

Colonoscopy Screening: An Optimal Early Diagnostic Choice for Colorectal Symptoms

Dr. Md. Hasanur Rahman^{1*}

¹Associate Professor, Department of Surgery, Chandpur Medical College, Chandpur, Bangladesh

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*Corresponding author: Dr. Md. Hasanur Rahman

Associate Professor, Department of Surgery, Chandpur Medical College, Chandpur, Bangladesh

Abstract

Original Research Article

Background: Colorectal cancer (CRC) is an emerging public health challenge in Bangladesh, with increasing incidence due to lifestyle changes, dietary habits, and genetic predisposition. Early detection significantly improves prognosis, yet colonoscopy remains underutilized due to limited awareness and accessibility. Implementing routine colonoscopic screening could enhance early diagnosis and reduce CRC-related mortality. **Objective:** This study aimed to evaluate the necessity and effectiveness of early colonoscopy screening as the preferred diagnostic method for colorectal symptoms in Bangladesh. **Methods:** The study was conducted at the Department of Colorectal Surgery, Tertiary Hospital, Dhaka, from January 2023 to June 2024. A total of 200 patients presenting with colorectal symptoms were included. Data were collected using a structured case record form, incorporating patient history, clinical findings, laboratory investigations, operative findings, and histopathological reports. Statistical analysis was performed using SPSS version 20. **Results:** Among the 200 participants, the majority were above 50 years old (5.5%), while 4.5% were between 41-50 years, and 0.5% were in the 31-40 age group. Malignancy was more prevalent in males (8%) than females (3%), with a male-to-female malignancy ratio of 1.7:1. The most common clinical presentation was per-rectal bleeding (64%), followed by anemia/weakness (46%), altered bowel habits (36%), pain (10.5%), and obstruction (3.5%). Colonoscopic findings revealed that 11% had malignancies, while 32% had benign conditions. A substantial proportion (38%) had normal findings, and 9% were follow-up cases. Malignancies were predominantly observed in patients aged 41 and above, with right-sided colon malignancies being more common in males than females. **Conclusion:** The study underscores the importance of implementing routine colonoscopy screenings in Bangladesh, particularly for high-risk groups. Ensuring the availability of colonoscopy equipment, educating healthcare personnel, and increasing public awareness could significantly enhance early detection rates. Although no single screening method is flawless, colonoscopy remains the gold standard due to its diagnostic and preventive benefits. Strengthening healthcare policies and public health initiatives could improve colorectal cancer outcomes in Bangladesh.

Keywords: Colorectal cancer, colonoscopy, early detection, screening, Bangladesh, malignancy, public health, endoscopy.

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INTRODUCTION

Colorectal cancer (CRC) is a growing health concern, with increasing incidence due to lifestyle changes, dietary habits, and genetic predisposition. Early detection is crucial in improving patient outcomes, and colonoscopy remains the gold standard for screening and diagnosis. Despite its effectiveness, awareness and accessibility of colonoscopy screening remain limited in the country [1-3].

Current guidelines worldwide emphasize early colonoscopy screening, particularly for individuals with risk factors such as a family history of CRC,

inflammatory bowel disease, or chronic gastrointestinal symptoms. Many patients present at later stages due to a lack of routine screening and misconceptions regarding the procedure. This delay significantly impacts survival rates and treatment effectiveness [3-5].

Colonoscopy is not only a diagnostic tool but also a preventive measure, as it allows for the identification and removal of precancerous polyps before they develop into malignancies. Other non-invasive screening options, such as fecal occult blood tests (FOBT) and stool DNA tests, are available but lack the accuracy and comprehensive evaluation that

colonoscopy provides. Thus, colonoscopy remains the investigation of choice for colorectal symptoms [6-7].

The availability and affordability of colonoscopy in Bangladesh pose challenges, as many healthcare facilities are not equipped with advanced endoscopic services. Additionally, patient reluctance due to fear, stigma, and lack of knowledge about the procedure further contribute to the underutilization of colonoscopy as a screening tool. Addressing these barriers through public health initiatives and policy reforms can enhance early detection rates.

Promoting routine colonoscopy screenings and improving access to endoscopic services can lead to earlier diagnosis, better treatment outcomes, and a reduction in colorectal cancer mortality in Bangladesh. Public awareness campaigns, physician recommendations, and healthcare infrastructure improvements are essential steps in ensuring colonoscopy becomes a widely accepted and utilized screening method for colorectal symptoms in the country.

Objective

To evaluate the necessity and effectiveness of early colonoscopy screening as the preferred diagnostic method for colorectal symptoms in Bangladesh.

METHODOLOGY

The study was carried out at the Department of Colorectal Surgery, Tertiary Hospital, Dhaka. These institutions were chosen for their specialized colorectal care and availability of endoscopic facilities.

A total of 200 patients presenting with colorectal symptoms were included in the study. The data collection period spanned from January 2023 to June 2024. Patients were selected based on predefined inclusion criteria, ensuring the study captured a broad spectrum of colorectal conditions.

Data were collected using a pre-designed case record form, documenting detailed patient history, physical examination findings, and necessary laboratory and radiological investigations. Operative findings and histopathological reports of biopsy samples were also recorded for comprehensive analysis.

The collected data were edited and analyzed using the Statistical Package for Social Sciences (SPSS) for Windows, version 20. Descriptive and inferential statistical methods were applied to interpret the results, ensuring accuracy and reliability in assessing the effectiveness of colonoscopy screening.

RESULTS

Among the 200 respondents, the majority were above 50 years old (5.5%), while 4.5% were between 41-50 years, and only 0.5% were in the 31-40 age group. Regarding gender distribution and diagnosis, malignancy was more common in males (8%) than females (3%), with a male-to-female ratio of 1.7:1 in malignancy. Benign conditions were also more prevalent in males (17.5%) compared to females (14%). The most common clinical presentation was per-rectal bleeding (64%), followed by anemia/weakness (46%), alteration of bowel habits (36%), pain (10.5%), and obstruction (3.5%).

Table-1: Age distribution, gender-based malignancy and benign cases, male-to-female ratio

Variable	Categories	Percentage (%)
Age Distribution	31-40 years	0.5%
	41-50 years	4.5%
	Above 50 years	5.5%
Gender & Diagnosis	Male (Malignancy)	8%
	Male (Benign)	17.5%
	Female (Malignancy)	3%
	Female (Benign)	14%
Male-to-Female Ratio	Malignancy	1.7:1
Clinical Presentation	Per-rectal bleeding	64%
	Anemia/Weakness	46%
	Alteration of bowel habit	36%
	Pain	10.5%
	Obstruction	3.5%

The colonoscopic findings revealed that malignancies accounted for 11% of the cases, while benign diseases were more prevalent, comprising 32%. A significant proportion of cases (38%) were labeled as

normal. Follow-up of previously operated cases constituted 9%, and another 9% of cases were deferred due to poor operation or the need for a repeat procedure.

Table-2: Distribution of Colonoscopic Findings (Percentage-wise)

Category	Percentage (%)
Malignancies	11%
Labeled normal	38%
Follow-up of operated cases	9%
Benign disease	32%
Paediatric age group	1%
Deferred due to poor operation or repeated later	9%

Among the 21 malignancy cases, no cases were observed in the 16-30 age group. In the 31-40 age group, a single case was found in the recto-sigmoid and anal region in a male patient. The highest number of malignancies was recorded in patients aged 41-50 and above 50 years, with right-sided colon malignancy being more frequent in males (5 cases) than females (2 cases). The transverse colon had similar findings, while left-sided colon malignancies were exclusively observed in males. Recto-sigmoid and anal malignancies were more evenly distributed among males and females.

Among the 63 benign cases, the majority were in the older age groups, with benign conditions being more common than malignancies. The 16-30 age group had a significant number of non-resectable (NR) cases (5 males, 4 females) and benign conditions (6 males, 5 females). In the 31-40 age group, benign findings were more frequent in females. The 41-50 and 50+ age groups had increasing cases of benign conditions, with follow-up cases also being recorded. Overall, benign conditions were more prevalent than malignancies, and males were more frequently affected across all age groups.

Table-3: Distribution of Malignancy and Benign Cases by Age Group

Age Group (Years)	Colonoscopic Findings	Male (M)	Female (F)	Total (M/F)
Malignancies (n=21)				
16-30	Right-sided colon	0	0	0/0
	Transverse colon	0	0	0/0
	Left-sided colon	0	0	0/0
	Recto-sigmoid and anal	0	0	0/0
31-40	Right-sided colon	0	0	0/0
	Transverse colon	0	0	0/0
	Left-sided colon	0	0	0/0
	Recto-sigmoid and anal	1	0	1/0
41-50	Right-sided colon	2	1	2/1
	Transverse colon	2	1	2/1
	Left-sided colon	2	0	2/0
	Recto-sigmoid and anal	1	0	1/0
50+	Right-sided colon	3	1	3/1
	Transverse colon	2	1	2/1
	Left-sided colon	1	0	1/0
	Recto-sigmoid and anal	2	1	2/1
Benign Cases (n=63)				
16-30	Follow-up (F/up)	0	0	0/0
	NR	5	4	5/4
	Benign	6	5	6/5
31-40	Follow-up (F/up)	1	0	1/0
	NR	4	2	4/2
	Benign	2	3	2/3
41-50	Follow-up (F/up)	2	1	2/1
	NR	2	1	2/1
	Benign	1	3	1/3
50+	Follow-up (F/up)	2	1	2/1
	NR	3	2	3/2
	Benign	7	6	7/6

Among the clinical presentations, the most common symptom was bleeding per rectum, observed in 64% of cases. Anemia and weakness were reported in 46% of patients, while alteration of bowel habits was noted in 36%. Pain was present in 10.5% of cases,

whereas obstruction was the least common symptom, occurring in only 3.5% of patients. These findings highlight the predominance of bleeding and anemia as key indicators of colorectal conditions, emphasizing the need for early colonoscopic evaluation.

Table-4: Clinical Presentation of Patients

Symptom	Percentage (%)
Bleeding PR	64%
Alteration of bowel habits	36%
Anemia/Weakness	46%
Obstruction	3.5%
Pain	10.5%

DISCUSSION

Our study revealed that malignancies were more common in males than females, with a male-to-female ratio of 1.7:1 in malignancy cases. This finding aligns with studies conducted in other populations, which have also reported a higher incidence of colorectal malignancies in males [7]. For example, a study conducted in India found a similar male predominance, suggesting that gender-based risk factors such as lifestyle, dietary habits, and genetic predisposition may contribute to this disparity. However, some Western studies have reported a more balanced distribution of colorectal malignancies between genders, indicating potential geographical and lifestyle influences [8].

Regarding age distribution, our study showed that malignancies were most prevalent in individuals aged 41 and above, with only 0.5% of cases found in the 31-40 age group. This finding is consistent with studies from developed countries where colorectal malignancies are more frequently diagnosed in individuals over the age of 50 [9]. However, some recent research has indicated an increasing incidence of early-onset colorectal cancer, particularly in younger adults, which was not prominently reflected in our findings. This discrepancy could be due to differences in screening practices and genetic predisposition among different populations.

The clinical presentation in our study showed that per-rectal bleeding was the most common symptom (64%), followed by anemia/weakness (46%) and alteration of bowel habits (36%). These findings are similar to studies conducted in other regions, where rectal bleeding is often the primary presenting symptom. However, compared to some Western studies, our study had a slightly higher prevalence of anemia and weakness, which might be attributed to late presentation and delayed diagnosis in our population [10]. In contrast, some studies from high-resource settings have reported a higher percentage of patients presenting with bowel obstruction, which was relatively rare in our cohort (3.5%) [11].

Our colonoscopic findings showed that malignancies accounted for 11% of cases, while benign diseases were more prevalent at 32%. This is consistent with studies from neighboring countries, where benign conditions like polyps and inflammatory changes are often detected more frequently than malignancies [12]. However, in some studies from Western countries, a higher percentage of pre-malignant conditions, such as advanced adenomas, have been reported due to routine screening programs, which might not be as widely practiced in our setting. The proportion of normal colonoscopic findings in our study (38%) was also similar to findings from other retrospective studies, indicating that a significant proportion of patients undergo colonoscopy without major pathological findings [13].

Overall, our study highlights both similarities and differences when compared to other research. The higher prevalence of colorectal malignancies in males and the dominance of per-rectal bleeding as a primary symptom are findings consistent with global studies. However, variations in age distribution, the frequency of anemia, and the proportion of benign versus malignant cases highlight the need for further research and a tailored approach to colorectal cancer screening and management in our population.

CONCLUSION

In conclusion, it is imperative to not only ensure the availability of appropriate equipment, such as colonoscopes, but also to provide adequate training for healthcare personnel in order to effectively implement colonoscopy as a mandatory screening tool, particularly for high-risk and vulnerable populations. An ideal colorectal cancer screening modality should strike a balance between cost-effectiveness and maximizing life-years gained, while also allowing for extended intervals between screenings, ensuring high patient compliance, and minimizing associated risks. Although no single screening method offers a flawless solution, a range of viable options exist, each with its own advantages and limitations.

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