

Colorectal Polyps among Sudanese Patients: A Single-Center Experience (Eyes Study)

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Abstract

Original Research Article

Introduction: A gastrointestinal polyp is an abnormal protrusion from the mucosal surface of the gastrointestinal lumen. The objectives of the present study were to evaluate the clinical features, possible risk factors, endoscopic features, and histopathological patterns of gastrointestinal polyps among adult Sudanese patients. **Methods:** This was a retrospective, descriptive, cross-sectional hospital-based study conducted at the Soba University Hospital Department of Endoscopy from March 2017 to March 2020. This study was conducted on patients with gastrointestinal polyps found upon colonoscopy or flexible sigmoidoscopy. **Results:** The incidence of colonic polyps was 11.7% (237/2019). The mean age was 51 ± 18 years, and the male-to-female ratio was 1.5:1. The indications for colonoscopy were bleeding per rectum (28.7%; n=68), chronic constipation (16.5%; n=39), a change in bowel habits (11%; n=26), anaemia (8.8%; n=20), melena (3.8%; n=9), diarrhoea (3.8%; n=9%) and surveillance (20%; n=48%). A family history of cancer was directly correlated with the size of the colon polyp on endoscopy and the grade of dysplasia on histopathology (p values=0.01 and 0.02, respectively). The use of NSAIDs was significantly correlated with the site of colonic polyps, while no significant correlation was found with smoking status, alcohol consumption, or family history of polyps (p value=0.02). The main site of polyps for colonic polyps was the left colon (67.4%). Histopathology reports were available for 65.4% (n=155) of patients with polyps. The predominant histopathological type in the lower gastrointestinal tract was adenomatous in 46.4% (n=72) of patients. **Conclusion:** The frequency of colonic polyps was 11.7%. The main presentation for colonic polyps was bleeding per rectum. A small size < 0.5 cm and a sessile shape were the dominant endoscopic features of the lower gastrointestinal polyps. However, adenomatous polyps were the most common histopathological type of polyp among the colonic polyps (46.4%).

Keywords: Colorectal Polyps, Bleeding Per Rectum, Colonoscopy, Snar Polypectomy.

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INTRODUCTION

Colorectal polyps are abnormal growths of tissue projecting from the mucosa of the large bowel. Colorectal polyps may be histologically classified as neoplastic or nonneoplastic (hyperplastic, hamartomatous, or inflammatory). The greatest concern is their ability to progress into carcinoma through the adenoma-carcinoma sequence [1, 2]. Most sporadic colorectal cancer (CRC) is the third most common cause of cancer worldwide in both sexes and the second leading cause in developed countries. Patients with CRC arise from precancerous polyps, namely, conventional adenomas and serrated polyps [3, 4]. Adenomatous (neoplastic) polyps are among the most common types of colon polyps found incidentally during screening, especially in older patients, in whom the frequency is greater in males, and they are usually asymptomatic [5].

Environmental and genetic factors contribute to the development of adenoma and play a major role in its common condition; furthermore, patients with upper GI adenomatous polyps have been found to have lower GI adenoma due to the same risk factor [6]. Adenomatous polyps are subclassified by their histological appearance as tubular, villous, or tubular-villous adenomas, and all subtypes are considered premalignant [7]. The serrated pathway included what were previously called hyperplastic polyps and was previously considered not to have any malignant potential. However, a subset of hyperplastic polyps has now been reclassified as sessile serrated polyps, which are thought to progress through the serrated pathway [8]. Pathologists can encounter difficulties in differentiating between SSP and hyperplastic polyps. They are treated as hyperplastic polyps or benign polyps. Recently, after much research

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and follow-up, it became clear that this population harbours an increased risk of colorectal cancer like or greater than that of adenomas [9]. The classification of colorectal polyps is an important skill for surgeons that must be used to risk stratify patients and help guide treatment decisions [10]. Different approaches are used to categorize polyps, such as schemes based on shape (PARIS) or based on surface structure (NICE) [11]. The Paris classification is the most widely validated and accepted system used to describe colorectal polyp morphology *in vivo*; however, it allows the standardization of polyp morphology, but more importantly, it can also be used to predict malignant disease. According to this system, lesion morphology can be broadly divided into protruded, flat elevated, and flat morphologies. Protruded lesions rise ~2.5 mm above the surrounding mucosa and include pedunculated (0-Ip), sub pedunculated (0-Isp), and sessile (0-Is) types. Flat elevated lesions (0-IIa) rise ~2.5 mm above the surrounding mucosa, and features such as central depression (0-IIa or c) or a broad-based nodule (0-IIa or Is) are described. Flat lesions include 0-IIb (barely perceptible elevation), 0-IIc (depressed), and 0-III (excavated) types [10, 12]. A systematic review was performed by Lesley Bailie, Maurice B., and Coleman HG. They identified 43 studies concerning the modifiable risk factor for SP (serrated polyp). They found 7 different lifestyle factors: smoking, alcohol consumption, body fatness, diet, physical activity, medication, and hormone replacement therapy [13]. The established nonmodifiable risk factors for conventional adenomas include age, sex, ethnicity, certain diseases, and family history [3]. Eileen Shaw *et al.*, conducted a cross-sectional study of the relation of NSAIDs and Fiber-containing diets to colorectal polyps. The authors concluded that the risk of having HRAP (high-risk adenomatous polyp) was reduced in patients consuming a fibrous diet and NSAIDs [14]. The risk factor profile of serrated polyps is different than that of classic adenomatous polyps; notably, age and sex do not increase the risk. Understanding these risk factors allows for targeted screening and surveillance of high-risk groups to reduce the incidence of CRC [3]. Numerous studies have shown that early screening for the presence of precancerous colon polyps and their subsequent removal decreases the risk of developing colon cancer [15]. Colonoscopy is the most powerful modality for detecting colorectal polyps and CRC. The current international guidelines recommend screening via colonoscopy beginning at the age of 50 years for early detection of CRC and colorectal adenomatous polyps [16]. The third eye retroscope is a new colonoscopic technology that involves the use of a small endoscope inside the colonoscope, allowing endoscopists to visualize the mucosa behind folds via the use of an extra flexible camera. The benefit of using a third eye retroscope was found to be statistically significant for surveillance and diagnostic colonoscopies but not for screening exams [17]. Juvenile polyposis syndrome (JPS) is a rare hamartomata polyposis syndrome

characterized by the existence of several distinct juvenile polyps in the gastrointestinal tract. Juvenile polyps may be considered true hamartomas, i.e., anomalies in the developmental patterning of the gut. Juvenile polyposis syndrome (PFS) is a unique model for studying gastrointestinal tract carcinogenesis. Although rare, recognition of this condition is important given the consequences for patients and their families. When confronted with a diagnosis of a juvenile polyp, each clinician should consider the possibility of juvenile polyposis syndrome. The number of juvenile polyps should be documented, along with the family history of gastrointestinal polyps and cancer. If a patient fulfils the clinical criteria of the JPS, a further diagnostic evaluation is indicated [18-20].

PATIENTS AND METHODS

This was an observational, cross-sectional, hospital-based study conducted at Soba University Hospital, Endoscopy Unit, from March 2017 to March 2020.

The inclusion and exclusion criteria for this study included patients aged more than 18 years, patients with endoscopic findings of polyps, and patients known to have polyps who were receiving care from the endoscopy unit at Soba University Hospital during the study period. The exclusion criterion was patients without endoscopic findings of polyps.

Clinical data were recorded in a constructed structure pretest questionnaire. This included age, sex, presenting complaints, comorbidities, family history, endoscopic findings, and histopathology.

The indications for colonoscopy were bleeding per rectum (28.7%; n=68), chronic constipation (16.5%; n=39), a change in bowel habits (11%; n=26), anaemia (8.8%; n=20), melena (3.8%; n=9), diarrhoea (3.8%; n=9) and surveillance (20%; n=48%).

The sample size was the total number of patients who presented to the clinic during the study period and who underwent colonoscopy or flexible sigmoidoscopy and fulfilled the inclusion criteria. Overall, 237 samples were estimated.

The data were analysed with the Statistical Package for the Social Sciences (SPSS) version 24. The qualitative data were analysed using the correlation test. The ordinal variables were analysed with the Spearman correlation test, while the chi-square test was used for nominal variables. A P value less than 0.05 was considered to indicate statistical significance.

RESULTS

We revised 2019 endoscopy reports, and 237 patients had colonic polyps, for an incidence of 11.7%. The main clinical presentations of the colonic polyps,

risk factors, endoscopic descriptions, and histological types of colonic polyps were assessed.

The mean age was 51 ± 18 years. Regarding the sex distribution, 60.3% (n=143) were males, while 39.7% (n=94) were females, for a male-to-female ratio of 1.5:1. The indications for colonoscopy were bleeding per rectum (28.7%; n=68), chronic constipation (16.4%; n=39), a change in bowel habits (11%; n=26), anaemia (8.8%; n=20), melena (3.8%; n=9), diarrhea (3.8%; n=9) and surveillance (20%; n=48%), as shown in Table 1. Moreover, 50 out of all patients had medical comorbidities: hypertension was noted in 25 (10.5%) patients, diabetes was noted in 19 (8%) patients, and both comorbidities were present in 6 (2.5%) patients. NSAIDs were used by 20.3% (n=48) of the patients. The smoking history was 14.3% (n=34), while alcohol consumption was 9% (n=22). There was a significant correlation with the use of NSAIDs (P value=0.02), while no significant correlation was found with smoking or alcohol consumption (Table 2).

There was a family history of polyps in 16.5% (n=39) of the patients. A family history of cancer was 19.8% (n=47): colorectal cancer in 55.3% (n=26); breast cancer in 19% (n=9); other gastrointestinal cancers (stomach, oesophagus, and duodenum) in 10.6% (n=5); thyroid cancer in 4% (n=2); uterine cancer in 4% (n=2); combined CRC and uterine cancer in 2% (n=1); and colorectal cancer and breast cancer in 2% (n=1), while 190 (80.2%) patients had no family history of cancer (Figure 1). There was a significant correlation between family history of cancer and the size of polyps and grade of dysplasia (P value=0.01, p value=0.02).

About the location of the colonic polyps, 67.5% (n=160) were on the left side of the colon, 30% (n=71) were rectal, 16% (n=38) were on the sigmoid colon, and 14.8% (n=35) were on the descending side. Among the remaining patients, 6.8% (n=16) had a cecum, 6.3% (n=15) had an ascending 12.2% (n=29) had a transverse

cecum, and 7.2% (n=17) had more than 2 different sites (Figure 2).

For the size of the colonic polyps, 35.4% (n=84) were more than 1 cm, 48.1% (n=114) were less than 0.5 cm, and 13% (n=31) were between 0.5 and 1 cm, while the size was not reported for 3% (n=7).

About the endoscopic description reported, polyp shape was described as sessile in 33.8% (n=80), pedunculated in 16% (n=38), flat in 2.1% (n=5), and 27.4% (n=65) of the polyps were not described, and 16% (n=38) of the polyps were described on endoscopy as adenomatous, inflammatory, or hyperplastic (Figure 3). The PARIS classification was not used in any report as a standard to describe the shape of the polyp (0%). Background Mucosa on endoscopy was normal in 50% (n=118) and inflamed in 12.2% (n=29) of patients, while the rest were not mentioned in 38% (n=90) of patients.

Histopathology reports were available for 65.4% (n=155) of patients with polyps as follows:

Among the adenomatous polyps, 46.4% (n=72) were (tubuloadenomatous, 22%; n=34); tubulovillous, 17.4%; (n=27); (three showed features of adenocarcinoma); adenomatous, (n=11) 7%; inflammatory, 37.4%; (n=58); hyperplastic, (n=8) 5%; and adenocarcinoma, 1.9% (n=3). bilharsiazial polyps were 1.9% (n=3), and serrated polyps were 1.2% (n=2) (Table 3).

High-grade dysplasia was reported in 9% (n=22) of the polyps examined (237), moderate-grade dysplasia was reported in 6.75% (n=16), low-grade dysplasia was reported in 21.5% (n=51) and 1 (0.4%), and no dysplasia was reported in 62% (n=147). Other gastrointestinal conditions were found as IBD in 7.2% (n=17) of patients with polyps, and 7.6% (n=18) had diverticulitis. Among the IBD patients (n=17) with polyps, eight had inflammatory disease, five had tubuloadenomatous disease, and the other had mixed disease, most of whom had no dysplasia (n=12).

Table 1: Main clinical presentations of the colonic polyps (n=237)

Indication of colonoscopy	Frequency		Percent %
Bleeding per rectum		68	28.7
Surveillance		48	20.3
Constipation		39	16.5
Abdominal pain		27	11.4
Change in bowel habit		26	11
Anemia		21	8.8
Diarrhea		9	3.8
Melena		9	3.8
Weight loss		4	1.7

Table 2: Correlations between risk factors and colonic polyps (n=237).

		Site	Significant for: Age =P value0 .01 NSAIDs =P value 0.02
Site	Pearson Correlation	1	
	N	237	
age (Binned)	Pearson Correlation	-.160	
	Sig. (2-tailed)	.014	
	N	237	
Smoking	Pearson Correlation	.046	
	Sig. (2-tailed)	.479	
	N	237	
Alcohol	Pearson Correlation	.065	
	Sig. (2-tailed)	.321	
	N	237	
NSAI	Pearson Correlation	-.142	
	Sig. (2-tailed)	.029	
	N	237	
Familyhistoryofpolyp	Pearson Correlation	-.075	
	Sig. (2-tailed)	.252	
	N	237	
FHofcancer	Pearson Correlation	-.062	
	Sig. (2-tailed)	.342	
	N	237	

Table 3: The histological type of the colonic polyps (n=155)

Types of colonic polyps	Frequency	Percent %
Adenomatous	72	46.4
Tubuloadenomatous	34	22
Tubulovillous	27	17.4
Adenomatous	11	7
Inflammatory	58	37.4
Hyperplastic	8	5.1
Adenocarcinoma	3	1.9
Inflammatory bilharzial	3	1.9
Lipomatous	1	.6
Inflammatory & adenomatous	2	1.2
Serrated	2	1.2
Polyp with adenocarcinoma	1	.6
Inflammatory and hyperplastic	1	.6
Hamartoma	1	.6
Fibroepithelial polyp	1	.6
Juvenile polyp	2	1.2

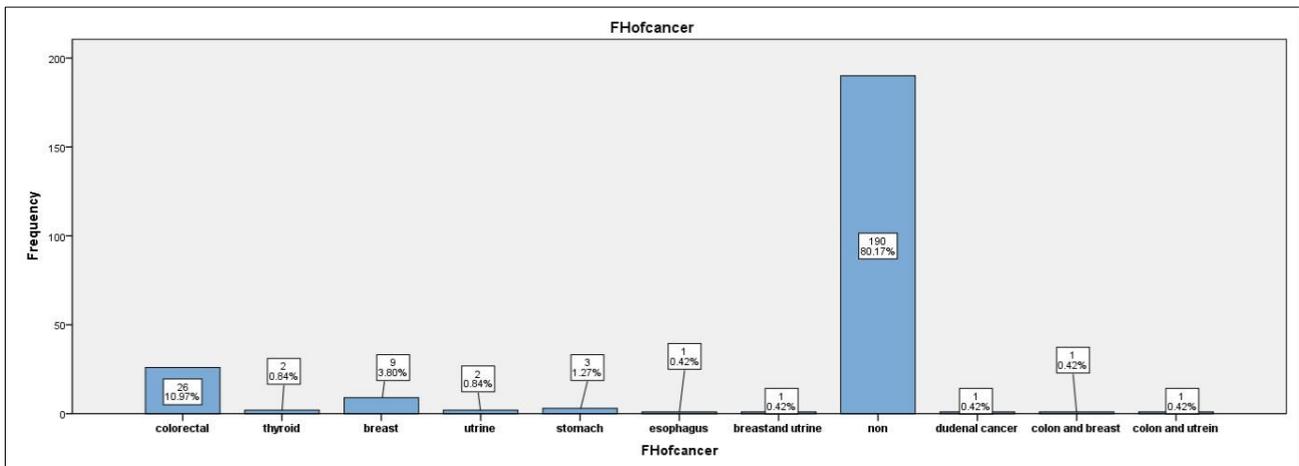


Figure 1: Family history (FH) of cancer among patients with colonic polyps (n=47; 190 patients had no family history of cancer, as indicated above).

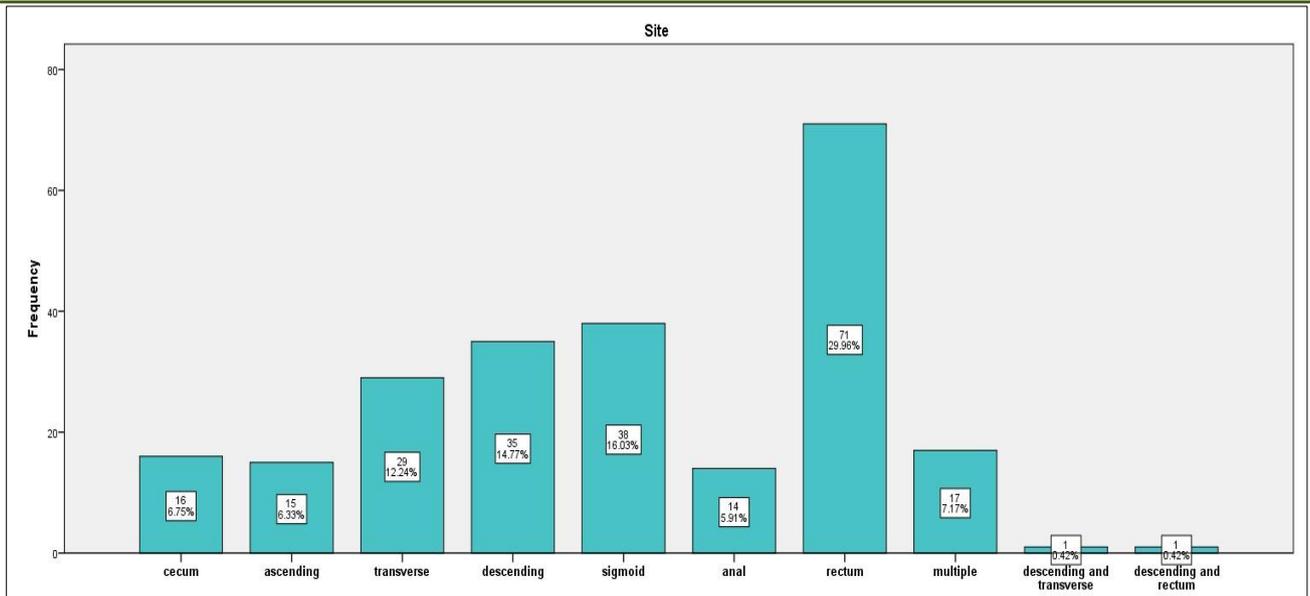


Figure 2: Sites of colonic polyps identified via endoscopy (n=237).

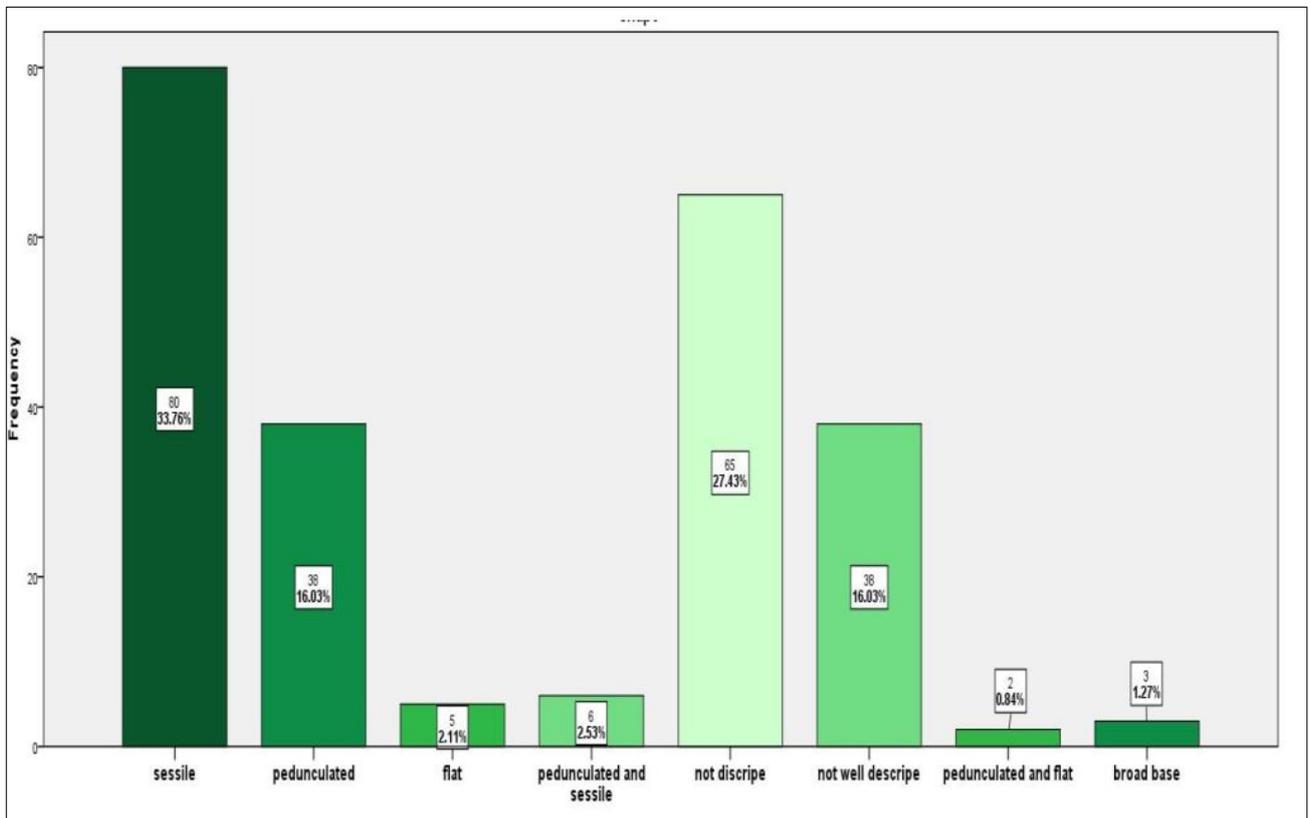


Figure 3: Endoscopy images of the shapes of the colonic polyps (n=237).

DISCUSSION

The incidence of colorectal polyps is rapidly increasing worldwide. Adenomatous polyps are thought to be precursor lesions for most colorectal cancers (CRCs) [21]. In this study, the incidence of colonic polyps was 11.7% (n=237); these findings are comparable to unpublished local data from our center, where paediatric patients were included in 10 months of study. However, these findings are less than the

prevalence of severe disease, which is 34%. Similarly, 20% of Saudi Arabian patients and 17.2% of Libya patients underwent colonoscopy. This can be explained using surveillance systems in these countries; however, our result is like that in India [22-26]. Colonic polyps were more common in males (60.3%, n=143), according to some international data, in contrast to Saudi Arabia, where females are more common [25, 26]. The mean age of patients with colonic polyps in this study was 51 ±18

years, like the findings of international studies, and was significantly correlated with polyps and increasing age (p value=0.01) [25]. Bleeding per rectum was the most common clinical presentation, which was also found in other previous studies [27]. Regarding risk factors for colorectal polyps, this study showed that the use of NSAIDs regularly for more than 1 year was a significant factor for developing colorectal polyps (with p value=0.02), similar to the findings of Eileen Shaw *et al.*, in contrast to Wallace K *et al.*, who found that NSAIDs and aspirin have a protective effect on the development of right-sided colon polyps but not on the left in a randomized controlled trial [14-28]. Other risk factors, such as smoking, alcohol consumption, and family history of polyps, had no significant correlation. About the family history of cancer, other studies have shown that a family history of colorectal cancer potentiates the growth of polyps but not the occurrence of polyps. This study highlighted that a family history of cancer (including CRC, other gastrointestinal cancers, and uterine, thyroid, and breast cancers) is directly correlated with the size of the polyp and grade of dysplasia (p value=0.01 and p value=0.02, respectively). However, further genetic studies are needed to evaluate this topic [29]. The left side of the colon was the main site for polyps in 160 (67.5%) patients, mainly the rectum in 30% (n=71) of patients. This finding is like recent international data [27]. According to the reported endoscopic data, among the 80 (33.8%) patients, sessile polyps were the most common type of polyp among the studied population, while the remaining 38 (16%) patients had pedunculated polyps; moreover, to a lesser extent, 2.1% (n=5) of the patients had flat polyps. These findings are consistent with the findings of Hewett DG *et al.*, who studied the classification system of polyps. However, in this study, 27.4% (n=65) of the patients were not described at all, 16% (n=38) were inappropriately described (histopathological terms were used), and no use of the PARIS classification or other standard classification was used. The use of such a system will greatly improve the determination of the shape of polyps and the possible histological type, which will prevent unnecessary sampling of benign polyps even more and can facilitate the use of the surveillance system. This study also revealed a significant relationship between the shape of the polyps and histopathology (P value=0.008). This finding highlights the importance of the use of a standard reporting system for the description of polyps by endoscopists [18-30].

In this study, histopathology reports were available for 66% (n=159) of patients with polyps as follows: the most common histopathology of polyps was adenomatous polyps in 45% (72%) of patients (tubuloadenomatous polyps in 21.5% (n=34), tubulovillous polyps in 17% (n=27), adenomatous polyps in 6.9% (n=11)), followed by inflammatory polyps in 36.7% (n=58) and hyperplastic polyps in 5% (n=8). In contrast to the findings of other studies,

hyperplastic polyps represent the most common type of polyp [25-27].

In this study, 7.6% (n=18) of patients with colon polyps had diverticulitis. Diverticulitis and colonic polyps were studied and were shown to be associated with synchronous colorectal adenomas in patients with colorectal cancer, which ultimately increases the risk of adenomas. Moreover, in a cross-sectional study performed by Alnzaer A *et al.*, in Sudan, colon polyps were found in 15.4% of patients diagnosed with diverticulitis [31, 32].

The current study revealed that the frequency of inflammatory bowel disease (IBD) among patients with colorectal polyps was 7% (n=17), and the most common inflammatory disease was found in the literature [33].

The limitations of this study were that it was a single-center study. More centers need to be involved in future studies. Other limitations were the gap between the number of patients and the histopathology samples; some of them were lost, while some were not done by the patients themselves; moreover, some reports contained missing data that impacted our results. The correlation between gastrointestinal polyps and risk factors was difficult to determine, and case-control studies need to be conducted in the future.

CONCLUSION

The incidence of colonic polyps was 11.7% in patients who underwent a colonoscopy when polyps were found in endoscopy reports. Bleeding per rectum was the main presentation of colonic polyps. NSAID use was significantly associated with colonic polyps (P value 0.02). A family history of cancer was significantly associated with the size of the polyps and the presence of dysplasia on histopathology (P values of 0.01 and 0.02, respectively). However, additional multicenter studies are needed, as are additional powerful surveillance systems for the early detection of polyps.

What Is Already Known About This Topic?

- The prevalence of colorectal polyps is increasing in Africa.
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What Does This Study Add?

- The incidence of colorectal polyps in the included population was 11.7%.
- The most common presentation is bleeding per rectum.
- The most common types of polyps in the study were adenomatous, inflammatory, and hyperplastic polyps.
- There was a significant correlation between the use of NSAIDs (P value=0.02) and the development of colonic polyps.

Competing Interests: None

Authors' Contributions**Acknowledgments:** None**REFERENCES**

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