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Lactose Intolerance in Patients with Diarrhea-Predominant Irritable Bowel Syndrome in a Tertiary Care Hospital in Bangladesh

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Abstract: ***Background:*** Diarrhea-predominant irritable bowel syndrome (IBS-D) and lactose intolerance frequently coexist, presenting overlapping gastrointestinal symptoms that complicate diagnosis and management. This study aimed to determine the prevalence of lactose intolerance among IBS-D patients in Bangladesh and to identify associated clinical features and risk factors. ***Methods:*** A cross-sectional observational study was conducted among 392 IBS-D patients at Bangabandhu Sheikh Mujib Medical University (BSMMU). Lactose intolerance was diagnosed using the Lactose Tolerance Test (LTT). Clinical symptoms, dietary patterns, comorbidities, and risk factors were assessed using structured interviews and validated scoring systems. Statistical analysis included Chi-square tests and logistic regression. ***Results:*** Lactose intolerance was identified in 57.7% of IBS-D patients using LTT. Lactose-intolerant patients experienced significantly higher rates of abdominal pain (95.1% vs. 89.8%, $p = 0.045$), bloating (85.0% vs. 71.1%, $p = 0.001$), flatulence (77.9% vs. 60.8%, $p < 0.001$), and diarrhea occurring three or more times a day (67.7% vs. 49.4%, $p < 0.001$) compared to lactose-tolerant patients. Severe IBS symptoms were more common in the lactose-intolerant group (43.4% vs. 15.7%, $p < 0.001$). Significant associations were observed with a family history of gastrointestinal illness ($p = 0.015$) and a lactose-rich diet ($p < 0.001$). Trends were noted for higher prevalence of PPI use, diabetes mellitus, and thyroid disorders among lactose-intolerant individuals. ***Conclusion:*** Lactose intolerance is highly prevalent among IBS-D patients in Bangladesh and is associated with more severe symptom profiles. Routine screening for lactose intolerance and individualized dietary interventions is recommended to improve clinical outcomes in this population.

Keywords: Lactose intolerance, IBS-D, Bangladesh, gastrointestinal symptoms, lactose tolerance test, risk factors.

Research Paper

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INTRODUCTION

Irritable Bowel Syndrome (IBS) is a chronic, functional gastrointestinal (GI) disorder characterized by recurrent abdominal pain associated with alterations in bowel habits, without any identifiable structural or biochemical abnormality [1, 2]. According to the Rome IV criteria, IBS is classified into four subtypes based on stool patterns: IBS with predominant constipation (IBS-C), predominant diarrhea (IBS-D), mixed bowel habits (IBS-M), and unclassified (IBS-U) [3]. Among these, IBS-D, or diarrhea-predominant IBS, is particularly burdensome as it significantly affects patients' daily activities, productivity, and psychological well-being [4]. Globally, the prevalence of IBS-D is estimated to range between 5% and 10%, and in Asia, it may affect up to 13% of the population [5]. In Bangladesh, the burden of IBS, particularly IBS-D, is notable, with local studies reporting a prevalence as high as 24.4% in some rural and semi-urban populations [6]. Despite its high occurrence, IBS often remains underdiagnosed and inadequately managed in low- and middle-income countries (LMICs) due to limited awareness and diagnostic resources.

Lactose intolerance, in contrast, is a common condition resulting from lactase deficiency, an enzyme responsible for hydrolyzing lactose into glucose and galactose in the small intestine. The undigested lactose is fermented by colonic bacteria, producing gas and short-chain fatty acids, which lead to symptoms such as abdominal bloating, flatulence, cramping, and diarrhea [7, 8]. These manifestations often overlap with those seen in IBS-D, complicating the diagnostic process. In many cases, lactose intolerance may be misdiagnosed as IBS-D, particularly in populations with a high prevalence

of lactose malabsorption. In South Asian countries, including Bangladesh, lactase non-persistence is widespread, with estimates suggesting that over 80% of adults may have some degree of lactose intolerance [9].

The overlap of symptoms between IBS-D and lactose intolerance presents a major clinical challenge. Both conditions involve chronic diarrhea and abdominal discomfort, but their etiologies and management differ substantially. While IBS-D is a functional GI disorder often managed with antispasmodics, low FODMAP diets, and psychological interventions, lactose intolerance requires dietary lactose restriction or enzyme replacement therapy. The lack of reliable, accessible diagnostic modalities, such as the hydrogen breath or lactose tolerance test, particularly in resource-limited settings, further contributes to diagnostic uncertainty. Moreover, the Rome IV criteria, being symptom-based, do not effectively rule out secondary causes such as lactose malabsorption, leading to potential misclassification and suboptimal treatment [10].

In the Bangladeshi context, the interplay between IBS-D and lactose intolerance remains poorly understood, and there is limited research investigating the co-occurrence of these two conditions. This knowledge gap is particularly concerning given the dietary habits of the local population, where milk and milk-based products form a regular part of the diet. Misdiagnosis may not only lead to unnecessary avoidance of dairy, causing nutritional deficiencies but also result in continued patient discomfort and increased healthcare utilization.

This study aims to investigate the prevalence of lactose intolerance among patients diagnosed with diarrhea-predominant irritable bowel syndrome (IBS-D) attending a tertiary care hospital in Bangladesh. It seeks to explore the extent of symptom overlap, evaluate diagnostic patterns, and highlight the need for more accurate diagnostic protocols to distinguish between these two conditions. The findings will inform clinical practice by improving diagnostic accuracy and optimizing therapeutic strategies for patients presenting with chronic diarrhea and abdominal discomfort.

METHODS

Study Design and Setting

This cross-sectional observational study was conducted at the Department of Gastroenterology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh. The study was carried out over a period of 12 months, from October 2017 to September 2018. BSMMU, being the premier tertiary care referral hospital in the country, provides specialized diagnostic and therapeutic services to patients with a wide range of gastrointestinal disorders, thereby making it an appropriate setting for this study.

Study Population

The study population consisted of patients attending the outpatient and inpatient services of the Department of Gastroenterology at Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka. All participants were clinically diagnosed with diarrhea-predominant irritable bowel syndrome (IBS-D) based on the Rome IV criteria. This diagnostic framework defines IBS-D as recurrent abdominal pain, on average, at least one day per week in the last three months, associated with two or more of the following: defecation-related discomfort, a change in stool frequency, or a change in stool form.

Eligible participants included adults aged 18 years and above who fulfilled the Rome IV criteria for IBS-D and provided written informed consent. These criteria ensured a representative sample of IBS-D patients appropriate for evaluating lactose intolerance.

Patients were excluded if they had known organic gastrointestinal diseases such as inflammatory bowel disease, celiac disease, or colorectal cancer. Those with a history of major gastrointestinal surgery (excluding appendectomy or cholecystectomy), individuals on lactose-restricted diets or taking lactase enzyme supplements, pregnant or lactating women, and patients with psychiatric or cognitive impairments affecting their ability to consent or participate were also excluded.

Sample size estimation

The sample size for this study was calculated based on an assumed prevalence of lactose intolerance among patients with diarrhea-predominant irritable bowel syndrome (IBS-D) in Bangladesh, estimated at 50%. This estimation was made using Cochran's formula for sample size determination, which is suitable when the population proportion is unknown or assumed to be at a 5% significance level (i.e., $Z\alpha/2=1.96$). The estimated prevalence (p) was 50% (i.e., $p=0.50$). The acceptable margin of error (e) was fixed at 0.05. Based on these parameters, the minimum required sample size was 384 participants.

An additional buffer was incorporated into the sampling strategy to account for possible non-responses and incomplete data. Consequently, the final target sample size was adjusted to 392 participants, who were proportionally allocated across the selected study sites to ensure representativeness.

Data Collection

Data were collected using a pretested structured questionnaire and standardized clinical examination protocol. The questionnaire gathered information on sociodemographic characteristics, duration and severity of symptoms, dietary habits, previous medical history, and medication use. A detailed clinical history was obtained to exclude secondary causes of diarrhea and associated red flag signs.

All participants underwent the following diagnostic evaluations to confirm IBS-D and exclude organic pathology:

- **Lactose Tolerance Test (LTT):** Blood glucose levels were measured at baseline and two hours after oral administration of 50 g lactose dissolved in water. A rise in blood glucose of <1.1 mmol/L from baseline was considered indicative of lactose malabsorption.
- **Routine Laboratory Investigations:** These included complete blood count (CBC), C-reactive protein (CRP), thyroid-stimulating hormone (TSH), and stool routine and microscopic examination to rule out infections or inflammatory conditions.
- **Abdominal Ultrasonography (USG):** Conducted to exclude structural abnormalities of the gastrointestinal tract.
- **Symptom Scoring and Severity Grading:** IBS symptom severity was assessed using a validated symptom severity scoring system that included frequency and intensity of abdominal pain, stool consistency, urgency, and quality of life impact. The grading categorized IBS-D as mild, moderate, or severe.

Data quality was ensured through periodic monitoring, and double entry was performed to minimize input errors. All laboratory tests were conducted at the central laboratory of BSMMU following standard operating procedures.

Definition of important concepts

- **Lactose Intolerance:** A condition characterized by gastrointestinal symptoms (e.g., bloating, abdominal pain, diarrhea) following lactose ingestion due to lactase deficiency. In this study, it was defined as a rise in blood glucose <20 mg/dL after oral lactose intake.
- **IBS-D (Diarrhea-Predominant Irritable Bowel Syndrome):** A subtype of IBS defined by the Rome IV criteria as recurrent abdominal pain related to defecation or changes in stool frequency/form, with >25% of stools being loose or watery and <25% being hard.

Statistical Analysis

Data were entered and analyzed using the Statistical Package STATA (version 17). Descriptive statistics were used to summarize sociodemographic and clinical characteristics. Categorical variables were expressed as frequencies and percentages, while continuous variables were presented as mean ± standard deviation (SD). The Chi-square and independent t-test were used to assess associations between categorical and continuous variables, respectively. Logistic regression analysis was performed to identify predictors of lactose intolerance among IBS-D patients. A p-value of <0.05 was considered statistically significant.

Ethical Considerations

Ethical approval for the study was obtained from the Institutional Review Board (IRB) of Bangabandhu Sheikh Mujib Medical University (BSMMU). Written informed consent was obtained from all participants after providing a detailed explanation of the study objectives, procedures, potential risks, and benefits. Participants were assured of the confidentiality and anonymity of their data. The study was conducted in compliance with the Declaration of Helsinki.

RESULTS

Association Between Lactose Intolerance and Demographic Variables

The mean age of patients diagnosed with lactose intolerance was 41.2 ± 13.6 years, compared to 39.1 ± 12.8 years among those who were lactose tolerant; the difference was not statistically significant (p = 0.138). Age distribution across the groups showed that 21.7% of lactose-intolerant individuals were between 18–30 years, 34.5% between 31–45 years, 29.6% between 46–60 years, and 14.2% were above 60 years of age. In comparison, 25.9%, 37.3%, 24.7%, and 12.0% of lactose-tolerant individuals fell into the respective age brackets (p = 0.297). Males constituted 55.8% of the lactose-intolerant group and 47.0% of the lactose-tolerant group (p = 0.094). Urban residence was reported among 64.2% of lactose-intolerant patients and 60.2% of lactose-tolerant patients (p = 0.432).

Regarding nutritional status, body mass index (BMI) distribution showed that 15.0% of lactose-intolerant individuals were underweight (BMI <18.5), 59.3% had normal BMI (18.5–24.9), and 25.7% were overweight or obese (BMI ≥25). The corresponding proportions among lactose-tolerant patients were 12.0%, 59.6%, and 28.3%, respectively (p = 0.568). Symptom severity as assessed by the IBS Symptom Severity Score (IBS-SSS) demonstrated a significantly higher proportion of severe symptoms in the lactose-intolerant group (43.4%) compared to the lactose-tolerant group (15.7%) (p < 0.001). Moderate symptoms were observed in 42.9% of lactose-intolerant and 53.6% of lactose-tolerant patients (p = 0.047), whereas mild symptoms

were more prevalent in the tolerant group (30.7%) than in the intolerant group (13.7%) ($p < 0.001$) (Table 1).

Table 1: Association Between Lactose Intolerance and Demographic Variables

Variable	Lactose Intolerant (n=226)	Lactose Tolerant (n=166)	p-value
Mean Age (years)	41.2 ± 13.6	39.1 ± 12.8	0.138
Age Group (years)			0.297
18–30	49 (21.7%)	43 (25.9%)	
31–45	78 (34.5%)	62 (37.3%)	
46–60	67 (29.6%)	41 (24.7%)	
>60	32 (14.2%)	20 (12.0%)	
Male Gender (%)	126 (55.8%)	78 (47.0%)	0.094
Urban (%)	145 (64.2%)	100 (60.2%)	0.432
BMI (kg/m²)			0.568
<18.5(Underweight)	34 (15.0%)	20 (12.0%)	
18.5–24.9 (Normal)	134 (59.3%)	99 (59.6%)	
≥25 (Overweight/Obese)	58 (25.7%)	47 (28.3%)	
Symptom Severity (IBS-SSS)			<0.001**
Mild	31 (13.7%)	51 (30.7%)	
Moderate	97 (42.9%)	89 (53.6%)	
Severe	98 (43.4%)	26 (15.7%)	

Statistically significant at **p-value < 0.01, *p-value < 0.05

Prevalence of Lactose Intolerance Among IBS-D Patients

Among all 392 IBS-D patients, the Lactose Tolerance Test identified 226 individuals (57.7%) as lactose intolerant and 166 (42.3%) as lactose tolerant. (Figure 1).

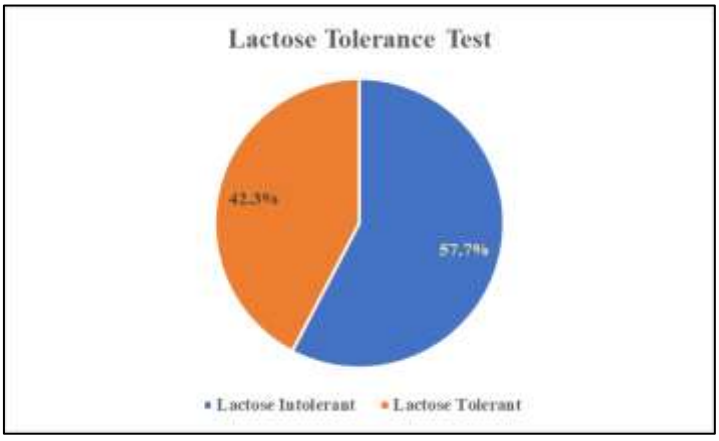

Figure 1: Prevalence of Lactose Intolerance Among IBS-D Patients

Comparison of Clinical Symptom Profile Between Lactose-Tolerant and Lactose-Intolerant IBS-D Patients

Abdominal pain was reported by 95.1% of lactose-intolerant patients and 89.8% of lactose-tolerant patients, with a statistically significant difference ($p = 0.045$). Bloating was observed in 85.0% and 71.1% of the respective groups ($p = 0.001$), while flatulence was reported in 77.9% of lactose-intolerant individuals and 60.8% of lactose-tolerant individuals ($p < 0.001$). Diarrheal episodes of three or more times per day were significantly more frequent among lactose-intolerant patients (67.7%) compared to those who were tolerant (49.4%) ($p < 0.001$). Postprandial symptom occurrence was higher in the lactose-intolerant group (63.7%) than in the tolerant group (47.0%) ($p = 0.002$) (Table 2).

Table 2: Comparison of Clinical Symptom Profile Between Lactose-Tolerant and Lactose-Intolerant IBS-D Patients

Symptom	Lactose-Intolerant (n=226)	Lactose-Tolerant (n=166)	p-value
Abdominal pain (%)	215 (95.1%)	149 (89.8%)	0.045*
Bloating (%)	192 (85.0%)	118 (71.1%)	0.001**
Flatulence (%)	176 (77.9%)	101 (60.8%)	<0.001**
Diarrhea frequency ≥3/day	153 (67.7%)	82 (49.4%)	<0.001**
Postprandial symptoms (%)	144 (63.7%)	78 (47.0%)	0.002**

Statistically significant at ***p-value < 0.01, *p-value < 0.05*

Analysis of Associated Risk Factors for Lactose Intolerance in IBS-D Patients

A history of smoking was reported by 31.9% of lactose-intolerant patients and 25.9% of lactose-tolerant patients (p = 0.173). Alcohol consumption was relatively uncommon and comparable between groups (6.2% vs. 6.6%, p = 0.891). NSAID use was reported by 23.9% of lactose-intolerant individuals and 22.9% of tolerant individuals (p = 0.808). A family history of gastrointestinal illness was significantly more prevalent among lactose-intolerant patients (27.9%) than in their tolerant counterparts (17.5%) (p = 0.015). Frequent antibiotic use was noted in 35.8% of lactose-intolerant patients versus 28.9% of tolerant patients (p = 0.143). A lactose-rich dietary pattern was more commonly reported among lactose-intolerant individuals (78.8%) compared to those who were lactose-tolerant (52.4%) (p < 0.001). Proton pump inhibitor (PPI) use was observed in 30.1% of lactose-intolerant patients, compared to 22.9% of lactose-tolerant patients. A history of diabetes mellitus was recorded in 15.9% of lactose-intolerant patients and 10.8% of lactose-tolerant. Thyroid disease was noted in 9.7% of lactose-intolerant individuals and 5.4% of lactose-tolerant individuals (Table 3).

Table 3: Analysis of Associated Risk Factors for Lactose Intolerance in IBS-D Patients

Risk Factor	Lactose-Intolerant (n=226)	Lactose-Tolerant (n=166)	p-value
Smoking history (%)	72 (31.9%)	43 (25.9%)	0.173
Alcohol consumption (%)	14 (6.2%)	11 (6.6%)	0.891
NSAID use (%)	54 (23.9%)	38 (22.9%)	0.808
Family history of GI illness (%)	63 (27.9%)	29 (17.5%)	0.015*
Frequent antibiotic use (%)	81 (35.8%)	48 (28.9%)	0.143
Lactose-rich diet (%)	178 (78.8%)	87 (52.4%)	<0.001**
PPI use (%)	68 (30.1%)	38 (22.9%)	0.097
History of Diabetes mellitus (%)	36 (15.9%)	18 (10.8%)	0.148
Thyroid disease (%)	22 (9.7%)	9 (5.4%)	0.119

Statistically significant at ***p-value < 0.01, *p-value < 0.05*

DISCUSSION

The comparison of demographic characteristics between lactose-intolerant and lactose-tolerant patients with diarrhea-predominant irritable bowel syndrome (IBS-D) revealed no statistically significant differences in age, sex, residence, or nutritional status, suggesting these variables may not be strong predictors of lactose intolerance in this population.

The mean age was slightly higher among lactose-intolerant individuals (41.2 years) compared to their lactose-tolerant counterparts (39.1 years), but the difference was not significant (p = 0.138). Similarly, age group distribution did not significantly vary between groups (p = 0.297), consistent with existing literature indicating that adult-onset lactose intolerance can occur across a broad age range without strong age dependence [11].

Male patients were more commonly represented among the lactose-intolerant group (55.8%) compared to the tolerant group (47.0%), though this difference did not reach statistical significance (p = 0.094). While some studies suggest a slight male predominance in lactose malabsorption [12, 13], sex-based differences in prevalence remain inconsistent across populations.

Urban residency was reported by the majority of patients in both groups (64.2% vs. 60.2%, p = 0.432), indicating that urban-rural residence was not associated with lactose intolerance in this cohort. Previous studies have shown mixed findings, with some suggesting higher rates of diagnosis in urban populations due to better healthcare access and dietary diversity [13], however, this was not observed in the current sample.

Nutritional status, as assessed by body mass index (BMI), also showed no significant association with

lactose intolerance (p = 0.568). The proportion of individuals with normal BMI was similar between groups (59.2%), and slight variations in underweight and overweight/obese categories were not statistically meaningful. This aligns with prior research indicating that BMI is not a consistent predictor of lactose intolerance [14].

However, a notable and statistically significant difference was observed in symptom severity as measured by the IBS Symptom Severity Score (IBS-SSS). Patients with lactose intolerance were significantly more likely to report severe IBS symptoms (43.4%) compared to lactose-tolerant patients (15.7%) (p < 0.001). In contrast, mild symptoms were more prevalent among lactose-tolerant individuals (30.7%) than in the lactose-intolerant group (13.7%) (p < 0.001). These findings suggest that lactose intolerance may exacerbate gastrointestinal symptom severity among IBS-D patients, potentially due to increased osmotic load and fermentation of unabsorbed lactose in the colon, leading to heightened visceral sensitivity and symptom manifestation [12, 15].

The Lactose Tolerance Test revealed that 57.7% of patients with diarrhea-predominant irritable bowel syndrome (IBS-D) were lactose intolerant, highlighting a notably high prevalence of lactose malabsorption within this subgroup. These findings align with existing studies reporting a high coexistence of lactose intolerance in IBS patients, particularly those with diarrhea-predominant symptoms, with prevalence rates ranging between 45% and 70% depending on geographic and ethnic factors [16].

The elevated rate of lactose intolerance in this cohort may be attributed to overlapping pathophysiological mechanisms shared by IBS-D and lactose malabsorption, including altered gut motility, visceral hypersensitivity, and dysregulated fermentation processes in the colon [17]. Moreover, the rates observed in this Bangladeshi population are consistent with regional studies demonstrating high lactose intolerance prevalence in South Asian countries due to genetically determined lactase non-persistence [18, 19].

Lactose-intolerant IBS-D patients demonstrated a significantly more severe clinical symptom profile compared to their lactose-tolerant counterparts. Abdominal pain was almost universal among lactose-intolerant individuals (95.1% vs. 89.8%, p = 0.045), a difference that, while modest, reached statistical significance. The greater prevalence of bloating (85.0% vs. 71.1%, p = 0.001) and flatulence (77.9% vs. 60.8%, p < 0.001) among the lactose-intolerant group further underscores the impact of unabsorbed lactose fermentation by colonic bacteria, leading to increased gas production and intestinal distension [20, 21].

Additionally, diarrhea frequency (≥3 episodes/day) was significantly higher in the lactose-intolerant group (67.7% vs. 49.4%, p < 0.001), suggesting osmotic diarrhea as a dominant feature in these patients. This occurs due to the osmotic effect of unabsorbed lactose in the colon, drawing water into the lumen and accelerating transit [22,23]. The significantly greater frequency of postprandial symptoms in the lactose-intolerant group (63.7% vs. 47.0%, p = 0.002) further reinforces the sensitivity of these patients to dietary triggers, particularly lactose-containing foods. These findings indicate that lactose intolerance not only coexists with IBS-D but may exacerbate its symptom burden, reinforcing the importance of identifying lactose intolerance in these patients to inform tailored dietary interventions.

A history of smoking was more frequently reported among lactose-intolerant individuals (31.9%) than lactose-tolerant ones (25.9%), though the difference was not statistically significant (p = 0.173). While smoking has been associated with gastrointestinal dysfunctions and altered intestinal motility [24], the current findings suggest it may not be a strong independent risk factor for lactose intolerance in IBS-D populations.

Alcohol consumption and NSAID use were both infrequent and showed no significant differences between the two groups (p = 0.891 and p = 0.808, respectively). This aligns with prior literature indicating that although these factors can contribute to general gastrointestinal symptoms or mucosal irritation, they are not directly implicated in the pathogenesis of lactose malabsorption [24, 25].

A positive family history of gastrointestinal illness was significantly more common among lactose-intolerant patients (27.9%) compared to tolerant individuals (17.5%) (p = 0.015). This suggests a possible genetic predisposition to lactose intolerance, particularly in regions with a high prevalence of lactase non-persistence. Several studies support the heritable nature of lactase activity, which is influenced by polymorphisms near the lactase gene (LCT) on chromosome 2 [18,26]. This finding reinforces the importance of family history in assessing risk for lactose malabsorption.

Frequent antibiotic use was more prevalent in the lactose-intolerant group (35.8% vs. 28.9%), though not statistically significant (p = 0.143). Antibiotic exposure has been linked to alterations in the gut microbiota, which may compromise the colonic

fermentation of lactose and exacerbate intolerance symptoms [27]. Although not conclusive in this study, the observed trend supports the hypothesis that microbiota disruptions might influence lactose digestion capacity in susceptible individuals.

A lactose-rich dietary pattern was significantly more common in lactose-intolerant patients (78.8%) than in lactose-tolerant individuals (52.4%) ($p < 0.001$). This inverse relationship may reflect dietary adaptation intolerant individuals, where habitual lactose consumption can upregulate colonic bacterial fermentation efficiency and improve tolerance over time [28]. Conversely, those who experience symptoms may avoid dairy products, which can lead to decreased colonic adaptation and perpetuate intolerance—a pattern observed in lactose maldigestion [29].

In the present study, proton pump inhibitor (PPI) use was more frequently observed among lactose-intolerant IBS-D patients (30.1%) than among lactose-tolerant individuals (22.9%). This finding is consistent with evidence suggesting that PPI-induced hypochlorhydria may disrupt the gastrointestinal microbiota and impair digestive function, potentially contributing to secondary lactose intolerance through altered bacterial overgrowth or reduced lactase activity [30]. Similarly, lactose-intolerant patients reported a history of diabetes mellitus (15.9%) compared to their lactose-tolerant counterparts (10.8%). Diabetes-related autonomic neuropathy can impair gastrointestinal motility and small intestinal absorption, thereby exacerbating symptoms of lactose intolerance in affected individuals [31]. Moreover, thyroid disorders were more commonly reported among lactose-intolerant patients (9.7%) than lactose-tolerant patients (5.4%). This finding aligns with previous research indicating a link between hypothyroidism and delayed gastrointestinal transit, which can intensify the clinical manifestations of lactose malabsorption. In addition, autoimmune thyroid diseases such as Hashimoto's thyroiditis may coexist with other autoimmune gastrointestinal disorders, increasing the risk of functional carbohydrate intolerance [32]. These associations emphasize the need to consider endocrine and pharmacological factors when assessing lactose intolerance in IBS-D patients.

CONCLUSION

This study highlights a substantial burden of lactose intolerance among patients with diarrhea-predominant irritable bowel syndrome (IBS-D) in a tertiary care setting in Bangladesh. Several associated risk factors were identified, including a significant relationship with a family history of gastrointestinal illness and consumption of a lactose-rich diet. Additionally, higher proportions of proton pump inhibitor (PPI) use, diabetes mellitus, and thyroid disorders were observed among lactose-intolerant individuals, indicating potential contributory roles of pharmacological and endocrine comorbidities. These findings underscore the need for routine screening for lactose intolerance in IBS-D patients, particularly those with relevant dietary patterns and comorbid conditions. Integrating dietary assessment and targeted management strategies may improve symptom control and overall quality of life in this patient population. Further large-scale, multicenter studies are recommended to validate these findings and guide evidence-based interventions tailored to the Bangladeshi context.

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Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of this manuscript.

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