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**Original Research Article**

# Evaluation of polypus growth among fecal immunochemical test positive patients

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## ABSTRACT

**Background:** Colorectal cancer is a difficult clinical condition to treat all over the world. Adenomatous polyps are thought to be cancer precursors. A colonoscopy is required to detect and confirm ulcerative colitis mucosal healing. Different screening procedures, including as colonoscopy, fecal immunochemistry test (FIT), guaiac fecal occult blood test (gFOBT), computed tomography (CT) colonography, and others, are used to detect polyps or ulcers early. Although the gold standard colonoscopy serves both diagnostic and therapeutic purposes, the FIT can identify advanced adenoma or established cancer, as well as the mucosal condition of ulcerative colitis. The FIT is a less costly approach for detecting colonic disease that is appropriate for our demographic. The aim of the study was to observe the type of polypus growth among FIT positive patients.

**Methods:** This observational cross-sectional study was conducted at the department of colorectal surgery, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh. The study duration was 1 year, from July 2019 to August 2020. At the initial stage, a total of 510 participants were selected among the patients attending the outdoor department of BSMMU colorectal surgery following the inclusion and exclusion criteria.

**Results:** The male: female ratio was 1.7:1 in our study. 48.28% were from the age group of 50-59 years. The most common clinical presentation or symptom among the participants was constipation, observed in 81.03% of cases. 39.66% of the participants had abdominal pain, 32.76% had rectal mucus discharge, 12.07% had observed changes in their bowel movement, while 6.90% had a lack of appetite. Among the participants, 42 had pedunculated polyp, while 16 had sessile polyps. A total of 55.17% had non-advanced pedunculated polyp, 22.41% had non-advanced sessile polyp, 17.24% had advanced grade pedunculated polyp, while the remaining 5.17% had advanced grade sessile polyp. Histopathological findings revealed that 44.83% of the participants had tubular adenoma with low grade dysplasia (LGD) among the non-advanced pedunculated polyps' cases, 17.24% had tubular adenoma with LGD among the non-advances sessile cases. Among the advanced pedunculated polyps' cases, 6.90% had tubular adenoma with high grade dysplasia (HGD), 3 (5.17%) had villous adenoma with dysplasia, and 2 (3.45%) had tubulovillous with dysplasia. Among the 3 advances sessile polyps cases, 3.45% had tubular adenoma with HGD, while 1 patient had malignancy.

**Conclusions:** It was observed that FIT positive patients had a higher frequency of pedunculated polyps, specifically advanced pedunculated polyps. Both sessile and pedunculated polyps had a high prevalence among patients aged between 50-59 years.

**Keywords:** Polypus, Sessile, Pedunculated, Colonoscopy, Advanced

## INTRODUCTION

Colorectal cancer is a major worldwide health issue with a better prognosis if detected early. It is the biggest cause of sickness and death all across the planet. It is the third most frequent cancer in the world and the second leading cause of cancer-related fatalities.[1] It affects both men and women nearly equally. Colorectal cancer is mostly a disease of wealthier Western cultures. Colorectal cancer incidence is highest in Australia, New Zealand, Europe, and North America, whereas it is lowest in Africa and Asia. Colorectal cancer is becoming more common in developing nations, which is likely due to the adoption of high-risk Western behaviors such as increased smoking, heavy alcohol use, constipation, physical inactivity, and bad diets.[2] Colorectal cancer can be avoided by detecting and removing adenomatous polyps, and survival is improved when CRC is detected early and in a confined stage. If the disease is detected when it is still localized, the five-year survival rate is 90%. (confined to the wall of the bowel). However, if there is regional illness with lymph node involvement, this number drops to 68 percent, and it drops to 10% if there is distant metastasis. Screening can help in early identification and prevention by performing polypectomy and providing better therapy. A higher proportion of adults receiving frequent screening might result in a lower incidence and fatality rate.[3] Most colorectal malignancies begin as benign colonic adenomas. Removal of tubular, tubulovillous, villous, and serrated adenoma (precursor lesions) can minimize the incidence of colorectal cancer. Screening for CRC has been demonstrated to help reduce mortality. For more than three decades, colonoscopy has been the gold standard for identifying adenomas and adenocarcinomas. However, this surgery might have major problems and can be painful and anxiety-inducing.[4]

Another restriction is that it is expensive and not widely available in many poor and impoverished nations. A stool-based test, fecal immunochemical test (FIT), is one of the less expensive but more reliable ways to restrict colonoscopy (FIT). Stool tests before a colonoscopy can predict advanced neoplasms. In a population at average risk for colon cancer, the FIT has been proven to have excellent sensitivity and specificity in detecting colorectal carcinoma and advanced polyps throughout the colon. A meta-analysis of nineteen such investigations found that the sensitivity and specificity of a single Fecal Immunochemical test result matched those of several samples.[5] So, FIT test can effectively detect lesions among patients. But further investigations are required to analyze the types of lesions found through FIT testing. The present study was conducted to evaluate the different polypus growths among selected FIT positive patients.

### *Objective*

General objective of the study was to observe the type of polypus growth among FIT positive patients.

## METHODS

This observational cross-sectional study was conducted at the department of colorectal surgery, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh. The study duration was 1 year, from July 2019 to August 2020. At the initial stage, a total of 510 participants were selected among the patients attending the outdoor department of BSMMU colorectal surgery having constipation, changes in bowel habit, lack of appetite, per rectal mucous discharge, and abdominal pain, through purposive sampling method. After observing the results of FIT tests, a total of 105 patients were selected for the secondary selection, and colonoscopy was done to find out the 58 polyps' cases from them. These 58 patients were selected as the final sample size who had given written consent to participate in the study.

Ethical clearance for the study was taken from the institutional review board (I.R.B) of BSMMU prior to the commencement of this study. Data was collected by a predesigned proforma involves questionnaire, clinical finding, preoperative investigations, stool test for FIT and colonoscopy. Computer based statistical analysis was carried out with appropriate technique and systems for data analysis.

### *Inclusion criteria*

Patients aged between 40-70 years; patients who had changes in bowel habit, lack of appetite, per rectal mucous discharge, abdominal pain; FIT positive participants; and patients with any form of polyps observed through colonoscopy were included.

### *Exclusion criteria*

FIT negative participants; patients presented with visible per rectal bleeding; patients with known cases of FAP, ulcerative colitis, Crohn's disease or familial colorectal cancer; patients with personal history of known colorectal carcinoma, adenoma; unable to answer the criteria question; and those affected with other chronic diseases were excluded

## RESULTS

Among the participants, almost 2/3$^{rd}$ (62.07%) were male and only 36.21% were female. The male: female ratio was 1.7:1 (Figure 1).

Majority of the participants (48.28%) were from the age group of 50-59 years. 22.41% were from the youngest age group of 40-49 years, another 22.41% were from the age group of 60-69 years, and 3.45% were from the oldest age group of 70 and above. The Mean± SD age of the participants was 51.73±7.97 years, with age range of 40-70 years (Table 1).

**Table 1: Age and gender distribution of the participants (n=58).**

| Age (in years) | Number | Percentage |
|---|---|---|
| **40-49** | 13 | 22.41 |
| **50-59** | 28 | 48.28 |
| **60-69** | 13 | 22.41 |
| **≥70** | 2 | 3.45 |
| **Mean±SD** | 51.73±7.97 | |
| **Range (min, max)** | 40-70 | |

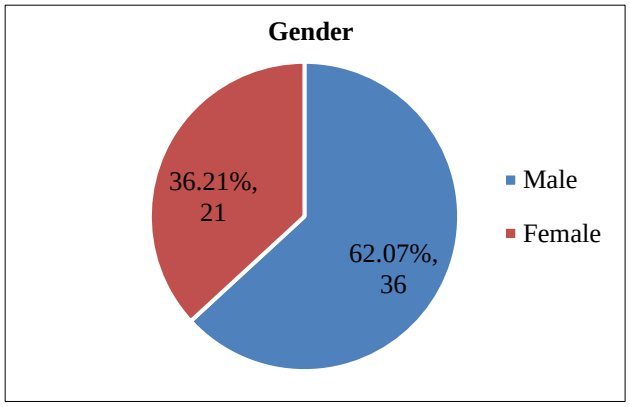


**Figure 1: Gender distribution of the participants (n=58).**

The most common clinical presentation or symptom among the participants was constipation, observed in 81.03% of cases. 39.66% of the participants had abdominal pain, 32.76% had rectal mucus discharge, 12.07% had observed changes in their bowel movement, while 6.90% had a lack of appetite (Table 2).

**Table 2: Distribution of the study patients by clinical symptoms (n=58).**

| Clinical symptoms | Number of patients | Percentage |
|---|---|---|
| **Changes in bowel habit** | 7 | 12.07 |
| **P/R mucous discharge** | 19 | 32.76 |
| **Abdominal pain** | 23 | 39.66 |
| **Lack of appetite** | 4 | 6.90 |
| **Constipation** | 47 | 81.03 |

**Table 3: Distribution of the study patients by grade and type of polyps (n=58).**

| Grade and type of polyp | Number | Percentage |
|---|---|---|
| **Pedunculated** | | |
| Non-advanced | 32 | 55.17 |
| Advanced | 10 | 17.24 |
| **Sessile** | | |
| Non-advanced | 13 | 22.42 |
| Advanced | 3 | 5.17 |

Among the participants, 42 had pedunculated polyp, while 16 had sessile polyps. A total of 55.17% had non-advanced pedunculated polyp, 22.41% had non-advanced sessile polyp, 17.24% had advanced grade pedunculated polyp, while the remaining 5.17% had advanced grade sessile polyp (Table 3).

Table 4 shows the distribution of participants by their grade of polyp and the histopathological findings of the patients. Histopathological findings revealed that 44.83% of the participants had tubular adenoma with low grade dysplasia (LGD) among the non-advanced pedunculated polyps' cases, 17.24% had tubular adenoma with LGD among the non-advances sessile cases.

Among the advanced pedunculated polyps' cases, 6.90% had tubular adenoma with HGD, 3 (5.17%) had villous adenoma with dysplasia, and 2 (3.45%) had tubulovillous with dysplasia. Among the 3 advances sessile polyps cases, 3.45% had tubular adenoma with HGD, while 1 patient had malignancy.

**Table 4: Distribution of study patients by grade of polyp and histopathological findings (N=58).**

| Types of polyps and histological findings | Number | Percentage |
|---|---|---|
| **Non-advanced pedunculated** | | |
| Tubular adenoma with LGD | 26 | 44.83 |
| SSA/HP no dysplasia | 6 | 10.34 |
| **Non-advanced sessile** | | |
| Tubular adenoma with LGD | 10 | 17.24 |
| SSA/HP no dysplasia | 3 | 5.17 |
| **Advanced pedunculated** | | |
| Villous adenoma with dysplasia | 3 | 5.17 |
| Tubulovillous with dysplasia | 2 | 3.45 |
| Tubular adenoma with high grade dysplasia | 4 | 6.90 |
| Malignancy | 1 | 1.72 |
| **Advanced sessile** | | |
| Tubular adenoma with high grade dysplasia | 2 | 3.45 |
| Malignancy | 1 | 1.72 |

Table 5 shows the distribution of types of polyps among different age groups. Both sessile and pedunculated polyps had the highest prevalence in the age group of 50-59 years, but the percentage of sessile polyps was higher in this age group compared to pedunculated polyps cases. Pedunculated polyps cases were widely distributed among all the age groups, but no participant older than 69 years had sessile polyps.

**Table 5: Distribution of types of polyps among age group (n=58).**

| Age group | Polyps, n (%) | |
|---|---|---|
| | Pedunculated | Sessile |
| 40-49 | 10 (23.80) | 3 (18.75) |
| 50-59 | 18 (42.85) | 10 (62.50) |
| 60-69 | 10 (23.80) | 3 (18.75) |
| ≥70 | 2 (4.76) | 0 (0) |
| Total | 42 (100) | 16 (100) |

## DISCUSSION

CRC is the third most common cancer in the Western world and is the second deadliest cancer.[5] However, early detection of cancer has now been shown to reduce mortality. In addition, because most CRCs are initially related to benign colonic adenomas, removal of tubular adenoma (TA), tubulovillous adenoma (TVA), and serrated adenomas could reduce CRC incidence. As a result, most Western nations have undertaken population screening programs. There are different programs used to perform colonoscopy screening.[6] Among these various techniques, the FIT has been shown to have both high sensitivity and specificity in identifying CRC and advanced polyps throughout the colon.[7] Many patients with colon cancer do not present with symptoms until it is advanced and detection in the early stage can only be achieved by screening of asymptomatic person. Nevertheless, maximum patients present lately with distance metastases when there is nothing to treat except palliative therapy. Considering the facts and figures, the present observational study was conducted in the department of colorectal surgery, Bangabandhu Sheikh Mujib Medical University (BSSMU), and some private hospitals from July 2019 to June 2020 among 105 FIT positive patients. In this study, regarding the distribution of the study patients by age and sex, it was observed that the highest number of patients (48.6%) belong to the sixth decade of life, followed by 35 (33.3%) in their fifth decade. The male: female ratio was 1.7:1, and the overall mean age was 51.73±7.97 years. There was another study with participants from a similar age range of 40-70 years, where the mean age was 57 years, which was not that different from our findings.[8] There was no significant age difference between the male and female participants of our study, which was similar to the findings of another study.[5] Some other studies with younger study participants reported that the incidence rate among adults younger than age 50 years is increasing due to an increase in left-sided tumors.[9,10] Male prevalence was higher in our study, which was supported by the findings of another 2017 study.[5] The main complaints of the study patient were constipation, followed by abdominal pain, P/R mucous discharge, changes in bowel habits and lack of appetite. Constipation had the highest incidence rate among the participants, observed in 80.95% of the participants. These findings were similar to the findings of a study conducted by Fong et al.[11] In the colposcopic diagnosis, it was observed that among the 58 polypus cases, 72.41% were pedunculated polyps cases, and the remaining 27.59% were sessile polyps cases. Further analysis showed that a total of 55.17% had non-advanced pedunculated polyp, 22.41% had non-advanced sessile polyp, 17.24% had advanced grade pedunculated polyp, while the remaining 5.17% had advanced grade sessile polyp. Among pedunculated polyps, the most common histopathological diagnosis was tubular adenoma with low grade dysplasia in 44.8%. Others were sessile serrated adenoma/hyperplastic polyp (SSA/HP) no dysplasia in 10.3%, villous adenoma with dysplasia in 5.2%, tubulovillous adenoma with dysplasia 3.5%, tubular adenoma with high grade dysplasia in 6.9% and malignancy in 1.7%. In sessile polyps, histopathological diagnosis showed that 17.2% were TA with LGD followed by 5.2% in SSA/HP no dysplasia, 3.5% in TA with HGD and 1.7% in malignancy. In my study, detection rate of advanced polyp was 22.4% and non-advanced polyp was 77.6%. These findings were similar to the findings of another study.[12] Colonoscopy findings had a significant correlation with patients' age and gender; also, they detected a significant correlation between patients' chief complaint and colonoscopy findings as well as colonoscopy pathology samples. It was observed that among both the pedunculated and sessile polyps cases, highest frequency was observed in patients between the age of 50-59 years.

### *Limitations*

The study was conducted in a single hospital with small sample size. So, the results may not represent the whole community.

## CONCLUSION

It was observed that FIT positive patients had a higher frequency of pedunculated polyps, specifically advanced pedunculated polyps. Both sessile and pedunculated polyps had a high prevalence among patients aged between 50-59 years.

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