

A Study of Prevalence and Clinical Markers of Colorectal Polyps in Children Presenting with Rectal Bleeding

Bodrul Alam^{*1}, Subir Subir Ananda Biswas², Rana Kumar Biswas³, Amena Khatun⁴, Abeda Aktar⁵, S.M. Shamsul Haque¹

¹ Department of Pediatrics, Rajshahi Medical College, Rajshahi

² Department of Pediatrics, Maternal and child Health Training institute, Azimpur, Dhaka

³ Department of Pediatrics, Khulna Medical College, Khulna

⁴ Upazila Health Complex, Bagmara, Rajshahi

⁵ Department of Pediatrics, Rangpur Medical College, Rangpur



Citation:

Alam B, Biswas SS, Biswas RK, Khatun A, Aktar A, Haque SMS; A Study of Prevalence and Clinical Markers of Colorectal Polyps in Children Presenting with Rectal Bleeding. Journal of Teachers Association. 2025;38(1):141-148.

Article History:

Received: 15.01.2025

Accepted: 10.02.2025

Published: 31.03.2025

*Correspondence to:

Dr. Md. Bodrul Alam

Email: drbodrul41st@gmail.com



Copyright © 2025 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0

International License (CC BY-NC 4.0) which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

ABSTRACT: Background: Colorectal polyps are abnormal growths in the wall of the colon including the rectum. The available data regarding the prevalence, types, and clinical determinants of colonic polyps in children is limited. **Objective:** To estimate the prevalence and type of colorectal polyps in children and to compare the patients with and without any colorectal polyps regards to demographic and clinical features. **Materials and Methods:** It was a cross sectional study conducted at the Department of Pediatric Gastroenterology and Nutrition, BSMMU, Dhaka, Bangladesh, from January 2016 to December 2016. A total of 90 cases of rectal bleeding were included in this study. Demographic, clinical, and histopathology information on consecutive patients who underwent colonoscopy were recorded in a pre-designed standard data sheet. At the end of study, the prevalence and type of colorectal polyps in children were estimated and compared the patients with and without any colorectal polyps regards to demographic and clinical features. **Results:** Total ninety (90) colonoscopy procedures were analyzed. The mean age was 6.4 ± 2.8 years and 60% were male patients. Colorectal polyps were reported in 60 (66.7%) patients. Children with colorectal polyps were significantly younger (5.6 ± 2.2 years vs. 8.2 ± 2.8 years; $p < 0.0001$), male (68.3% vs. 43.3%; $p = 0.0224$) as compared to children without polyps. Painless rectal bleeding (96.7 vs. 50.0%; $p < 0.0001$) was more common in patient with polyp. Abdominal pain (50.0% vs. 15.0%; $p = 0.0004$), constipation (23.3% vs. 5.0%; $p = 0.009$), weight loss (16.7% vs. 3.3%; $p = 0.0259$), fever (16.7% vs. 0.00%; $p = 0.0032$), anemia (36.7% vs. 8.3%; $p = 0.0009$) were more common in non-polyp group. The histological types were juvenile in 42 (91.3%), adenoma in 2 (4.3%), hyperplastic in 1 (2.2%), retention polyp in 1 (2.2%) patient. **Conclusion:** Colorectal polyps were detected in 66.7% of studied cases presented with lower gastrointestinal bleeding.

Keywords: Colorectal Polyp, Juvenile Polyp, Rectal Bleeding, Lower Gastrointestinal Bleeding, Adenoma.

Article at a glance:

Study Purpose To estimate the prevalence and types of polyps in children with rectal bleeding.

Key findings: 66.7% of children had colorectal polyps, with younger males and painless bleeding being common features.

Newer findings: Juvenile polyps were most common, with 30% of patients having multiple polyps, mainly in the rectum.

Abbreviations: GI – Gastrointestinal, CBC - Complete Blood Count, CRP - C-Reactive Protein, MTZ - Metronidazole.

INTRODUCTION

In day-to-day medical practice per-rectal bleeding is one of the common problems in children. The general practitioners do not have enough knowledge regarding causes and management of per-rectal bleeding in children and these cases are mostly mismanaged. Chronic cases of minor lower GI bleeding may produce significant anemia; thus, localization of the source of bleeding is important in

the management of these children. In addition to a careful history, inspection of the perianal area, digital rectal examination and a stool test, a variety of other techniques like endoscopy, radiology, ultrasonography, technetium-labelled red blood cells scan, and angiography are available for diagnostic evaluation.¹ Colonoscopy, by direct visualization of the mucosa, is a more effective diagnostic procedure. Colorectal polyps are common during childhood and affect 1.1% of preschool and school aged children.² In

children, juvenile polyps usually present with painless, intermittent, and fresh rectal bleeding with or without associated symptoms, including recurrent abdominal pain, prolapse through the anus, diarrhea, anemia (Hb% <10gm/dl) and anal mass.³ When left untreated for a long time, they cause significant anemia because of occult blood loss as well as apparent bleeding per rectum.⁴ Early detection of polyps can significantly improve the patient's quality of life and overall health. Therefore, in pediatric patients, colonoscopy is the best tool both for early lesion detection and as an effective therapy to treat lesions and remove polyps. The pediatric literature demonstrated a wide variation in reported prevalence of polyps in children undergoing endoscopy. The reported prevalence of juvenile colorectal polyps in children undergoing endoscopic examination for various indications varies from 4 to 17% in the western data.^{4,5} The largest study reported polyps in 184 patients (8.7%) of 2,117 who underwent colonoscopy over a 9 year period at a single referral center in the USA.⁶ The second largest study was conducted in France and included 1533 colonoscopies performed between January 1974 and April 1988.⁷ This study reported polyps in 183 children (12%) under the age of 15. it has been reported similarly high (61%) from India.⁸ Traditionally, juvenile polyps have been considered to have little or no malignant risk; however, studies suggested that they have the potential to develop adenomatous changes, and there are also cases on record of colorectal adenocarcinoma arising from juvenile polyps occurring in children.^{9,10} Colorectal adenomas are known to be precursors of sporadic and hereditary colorectal cancer.¹¹ However, the available evidence regarding the prevalence, type, and significance of colonic polyps in children is limited.

RESULTS

Table 1: Age Distribution of the Studied Patients (n=90)

Age (in years)	Number of patients	Percentage
<5	42	46.7
5-10	40	44.4
>10	8	8.9
Mean±SD*	6.4	±2.8

*SD: Standard deviation

OBJECTIVE

To estimate the prevalence and type of colorectal polyps in children and to compare the patients with and without any colorectal polyps regards to demographic and clinical features.

MATERIALS AND METHODS

This cross-sectional study was conducted in the Department of Paediatric Gastroenterology & Nutrition, BSMMU from January 2016 to December 2016. The general objective was to estimate the prevalence of colorectal polyps in children presenting with rectal bleeding. Specific objectives were (a) to observe the morphology and histological type of colonic polyps in children presenting with rectal bleeding, and (b) to compare the patients with and without colorectal polyps in regards to demographic and clinical features. Children 1- 18 years of age undergoing colonoscopy who presented with rectal bleeding were included in this study. Their clinical history, physical examination and initial investigation reports were recorded in a predesigned standard data sheet. Colonoscopy was performed using Olympus video scopes instruments after bowel preparation under sedation. If any polyp was found, it removed using polyp snare and electrocautery. The polyps were retrieved and immediately placed in formalin for transportation to the pathology laboratory, in BSMMU. For all patients baseline laboratory investigations CBC, CRP, coagulation profile, liver function test, blood group and cross match, Stool R/E and C/S, plain abdominal x-ray, ultrasound abdomen, upper gastrointestinal endoscopy were done. Contrast studies, nuclear scan was done if necessary.

Statistical analysis

Statistical analysis was done using the Statistical Package for Social Science (SPSS, version 15).

Table 1 shows the age distribution of the studied patients. It was observed that 42 (46.7%) were below 5 years, 40 (44.4%) between 5-10 years and only 8 (8.9%) were aged above 10 years. The mean age was

found 6.4 years ± 2.8 years with ranged from 22 months-13 years. In this study 54 (60%) were male and 36 (40%) females.

Table 2: Colonoscopic Finding and Diagnosis of Patients (n=90)

Findings	Cases	Percentage
Polyp	60	66.7
Other than polyp	30	33.4

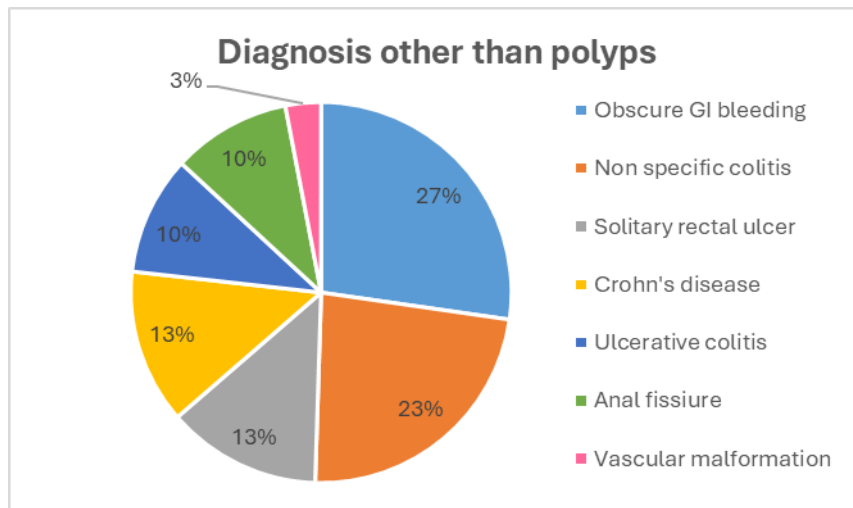


Figure 2: Diagnosis Other Than Polyp (n=30)

Table 2 shows colonoscopic finding and diagnosis of patients. Among 90 patients, polyps were present in 60 (66.7%) patients and other than polyp in 33.3% patients. Other findings include nonspecific

colitis (n=7, 23.3%), solitary rectal ulcer (n=4, 13.3%), Crohn's disease (n=4, 13.3%), ulcerative colitis (n=3, 10%), anal fissure (n=3, 10%), and normal colon (n=8, 26.7%) [Figure 2].

Table 3: Morphological Characteristics of Polyps (n=60)

Variable	Number	Percentage
Type		
Pedunculated	39	65
Sessile	14	23.3
Pedunculated + Sessile	7	11.4
Number of Polyp		
Single	42	70
Multiple	18	30

Table 3 shows the morphological characteristics of polyps. Single polyp was found in 42 (70%) patients and multiple polyps in 18 (30%) patients. A pedunculated attachment was present in

39 (65%) patients, while 14 (23.3%) were present as sessile and 7 (11.7%) patients presented with both pedunculated and sessile polyps.

Table 4: Location of Polyps (n=60)

Location	Number	Percentage
Rectum	46	78.3
Sigmoid Colon	14	23.3
Descending Colon and Transvers Colon	5	8.3

Table 4 shows the location of polyps. The most common location of polyps was the rectum 46 (78.33%), and sigmoid colon 14 (23.3%) followed by

descending colon and transverse colon 5 (8.33%). Five patients had polyps in more than one location.

Table 5: Demographic Comparison Between Patients with Polyps and without Polyps

Variable	No Polyp (n = 30)	With Polyp (n = 60)	p-value
Age	n (%)	n (%)	
<5	6 (20)	36 (60)	<0.0001
50-10	18 (60)	22 (36.7)	
>10	6 (20)	2 (3.3)	
Mean age	8.2 ± 2.8	5.6 ± 2.2	
Gender			
Male	13 (43.3)	41 (68.3)	0.0024
Female	17 (56.7)	19 (31.7)	

Data were presented as frequency and percent.

p value estimated by unpaired student's t-test (numerical data) and chi-square test (categorical data).

p value <0.05 was considered as statistically significant.

Table 5 shows the demographic comparison between patients with polyps and without polyps. Among the patients with polyp, 36 (60%) were aged below 5 years, 22 (36.7%) were between 5-10 years of age and only 2 (3.3%) were above 10 years of age. The mean age of these patients was 5.6 ± 2.2 years with ranged from 22 months-12 years. Among them 41 (68.3%) were male and rest 19 (31.7%) female. Polyps were predominant in male (68.3% vs. 31.7%) and among <5 years age group. Among the non-polyp

patients, 6 (20%) were aged below 5 years, 18 (60%) between 5-10 years of age and 6 (20%) were above 10 years. The mean age of these patients was 8.2 ± 2.8 years with ranged from 2.5-13 years. Among the non-polyp patients, 13 were male (43.33%) and 17 female (56.67%). Overall, patients with polyps were younger (5.6 ± 2.2 years vs. 8.2 ± 2.8 years) [p value <0.0001] and male (68.3% vs. 43.3%) [p value 0.0024] compared to non-polyp patient. Polyps were more common in <5 year age group.

Table 6: Comparison of Clinical Features Between Patient with Polyp and Without Polyp

Clinical Features	No Polyp (%)	With Polyp (%)	p-value
Painless bleeding	15 (50)	58 (96)	<0.0001
Abdominal pain	15 (50)	9 (15)	0.0004
Diarrhea	1 (3.3)	0 (0)	0.3333
Constipation	7 (23.3)	3 (5)	0.0090
Weight loss	5 (16)	2 (3.3)	0.0259
Anemia	11 (36.7)	5 (8.3)	0.0009
Fever	5 (16.7)	0 (0)	0.0032
Something coming out per rectum	3 (10)	5 (8.3)	0.7933

Data were presented as frequency and percent.

p value estimated by Chi-square test and Fisher exact test (when frequency <5).

p value <0.05 was considered as statistically significant.

Table 6 shows the comparison of clinical features between patients with polyp and without polyp. In polyp group, painless rectal bleeding was present in 58 (96.7%) patients, abdominal pain in 9 (15%), constipation in 3 (5%), weight loss in 2 (3.33%), and something coming out per rectum in 5 (8.3%) patients. On examination anemia was present in 5 (8.3%) patients. In non-polyp group, painless rectal bleeding was present in 15 (50.0%) patients, abdominal pain in 15 (50%), constipation in 7 (23.33%), weight loss in 5 (16.7%), fever in 5 (16.7%),

something coming out per rectum in 3 (10%) and diarrhea in 1 (3.3%) patient. On examination anemia was present in 11 (36.7%) patients. Painless rectal bleeding (96.7% vs. 50.0%; $p<0.0001$) was the most common symptom in patient with polyp. Abdominal pain (50% vs. 15.0%; $p=0.0004$), constipation (23.3% vs. 5.0%; $p=0.009$), weight loss (16.7% vs. 3.3%; $p=0.0259$), anemia (36.7% vs. 8.3%; $p=0.0009$), fever (16.7% vs. 0.0%; $p=0.0032$) were more common in non-polyp group compared to polyp group.

Table 7: Histopathological Types of Polyps (n=60)

Histopathological Types	Number of Cases	Percentage
Juvenile	43	91
Adenomatous	2	4.3
Retention	1	2.2
Hyperplastic	1	2.2

Table 7 shows the histopathological types of polyps. Histological examination of 46 patients with polyp were available for analysis. The histological types were juvenile in 42 (91.3), adenoma in 2 (4.3%), hyperplastic polyps in 1 (2.2%), retention polyp in 1(2.2%) patients and histopathology not done due to sessile polyp in 14 (23.3%) patients.

DISCUSSION

Juvenile polyps are the most common tumor of the gastrointestinal tract in children. The prevalence of juvenile colorectal polyps in children undergoing endoscopic examination for various indications is reported high in India (61.7%) compared with Western data 4–17.5%.^{4,5} Mandhan *et al.* also found high prevalence of juvenile colorectal polyps in Pakistan (67.7%).¹² In the present study it was 66.7%. The prevalence is similar to rates (61.7%–67.7%) found in other study by Poddar *et al.* occurred in this subcontinent.⁸ Other causes like inflammatory bowel disease is less prevalent in this part of world. Inflammatory bowel disease (IBD), which mainly includes Crohn's disease (CD) and ulcerative colitis (UC), is an idiopathic recurrent gastrointestinal disorder associated with immunological dysfunction. In the present study, it was the third-most common positive finding in pediatric colonoscopy patients. IBD was once rare in Asian patients and previously considered to be a "Western" disease. Resulting from dramatic economic development in the past two decades, dietary habits and life styles have gradually shifted towards a more western approach. The

epidemiology of IBD has changed in many ways over the past decade. In pediatric patients, several studies also found an increasing incidence of pediatric IBD during the past decade. Our results suggested that a similar increase might also exist in pediatric patients in Bangladesh. In our series, the mean age at diagnosis of polyp was 5.6 ± 2.2 years. In Mandhan's study it was six years.¹² In another study conducted by Motamed *et al.* in Shiraz, the mean age was 5.7 years.¹³ In our study, male gender was more prevalent for polyps. Although many adult studies were performed in asymptomatic patients, adult data also shows male gender as risk factors for hyperplastic and adenomatous polyps.^{14,15} Previous study conducted by Gupta *et al.* and Mougenot *et al.* in children have shown that male patients are at increased risk for polyps.^{6,7} For example, in one large series examining childhood polyps in the USA, juvenile polyps were twice as likely in male patients undergoing colonoscopy.⁶ Generally, it has been accepted that 90% of juvenile polyps are solitary and located in the rectum or sigmoid colon.^{5,9} Two series by Mestre *et al.* and Cynamon *et al.* 1989 have shown that 53–58% of polyps are multiple and 30–60% are proximal to the sigmoid colon.^{4,9} In our study, 30% children had multiple polyps and 8.3% had polyps proximal to the sigmoid colon. Anoyher series by Latt *et al.* found polyps in the rectosigmoid area in two-thirds of cases and 75% had solitary polyps.⁵ This shows that, although a majority of children had solitary polyps in the rectosigmoid area, a good number had multiple and proximally located polyps, which reemphasizes

the need for doing total colonoscopy in all children with rectal bleeding.

Painless bleeding per rectum was the presenting symptom in all except two children. The clinical presentation of children with polyps in our study was similar to other study done by Poddar *et al.*⁸ The clinical spectrum of our children with polyps differs from other study done by Mandhan *et al.*¹² Through painless per rectal bleeding was 98% but diarrhea (11%) and anemia (42%) was observed at a high rate compared to this study. In patient without polyps, clinical spectrum like abdominal pain (50%), constipation (23.3%), weight loss (16.7%), anemia (36.7%) and fever (16.7%) were observed at a higher rate compared to other study done by Thakkar *et al.*¹⁶ Abdominal pain (20.8%), constipation (1.2%), weight loss (3.5%), fever (5%), anemia (1.3%) were observed in that study. Juvenile polyps are the most common type polyps in children. In this study, histological subtypes of colonic polyps were juvenile 42 (91.3%), adenomatous 2 (4.3%), hyperplastic 1 (2.2%), and retention 1 (2.2%). Histological findings in our study are similar to that of others. Cynamon *et al.* reported a similar finding juvenile in 92% and adenomas in 8% of 41 children with polyps in a referral center in the USA.⁴ On the other hand a report from India also showed juvenile (93%) and adenomatous changes in 11% of children with polyps.⁸ The prevalence of adenomatous colorectal polyps in this study is not negligible. Histological examination in 46 cases revealed adenomas in 2 (4.3%) cases. Previous pediatric studies reported variable prevalence for polyps with adenomatous changes. For example, Gupta *et al.* examined polyps encountered in 195 colonoscopies performed in a tertiary referral center in the USA and found adenomatous changes in only one patient.⁶ In a 10-year audit of 730 colonoscopies by Latt *et al.* also found one adenomatous polyp.⁵ Solitary juvenile polyps are considered benign, whereas the multiple juvenile polyps are associated with increased risk of colorectal cancer.¹⁷ Three or more juvenile polyps or any number of polyps occurring in the context of a family history of juvenile polyposis or colon cancer have been proposed as a criterion for an increased risk of colon neoplasia in children.¹⁰ However, the precise number of polyps that increases cancer risk is unknown. Despite the generally benign nature of juvenile polyps, endoscopic removal is recommended. There are reports of rare neoplasia in patients with solitary

juvenile polyps and it is unclear which patients with juvenile polyps may develop malignancy.^{10, 18-33} A review by Mestre *et al.* concluded that there is a 3–5% chance that a single juvenile polyp may have adenomatous features.⁹ Hyperplastic polyps are the most common (20–40%) type of colorectal polyp in adults, and were encountered in 2.2% of polyps reviewed in our sample. Hyperplastic polyps have traditionally been considered to be benign lesions which do not require surveillance, similar to solitary juvenile polyps in children. However, several preliminary studies in adults indicate that hyperplastic polyps with serrated pathology may act as a marker for future adenomas or a precursor to colorectal cancer.

CONCLUSION

Colorectal polyps are reported in approximately 66.7% children presenting with rectal bleeding. Polyps are strongly associated with younger age, male gender and painless rectal bleeding. Although solitary juvenile polyps are the most common type, up to 30 % of patients may have multiple juvenile polyps. Abdominal pain, constipation, weight loss, anemia and fever were more common in non-polyp group compared to polyp group

Funding: No funding sources

Conflict of interest: None declared

REFERENCES

1. Yachha SK, Khanduri A, Sharma BC. Gastrointestinal bleeding in children. *Journal of Gastroenterology and Hepatology* 1996;11:903-907.
2. Gleb A, Minkowitz S, Tresser M. Rectal and colonic polyps occurring in young people. *New York State Journal of Medicine* 1992;62:513-518.
3. Holgersen LO, Mossberg SM, Miller RE. Colonoscopy for rectal bleeding in childhood. *Journal of Pediatric Surgery* 1978;13:83-85.
4. Cynamon HA, Milov DE, Andres JM. Diagnosis and management of colonic polyps in children. *The Journal of Pediatrics* 1989;114:593-596.
5. Latt TT, Nicholl R, Domizio P, Walker-Smith JA, Williams CB. Rectal bleeding and polyps. *Archives of Disease in Childhood* 1993;69:144-147.
6. Gupta SK, Fitzgerald JF, Croffie JM, Davis MM, Faught PR, Chong SK, et al. Experience with

- juvenile polyps in North American children: the need for pancolonoscopy. *The American Journal of Gastroenterology* 2001;96:1695-1697.
7. Mougnot JF, Baldassarre ME, Mashako LM. Recto-colic polyps in the child. Analysis of 183 cases. *Archives Francaises de Pediatrie* 1989;46:245-248.
8. Poddar U, Thapa BR, Vaiphei K, Singh K. 'Colonic polyps: experience of 236 Indian children. *The American Journal of Gastroenterology* 1998;93:619-622.
9. Mestre JR. The changing pattern of juvenile polyps. *The American journal of Gastroenterology* 1986;81:312-314.
10. Giardiello FM, Hamilton SR, Kern SE, Offerhaus GJ, Green PA, Celano P, et al. Colorectal neoplasia in juvenile polyposis or juvenile polyps. *Archives of Disease in Childhood* 1991;66:971-975.
11. Muto T, Bussey HJ, Morson BC. The evolution of cancer of the colon and rectum. *Cancer* 1975;36(6):2251-70.
12. Mandhan P. Juvenile colorectal polyps in children. *Pediatric surgery International* 2004;20(5):339-42.
13. Motamed F, Najafi M, Khodadad A et al. Colonoscopic findings in children with lower gastrointestinal bleeding. *Govaresh* 2008;13:54-57.
14. Lieberman DA, Holub JL, Moravec MD, Morris CD, Peters D, Eisen GM. Prevalence of colon polyps detected by colonoscopy screening in asymptomatic black and white patients. *JAMA* 2008;300:1417-1422.
15. Morimoto LM, Newcomb PA, Ulrich CM. Risk factors for hyperplastic and adenomatous polyps: evidence for malignant potential? *Cancer Epidemiology, Biomarkers and Prevention* 2002;11:1012-1018.
16. Thakkar K, Alsarraj A, Fong E, Holub JL, Gilger MA, et al. Prevalence of Colorectal Polyps in Pediatric Colonoscopy. *Digestive Diseases and Sciences*. 2012;57:1050-1055.
17. Kapetanakis AM, Vini D, Plitsis G. Solitary juvenile polyps in children and colon cancer. *Hepato-Gastroenterology* 1996;43:1530-1531.
18. Shahid SM, Ali MN, Lina KS, Paul SR, Islam SS, Lisa T. Pediatric Laparoscopic Inguinal Hernia Repair: A Comparison between Techniques. *TAJ: Journal of Teachers Association*. 2020 Dec 31;33(2):20-6.
19. Hossain Z, Ali N, Shahid SM, Paul SR, Al Mamun A. Outcome of gastroschisis in Rajshahi Medical College Hospital: Searching for the way of improvement. *TAJ: Journal of Teachers Association*. 2024 Jun 30;37(1):192-200.
20. Shahid SM, Ali N, Islam SS, Lina KS. Management of Posterior Urethral Valves: An Outcome Analysis of Endoscopic Valve Fulguration. *TAJ: Journal of Teachers Association*. 2018;31(2):68-72.
21. Das D, Shahid SM, Paul SR, Hussain Z, Nure RH, Shuvo SS. Dorsal Mesenteric Agenesis without Small Bowel Atresia: A Rare Pediatric Case Insight. *TAJ: Journal of Teachers Association*. 2024 Dec 31;37(2):381-4.
22. Islam SS, Hassan P, Ali MN, Shahid SM, Badruddoza SM, Ahmed M. Undescended Testes in Children: Clinicopathological Study of 32 Cases. *TAJ: Journal of Teachers Association*. 2017;30(2):26-31.
23. Ali MN, Hannan MA, Shahid SM, Kubba T, Roy D. Ultrasound Guided Needle Aspiration of Breast Abscess as an Alternative to Surgical Incision and Drainage. *TAJ: Journal of Teachers Association*. 2020 Oct 18;33(1):1-4.
24. Nowshad A, Shahid SM, Islam SS, Mostaque A. Intussusception Secondary to Isolated Heterotopic Pancreas of Meckel's Diverticulum. *TAJ: Journal of Teachers Association*. 2011 Jun 30;24(1):16-20.
25. Shahid SM, Ali MN, Sarkar MH, Rahman MH. Ensuring authenticity in scientific communication: Approaches to detect and deter plagiarism. *TAJ: Journal of Teachers Association*. 2024 Jun 30;37(1):i-ii.
26. Alam KM, Shahid SM. PCR Test for SARS-CoV-2, Rajshahi Medical College Perspective. *TAJ: Journal of Teachers Association*. 2024 Dec 31;37(2):1-4.
27. Haque MA, Islam MI, Hasan H. Successful Surgical Creation and Management of an Arteriovenous Fistula: A Case Report. *Asia Pacific Journal of Surgical Advances*. 2024 Aug 31;1(1):34-8.
28. Paul SR, Ali MN, Shahid SA, Paul SC, Haque MN, Hossain MZ. Acute Sigmoid Volvulus: Outcome of Primary Resection & Anastomosis in a Tertiary Hospital. *TAJ: Journal of Teachers Association*. 2022;35(2):13-8.
29. Hasan H, Rahman MH, Haque MA, Rahman MS, Ali MS, Sultana S. Nutritional management in patients with chronic kidney disease: A focus on renal diet. *Asia Pacific Journal of Medical Innovations*. 2024 Aug 31;1(1):34-40.

30. Shahid SM, Ali MN, Paul SR, Hossain MZ, Al Mamun A. Demographic Profile and Outcome of Paediatric Solid Tumor Patients, in a Tertiary Level Hospital in Bangladesh. TAJ: Journal of Teachers Association. 2024 Jun 30;37(1):55-62.
31. Haque MA, Begum MM, Rahman MS, Hasan H. Complications of Arteriovenous Fistula Surgery: A Comprehensive Study in Bangladesh. TAJ: Journal of Teachers Association. 2024 Dec 31;37(2):87-97.
32. Haque A, Rahman S, Roshid M, Hasan H, Uddin N. Dietary Protein and Fluid Management in CKD Patients Undergoing Arteriovenous Fistula (AVF) Surgery: Investigating the Role of Nutrition on Reducing Fistula Failure. Pacific Journal of Medical Research. 2024 Dec 31;1(1):26-34.
33. Hyer W, Beveridge I, Domizio P. Clinical management and genetics of gastrointestinal polyps in children. 2000;31:469-479.