

# Colonoscopy Findings at Divine Mercy Hospital-Father Bash Foundation, South-Western Uganda: A 6 Years Retrospective Analysis

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## Abstract

**Background:** Colonoscopy is the gold standard for screening and diagnosis of several colorectal disease conditions such as colorectal cancer, polyps, inflammatory bowel disease and other forms of colitis. Lower GI symptoms requiring colonoscopy include: GI bleeding, chronic constipation, recurrent abdominal pain, chronic diarrhoea and mucoid stools among others. This study aimed at documenting the indications and findings among patients done colonoscopy at Divine Mercy Hospital (DMH) in South Western Uganda. **Methods:** This was a 6-year retrospective review of records of patients from whom a colonoscopy was done at DMH from October, 2018 to September, 2024. The data that was extracted included patient's demographics, indications, findings at colonoscopy and histology results where applicable. Data analysis was done using Stata version 17 and it was summarized in frequency tables, means and standard deviation. A student's t-test and or chi square p-value < 0.05 was considered significant. The study was approved by Mbarara University of Science and Technology Research Ethics committee. **Results:** Reports of 389 patients who had undergone colonoscopy were retrieved. The mean age of participants was 54.1 ( $\pm$ 18.7) years. Majority were males (63.5%), and majority presented with lower GI bleeding (57.3%). Tumors were seen among 55 patients, with anorectal tumors dominating (n = 32). Other common findings included Hemorrhoids (n = 95, 24.4%), colitis (n = 54, 13.9%), and inflammatory bowel disease (n = 27, 6.9%). Among 106 patients who had suspicious lesions warranting biopsy, 49 (46.2%) patients had confirmed cancer and these were predominantly adenocarcinomas. 120 patients (30.8%) had normal

findings at colonoscopy. **Conclusion:** In South Western Uganda, the most common indication for colonoscopy was lower GI bleeding. Hemorrhoids, colitis and inflammatory bowel disease were the main benign findings at colonoscopy. Several patients also had lower GI malignancies and these were predominantly adenocarcinomas. This study highlights the importance of colonoscopy in diagnosing and managing lower GI conditions in a resource-limited setting.

## Keywords

Colonoscopy, Lower GI bleeding, Tumors

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## 1. Introduction

Colonoscopy is a procedure that involves the placement of a flexible tube with a fibre optic camera on its tip, through the rectum, in order to visualize the colon [1]. It is a key investigation required for diagnosis of several disease conditions involving the lower gastrointestinal tract [2]. Lower GI symptoms requiring colonoscopy include GI bleeding, chronic constipation, recurrent abdominal pain, chronic diarrhoea and mucoid stools among others [3]. Colonoscopy is the gold standard for screening and diagnosis of colorectal cancer [4]. Other benign lesions that are commonly encountered at colonoscopy include: polyps, colorectal adenomas, inflammatory bowel disease and other forms of colitis, as well as internal hemorrhoids and diverticulosis [5] [6]. The procedure also gives room for minimally invasive therapeutic modalities like polypectomy [5]. Advances in colonoscopy have greatly improved clinical practices in modern gastroenterology [7].

In many African countries, colonoscopy services can only be accessed in a few health facilities [6] [8] [9] and many patients are treated empirically while others are referred to urban centres where the service can be accessed [10]. This is attributed to few trained health personnel to handle these procedures, lack of equipment and inadequate infrastructure [11] [12].

In low- and middle-income countries, the prevalence of colorectal cancer has been reportedly low compared to developed countries. This is attributed to the limited access to colorectal disease screening services especially colonoscopy [13]. A study was done in Ethiopia, Kenya, Malawi and Zambia to evaluate the gastrointestinal endoscopy capacity by interviewing digestive healthcare professions in various health facilities and it was discovered that endoscopy capacity is severely limited in sub-Saharan Africa despite the high burden of gastrointestinal diseases in this region [14].

In Uganda, there is limited local research to guide policy and programming for CRC prevention. This prompted a stakeholders engagement workshop in Kampala in March 2024 where limited CRC screening was reported as a major barrier to CRC diagnosis [15].

Therefore, this study aimed at describing the various indications and findings at colonoscopy at Divine Mercy Hospital in South Western Uganda.

## **2. Methods**

### **2.1. Study Setting and Design**

This was a 6-year retrospective record review of endoscopy reports for patients done colonoscopy at DMH from October, 2018 to September, 2024. This period was considered because it is the period when the endoscopy unit at DMH was established. DMH is a private not for profit institution under Father Bash Foundation in Mbarara City. The hospital has a complete set of endoscopy equipment of the Olympus type. There are three functional gastroscopes and two colonoscopes. Colonoscopies were done by a trained endoscopist who was also a general surgeon. The procedures were done under sedation by an experienced anesthetist to optimize patient comfort. For patients that required biopsy sampling, the specimens were picked and put in appropriate containers where they were preserved in 10% formalin solution and later taken to lancet laboratories for histopathological analysis. After the procedure, the findings were explained to the patient and a written report was printed and given to the patient (or his/her attendants). The hospital also kept a copy of the report, both electronic and hard copy. DMH is a referral centre for patients who require colonoscopy in Ankole and Kigezi subregions, serving a population of approximately 5.3 million as per the report from Uganda Bureau of statistics, 2024.

### **2.2. Study Population**

We included all reports of patients done colonoscopy at DMH during the study period.

### **2.3. Study Procedure**

In November and December 2024, with the help of a trained research assistant who was a qualified theatre nurse with additional training in gastrointestinal endoscopy procedures, we were able to retrieve all the reports for patients who underwent colonoscopy at DMH from October, 2018 to September, 2024. From these reports, the study variables that were extracted included: patients age, gender, indication, findings at colonoscopy. Records of patients with suspicious lesions warranting biopsy at colonoscopy were further reviewed in the hospital electronic database to establish the histopathological diagnosis as per the histology results processed by Lancet laboratories.

Ethical approval was sought from Mbarara University of Science and Technology Research Ethics Committee (MUST REC) and administrative clearance was also obtained from DMH administration. A waiver of consent was sought from MUST REC since the study was entirely dealing with retrospective data without any need to interface with patients. Data was kept confidential – we deidentified the information.

## 2.4. Data Analysis

Data was entered in Microsoft Excel spread sheet and the Principal Investigator (PI) cross checked all the entries made. Statistical analysis was done using Stata version 17 (StataCorp. 2021. Stata: Release 17. Statistical Software. College Station, TX: StataCorp LLC). Descriptive statistics was done to answer the objectives of this study. Patient demographic information, indications, colonoscopy and histology findings were summarized in frequency tables. Categorical variables were summarised as proportions (percentages). Continuous variables which were normally distributed were summarised using mean and standard deviation. Additionally, a cross tabulation comparing independent variables (age, gender, indication) and the occurrence of malignancies was made. A student's t-test and or chi square p-value < 0.05 was considered significant.

## 3. Results

### 3.1. Patient Characteristics and Indications for Colonoscopy

Reports of 389 patients who had undergone colonoscopy were retrieved. The mean age of participants was 54.1 ( $\pm 18.7$ ) years. Majority were males (63.5%), and majority presented with lower GI bleeding (57.3%) as shown in the **Table 1**.

**Table 1.** Showing patient characteristics and indication for colonoscopy.

Variable	Number	Percentage
Mean Age ( $\pm$ SD)	54.1 ( $\pm 18.7$ )	
Age category		
<50 years	162	41.65
$\geq 50$ years	227	58.35
Gender		
Female	142	36.5
Male	247	63.5
Indications		
Anorectal pain	30	7.7
Constipation	48	12.3
Lower GI bleeding	223	57.3
Diarrhea	5	1.3
Lower abdominal pain	82	21.1
Rectal prolapse	1	0.3

### 3.2. Colonoscopy Findings

Of the 389 patients, 120 (30.8%) had normal findings at colonoscopy. Tumors were seen among 55 patients, with anorectal tumors dominating (n = 32). Other

common findings included hemorrhoids (n = 95, 24.4%), non-specific colitis (n = 54, 13.9%), and inflammatory bowel disease (n = 27, 6.9%) as shown in the **Table 2**.

**Table 2.** Showing colonoscopy findings.

Findings	Number	Percentage
Anal fissure	10	2.6
Anal warts	1	0.3
Anorectal tumor	32	8.2
Non-specific Colitis	54	13.9
Colon tumor	23	5.9
Colonic polyp	11	2.8
Diverticulosis	14	3.6
Hemorrhoids	95	24.4
Inflammatory Bowel Disease	27	6.9
Normal	120	30.8
Rectal prolapse	2	0.5

### 3.3. Biopsy Results

Biopsies were taken from patients with endoscopic diagnosis of tumors, polyps, IBD and severe forms of colitis. Among 106 patients who had biopsy samples picked, 49 (46.2%) patients had confirmed cancer. Of these, 30 patients had anorectal cancer while 19 patients had colon cancer. 5 patients had right sided colon cancer. The commonest histological type was Adenocarcinoma with varying grades of differentiation (n = 48). We were unable to access histology results for 23 patients (21.7%) in their medical documents, while the rest had benign conditions as shown in the **Table 3**.

**Table 3.** Showing histology findings.

Biopsy finding	Number	Percentage
Adenocarcinoma	48	45.3
Inflammatory bowel disease	8	7.5
Inconclusive	3	2.8
Inflammatory polyp	4	3.8
Low Grade Leiomyosarcoma	1	0.9
Non-specific colitis	19	17.9
Missing results	23	21.7

### 3.4. Characteristics of Patients with Malignancy at Histology

The mean age of participants with malignancy was statistically higher compared

to the mean age of patients without malignancy (p-value = 0.002). The proportion of participants with LGIB was statistically higher among the group with malignancy compared to the proportion of participants with LGIB in the non-malignancy group (p-value = 0.037). Early onset cancer (diagnosed before 50 years of age) occurred in 28.6% of patients with malignancy as shown in the table below (**Table 4**).

**Table 4.** Showing characteristics of patients with malignancy at histology.

Characteristic	Malignancy (n = 49)	No Malignancy (n = 57)	p-Value
Mean Age (SD)	60.1 (18.1%)	48.6 (18.6%)	0.002*
Age category			0.007*
<50 years	14 (28.6%)	31 (54.4%)	
≥50 years	35 (71.4%)	26 (45.6%)	
Sex			0.282
Female	24 (49%)	22 (38.6%)	
Male	25 (51%)	35 (61.4%)	
Lower GI bleeding present			0.037*
No	7 (14.3%)	18 (31.6%)	
Yes	42 (85.7%)	39 (68.4%)	

#### 4. Discussion

Majority of our patients were males with a male to female ratio of 1.7:1. This was consistent with studies done in south western Nigeria [3] and Zanzibar [16] where the male to female ratios were 3.5:1 and 1.2: 1 respectively. However, the explanation for this male predominance remains uncertain.

The mean age of our patients was 54.1 ( $\pm$ 18.7) years. The youngest patient was 8years while the oldest patient was 91years. Colonoscopy was done in only 5 patients below 18years of age. In a large study that was conducted on 1858 patients, Naseer *et al.*, reported a mean age of 51.7 ( $\pm$ 18.5) years [1] which was quite similar to our study. However, in Ethiopia, Gudissa *et al.*, reported a mean age of 43.5 years (SD = 15.67) with age range of 15 - 84 years [17]. The wide age range in our study could perhaps explain this variation in the mean age.

Lower Gastrointestinal bleeding (LGIB) is a threatening symptom that makes patients and their caretakers worried hence the need to seek medical services at the nearest health facility. In this study, LGIB was the most common indication for colonoscopy and this was also reported by Obonna *et al.*, in Nigeria [3]. However, a study done by Qu *et al.*, in Zanzibar, LGIB was the third most common indication after chronic diarrhea and abdominal pain [16]. Anorectal pain and chronic constipation were among the other indications for colonoscopy. One patient, who was a 27 years old male, had rectal prolapse as the indication for colon-

oscopy but the colonoscopy report revealed normal findings. Similarly, a 32 years old male had anal warts but his colon had normal findings. We were unable to establish his serostatus from the available data.

The most common benign finding at colonoscopy was presence of hemorrhoids which accounted for the largest portion of patients with LGIB. Other benign lesions identified at colonoscopy were colitis, inflammatory bowel disease, polyps, anal fissures and diverticulosis among others. Ismaila and Misauno also found hemorrhoids in 58.1% of the patients that were done colonoscopy and the other benign lesions were quite similar to the ones reported in our study [18]. This similarity could be explained by the fact that these studies were done in African countries whose communities share similar socio-economic status, environmental factors and health seeking behaviors. This study did not establish any causal factors for these findings.

Forty-nine patients had malignant lower GI conditions confirmed at histology and of these, 14 (28.6%) were below 50 years of age. The CDC recommends that adults aged 45 to 75 years should be screened for colorectal cancer [19]. Although colorectal cancer (CRC) is more common in patients above 50 years of age, there are rising cases of early onset colorectal cancer among patients below 50 years and this may be partly attributed to lifestyle changes, obesity and dietary habits [20] [21]. Several studies have reported advanced age as a risk factor to colorectal cancer and these patients usually present with hematochezia and anemia [16] [22] [23]. Although males had a significantly higher predominance among patients who had colonoscopy (63.5%), those with confirmed malignancy were almost in equal proportions without gender predilection. Male gender has been reported as a risk factor for CRC in some studies [20]. The histopathological diagnosis was predominantly adenocarcinoma, with varying degrees of differentiation. Other studies in literature have also reported adenocarcinomas as the most common histological diagnosis among patients with colorectal cancers [24]-[26].

A number of patients (30.8%) had normal colonoscopy findings. This finding resonates well with some studies done in Nigeria that found normal colonoscopy findings in 24% [3] and 20.9% [18]. This was mainly observed among patients who presented with lower abdominal pains for which colonoscopy was requested by the attending doctor but it is presumed that the abdominal pain could have been due to other causes.

## 5. Conclusion

In South Western Uganda, the most common indication for colonoscopy was lower GI bleeding. Hemorrhoids, colitis and inflammatory bowel disease were the main benign findings at colonoscopy. Several patients also had lower GI malignancies and these were predominantly adenocarcinomas. This study highlights the importance of colonoscopy in diagnosing and managing lower GI conditions in a resource-limited setting.

## Recommendation

Patients with lower GI symptoms should undergo colonoscopy to obtain a clear diagnosis that in turn helps the health worker to institute a proper plan of management.

## Limitations

This was a retrospective study that mainly looked at colonoscopy reports which had limited variables that would be extracted for statistical analysis, thus indepth analysis could not be done to establish the possible risk factors for these colonoscopy findings.

We had some missing histology results, this may be attributed to some patients who may prefer to go with their samples to be processed by their primary healthcare physician, thus the hospital lacks record of such histological results.

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## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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