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Etiological Profile of Lower Gastrointestinal Bleeding in Children in a Tertiary Care Hospital

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ABSTRACT

Introduction: Lower gastrointestinal bleeding (LGIB), defined as bleeding occurring distal to the ligament of Treitz, is a common presenting symptom in pediatric patients. Lower gastrointestinal bleeding (LGIB) in children is a common clinical problem with diverse etiologies that vary according to age and underlying pathology. **Aim of the study:** To evaluate the etiological spectrum and clinical characteristics of lower gastrointestinal bleeding in children admitted to a tertiary care pediatric hospital. **Methods & Materials:** This prospective observational study was conducted at Bangladesh Shishu Hospital, Dhaka, from January 2024 to December 2025. Children aged below 18 years admitted with features of lower gastrointestinal bleeding were consecutively enrolled after obtaining informed consent from legal guardians. Data were collected using a structured data collection form. Colonoscopic and histopathological findings were recorded. Descriptive statistical analysis was performed using SPSS software. **Results:** A total of 96 children were included, with a mean age of 6.1 ± 3.4 years; most were aged 5–10 years (46.9%), and males predominated (60.4%). Lower gastrointestinal bleeding was the most common presenting complaint (56.2%). Colonoscopy revealed polyps as the leading finding (59.4%), followed by nonspecific colitis (10.4%) and normal findings (10.4%). Histopathology confirmed juvenile polyps in 57.3% of cases, Nonspecific colitis was identified in 10 cases (10.4%), ulcerative colitis in 7 (7.3%), solitary rectal ulcer syndrome in 5 (5.2%), and Crohn's disease in 3 (3.1%). **Conclusion:** Juvenile polyps are the most frequent cause of pediatric lower gastrointestinal bleeding in this study. Colonoscopy is the procedure of choice to evaluate the etiology of lower GI bleeding. Other causes are Nonspecific colitis, Ulcerative colitis, solitary rectal ulcer syndrome, Crohn's disease, intestinal tuberculosis, anal fissure and polyposis.

Keywords: *Lower gastrointestinal bleeding, Children, Juvenile polyp, Colonoscopy, Histopathology*

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INTRODUCTION

Lower gastrointestinal bleeding (LGIB) in children represents a clinically important and heterogeneous condition, encompassing bleeding that originates distal to the ligament of Treitz and most commonly manifests as hematochezia, blood-mixed stools, or, less frequently, melena and occult blood loss leading to anemia. Unlike adult gastrointestinal bleeding, pediatric LGIB demonstrates distinct etiological patterns, clinical behavior, and management priorities that vary significantly with age, underlying pathology, and healthcare context, necessitating pediatric-specific evaluation strategies [1,2]. Pediatric patients may present with a wide spectrum of severity, ranging from benign, self-limited rectal bleeding to acute hemorrhage requiring urgent resuscitation and intervention, emphasizing the importance of early recognition and etiological clarification [1].

Although precise population-based incidence rates remain limited, LGIB constitutes a substantial proportion of pediatric gastroenterology consultations and endoscopic referrals worldwide. Hospital-based series consistently demonstrate that lower gastrointestinal sources account for a significant share of pediatric bleeding presentations, often exceeding upper gastrointestinal causes in endoscopic cohorts [3]. These findings highlight the growing clinical burden of pediatric LGIB and its contribution to healthcare utilization, particularly in tertiary care settings where diagnostic facilities are available. Regional studies further suggest that LGIB is one of the leading indications for pediatric colonoscopy, underscoring its clinical importance across diverse healthcare systems, including South Asian contexts [4].

A defining feature of pediatric LGIB is its strong age-dependent etiological spectrum. In infancy and early childhood, conditions such as food protein-induced allergic proctocolitis, infectious colitis, and congenital anomalies predominate, whereas preschool and school-aged children more commonly present with juvenile polyps and nonspecific colitis [5,6]. Several observational studies have demonstrated that juvenile polyps represent one of the most frequent causes of painless rectal bleeding in children, particularly between the ages of two and ten years, while inflammatory bowel disease and chronic inflammatory conditions become increasingly prevalent in older children and adolescents [7,8]. This age-related variation reinforces the necessity of tailoring diagnostic algorithms to the child's developmental stage and clinical presentation.

Clinically, pediatric LGIB exhibits considerable heterogeneity in both presentation and pattern of bleeding. Hematochezia remains the most common presenting feature, often accompanied by abdominal pain, diarrhea, constipation, fever, or weight loss, depending on the underlying cause [1,3]. While many children present with intermittent or low-volume bleeding, others may develop significant anemia or hemodynamic compromise, particularly in cases of inflammatory, infectious, or structural pathology. The presence or absence of pain, systemic symptoms, and growth impairment frequently provides valuable diagnostic clues and helps stratify urgency during initial assessment [2].

Despite advances in pediatric gastroenterology, the diagnostic evaluation of LGIB in children remains challenging. Clinical assessment must balance the need

for accurate localization and etiological diagnosis against the invasiveness of investigations, sedation requirements, and limited availability of pediatric-specific endoscopic resources in many settings. Endoscopy, particularly colonoscopy, plays a central role in identifying bleeding sources and offers therapeutic potential in conditions such as juvenile polyps, yet its use is often constrained by age, clinical stability, and institutional expertise [1,3]. These challenges are more pronounced in low- and middle-income countries, where delayed presentation, limited diagnostic infrastructure, and shortages of trained pediatric specialists may further complicate timely diagnosis and management [4].

From a management perspective, accurate etiological identification directly influences treatment decisions and surgical relevance. While many causes of pediatric LGIB can be managed conservatively or with endoscopic intervention, certain conditions may require surgical involvement, particularly when bleeding is persistent, recurrent, or associated with complications. The integration of medical, endoscopic, and surgical approaches is therefore essential to optimize outcomes and minimize morbidity [1]. Moreover, regional and socioeconomic factors significantly shape disease patterns, healthcare-seeking behavior, and diagnostic yield, highlighting the importance of locally generated data to inform context-appropriate clinical algorithms [3,4].

Given the variability in etiological patterns, clinical presentation, and resource availability across regions, comprehensive analyses of pediatric LGIB remain limited, particularly in South Asian and similar low-resource settings. There is a clear need for hospital-based studies that systematically describe the etiological and clinical profile of lower gastrointestinal bleeding in children to support evidence-based diagnostic strategies and improve early recognition. The present study aims to address this gap by evaluating the etiological spectrum and clinical characteristics of pediatric LGIB in a tertiary care setting, thereby contributing context-specific evidence to guide pediatric gastroenterology and surgical practice.

METHODS & MATERIALS

This study was conducted using a prospective observational design to evaluate the etiological and clinical profile of lower gastrointestinal bleeding among children. The study population consisted of pediatric patients aged below 18 years who were admitted with features suggestive of lower gastrointestinal bleeding during the study period. Lower gastrointestinal bleeding was operationally defined as the passage of fresh blood per rectum, blood-mixed stool, maroon-colored stool, or clinically suspected bleeding distal to the ligament of Treitz, as determined by the attending clinical team.

The study was carried out at Bangladesh Shishu Hospital, Dhaka, Bangladesh that receives patients from both urban and rural regions. Data collection was conducted over a 2 years period, from January 2024 to December 2025. All eligible children presenting during this period were screened for inclusion. A total of 96 cases fulfilling the inclusion criteria were enrolled consecutively.

Children younger than 18 years of age who were admitted with clinical evidence of lower gastrointestinal bleeding were included in the study. Patients with suspected or confirmed upper gastrointestinal bleeding, bleeding secondary to systemic coagulopathies, or those whose guardians declined consent were excluded. Written informed consent was obtained from the parents or legal guardians of all participants prior to enrollment, following explanation of the study objectives and procedures.

Data were collected prospectively using a predesigned, structured data collection form. The form was used to record demographic characteristics, presenting symptoms, clinical features, suspected or confirmed etiological diagnosis, relevant investigation findings, and immediate management details as documented during hospital admission. Clinical evaluation and diagnostic investigations were performed as per standard institutional protocols and at the discretion of the treating physicians, without any additional interventions introduced solely for research purposes.

All collected data were checked for completeness and consistency before entry. Data analysis was performed using Statistical Package for the Social Sciences (SPSS) software. Descriptive statistical methods were applied to summarize the study findings. Categorical variables were expressed as frequencies and percentages, while continuous variables were presented using appropriate measures of central tendency and dispersion.

RESULTS

Among the 96 enrolled children, the largest proportion belonged to the 5–10 years age group, 45 (46.9%), followed by those under 5 years, 39 (40.6%), while children older than 10 years comprised 12 (12.5%); the mean age of the study population was 6.1 ± 3.4 years (*Table I*).

Table I
Age Group Distribution (*n*=96).

Age group	Frequency	Percentage
< 5 years	39	40.6%
5–10 years	45	46.9%
> 10 years	12	12.5%
Mean ± SD	6.1 ± 3.4	

Regarding sex distribution, males predominated, accounting for 58 cases (60.4%), whereas females constituted 38 cases (39.6%) (*Table II*).

Table II
Sex Distribution (*n*=96).

Sex	Frequency	Percentage
Male	58	60.4%
Female	38	39.6%
Total	96	100.0%

Clinical presentation varied, with lower gastrointestinal bleeding as the predominant presenting complaint in 54 children (56.2%). Other accompanying presentations included abdominal pain in 12 (12.5%), diarrhea in 10 (10.4%), weight loss in 6 (6.2%), constipation in 5 (5.2%), fever in 5 (5.2%), and alteration of bowel habit in 4 (4.2%) (*Table III*).

Table III
Clinical Presentation (*n*=96).

Presenting complaint	Frequency	Percentage
LGIB	54	56.2%
Diarrhea	10	10.4%
Abdominal pain	12	12.5%
Alteration of bowel habit	4	4.2%
Constipation	5	5.2%
Fever	5	5.2%
Weight loss	6	6.2%
Total	96	100.0%

Colonoscopy most frequently identified polyps, seen in 57 children (59.4%). Nonspecific colitis and a normal colonoscopic study were each reported in 10 cases (10.4%). Ulcerative colitis was found in 7 children (7.3%), solitary rectal ulcer syndrome in 5 (5.2%), Crohn's disease in 3 (3.1%), intestinal tuberculosis in 2 (2.1%), while anal fissure and polyposis were each identified in 1 case (1.0%) (*Table IV*).

Table IV
Colonoscopic Findings (*n*=96).

Finding	Frequency	Percentage
Polyp	57	59.4%
Nonspecific colitis	10	10.4%
SRUS	5	5.2%
Ulcerative colitis	7	7.3%
Crohn's disease	3	3.1%
Anal fissure	1	1.0%
Normal	10	10.4%
Polyposis	1	1.0%
Intestinal TB	2	2.1%
Total	96	100.0%

Histopathology most commonly demonstrated juvenile polyps in 55 children (57.3%). Nonspecific colitis was identified in 10 cases (10.4%), ulcerative colitis in 7 (7.3%), solitary rectal ulcer syndrome in 5 (5.2%), and Crohn's disease in 3 (3.1%). Adenomatous polyps and tuberculosis were each reported in 2 cases (2.1%). Histopathology reports were not available for 12 children (12.5%) (*Table V*).

Table V
Histopathological Findings (*n*=96).

Diagnosis	Frequency	Percentage
Juvenile polyp	55	57.3%
SRUS	5	5.2%
TB	2	2.1%
Adenomatous polyp	2	2.1%
Nonspecific colitis	10	10.4%
Ulcerative colitis	7	7.3%
Crohn's disease	3	3.1%
Histopathology not available	12	12.5%
Total	96	100.0%

DISCUSSION

In this prospective cohort of 96 children presenting with lower gastrointestinal bleeding (LGIB), the age distribution showed the highest proportion in the 5–10 years group (46.9%), with younger children (<5 years) accounting for 40.6%, and older children (>10 years) comprising 12.5%; the mean age was 6.1 ± 3.4 years. This pattern aligns with prior pediatric LGIB literature showing a predominance of bleeding in early school-age children; lower GI bleeding was found to be most common in children aged 2–10 years in a large Southern Iran cohort of pediatric LGIB study, and several older studies supported it [5,9–11]. Similarly, an open-access Kashmiri cohort reported that the age group of 1–6 years dominated their pediatric LGIB population, with hematochezia as the most frequent presentation, consistent with the age and bleeding patterns observed in our study [12].

Sex distribution in our cohort showed a male predominance (60.4% male vs 39.6% female), a trend that is also reflected in other pediatric endoscopic series, where a slight male majority among children with LGIB has been reported [4]. Although sex differences in pediatric LGIB have not been evaluated for causality, this recurrent pattern suggests a possible referral or healthcare utilization trend and may warrant further study in future analytic research.

Clinically, over half of our participants presented with overt LGIB (56.2%), and other symptoms such as abdominal pain and diarrhea were less common. Hematochezia as the leading symptom in children with lower GI bleeding has been consistently noted in multiple pediatric studies, including those from Iran and northern India, emphasizing that frank bleeding rather than occult loss is the typical presentation in this age group [5,12]. These findings reinforce the importance of clinician awareness that visible rectal bleeding in children often reflects underlying pathology requiring investigation rather than benign self-limiting causes.

Colonoscopy in our study identified polyps as the dominant finding (59.4%), with nonspecific colitis and normal findings each accounting for 10.4% of cases. Published pediatric colonoscopy series support that juvenile polyp are a leading endoscopic diagnosis in children with LGIB. In a large

cohort of children undergoing colonoscopy for isolated lower GI bleeding, single left-sided juvenile polyps were the most common finding, present in a substantial proportion of cases, and the majority of such polyps were solitary and distal [13]. A regional Bangladesh pediatric colonoscopy study also documented a high prevalence of polyps and confirmed that colonoscopic identification corresponded well with histologic diagnosis [4]. Additionally, the broad pediatric endoscopic experience from Bahrain and other centers underscores that colorectal polyps, along with inflammatory lesions, are among the most frequent colonoscopic findings in children with lower GI symptoms [3].

Histopathologically, juvenile polyps were confirmed in 57.3% of cases and adenomatous polyps in 2.1%, indicating strong concordance between colonoscopic identification of polypoid lesions and microscopic diagnosis. This high concordance has been demonstrated previously, where the majority of endoscopically detected polyps in pediatric LGIB were indeed juvenile on histology [13]. A similar pattern of histologic polyp predominance was seen in cohorts from Iran and Kashmir, though overall proportions vary depending on referral patterns and patient selection [5,12]. These data together support that juvenile polyps remain the principal histopathological entity underlying polypoid LGIB in children.

Inflammatory diagnoses accounted for a significant but lower proportion of histopathological findings in our cohort, nonspecific colitis (10.4%), ulcerative colitis (7.3%), and Crohn's disease (3.1%). These findings are compatible with previous pediatric LGIB studies demonstrating that colitis and inflammatory bowel disease (IBD) contribute to bleeding presentations, albeit less frequently than polyps [3,7]. Notably, the proportion of IBD in pediatric LGIB series varies widely across regions, highlighting the influence of demographic and environmental factors on disease prevalence.

Less frequent histopathological entities in our study included solitary rectal ulcer syndrome (5.2%) and intestinal tuberculosis (2.1%), both of which have been documented in pediatric GI bleeding literature as uncommon causes of chronic or recurrent bleeding [14,15]. Their presence, although small in number, underscores the broad differential diagnosis that must be considered in children with LGIB.

Finally, a subset of cases (12.5%) lacked available histopathology due to logistic constraints, a limitation that has been reported in other descriptive pediatric GI studies and is reflective of real-world clinical practice where complete tissue sampling may not always be feasible [5]. Alongside this, as a descriptive observational study without inferential statistical testing, our analysis aligns with methodological expectations for prospective cohorts focused on outlining patterns rather than hypothesis testing.

In summary, our findings highlight that juvenile polyps are the predominant histopathological diagnosis in pediatric LGIB, with strong concordance between colonoscopic and histopathological evaluation. Inflammatory lesions such as colitis and IBD are notable secondary contributors, and less frequent causes including SRUS and TB remain part of the diagnostic spectrum. These patterns are consistent with the broader pediatric LGIB literature and emphasize the value of endoscopic evaluation in establishing definitive diagnosis and guiding management.

LIMITATIONS

This study was conducted at a single tertiary care center with a relatively limited sample size, which may restrict the generalizability of the findings. Additionally, histopathological confirmation was not available in a subset of cases, and the analysis was descriptive in nature without inferential statistical testing, limiting assessment of associations between clinical variables.

CONCLUSION

This prospective study demonstrates that juvenile polyps constitute the predominant etiological cause of lower gastrointestinal bleeding in children, particularly among those in the early school-age group. Colonoscopy showed high diagnostic yield and strong concordance with histopathological findings, underscoring its value as a primary investigative modality in pediatric LGIB. Inflammatory conditions, including nonspecific colitis and inflammatory bowel disease, represented important secondary causes, while less frequent diagnoses such as solitary rectal ulcer syndrome and intestinal tuberculosis reflected the broader etiological spectrum encountered in a tertiary care setting. Overall, the findings highlight the heterogeneous nature of pediatric LGIB and emphasize the importance of systematic evaluation for accurate diagnosis and appropriate management.

RECOMMENDATION

Early colonoscopic evaluation should be considered in children presenting with persistent or recurrent lower gastrointestinal bleeding. Histopathological assessment of detected lesions should be ensured whenever feasible to confirm diagnosis and guide management. Larger multicenter studies incorporating analytical statistical methods are recommended to explore associations between demographic factors, clinical presentation, and etiological patterns of pediatric LGIB.

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CONFLICT OF INTEREST

None declared

ETHICAL APPROVAL

The study was approved by the Institutional Ethics Committee

REFERENCES

1. Piccirillo M, Pucinischi V, Mennini M, Strisciuglio C, Iannicelli E, Giallorenzi MA, et al. Gastrointestinal bleeding in children: diagnostic approach. Ital J Pediatr. 2024 Jan 23;50:13.
2. Romano C, Oliva S, Martellossi S, Miele E, Arrigo S, Graziani MG, et al. Pediatric gastrointestinal bleeding: Perspectives from the Italian Society of Pediatric Gastroenterology. World J Gastroenterol. 2017 Feb 28;23(8):1328–37.
3. Isa HM, Alkharsi FA, Ebrahim HA, Walwil KJ, Diab JA, Alkowari NM. Causes of gastrointestinal bleeding in children based on endoscopic evaluation at a tertiary care center in Bahrain. World J Gastrointest Endosc. 2023 Apr 16;15(4):297–308.
4. Begum F, Nahid KL, Islam F, Majumder W, Rukunuzzaman -Md, Karim AB. Paediatric Colonoscopy: Experience from Pediatric Gastroenterology and Nutrition Department, BSMMU. Bangladesh Journal of Child Health. 2021 Sep 5;45(1):25–8.
5. Zahmatkeshan M, Fallahzadeh E, Najib K, Geramizadeh B, Haghighat M, Imanieh MH. Etiology of Lower Gastrointestinal Bleeding in Children:A Single Center Experience from Southern Iran. Middle East J Dig Dis. 2012 Oct;4(4):216–23.
6. Jamer T, Maleika P, Borys-Iwanicka A, Krzesiek E, Strożecki Ł, Stawarski A. A child with lower gastrointestinal bleeding – aetiology and diagnostic procedure. Pediatr Pol. 2022;97(3):193–9.
7. Talib MA, Aziz MT, Suleman H, Khosa GK, Joya SJ, Hussain I. Etiologies and outcome of lower gastrointestinal bleeding in patients presenting to a tertiary care Children's Hospital. Pak J Med Sci. 2021;37(2):556–60.
8. Kim DY, Bae JY, Ko KO, Cheon EJ, Lim JW, Song YH, et al. Juvenile Polyp associated with Hypovolemic Shock Due to Massive Lower Gastrointestinal Bleeding. Pediatr Gastroenterol Hepatol Nutr. 2019 Nov;22(6):613–8.
9. Yachha S, Khanduri A, Sharma B, Kumar M. Gastrointestinal Haemorrhage. Journal of Gastroenterology and Hepatology. 1996;11(10):903–7.
10. Boyle JT. Gastrointestinal Bleeding in Infants and Children. Pediatr Rev. 2008 Feb 1;29(2):39–52.
11. Kocic M, Rasic P, Marusic V, Prokic D, Savic D, Milickovic M, et al. Age-specific causes of upper gastrointestinal bleeding in children. World J Gastroenterol. 2023 Dec 21;29(47):6095–110.
12. Malik I, Sami A, Yousuf W, Tariq S, Jan S, Niyaz T. Etiological Profile of Lower Gastrointestinal Bleeding in Children and Adolescents from Kashmir; A Tale of 5 Years. Middle East J Dig Dis. 2023 Jul;15(3):180–4.
13. Silbermintz A, Matar M, Assa A, Zevit N, Glassberg YM, Shamir R. Endoscopic

Findings in Children with Isolated Lower Gastrointestinal Bleeding. Clin Endosc. 2019 May;52(3):258–61.

14. Perito ER, Mileti E, Dalal DH, Cho SJ, Ferrell LD, McCracken M, et al. Solitary rectal ulcer syndrome in children and adolescents. J Pediatr Gastroenterol Nutr. 2012 Feb;54(2):266–70.

15. Abusharifah O, Bokhary RY, Mosli MH, Saadah OI. Solitary rectal ulcer syndrome in children and adolescents: a descriptive clinicopathologic study. Int J Clin Exp Pathol. 2021 Apr 15;14(4):399–407.