients at average risk is 5%, with 90% of cases occurring after the age of 50 years [29]. In this study, 73% of the patients with colorectal cancer were above 50 years while the remaining 27% were between 45 – 50 years of age.

Symptoms of colorectal cancer include haematochezia, melaena, fatigue, constipation, change in bowel habits and unexplained weight loss among others. These symptoms were also observed in this study population necessitating their presentation for lower gastrointestinal endoscopy. Individuals presenting with any of these symptoms should undergo a thorough medical evaluation including a lower gastrointestinal endoscopy as they may be the features of colorectal cancer.

Colorectal cancer survival is highly dependent upon stage of disease at diagnosis, the earlier the stage at diagnosis, the higher the chance of survival. It is estimated that 394,000 deaths from colorectal cancer still occur worldwide annually [25]. colorectal cancer is a preventable disease which can be achieved through early cancer detection by widely applied screening programs such as lower gastrointestinal endoscopy for at risk individuals and surgical removal if the cancer is detected early [30-32].

This study showed a polyp detection rate of 16.7% which is similar to what was reported by Olokoba *et al* [15]. (15.5%) but less than what was reported by Akere *et al* [16]. (23.2%) and Ray-Offor *et al* [21]. (53.7%). Alatise *et al* [14]. Osinowo *et al* [20]. and Ismaila *et al* [8]. reported lower values of 10.3%, 7.4% and 6.9% respectively.

In this study, the prevalence of ulcerative colitis was 4.2% and there was no patient with crohn's disease. Ulcerative colitis is reportedly rare in Black Africans [33, 34] and indeed Nigerians [16, 35] compared to Western populations [36, 37]. There is no national data on the prevalence of ulcerative colitis in Nigeria; only few reports are available, mainly as case reports and case series [38, 39]. Even though ulcerative colitis is rare in our environment, it is important for physicians to have a high index of suspicion for this condition particularly in young individuals presenting with recurrent haematochezia such as the patients in this study.

The caecal intubation rate from this study was 87.5% which is lower than the recommended minimum of 90% [2]. This can be explained by few instances of sub-optimal bowel preparation and poor patients' tolerance of the procedure; since the procedures were performed under conscious sedation and not general anaesthesia. Some patients also had obstructing tumours which prevented ability to advance the scope further. Osinowo *et al* [20]. Akere *et al* [40]. and Ray-offor *et al* [21]. reported caecal intubation rates of 80.2%,

89.2% and 98.5% respectively. Studies have shown that some of the factors that affect caecal intubation rates are age, gender, quality of bowel preparation, experience of the endoscopist, procedure volume, and certain diseases of the colon such as diverticular disease and inflammatory bowel disease [41, 42].

This study has shown an overall diagnostic yield of 72.9% with 27.1% having normal lower gastrointestinal endoscopic findings. The diagnostic yield from our study was higher than that of Osinowo *et al* [20]. and Alatise *et al* [14], who reported diagnostic yields of 55.9% and 70.9% respectively but lower than that of Akere *et al* [16]. Ismaila *et al* [8]. and Olokoba *et al* [15]. who reported diagnostic yields of 74%, 79% and 79.6% respectively. Differences in indications, as well as the spectrum of colonic diseases, inclusion criteria and sample size are some of the factors that can determine the diagnostic yield following lower gastrointestinal endoscopy.

Studies have shown that the highest diagnostic yield is found in patients having lower GI bleeding, mass lesions and polyps as demonstrated by Morini *et al* [43]., Kassa [18], Lee *et al* [24]., and Rex [44] in their work. This observation was also supported by this study in which 92.3% of the patients with lower gastrointestinal bleeding had an identifiable endoscopic abnormality that is responsible for the bleeding (i.e. 92.3% diagnostic yield) while in 7.7% of the patients, there was no endoscopic abnormality found. The importance of lower gastrointestinal endoscopy in the evaluation of patients with lower gastrointestinal symptoms, in order to confirm the diagnosis and in some cases provide therapy, thus cannot be overemphasized.

**Limitations of the study**

1. The total number of the lower gastrointestinal endoscopies performed over the 5-year period under review was relatively small, a larger volume of the procedure would have been better which could give a wider range of endoscopic abnormalities.
2. The histology reports of the mucosal biopsy samples taken during the endoscopy procedures were not documented in the Endoscopy register and thus was not included in this study. Since the hospital does not have Electronic Medical Record, such reports can only be retrieved by searching through the individual case files of the patients which is outside the scope of this study.

**Conclusion**

The commonest indication for lower gastrointestinal endoscopy in this study was lower gastrointestinal bleeding while the commonest endoscopic abnormality was large bowel tumour. Large bowel tumours were the most common cause of lower gastrointestinal bleeding and left-sided bowel tumours were the more commonly found tumours in this study. It may therefore be concluded that, large bowel tumours are the commonest underlying gastrointestinal pathology of patients' symptomatology necessitating lower gastrointestinal endoscopic evaluation. Certainly, the importance of lower gastrointestinal endoscopy in the evaluation of patients with lower gastrointestinal symptoms cannot be overemphasized.

The findings from this study conducted in a rural community in Nigeria were similar to those conducted in urban communities in the country; suggesting that place of domicile may not affect the pattern of symptomatology, clinical presentation or the endoscopy findings of individuals. This further suggests that the risk factors for gastrointestinal pathologies are similar in both rural and urban communities. Therefore, a national guideline on endoscopic evaluation of lower gastrointestinal disorders can be universally applied irrespective of the location of practice in Nigeria.

**Recommendations**

1. Enlightenment of the public about the need to avoid the risk factors for colorectal cancers is important in reducing its incidence in the general population thereby reducing the morbidity and mortality associated with it. Such risk factors include obesity, cigarette smoking, excessive alcohol consumption, consumption of smoked food items and consumption of red meat. Consumption of vegetables and fruits should be encouraged since they reduce the risk of colorectal cancers.
2. There is a need to have and implement a national guideline in Nigeria for colorectal cancer screening in order to aid early cancer detection and early removal of pre-malignant lesions identified during routine screening endoscopy. Early detection and prompt intervention remain the only ways the morbidity and mortality associated with this debilitating condition can be reduced since colorectal cancer is curable when detected early. Screening endoscopy should be encouraged for individuals above 45 years of age.
3. Government should ensure universal health insurance coverage for the populace, which should cover lower gastrointestinal endoscopy so that more patients with the indications for it can benefit from the procedure. This would increase the volume of the procedures performed, improve the skills of the endoscopists, enhance better training of resident doctors and improve overall patient care.
4. Government should also make lower gastrointestinal endoscopy services available in more health institutions across the country including rural communities to facilitate patients' access to care.
5. Regular Clinical Audit should be performed by each specialized unit in the hospital and compare practice with international standards; this would greatly improve overall performance and patient care.

**Acknowledgement**

Special thanks to the Endoscopy Nurses, House Officers and Resident Doctors in the Gastroenterology unit of the Department of Medicine for their support in making this publication a reality.

**Funding**

The author bore the entire cost of the research and did not receive any financial support from any individual, institution, organization or body towards this research work.

**Previous publication**

The author confirm that the article is not under consideration for publication elsewhere.

**Conflict of Interest Disclosure**

The author declared no conflict of interest.

**Ethical Approval**

Ethical approval was obtained from the Ethics and Research Committee of the institution.

**References**


1. Stein DE Bonheur JL, Fazendin EA. Colonoscopy. https://emedicine.medscape.com/article/1819350-overview#a2. Updated: November 30, 2020. Assessed, 2021.
2. Rex DK, Bond JH, Winawer S, Levin TR, Burt RW, Johnson DA *et al*. Quality in the technical performance of colonoscopy and the continuous quality improvement process for colonoscopy: Recommendations of the U.S. Multi-Society Task Force on Colorectal Cancer. Am J Gastroenterol,2002:97:1296-1308.
3. Grassini M, Verna C, Niola P, Navino M, Battaglia E, Bassotti G. Appropriateness of colonoscopy: Diagnostic yield and safety in guidelines. World J Gastroenterol,2007:13:1816-1819.
4. Davila RE, Rajan E, Baron TH, Adler DG, Egan JV, Faigel DO *et al*. ASGE guideline: Colorectal cancer screening and surveillance. Gastrointest Endosc,2006:63:546-557.
5. Rex DK, Johnson DA, Lieberman DA, Burt RW, Sonnenberg A. Colorectal Cancer Prevention 2000: Screening recommendations of the American College of Gastroenterology. American College of Gastroenterology. Am J Gastroenterol,2000:95:868-877.
6. Lieberman DA, De Garmo PL, Fleischer DE, Eisen GM, Helfand M. Patterns of endoscopy use in the United States. Gastroenterology,2000:118:619-624.
7. Gonvers JJ, Froehlich F, Burnand B, Vader JP, Wietlisbach V. The European EPAGE Study Group. A European view of appropriateness and diagnostic yield of colonoscopy: A multicentre study. Gastroenterology,2002:122:A574.
8. Ismaila BO, Misauno MO. Colonoscopy in a tertiary hospital in Nigeria. J Med Trop,2011:13:172-174.
9. Onyekwere CA, Odiagah JN, Ogunleye OO, Chibututu C, Lesi OA. Colonoscopy Practice in Lagos, Nigeria: A Report of an Audit. Diagnostic and Therapeutic Endoscopy, Article ID798651, 2013, 6.
10. Cahyono SB, Bayupurnama P, Ratnasari N, Catharina T, Fahmi I, Sutanto M, *et al*. Evaluating indications and diagnostic yield of colonoscopy in Sardjito general hospital. J Int Med Acta Int,2014:4:51-56.
11. Al-Shamali MA, Kalaoui M, Hasan F, Khajah A, Siddiqe I, Al-Nakeeb B. Colonoscopy: Evaluating indications and diagnostic yield. Ann Saudi Med,2001:21:304-307.
12. Mahomed AD, Cremona E, Fourie C, Dhlamini L, Klos M, Ntshalintshali T *et al*. A clinical audit of colonoscopy in a gastroenterology unit at a tertiary teaching hospital in South Africa. South Afr Gastroenterol Rev,2012:10:9-15.
13. Dakubo JC, Seshie B, Ankrah LN. Utilization and diagnostic yield of large bowel endoscopy at Korle-Bu Teaching Hospital. J Med Biomed Sci,2014:3:6-13.
14. Alatise OI, Arigbabu AO, Agbakwuru EA, Lawal OO, Ndububa DA, Ojo OS. Spectrum of colonoscopy findings in Ile-Ife Nigeria. Niger Postgrad Med J,2012:19:219-224.
15. Olokoba AB, Obateru OA, Bojuwoye MO, Olatoke SA, Bolarinwa OA, Olokoba LB. Indications and findings at colonoscopy in Ilorin, Nigeria. Niger Med J,2013:54:111-114.
16. Akere A, Oke TO, Otegbayo JA. Colonoscopy at a tertiary healthcare facility in Southwest Nigeria: Spectrum of indications and colonic abnormalities. Ann Afr Med,2016:15(3):109-113. DOI: 10.4103/1596-3519.188889. PMID: 27549414. PMCID: PMC5402806.
17. Oguntoye OO, Yusuf M, Olowoyo P, Erinomo O, Omoseebi O, Soje MO *et al*. Colonoscopy in Ido-Ekiti, Nigeria: A four-year review. Gastroenterology, Hepatology and Digestive Disorders,2020:3(1):1-8.
18. Kassa E. Colonoscopy in the investigation of colonic diseases. East Afr Med J,1996:73:741-745.
19. Ogutu EO, Okoth FA, Lule GN. Colonoscopic findings in Kenyan African patients. East Afr Med J,1998:75:540-543.
20. Osinowo A, Lawal O, Lesi OA, Olajide T, Adesanya A. Audit of colonoscopy practice in Lagos University Teaching Hospital. J Clin Sci,2016:13:29-33.
21. Ray-Offor E, Abdulkareem F. Screening colonoscopy in Port Harcourt, Nigeria. Gastroenterology Insights,2019:10(1):7987.
22. Berkowitz I, Kaplan M. Indications for colonoscopy. An analysis based on indications and diagnostic yield. S Afr Med J,1993:83:245-248.
23. Sahu SK, Husain M, Sachan PK. Clinical spectrum and diagnostic yield of lower gastrointestinal endoscopy at a tertiary centre. Internet J Surg,2009, 18.
24. Lee MG, Martin A, Terry SI. Colonoscopy in Jamaica-a 12 year experience. West Indian Med J,1989:38:213-216.
25. Ferlay J, Shin HR, Bray F, Forman D, Mathers C, Parkin DM. Estimates of worldwide burden of cancer in 2008:GLOBOCAN 2008. Int J Cancer,2010:127(12):2893-2917.
26. Elesha SO, Owonikoko TK. Colorectal neoplasms: a retrospective study. East Afr Med J,1998:75(12):718-723.
27. Ohanaka CE, Ofoegbu RO. The pattern of surgical cancers in Nigeria: the Benin experience. Trop. Doct.2002:32:38-39.
28. Abdulkareem FB, Abudu EK, Awolola NA, Elesha SO, Rotimi O *et al*. Colorectal carcinoma in Lagos and Sagamu, Southwest Nigeria: a histopathological review. World J Gastroenterol,2008:14:6531-6535.
29. Smith RA, Cokkinides V, Brooks D, Saslow D, Brawley OW. Cancer screening in the United States, 2010: a review of current American Cancer Society guidelines and issues incancer screening. CA Cancer J Clin,2010:60(2):99-119.
30. Douglas KR, David AJ, Joseph CA, Phillip SS, Craol AB, John M.I. American College of Gastroenterology Guidelines for colorectal cancer screening 2008. Am J Gastroenterol,2009:104:739-750.
31. Raquel ED, Elizabeth R, Todd HB, Douglas GA, James VE *et al*. American Society for Gastrointestinal Endoscopy: colorectal cancer screening and surveillance 2006. Gastrointestinal Endoscopy, 2006:63(4):546-892.
32. Bernard L, David AL, Beth M. Kimberly SA, Durado B *et al*. Screening and Surveillance for the Early

Detection of Colorectal Cancer and Adenomatous Polyps, 2008: A Joint Guideline From the American Cancer Society, the US Multi-Society Task Force on Colorectal Cancer, and the American College of Radiology. Gastroenterology,2008:134:1570-1595.
33. Alese OB, Irabor DO. Pyoderma gangrenosum and ulcerative colitis in the tropics. Rev Soc. Bras. Med. Trop,2008:41:6647. DOI: 10.1590/s0037-86822008000600020. PMID: 19142449
34. Mayberry J, Mann R. Inflammatory bowel disease in Sub Saharan Africa: Rarity of diagnosis in patients attending mission hospitals. Digestion,1989:144:1726. DOI: 10.1159/000199907. PMID: 2628138.
35. Ukwenya AY, Ahmed A, Odigie VI, Mohammed A. Inflammatory bowel disease in Nigerians: Still a rare diagnosis?. Ann Afr Med.2011:10:175-179. DOI: 10.4103/1596-3519.82067. PMID: 21691027.
36. Molodecky NA, Soon IS, Rabi DM, Ghali WA, Ferris M, Chernoff G *et al*. Increasing incidence and prevalence of the inflammatory bowel diseases with time, based on systematic review. Gastroenterology, 2012:142:46-54. DOI: 10.1053/j.gastro.2011.10.001. PMID: 22001864.
37. Kaplan GG, Ng SC. Understanding and preventing the global increase of inflammatory bowel disease. Gastroenterology,2017:152:313-321. DOI: 10.1053/j.gastro.2016.10.020. PMID: 27793607.
38. Alatise OI, Otegbayo JA, Nwosu MN, Lawal OO, Ola SO, Anyanwu SN *et al*. Characteristics of inflammatory bowel disease in three tertiary health centers in southern Nigeria. West Afr J Med,2012:31(1):28-33. PMID: 23115093.
39. Obaseki DE, Forae GD. Clinicopathological features of inflammatory bowel disease in Benin City, Nigeria. Int J Adv Med Health Res,2014:1:16-19. DOI: 10.4103/2349-4220.134445.
40. Akere A, Akande KO. Cecal intubation rate during colonoscopy at a tertiary hospital in South-West Nigeria: How frequent and what affects completion rate?. Niger J Clin Pract,2017:20:303-306.
41. Church JM. Complete colonoscopy: How often And if not, why not?. Am J Gastroenterol,1994:89:556-560.
42. Dafnis G, Granath F, Påhlman L, Ekbom A, Blomqvist P. Patient factors influencing the completion rate in colonoscopy. Dig Liver Dis,2005:37:113-118.
43. Morini S, Hassan C, Meucci G, Toldi A, Zullo A, Minoli G. Diagnostic yield of open access colonoscopy according to appropriateness. Gastrointest Endosc, 2001:54:175-179.
44. Rex DK. Colonoscopy: A review of its yield for cancers and adenomas by indication. Am J Gastroenterol, 1995:90:353-365.