



Original Article



Demographic, Clinical, and Lifestyle Risk Factors Associated with Lower Gastrointestinal Bleeding: A Cross-Sectional Study at A Tertiary Care Hospital

Qandeel Jamali¹, Nand Lal Seerani², Atif Ahmed¹, Shahzad Ali Jariko², Muhammad Kaleem³, Sheeba Faryal⁴ and Irzah Farooq⁵

¹Department of Gastroenterology, Liaquat University of Medical and Health Sciences, Jamshoro, Pakistan

²Department of Medicine, Bilawal Medical College, Liaquat University of Medical and Health Sciences, Jamshoro, Pakistan

³Department of Medicine, Suleman Roshan Medical College, Tando Adam, Pakistan

⁴Department of Medicine, Liaquat University of Medical and Health Sciences, Jamshoro, Pakistan

⁵Rotogen Biotech LLC, United States of America

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***Corresponding Author:**

Nand Lal Seerani

Department of Gastroenterology, Liaquat University of Medical and Health Sciences, Jamshoro, Pakistan
lalnandseerani76@gmail.com

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ABSTRACT

Gastrointestinal bleeding is classified into upper and lower types; lower GI bleeding occurs distal to the ligament of Treitz, presenting as rectal bleeding with symptoms like fatigue, pallor, or shock. **Objectives:** To assess the demographic, clinical, and lifestyle risk factors associated with lower gastrointestinal bleeding (LGIB) among patients presenting to a Tertiary Care Hospital, Hyderabad. **Methods:** This cross-sectional descriptive study was conducted from August 12, 2023, to February 11, 2024, at the Department of Gastroenterology, Liaquat University of Medical and Health Sciences, Jamshoro. A total of 105 male and female patients aged 18-70 years presenting with active rectal bleeding as their main complaint, and the duration of bleeding was not more than 6 months, were included in the study. The biodata of patients, such as age, duration of bleeding, and causes of bleeding, was collected. **Results:** The Age range of the patients in this study was 18 to 70 years, with a mean age was 42.29 ± 11.64 years. The most common cause of LGIB was internal hemorrhoids 32 (24%) followed by rectal ulcers 12 (9%), ulcerative colitis 10 (7.4%), rectal polyps 9 (6.6%), colitis 8 (5.9%), ileocecal ulcers 4 (2.9%), ileitis and colonic ulcers 3 (2.2%) in patients with Lower Gastrointestinal Bleeding. **Conclusions:** It was concluded that the most common cause of colorectal bleeding in our patients was carcinomas, while in Western countries, diverticulosis is the commonest cause, and ulcerative colitis is the most common cause in some Eastern countries. Male individuals are more commonly affected by LGIB.

INTRODUCTION

Gastrointestinal (GI) bleeding is classified into upper GI bleeding (UGIB) and lower GI bleeding (LGIB) based on the site of bleeding. Lower gastrointestinal bleeding (LGIB) is defined as bleeding distal to the ligament of Treitz and typically presents as rectal bleeding [1]. Pathologies involving the mucosa and vasculature of the gastrointestinal tract may lead to GI bleeding, which is considered a serious clinical presentation across all age groups. LGIB commonly presents as hematochezia,

melena, or occult bleeding, with associated symptoms such as pallor, fatigue, tachycardia, and in severe cases, hypovolemic shock [2]. The annual incidence of hospitalization for LGIB is approximately 36 per 100,000 populations, with even higher rates observed among the elderly [3]. Patients often present with painless hematochezia and a reduction in hematocrit values, typically without signs of orthostatic hypotension. The incidence of LGIB among adults is reported to range



between 20.5 and 27 cases per 100,000 individuals [4]. Compared to acute UGIB, patients with acute LGIB are significantly less likely to experience shock (35% versus 19%), require fewer blood transfusions (64% versus 36%), and often present with a higher hemoglobin concentration (61% versus 84%) [5]. Moreover, colonic bleeding tends to require fewer blood transfusions compared to small intestinal bleeding. The overall mortality rate associated with LGIB ranges from 2% to 4% [6]. The etiology and epidemiology of LGIB vary according to environmental factors such as lifestyle, dietary habits, prevalence of smoking, medication use, age, and life expectancy. Most Western data suggest that colonic diverticula are the most frequent source of LGIB, followed by angiodysplasias, colitis (ischemic, infectious, or inflammatory bowel disease), neoplasms, small bowel bleeding, and post-polypectomy bleeding [6-8]. A study conducted at the Department of Gastroenterology, Services Institute of Medical Sciences (SIMS) Lahore, aimed at determining the frequency of common causes of LGIB, found abnormal findings in 219 (79.06%) patients, with internal hemorrhoids (26.7%) being the most common cause, followed by rectal ulcers (9.38%), rectal polyps (6.85%), colitis (6.49%), proctitis (5.41%), ulcerative colitis (6.49%), rectal growths and ileitis (3.97% each), ileocecal ulcers (3.61%), and colonic ulcers (3.24%) [9]. Similarly, in a study conducted in South Punjab, Pakistan, ulcerative colitis emerged as the most frequent colonoscopic finding, observed in 20 patients (13.3%). This was followed by hemorrhoids in 19 patients (12.7%), anisitis in 17 patients (11.3%), suspected carcinoma of the colon in 16 patients (10.7%), and solitary rectal ulcer in 12 patients (8.0%). Notably, normal colonoscopic findings were reported in 50 patients (33.3%) [10].

While extensive data are available from Western countries, there remains a paucity of local research from South and Eastern Asia, where differences in climate, diet, lifestyle, and socioeconomic factors could influence the etiology of LGIB. This study seeks to bridge this knowledge gap and provide region-specific insights into the patterns of LGIB. This study aims to assess the demographic, clinical, and lifestyle risk factors associated with lower gastrointestinal bleeding (LGIB) among patients presenting to a tertiary care hospital, Hyderabad.

METHODS

This cross-sectional descriptive study was conducted at the Department of Gastroenterology, Liaquat University of Medical and Health Sciences (LUMHS), Jamshoro, over six months from August 12, 2023, to February 11, 2024. A total of 135 patients were included using a non-probability consecutive sampling technique. Patients aged 18-70 years presenting with active rectal bleeding for less than

six months and willing to provide informed consent were enrolled. Patients with bleeding due to trauma, suspected upper GI source, known infectious diarrhea, inflammatory bowel disease, GI malignancy, or advanced systemic diseases were excluded. The sample size was calculated by the WHO Open Epi sample size calculator by taking the prevalence of rectal ulcers, 7.3% [9], as a cause of LGIB, margin of error = 5%, confidence interval = 95%. The study was approved by the College of Physicians and Surgeons vide letter no. CPSP/REU/GAS-2022-164-1300. All eligible patients presenting to the Emergency or Outpatient Department were evaluated. After obtaining informed consent, demographic details such as age, gender, and BMI were noted. Comorbidities included diabetes mellitus, hypertension, and each was recorded as present or absent. Clinical history factors included NSAID use, anticoagulant use, constipation, diarrhea, previous GI bleeding, anemia, family history, surgery and lifestyle/dietary variables e.g., low fiber diet, red meat intake, water intake, smoking, alcohol use, sedentary lifestyle and duration of bleeding was treated as a continuous variable (mean \pm SD in months). Colonoscopic examination was performed using an Olympus EXERA II CF-H180 AL/I colonoscope after bowel preparation with polyethylene glycol (PEG-3350). In cases of inadequate preparation, repeat cleansing with the same regimen was administered. The causes of lower gastrointestinal bleeding were determined based on colonoscopic findings and were grouped into: Vascular causes (e.g., internal hemorrhoids), Inflammatory/ulcerative conditions (e.g., rectal ulcers, colitis, ulcerative colitis) and Neoplastic/others (e.g., rectal polyps, unspecified causes). Data were analyzed using SPSS version 26.0. Descriptive statistics were applied to summarize demographic, clinical, and lifestyle variables. Categorical variables were presented as frequencies and percentages, while continuous variables (e.g., duration of bleeding) were expressed as mean \pm standard deviation (SD).

RESULTS

The majority were male (77.1%) and from urban areas (72.4%). Age distribution showed that most patients were middle-aged to elderly, with 39% between 46-60 years and 22.9% above 60 years. Regarding nutritional status, 41.9% were overweight and 16.2% were obese, while only 5.7% were underweight. The mean duration of bleeding was 3.8 \pm 1.7 months. Comorbid conditions were prevalent, with 45.7% of patients having diabetes mellitus and 35.2% diagnosed with hypertension (Table 1).

Table 1: Demographic and Clinical Characteristics of Patients with LGIB (n=105)

Variables	Frequency (%)
Gender	
Male	81 (77.1%)
Female	24 (22.9%)
Age (Years)	
18-30	12 (11.4%)
31-45	28 (26.7%)
46-60	41 (39.0%)
>60	24 (22.9%)
Residential Status	
Urban	76 (72.4%)
Rural	29 (27.6%)
BMI (kg/m²)	
<18.5 (Underweight)	6 (5.7%)
18.5-24.9 (Normal)	38 (36.2%)
25-29.9 (Overweight)	44 (41.9%)
≥30 (Obese)	17 (16.2%)
Duration of the Bleeding	3.8 ± 1.7 months
Diabetes Mellitus	
Present	48 (45.7%)
Absent	57 (54.3%)
Hypertension	
Present	37 (35.2%)
Absent	68 (64.8%)

In terms of the underlying causes of LGIB, vascular causes were most common, with internal hemorrhoids identified in 30.5% (n=32) of cases. Inflammatory and ulcerative conditions collectively accounted for 50.5% of cases, including rectal ulcers (21.0%), colitis (7.6%), ulcerative colitis (9.5%), proctitis (4.8%), ileitis (2.9%), ileocecal ulcers (3.8%), and colonic ulcers (2.9%). Neoplastic and other unspecified causes contributed to 17.2% of the cases, with rectal polyps and other or unspecified sources each making up 8.6% (n=9) of the total (Table 2).

Table 2: Causes of Lower Gastrointestinal Bleeding in Study Participants

LGIB Causes	Frequency (%)
Vascular Causes	
Internal Hemorrhoids	32 (30.5%)
Inflammatory / Ulcerative	
Rectal Ulcers	22 (21.0%)
Ileocecal Ulcers	4 (3.8%)
Colonic Ulcers	3 (2.9%)
Colitis	8 (7.6%)
Proctitis	5 (4.8%)
Ulcerative Colitis	10 (9.5%)
Ileitis	3 (2.9%)

Neoplastic / Others	
Rectal Polyps	9 (8.6%)
Others / Unspecified	9 (8.6%)

Among the 105 patients with lower gastrointestinal bleeding (LGIB), clinical history revealed that 43.8% had a history of NSAID use, while 18.1% were on anticoagulant or antiplatelet therapy. A history of constipation was present in 39%, and 22.9% reported chronic diarrhea. Previous episodes of GI bleeding were noted in 25.7%, 13.3% had a family history of colorectal disease, and 7.6% reported undergoing colorectal surgery. Additionally, 53.3% of patients were anemic at presentation (Table 3).

Table 3: Clinical History of Patients with LGIB (n=105)

Clinical History Variables	Frequency (%)
NSAID Use	46 (43.8%)
Anticoagulant/Antiplatelet Use	19 (18.1%)
History of Constipation	41 (39.0%)
History of Chronic Diarrhea	24 (22.9%)
Previous GI Bleeding	27 (25.7%)
Family History of Colorectal Disease	14 (13.3%)
History of Colorectal Surgery	8 (7.6%)
Anemia at Presentation	56 (53.3%)

In terms of dietary and lifestyle factors, 58.1% consumed a low-fiber diet, 41.0% had a high red meat intake, and 46.7% reported inadequate water consumption. A sedentary lifestyle was observed in 56.2%, 30.5% were smokers, and 16.2% reported alcohol use. These findings highlight the presence of modifiable risk factors contributing to LGIB.

Table 4: Dietary and Lifestyle Factors of Patients with LGIB (n=105)

Lifestyle / Dietary Factor	Frequency (%)
Low Fiber Diet	61 (58.1%)
High Red Meat Intake	43 (41.0%)
Inadequate Water Intake (<1.5L/day)	49 (46.7%)
Sedentary Lifestyle	59 (56.2%)
Smoking	32 (30.5%)
Alcohol Use	17 (16.2%)

DISCUSSION

The current study provides valuable information about the patterns and potential etiological contributors to LGIB in a Pakistani urban-rural mixed population. The predominance of males (77.1%) aligns with several local and international studies, where LGIB has been observed more frequently in male than female, potentially due to greater exposure to risk factors such as smoking, alcohol use, and NSAID consumption [11]. Comorbid conditions were common, with 45.7% of participants diagnosed with diabetes mellitus and 35.2% with hypertension. These findings are comparable to a study conducted in Pakistan, which has

highlighted the role of vascular fragility and mucosal ischemia in the elderly and comorbid populations as significant contributors to gastrointestinal bleeding [12]. The mean disease duration of 3.8 ± 1.7 months suggests a significant proportion of patients experienced recurrent or chronic Lower GI bleeding episodes, indicating delayed presentation or under diagnosis, in healthcare settings across the globe [13]. Regarding etiology, internal hemorrhoids (30.5%) were the most frequent cause, followed by rectal ulcers (21.0%) and ulcerative colitis (9.5%). These results align with previous studies from Pakistan, where hemorrhoids and ulcerative lesions predominate in LGIB etiologies [14]. Inflammatory and ulcerative conditions collectively accounted for over half of the cases (50.5%), underscoring the growing burden of inflammatory bowel disease (IBD) in Asia, particularly ulcerative colitis, which is increasingly diagnosed among urban dwellers due to dietary westernization and environmental factors [15, 16]. Neoplastic causes, such as rectal polyps (8.6%) and unspecified causes (8.6%), also reflect a critical diagnostic domain, especially given the rising incidence of colorectal malignancies in younger South Asian populations [17]. Clinical history data revealed substantial modifiable risk factors. NSAID usage was reported by 43.8% of patients, reaffirming findings from international studies indicating a strong association between NSAID consumption and gastrointestinal mucosal injury leading to bleeding [18]. Dietary and lifestyle factors further illustrated the modifiability of LGIB risk. A low-fiber diet (58.1%) and high red meat intake (41.0%) were frequently reported, which are both established contributors to colonic diverticulosis, hemorrhoids, and colorectal carcinogenesis [19]. Tobacco use (30.5%) and alcohol consumption (16.2%) were also significant, both of which have been implicated in mucosal damage and inflammatory responses within the bowel [20]. Collectively, the study reinforces the multifactorial nature of LGIB, with vascular, inflammatory, neoplastic, pharmacological, and behavioural factors all playing contributory roles. There is a compelling need for early screening of high-risk individuals, especially those with anemia, chronic constipation, or NSAID use.

This study was limited by its single-center design and relatively small sample size, which may restrict the generalizability of the findings. Additionally, reliance on self-reported lifestyle and dietary factors may have introduced recall bias. Future studies should include larger, multi-center populations with objective assessment of risk factors and standardized diagnostic protocols to better clarify etiological patterns of LGIB.

CONCLUSIONS

It was concluded that lower gastrointestinal bleeding (LGIB) was more common among males, overweight and urban residents, with internal hemorrhoids as the leading cause. Common risk factors included NSAID use, low-fiber diet, sedentary lifestyle, and comorbidities like diabetes and hypertension. Early intervention and addressing modifiable lifestyle factors are crucial for better patient outcomes.

Authors' Contribution

Conceptualization: QJ

Methodology: QJ, NLS, AA, SAJ, SF

Formal analysis: NLS, MK, SF

Writing and Drafting: NLS, AA, IF

Review and Editing: QJ, NLS, AA, SAJ, MK, SF, IF

All authors approved the final manuscript and take responsibility for the integrity of the work

Conflicts of Interest

All the authors declare no conflict of interest.

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