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DIAGNOSTIC YIELD FROM SYMPTOMATIC COLONOSCOPY: A CROSS-SECTIONAL STUDY FROM GAJJU KHAN MEDICAL COLLEGE SWABI.

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ABSTRACT

BACKGROUND: Colonoscopy is an essential diagnostic tool for detecting underlying lower gastrointestinal pathologies. Evaluating its diagnostic yield and its relationship with patient demographics and clinical indications can enhance its utility and improve patient care outcomes. **OBJECTIVE:** To evaluate the diagnostic yield of colonoscopy in patients presenting with lower gastrointestinal symptoms and to analyze its association with patient demographics, clinical indications, and underlying pathologies. **METHODS:** This retrospective study, conducted at Gastroenterology Department, Gajju Khan Medical College, Swabi, from September 2019 to September 2024. A total of 1119 adult patients presenting with lower gastrointestinal symptoms were enrolled. Data on demographics, clinical indications, and colonoscopy findings were collected through structured questionnaires and medical records. Data analysis was conducted using SPSS version 26 to calculate diagnostic yield and assess associations with age, gender, and clinical symptoms. **RESULTS:** Mean age of participants was 41±14 years, with 62% being male. The most common clinical indications were per rectal bleeding (42.1%), chronic diarrhea (17.2%), and abdominal pain (12.7%). The overall diagnostic yield of colonoscopy was 69%, with hemorrhoids (24.8%), rectal polyps (5.1%), and ulcerative colitis (4.9%) being the most frequent findings. Significant associations were observed between diagnostic yield and clinical symptoms ($p=0.001$). Hemorrhoids were more prevalent in males ($p<0.001$) and older age groups. **CONCLUSION:** Colonoscopy demonstrated a high diagnostic yield of 69% in patients with lower gastrointestinal symptoms. Patient demographics and clinical indications, particularly per rectal bleeding, were significantly associated with diagnostic outcomes, highlighting the importance of targeted diagnostic approaches to improve patient management.

KEYWORDS: GI Pathologies, Rectal Bleeding, Hemorrhoids, Diarrhea, Colonoscopy.

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INTRODUCTION

Colonoscopy is a procedure that allows for the examination of the rectum, colon, and terminal ileum using a flexible tube equipped with a camera and light source, known as a colonoscope[1]. Since its introduction in the 1960s, colonoscopy has become a vital diagnostic and therapeutic tool for detecting and treating various intestinal diseases. The procedure allows physicians to visually inspect most of the large intestine, including the rectum and colon, to identify abnormalities such as inflammation, polyps, or cancer[2]. The procedure can reveal irritated or swollen tissue, ulcers, polyps, and cancers. Doctors often recommend colonoscopy to investigate symptoms such as rectal bleeding, changes in bowel movements (such as diarrhea), abdominal pain, or unexplained weight loss[3].

Additionally, colonoscopy serves as a screening tool for colon polyps and colorectal cancer in asymptomatic individuals, potentially detecting these conditions at an earlier, more treatable stage[4]. Screening for colorectal cancer typically begins at age 45 for individuals without additional risk factors[5,6]. However, certain conditions, such as a family history of colorectal cancer, a personal history of polyps or inflammatory bowel diseases (like Crohn's disease or ulcerative colitis), genetic disorders such as Lynch syndrome, or lifestyle factors like obesity, smoking, and alcohol consumption, can increase the risk of developing colorectal cancer. For those at higher risk, earlier and more frequent screening may be recommended[5,7].

Colonoscopy is the most commonly used endoscopic procedure in the United States, with estimates of 14 million procedures annually[3]. Colonoscopy plays a critical role in postoperative surveillance for colorectal cancer, aiming to detect both anastomotic recurrence and metachronous cancers. According to the "Research Project on Follow-up after Curative Resection for Colorectal Cancer" by the JSCCR, 95% of anastomotic recurrences occur within the first three years post-surgery, with recurrence rates being higher for rectal cancer (8.8%) than colon cancer (1.8%). As a result, the 2019 JSCCR guidelines recommend annual colonoscopy for rectal cancer patients during the first three years post-surgery, and within 1 and 3 years for colon cancer patients[8]. A Cochrane Database systematic review and meta-analysis found that patients with IBD undergoing surveillance colonoscopy had lower cancer detection rates (3.2% vs. 1.8%), reduced colorectal cancer-related mortality (22.3% vs. 8.5%), and a higher rate of early-stage colorectal cancer detection (7.7% vs. 15.5%) compared to those without surveillance[2].

In addition to colonoscopy, other screening options for colorectal cancer include virtual colonoscopy, flexible sigmoidoscopy, and stool tests. The colonoscopy procedure itself generally takes less than an hour and is performed in a hospital or outpatient center. If polyps or abnormal tissues are found, they can be removed and sent for laboratory testing [1,9].

Colonoscopy also plays a crucial role in managing large bowel obstruction (LBO). It not only aids in diagnosing various causes of LBO but is also valuable as a therapeutic tool. Colonoscopy can be used for balloon dilatation in cases of benign strictures and for metal stent insertion in malignant obstructions, providing both diagnostic and treatment options[2].

Endoscopic procedures are essential in the diagnosis and treatment of various digestive pathologies, offering minimally invasive alternatives to surgery. However, being invasive, they carry the risk of complications, which require early identification for timely and appropriate management. While colonoscopy is an effective diagnostic tool, it carries risks, including bleeding, perforation of the colon, and reactions to sedatives ([10]). These risks are relatively rare, with bleeding occurring in about 15 out of

every 10,000 procedures and perforation in about 3 out of every 10,000 ([4]). The risk of complications following colonoscopy is relatively low, with an overall incidence of up to 0.28%. Over 85% of these complications occur during polypectomy procedures. The estimated perforation rate is 0.05%, bleeding occurs in 0.26% of cases, and the mortality rate is 0.007%. Although colonoscopy is generally a safe procedure, the high volume of procedures performed makes these complications more commonly encountered in hospital emergency settings. The risk is higher in older patients and those with cardiopulmonary comorbidities [10].

Up to 33% of patients report at least one minor, transient gastrointestinal symptom following a colonoscopy; however, serious complications are uncommon[11]. The most common complications observed included vomiting, epistaxis, loss of consciousness with head injury, abdominal pain, acute diarrhea, choking symptoms, heart rhythm disturbances, dyspnea, fractures of the limbs and hands, acute coronary syndrome, hypotension, hypertension, cerebral ischemia, severe blood glucose fluctuations, increased muscle contraction, and allergic reactions[12]. Most complications occur in older patients or in those who have had polyps removed. Despite these risks, colonoscopy remains a vital tool for diagnosing and preventing colorectal cancer[4].The diagnostic accuracy of colonoscopy ranges from 72% to 86% [13]. This study aims to assess the diagnostic yield of colonoscopy in symptomatic patients presenting to Gajju Khan Medical College, Swabi. It seeks to provide valuable insights into the prevalence and types of lower gastrointestinal pathologies identified through this critical diagnostic procedure.

MATERIALS ANDMETHOD

This cross sectional study was carried out at the Gastroenterology Department of Gajju Khan Medical College, Swabi. The study spanned a period of five years from September 2019 to September 2024, using a non-probability convenience sampling technique to select participants presenting to the Gastroenterology Department for colonoscopy during our study period. A total of 1113 participants were enrolled, calculated using OpenEpi, based on anticipated frequency of endoscopies performed about 30.7%, confidence interval 97%, 3% margin of error and population of 1,894,600 [14].

Inclusion criteria consisted of adults aged 18 and above presenting with lower gastrointestinal symptoms, patients undergoing colonoscopy for diagnostic purposes, and those who gave informed consent. Exclusion criteria included patients with contraindications to colonoscopy (such as severe cardiorespiratory disease) and those undergoing colonoscopy for routine screening without symptoms.

Patient demographic data, clinical history, and indications for colonoscopy were collected through structured questionnaires and medical records. Findings from the colonoscopy, such as inflammation, ulcers, polyps, strictures, or neoplasms, were recorded in structured questionnaires. If biopsies were taken, the histopathological results were also documented. The study was approved by the Institutional Review Board of Gajju Khan Medical College, Swabi. Informed consent was obtained from all participants, and patient confidentiality was maintained throughout the study. All colonoscopies were performed by experienced gastroenterologists using a standard flexible colonoscope. Patients were prepared with a bowel-cleansing regimen, and sedation was administered according to standard practice. The procedure involved a visual inspection of the rectum, colon, and terminal ileum, with images captured for diagnostic purposes. Biopsies were taken when clinically indicated, and any therapeutic interventions, such as polyp removal or stricture dilation, were performed during the procedure. Data

analysis was conducted using SPSS version 26. Descriptive statistics were used to summarize patient demographics and the frequency of abnormal findings during colonoscopy. The diagnostic yield, defined as the proportion of colonoscopies revealing significant pathology, was calculated. Chi-square tests and correlation analysis were performed to compare diagnostic outcomes based on age, gender, and presenting symptoms.

RESULTS

Our study included 1119 participants with a mean age of 42.62 years (SD±16.49), ranging from 18 to 87 years. The age distribution of the 1119 participants showed a higher frequency in the younger age groups. The majority of participants were aged 18–29 years, comprising 24.9% (n=279), followed by 20.5% (n=229) in the 30–39 years age group. Participants aged 40–49 years accounted for 18.1% (203 participants), while those aged 50–59 years made up 16.6% (186 participants). The 60–69 years age group included 11.3% (127 participants), and the remaining 8.5% (n=95) were aged 70 years or above. The gender distribution revealed that the majority were male, accounting for 66.9% (749 participants), while females comprised 33.1% (370 participants). This highlights a male predominance with male to female ratio of 2:1 among the study population, as shown in Table 1.

TABLE 17AGE AND GENDER DISTRIBUTION OF THE PARTICIPANTS.

Variable	Category	Percentage & Frequency
Age	18–29 years	24.9% (n=279)
	30–39 years	20.5% (n=229)
	40–49 years	18.1% (n=203)
	50–59 years	16.6% (n=186)
	60–69 years	11.3% (n=127)
	70 years or above	8.5% (n=95)
Gender	Male	66.9% (n=749)
	Female	33.1% (n=370)

The clinical indications for colonoscopy among the 1119 participants were diverse, with per rectal bleed being the most common indication, accounting for 42.1% (471 participants). This was followed by chronic diarrhea, indicated in 17.2% (n=193), and abdominal pain, which prompted 12.7% (n=142) to undergo the procedure. Anemia was an indication in 5.9% (n=66), while irritable bowel syndrome (IBS) accounted for 5.7% (n=64). Less frequent indications included rectal pain (3.8%, n=42), constipation (3.1%, n=35), and proctalgia (3.0%, n=34). Other rare indications were rectal prolapse (1.3%, n=14), melena (2.1%, n=24), ascites (0.9%, n=10), weight loss (0.8%, n=9), and per rectal bleed with mucus discharge (0.8%, 9 participants). Bloody diarrhea was the least common, indicated in only 0.5% (6 participants), as presented in Table 1.

TABLE 18. FREQUENCY OF CLINICAL INDICATION FOR COLONOSCOPY.

Clinical Indication	Frequency	Percent
Per Rectal Bleed	471	42.1
Chronic diarrhea	193	17.2
Anemia	66	5.9
Abdominal Pain	142	12.7
IBS	64	5.7
Rectal Prolapse	14	1.3
Bloody Diarrhea	6	0.5
Constipation	35	3.1
PR Bleed with Mucus Discharge	9	0.8
Ascites	10	0.9
Proctalgia	34	3.0
Melena	24	2.1
Weight loss	9	0.8
Rectal Pain	42	3.8
Total	1119	100.0

The colonoscopy findings among the 1119 participants revealed a wide spectrum of gastrointestinal pathologies. About 39% (n=436) of participants had normal results. Among the abnormal findings, hemorrhoids were the most common, present in 24.8% (n=277) of cases,

followed by rectal polyps in 5.1% (n=57) and ulcerative colitis in 4.9% (n=55). Other notable conditions included anal fissure and fistula (4.6%, n=52), solitary rectal ulcer syndrome (3.6%, n=40), and infective colitis (3.0%, n=34). Less frequent diagnoses were anorectal ulcers (2.8%, n=31), terminal ileal ulcers (2.4%, n=27), and rectosigmoid growth (2.2%, n=25). Rare findings included proctosigmoiditis (1.1%, n=12), parasitic infections and sigmoid polyps (1.2% each, n=13), ulcerative proctitis (1.4%, n=16), polyposis syndrome (1.9%, n=21), and diverticular disease (0.6%, n=7). The least common diagnosis was ileocecal tuberculosis, found in 0.3% (n=3) of participants, as presented in Table 2. The diagnostic yield of the colonoscopies performed in this study revealed that 39% (n=436) of participants had no abnormal findings, while 61% (n=683) exhibited significant abnormalities. The crosstabulation followed by Chi-square test and correlation analysis provides insight into the relationship between diagnostic yield and various factors such as age group, gender, and clinical symptoms, as shown in Table3.

The distribution of diagnostic yield across different age groups showed that the majority of participants (61%, n=683) had significant abnormalities. In the younger age groups (18–29 years), 34.2% had significant abnormalities, while in older age groups, the percentage of significant abnormalities was higher, particularly in the 50–59 years (59.6%) and 60–69 years (56.7%) categories. However, the Chi-Square test result ($\chi^2 = 5.026$, $p = 0.413$) indicates no statistically significant association between age group and diagnostic yield. The diagnostic yield also did not show a significant association with gender. Of the total 749 male participants, 61.3% had significant abnormalities, while among females, 60.8% had significant abnormalities.

TABLE 19. COLONOSCOPY FINDINGS AMONG THE PARTICIPANTS

Colonoscopy Findings	Frequency	Percent
Normal	436	39.0
Ulcerative Colitis	55	4.9
Parasitic Infection	13	1.2
Hemorrhoids	277	24.8
Rectal Polyps	57	5.1
Sigmoid Polyps	13	1.2
Rectosigmoid growth	25	2.2
Polyposis Syndrome	21	1.9
Solitary rectal ulcer syndrome	40	3.6
Ulcerative Proctitis	16	1.4
Anal Fissure & Fistula	52	4.6
Anorectal Ulcer	31	2.8
Infective colitis	34	3.0
Terminal Iliec Ulcer	27	2.4
Proctosigmoiditis	12	1.1
Diverticular Disease	7	0.6
Ileocecal TB	3	0.3
Total	1119	100.0

The Chi-Square test ($\chi^2 = 0.012$, $p = 0.913$) and Fisher's Exact Test ($p = 0.948$) indicate no significant relationship between gender and diagnostic yield. Clinical symptoms showed a significant relationship with diagnostic yield. For example, participants with per rectal bleeding had a high rate of significant abnormalities (85.5%), and similarly, participants with chronic diarrhea (62.9%) and abdominal pain (48.6%) also exhibited high rates of significant findings. The Chi-Square test result ($\chi^2 = 248.847$, $p = 0.001$) indicates a significant association between clinical symptoms and diagnostic yield. Symmetric measures, including Pearson's R (-0.141) and Spearman's correlation (-0.324), further confirm this negative relationship between clinical symptoms and diagnostic yield, indicating that certain clinical symptoms are strongly associated with significant abnormalities on colonoscopy. For instance, per rectal bleed was the most frequently reported symptom, with 85.5% (n=402) of participants showing significant abnormalities.

TABLE 20. CORRELATION OF DIAGNOSTIC YIELD WITH AGE, GENDER AND CLINICAL INDICATION

Variable	Diagnostic Yield	Significant abnormality	Total	p-value	
	No abnormality	96	183	279	
	18--29 years	92	137	229	
	30--39 years	76	127	203	
	40--49 years	75	111	186	
Age groups	50--59 years	55	72	127	0.413
	60--69 years	42	53	95	
	70 years or above	436	683	1119	
	Total	291	458	749	
	Male	145	225	370	
Gender	Female	436	683	1119	0.913
	Total	69	402	471	
	Per Rectal Bleed	121	72	193	
	Chronic diarrhea	50	16	66	
	Anemia	73	69	142	
	Abdominal Pain	46	18	64	
	IBS	19	16	35	
Clinical symptoms	Constipation	12	22	34	0.001
	Proctalgia	11	13	24	
	Melena	14	28	42	
	Rectal Pain	21	27	48	
	Other	436	683	1119	
	Total				

Chi-square test was performed to assess the association of age, gender, and clinical symptoms with hemorrhoids, ulcerative and infective colitis among the participants.

For Hemorrhoids, no significant association was found with age group (χ^2=7.244, p=0.203), suggesting that the occurrence of hemorrhoids was not significantly related to different age groups. The gender distribution of hemorrhoids, however, showed a significant association (χ^2=17.720, p<0.001), with more males having hemorrhoids than females. Additionally, clinical symptoms like per rectal bleeding were strongly associated with hemorrhoids (χ^2=167.966, p<0.001), highlighting the significant relationship between hemorrhoids and various gastrointestinal symptoms.

In the case of Colitis, no significant association was found with age group (χ^2=6.015, p=0.305), suggesting that ulcerative and infective colitis occurred relatively evenly across different age groups. Gender showed a borderline relationship with colitis types (χ^2=2.946, p=0.086), with slightly more males diagnosed with ulcerative colitis than females. The analysis of clinical symptoms revealed a significant relationship with colitis (χ^2=15.952, p=0.043), with ulcerative colitis more commonly associated with symptoms such as per rectal bleeding and abdominal pain, while infective colitis was linked with symptoms like chronic diarrhea and anemia, as shown in Table 4.

TABLE 21. ASSOCIATION OF HEMORRHOIDS AND COLITIS WITH AGE, GENDER AND CLINICAL INDICATION.

Variables		Hemorrhoids				Colitis			
		No	Yes	Total	p-value	Ulcerative Colitis	Infective Colitis	Total	p-value
Age groups	18--29 years	213	66	279	0.203	16	7	23	0.305
	30--39 years	173	56	229		11	6	17	
	40--49 years	146	57	203		15	5	20	
	50--59 years	136	50	186		7	7	14	
	60--69 years	93	34	127		3	5	8	
	70 years or above	81	14	95		3	4	7	
	Total	842	277	1119		55	34	89	
Gender	Male	535	214	749	<0.001	39	18	57	0.086
	Female	307	63	370		16	16	32	
	Total	842	277	1119		55	34	89	
Clinical symptoms	Per Rectal Bleed	265	206	471	<0.001	23	7	30	0.043
	Chronic diarrhea	178	15	193		11	9	20	
	Anemia	59	7	66		3	0	3	
	Abdominal Pain	129	13	142		10	10	20	
	IBS	59	5	64		0	1	1	
	Rectal Prolapse	10	4	14		0	0	0	
	Constipation	26	9	35		1	0	1	
	Other	116	18	134		7	7	14	
	Total	842	277	1119		55	34	89	

When examining Rectal Polyps, Sigmoidal Polyps, and Polyposis Syndrome by age group, the chi-square test revealed a significant relationship (χ^2=18.441, p=0.048). Although the sample size for these conditions was smaller (91 cases), significant differences were noted in how these conditions were distributed across age groups. Gender did not appear to significantly influence the distribution of polyps and polyposis syndrome (χ^2=0.113, p=0.945), and the clinical symptoms also showed a significant association (χ^2=42.679, p=0.005), particularly for rectal polyps, which were often associated with symptoms like per rectal bleeding, as presented in Table 5

TABLE 22. CORRELATION OF RECTOSIGMOID POLYPS WITH AGE, GENDER AND CLINICAL INDICATION.

Variable		Rectal Polyps	Sigmoid Polyps	Polyposis Syndrome	Total	p-value
Age group	18--29 years	20	4	6	30	0.048
	30--39 years	16	1	3	20	
	40--49 years	5	2	2	9	
	50--59 years	4	4	9	17	
	60--69 years	4	1	1	6	
	70 years or above	8	1	0	9	
	Total	57	13	21	91	
Gender	Male	36	8	14	58	0.945
	Female	21	5	7	33	
	Total	57	13	21	91	
Clinical symptoms	Per Rectal Bleed	33	5	10	48	0.005
	Chronic diarrhea	9	0	1	10	
	Abdominal Pain	3	7	4	14	
	IBS	0	0	2	2	
	Rectal Prolapse	4	0	0	4	
	Proctalgia	3	0	0	3	
	Weight loss	1	0	0	1	
	Other	4	1	4	9	
	Total	57	13	21	91	

DISCUSSION

Our study assessed the demographic characteristics, clinical indications, and colonoscopy findings in patients undergoing symptomatic colonoscopy at Gajju Khan Medical College, Swabi. The study highlighted the diagnostic yield of symptomatic colonoscopy. The mean age of the study participants was 48.3±15.6 years, with the majority belonging to the 41–60 years age group (46.2%), followed by the 20–40 years group (28.2%). Gender distribution showed that males comprised the majority of cases (62.8%), while females accounted for 37.2% of the study population. Colonoscopy findings revealed a diverse range of conditions. Hemorrhoids were the most common, observed in 24.8% of cases, followed by rectal polyps in 5.1% and sigmoid polyps in 1.2%. Solitary rectal ulcer syndrome was observed in 3.6% of patients. Ulcerative colitis was identified in 4.9%, and ulcerative proctitis was seen in 1.4%. Other findings included infective colitis (3.0%), and terminal ileal ulcers (2.4%). The most common clinical indications for colonoscopy were per rectal bleeding (42.6%), chronic diarrhea (25.4%), and abdominal pain (19.8%), with other indications including altered bowel habits and unexplained anemia. Fadi et al. observed that chronic diarrhea and abdominal pain were the major indications for colonoscopy, with respective frequencies of 42.4% and 36.2%. Rectal bleeding and constipation were also notable indications, reported at 19.8% and 18.4%, respectively (15). Similarly, in our study, clinical indications such as chronic

diarrhea (17.2%), abdominal pain (12.7%), and rectal bleeding (42.1%) were frequently observed, suggesting that these symptoms play a crucial role in determining the need for colonoscopic evaluation. While rectal bleeding was the most prevalent indication in both studies, abdominal pain and chronic diarrhea were also prominent, reinforcing their clinical relevance in guiding colonoscopy decisions. Gudissa et al., also found rectal bleeding (31.7%) to be the common indication for colonoscopy at a tertiary teaching hospital at Ethiopia [16].

Afifi et al. observed that the most common clinical indications in their study were lower gastrointestinal bleeding (41.7%), chronic diarrhea (17.7%), abdominal pain (14.7%), and chronic constipation (13.3%). In terms of colonoscopic findings, hemorrhoids were the most frequent (38.3%), followed by colonic ulcers (11%), diverticular disease (6%), and polyps (5.7%). In comparison, our study reported a higher proportion of patients with per rectal bleeding (42.1%) as the leading clinical indication. Similar to Afifi et al., hemorrhoids were the most common finding on colonoscopy, but the frequency in our study was 24.8%, which is slightly lower than their reported figure[17]. Additionally, we observed a broader range of findings, including rectal polyps (5.1%), anal fissures (4.6%), and inflammatory conditions such as ulcerative colitis (4.9%), reflecting a slightly different clinical and pathological spectrum. Manko et al., reported hemorrhoids about 40% and colitis 16.8%, while lower GI bleeding was the common indication for colonoscopy, which aligns with our study [18].

The diagnostic yield of colonoscopy in our study was 61%, demonstrating its effectiveness in identifying clinically significant pathologies. The diagnostic yield was significantly associated with clinical symptoms, particularly per rectal bleeding and chronic diarrhea ($p < 0.001$), but showed no significant correlation with age ($p = 0.276$) or gender ($p = 0.458$). Frazzoni et al. reported a diagnostic yield of 45%, which is slightly lower than the diagnostic yield found in our study, which was 61% [19]. In comparison to Hochman et al., who reported a diagnostic yield of 48%, our study observed a higher yield of 69%. Hochman et al. found that rectal bleeding (61%) and diarrhea (43%) were the most common clinical indications associated with significant findings[20]. Similarly, in our study, per rectal bleeding was the most frequent indication (42.1%), followed by abdominal pain (12.7%) and chronic diarrhea (17.2%). While both studies emphasize the significance of rectal bleeding as a primary indication for colonoscopy, our higher diagnostic yield suggests that our cohort may have a higher proportion of patients with clinically relevant findings. In comparison, Lu et al.'s study had a younger cohort, with a mean age of 31 years (SD±3), and 36% of participants were male. This contrasts with our study, where the mean age was higher, and the demographic distribution of age and gender may have influenced the diagnostic yield. The younger age group in Lu et al.'s study may have had fewer serious gastrointestinal pathologies, which likely contributed to their lower diagnostic yield of 15%[21]. In contrast, our study, which included a broader age range, found a higher diagnostic yield of 69%, suggesting that the clinical indications in our cohort were more closely associated with significant finding. In line with Lu et al.'s findings, where the diagnostic yield in patients with rectal bleeding was significantly higher than in those without rectal bleeding, our study similarly showed a strong association between rectal bleeding and significant colonoscopic findings[21]. Ismail et al. reported that diarrhea yielded the highest diagnostic rate for clinically significant disease (CSD) at 5.3%, followed by per rectal (PR) bleeding at 2.9%, with weight loss showing the lowest diagnostic yield of 0.4%. In contrast, our study demonstrated a much

higher diagnostic yield for PR bleeding at 69%, making it the most significant clinical indication. Chronic diarrhea, while accounting for 17.2% of the indications in our study, also showed a strong association with significant findings. Weight loss, though a rare indication in our study (0.8%), yielded a higher diagnostic rate than reported by Ismail et al. [22].

In our study, Hemorrhoids were significantly more common in males ($p<0.001$) and strongly associated with per rectal bleeding ($p<0.001$), but no significant association with age was observed ($p=0.203$). Sadiqa et al. reported that hemorrhoids were significantly associated with patients aged above 40 years and predominantly with the male gender. In our study, hemorrhoids were diagnosed in 24.8% of cases, having significant association with male gender but we observed no significant association between hemorrhoids and age, suggesting a different distribution pattern in our patient population[23]. Colitis was observed across all age groups with no significant age-related prevalence ($p=0.305$) and only a borderline association with gender ($p=0.086$). Chronic diarrhea and anemia were more frequently observed in cases of infective colitis, while abdominal pain and per rectal bleeding were common in ulcerative colitis. Rectal polyps, sigmoidal polyps, and polyposis syndrome showed a significant association with age ($p=0.048$), being more prevalent in the middle-aged and older groups, but no significant gender differences were noted ($p=0.945$). Per rectal bleeding was the most common clinical symptom linked with these conditions ($p=0.005$).

Our study has certain limitations that need to be acknowledged. Firstly, as a single-center study, the findings may not be generalizable to broader populations with diverse demographic and clinical characteristics. The study relied on clinical indications for colonoscopy rather than standardized diagnostic protocols, which could have impacted the diagnostic yield and associations observed. Additionally, the study did not evaluate long-term outcomes or follow-up of patients, limiting our understanding of the clinical impact of the identified findings. To address these limitations, future studies should consider a multicenter approach, comprehensive follow-up data are recommended. Further research should also explore the cost-effectiveness of colonoscopy in detecting clinically significant diseases and evaluate the role of advanced diagnostic tools in improving diagnostic accuracy.

CONCLUSION

Our study highlights the diagnostic value of colonoscopy in evaluating patients with lower gastrointestinal symptoms. The majority of participants were presented with rectal bleeding, chronic diarrhea, and abdominal pain as clinical indications. The diagnostic yield of colonoscopy in our study was notably high at 69%, with hemorrhoids being the most frequently identified pathology, followed by rectal and sigmoid polyps, and colitis. Significant associations were observed between diagnostic yield and presenting clinical symptoms. These findings emphasize the importance of colonoscopy as a crucial diagnostic tool, particularly in younger populations with lower GI symptoms, and underscore the need for tailored screening strategies to improve patient outcomes.

ETHICS APPROVAL: The ERC gave ethical review approval.

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All persons who meet authorship criteria are listed as authors, and all authors certify that they have participated in the work to take public responsibility of this

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