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PREVALENCE, RISK FACTORS, AND PATHOPHYSIOLOGY OF CONSTIPATION-INDUCED HEMORRHOIDAL DISEASE IN PATIENTS OF QUETTA DISTRICT BALOCHISTAN

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Abstract

Background: *Constipation-related hemorrhoidal disease (HD) is a frequent gastrointestinal disease that considerably reduces the quality of life. Until now, based on global data, the HD prevalence is relatively high (4%–86%), but literature at the regional level, especially from Quetta District, Pakistan, is lacking. Other established risk factors chronic constipation, low-fiber diets, sedentary lifestyles and pregnancy are well documented, though their interactions in this population are poorly understood.*

Objectives: *To examine the prevalence of HD among this cohort of constipated patients in Quetta, identify modifiable risk factors, and elucidate pathophysiological mechanism linking constipation to HD.*

Methods: *It was a hospital-based cross-sectional study at Bolan Medical Complex hospital and Sandeman Provincial Hospital, January to March 2025. Data Collection: Data were collected from 664 enrolled patients (52% men and 48% women; aged 20–60 years old) through a structured questionnaire and digital rectal/proctoscopic examination and laboratory tests (CBC, stool analysis, and electrolytes). Statistical analyses were performed using SPSS v26, with significance set at $p<0.05$.*

Results: *The highest prevalence of HD was in ages 41–50 (29%). The diet factors saw the following risk factors: low fiber (68%), dehydration (74%), sedentary lifestyle (61%) and fast food (58%). Significant differences in gender were arisen: males had higher smoking (16% vs. 2%) and alcohol use (4.5% vs. 0.5%) than females but females tend to have pregnancy-affecting risk of test. Grade II HD (n = 371, or 37%) was the most common. The pathophysiological drivers included venipuncture-associated venous hypertension, and connective*

tissue degeneration.

***Conclusion**: Lifestyle factors were a leading cause of HD due to constipation, especially in middle-aged adults of Quetta. Clearly, as well as its contributory effect on wider public health, urgent public health interventions addressing dietary habits, physical activity, and patient education will be necessary. Further studies are needed to address long-term outcomes and treatment responses in this population.*

INTRODUCTION

One common condition caused by constipation is hemorrhoidal disease, which affects the quality of life of people with this non-life-threatening condition (1). Hemorrhoids are swollen veins in the lower rectum and anus and can cause pain, bleeding, and discomfort (2). Straining has been associated with hemorrhoidal disease and it is generally accepted that constipation is associated with the initiation and exacerbation of hemorrhoids (3). It has been shown that hemorrhoidal disease (HD) and chronic constipation are prevalent conditions affecting the quality of life (4). Hemorrhoids are defined as symptomatic enlargement and displacement of anal cushions, which may present as rectal bleeding, prolapse, discomfort, and pruritus (5).

Hemorrhoidal disease is classified into internal and external hemorrhoids. Internal hemorrhoids appear above the dentate line and are generally non-painful, but external hemorrhoids appear below the dentate line and are very painful (6). Constipation is a frequent gastrointestinal complaint defined by infrequent bowel movements or exacerbation while passing stool, typically resulting in straining. Constipation can be caused by a number of factors, including diet, inactivity, and some medical conditions. This period has been characterized by a deeper understanding of the interplay of these factors in the genesis of hemorrhoids and it is important to deals with it strategically for adequate prevention and management measures (7).

Therefore, the epidemiology of hemorrhoids is variable and the global prevalence has been estimated at between 4% and 86% of individuals with many patients having symptoms at some stage during their lifetime (8) The impact of hemorridal disease is as much economic, with healthcare and loss of productivity contributing to the need for further investigation into this realm. Hemorrhoidal disease is a common condition associated with a substantial burden on quality of life. The prevalence was at least in small studies of 4%-34%, however, their prevalence is difficult to determine because patients who self-medicate for have. Yet, it is important to note that it is recognized as one of the most common medical condition among the general population. Likewise, chronic constipation is a prevalent condition with its prevalence reported widely, from 1% to 80% (9), owing to various diagnostic criteria used. Constipation and hemorrhoids often co-exist, and constipation has also long been accepted as a risk factor for HD. Commonly cited risk factors for hemorrhoids are constipation, low-fiber diet, sedentary lifestyle and pregnancy.

Both conditions carry a high economic burden. Gastrointestinal diseases such as hemorrhoids and constipation are common and account, in a large part, for morbidity, mortality, and healthcare costs in the United States (10). The economic burden of IBS-C is primarily derived from direct healthcare costs associated with symptoms of constipation and hemorrhoids. The risk of hemorrhoidal disease is generally increased with constipation, low-fiber diet, higher body mass index (BMI), pregnancy, and with a sedentary lifestyle (11). Old age is a well-known risk factor for constipation. Older adults tend to have increased sedentary lifestyle, polypharmacy, and chronic medical diseases, which are all contributing factors for constipation (12).

Female gender has also consistently been linked to an increased prevalence of both constipation and hemorrhoidal disease (13). The low-fiber diet, sedentary lifestyle and pregnancy are major risk factors for Constipation and hemorrhoidal disease. On the contrary, dietary fiber is important for normal bowel function as it increases stool bulk and decreases intestinal transit time, and its low intake can cause hard stools and tenseness that could lead

to the development of hemorrhoids. Lack of activity worsens the risk through decreased bowel movement, while sitting for long periods, or straining elevates the pressure on the anorectal area and can lead to hemorrhoids. On the other hand, physical activity stimulates your bowel motility and lowers the risk of constipation. This susceptibility is intensified during pregnancy due to increased hormone levels (especially progesterone, which decreases bowel motility), and the enlarged uterus compressing the recto sigmoid colon leading to constipation and contributing to the development of hemorrhoids (14).

According to Fentahun (2025), patients with hemorrhoids often take on home treatment without consulting a visit. Hemorrhoidal disease is a common condition, but its real prevalence is difficult to estimate, as a large number of patients choose self-medication rather than medical consultation (15). A study conducted by Oberi et al., (2023) in Jazan, Saudi Arabia reported that 59% of adult participants surveyed had at least one symptom of hemorrhoids. These regional studies define a substantial burden of hemorrhoidal disease in diverse populations. Hemorrhoids are strongly affected by lifestyle and dietary habits. Sedentary lifestyle is another major risk factor; in the Jazan study, 83% of subjects did not exercise regularly. Furthermore, low-fiber and high-saturated fat diets are associated with a higher risk of hemorrhoidal disease (16).

A prospective study by Pars et al., (2021) demonstrated that the prevalence of hemorrhoidal symptoms increased from 11% in the first trimester to 23% in the 3rd trimester and peaked at 36.2% at one month postpartum. Individuals with a prior history of hemorrhoidal disease have a considerably increased risk of getting symptomatic hemorrhoids, especially if they are pregnant. Constipation in itself is a significant risk factor, so that in the first (17) and third trimesters of pregnancy the symptoms of constipation are strongly associated with hemorrhoidal disease.

1. Research Methodology

1.1. Study Design

The cross-sectional study was carried out in two tertiary hospitals namely Bolan Medical Complex Hospital (BMCH) and Sandeman Provincial Hospital (SPH), for a period of 3 months i.e. from January 2025 to March 2025. These hospitals are major referral centers for the relatively populous region in which they reside, which has a diverse patient case mix.

1.2. Sample Size

A total of 664 patients diagnosed with hemorrhoidal disease because of constipation (52% male, 48% female) were enrolled in the study. Patients were 20–60 years of age, divided into four age groups: 21–30 years, 31–40 years, 41–50 years and 51–60 years. Patients were recruited from the out-patient departments (OPDs), surgical wards, and gastroenterology units of BMCH and SPH.

1.3. Sampling Technique

Patient selection was performed on a convenience sampling basis. The individuals who had common symptoms of hemorrhoidal type disease (e.g., rectal bleeding, anal ached, and chronic constipation) were approached to participate. The inclusion criteria were age and informed consent.

1.4. Inclusion Criteria

It included male and female patients and the pregnant women aged 20 to 60 years on specifically diagnosed constipation induced hemorrhoidal disease in bowel movement care help and pressure at BMCH and SPH. Patients with chronic constipation with additional symptoms including rectal bleeding, anal pain, and painful defecation were enrolled. Inclusion was limited to patients who provided informed consent and did not have a previous history of hemorrhoidectomy or major anorectal surgery due to the necessity for accurate clinical assessment and reliable findings.

1.5. Exclusion Criteria

Patients with secondary hemorrhoidal disease secondary to IBD, colorectal malignancies, or anorectal infections were excluded. Patients under 20 or over 60 years, previous history of hemorrhoidectomy or major anorectal surgery and secondary gastrointestinal disorders affecting bowel habits were excluded. Patients who denied informed

consent or with unrelated medical conditions were also excluded from the study.

1.6. Data Collection

The data were gathered with a structured questionnaire and clinical examination by health workers. Data on demographics were collected using a questionnaire that inquired about age, gender, occupational status, education, and socioeconomic status. Dietary habits such as fiber intake, water consumption, and fast-food frequency were evaluated. They also reported on lifestyle factors such as physical activity, smoking and alcohol consumption. Medical history included the duration of constipation, hemorrhoidal symptoms, prior treatments, and family history. For pregnant medical doctors, the trimester during the pregnancy, the severity of constipation, and the presence of previous hemorrhoidal disease were recorded. Hemorrhoidal disease was diagnosed and graded using digital rectal examinations (DRE) and proctoscopic evaluations.

1.7. Clinical Examination

Confirmation of hemorrhoidal disease presence and severity was made through clinical examination of all patients. Digital Rectal Examination (DRE) to check for the presence of hemorrhoidal swelling, tenderness and rectal abnormalities. This procedure guided the degree of inflammation and other possible underlying anorectal conditions. We performed a Proctoscopic Examination to assess for the grade and severity of hemorrhoidal disease (a more detailed examination of the diseased rectal area).

1.8. Laboratory Investigations

Various laboratory tests were performed to exclude other possible reasons and to evaluate the impact of constipation. Complete Blood Count (CBC): To evaluate for anemia, which may develop with chronic bleeding from the rectum. A stool analysis was also performed to rule out any parasitic infections, occult blood, and other gastrointestinal problems that could be contributing to the condition. Electrolytes (Na, K, Cl) in serum were examined as potential indicators of dehydration and other electrolyte imbalances that may reflect chronic constipation. Furthermore, the pattern of fasting blood sugar (FBS) tests were conducted to assess the association of diabetes with constipation and resultant hemorrhoidal disease.

1.9. Ethical Considerations

Ethics approval was granted by the Institutional Review Board (IRB) prior to commencement of the study. Participants were notified about the purpose of the study as well as its risks and benefits and informed consent was obtained from each individual. Patients were informed that participation in this study was voluntary and that they could withdraw at any time without any consequences. All personal data were anonymized and kept in secure form accessible only to personnel involved in the research to ensure their confidentiality. Hence, the study performed in compliance with the medical ethics principles of beneficence, non-maleficence and dignity of sick and healthy individuals in each stage of the research.

1.10. Data Analysis

Statistical Package for Social Sciences (SPSS, version 26) was used for the analysis of data We used descriptive statistics to summarize patient demographics, dietary habits, and medical history. Chi-square tests and logistic regression were conducted to determine risk factors for hemorrhoidal disease. Statistical significance was defined as a p-value <0.05.

2. Results

From the total of 664 patients, there were 345 males (52%) and 319 females (48%). Patients were grouped into four age brackets. In the 21-30 years' category, there were 152 (23%) patients, with males 80 (12%) and females 72 (11%). The 31-40 years' group consisted of 190 patients (29%) with 95 males (14%) and 95 females (14%) in equal proportion. The peak number of cases were in the 41–50 years' group:192 patients (29%);100 males (15%)and 92 females (14%). Finally, 130 patients (20%) belonged to the 51-60 years' category, with 70 males (11%) and 60 females (9%) (Fig. 2a). As shown in table and figure 1, the group (41–50) had the highest prevalence of hemorrhoidal disease followed by (31-40) group.

Table 1: Demographic Distribution of Patients by Age and Gender wise

Age Group (Years)	Total Patients (%)	Males (%)	Females (%)
21–30	152 (23%)	80 (12%)	72 (11%)
31–40	190 (29%)	95 (14%)	95 (14%)
41–50	192 (29%)	100 (15%)	92 (14%)
51–60	130 (20%)	70 (11%)	60 (9%)
Total	664 (100%)	345 (52%)	319 (48%)

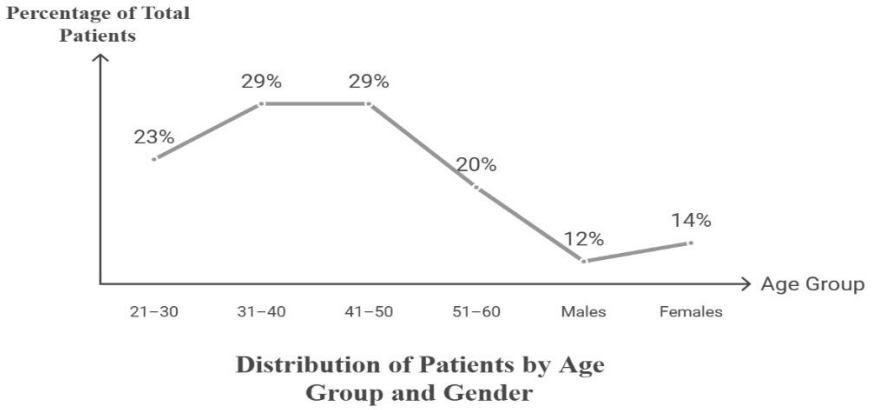

Figure 1: Demographic Distribution of Patients by Age and Gender wise

Table 2: Common Risk Factors Among Patients

Risk Factors	Total Patients (%)	Males (%)	Females (%)
Low Fiber Intake	451 (68%)	225 (33%)	226 (34%)
Inadequate Water Consumption	491 (74%)	258 (39%)	233 (35%)
Frequent Fast Food Consumption	385 (58%)	210 (32%)	175 (26%)
Sedentary Lifestyle	405 (61%)	220 (33%)	185 (28%)
Smoking	119 (18%)	105 (16%)	14 (2%)
Alcohol Consumption	33 (5%)	31 (4.5%)	2 (0.5%)
Family History of Hemorrhoids	266 (40%)	132 (20%)	134 (20%)

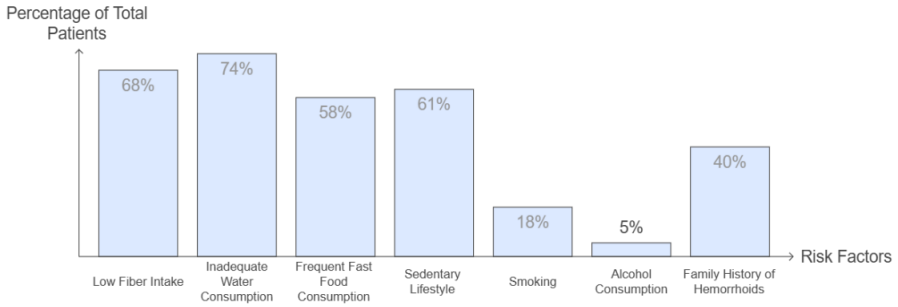

Figure 2: Common Risk Factors Among Patients

Table and figure 2 have reflected the risk factors among patients with known, while we've noted discrepancies between gender. The most common risks were low fiber intake (68%) and insufficient water ingestion (74%), showing little variation across sex. Sedentary lifestyle (61%) and fast food consumption (58%) also topped. Some factors, such as smoking (18%) and alcohol use (5%), did show substantial differences by gender, disproportionately affecting males (smoking: 16% vs. 2%; alcohol: 4.5% vs. 0.5%). Family history of hemorrhoids (40%) was uniformly shared between the sexes. These papers highlight the impact of lifestyle choices and genetic factors on health risks, with men more likely to smoke and drink excessively.

Table 3: Occupation-Wise Distribution of Patients

Occupation Type	Total Patients (%)	Males (%)	Females (%)
Sedentary Workers (Office Jobs, Teachers, IT Workers, etc.)	240 (36%)	135 (20%)	105 (16%)
Manual Laborers (Construction, Factory Workers, etc.)	180 (27%)	140 (21%)	40 (6%)
Housewives	144 (22%)	0 (0%)	144 (22%)
Students	50 (8%)	35 (5%)	15 (2%)
Unemployed	50 (8%)	35 (5%)	15 (2%)

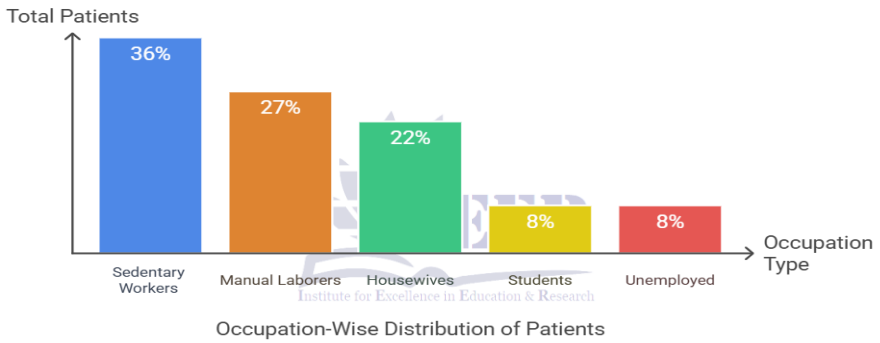

Figure 3: Occupation-Wise Distribution of Patients

Table and figure 3 show the gender-based distribution of patients according to their occupation. The largest group (36%) are sedentary workers, with a slight majority of men (20%) over women (16%). Manual bug workers exhibit a practically male (27% vs. 21% lively) predominance (21% vs. 6% feminine). Housewives (22%) are all female, while students (8%) and unemployed (8%) similarly have more females (5% male, 2% female). Males take up most manual labor jobs whereas females dominate caretaking jobs (housewives). Sedentary jobs are still the most common in general, consistent with wider workforce patterns and gendered divisions of labor.

Table 4: Severity of Hemorrhoidal Disease Based on Proctoscopic Findings

Severity (Grades)	Total Patients (%)	Males (%)	Females (%)
Grade I (Mild Swelling)	180 (27%)	94 (14%)	86 (13%)
Grade II (Moderate Swelling, Bleeding)	243 (37%)	125 (19%)	118 (18%)
Grade III (Prolapse, Manual Reduction Required)	168 (25%)	90 (14%)	78 (11%)
Grade IV (Severe, Irreducible Prolapse)	73 (11%)	36 (5%)	37 (6%)

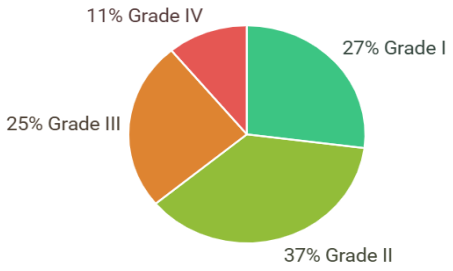

Figure 4: Severity of Hemorrhoidal Disease Based on Proctoscopic Findings

Table and figure 4 show the improvement in the severity of hemorrhoidal disease among patients according to proctoscopic findings. The most common was grade II hemorrhoids (moderate swelling with bleeding), observed in 37% of patients (19% of males, 18% of females). Grade I hemorrhoids (mild swelling) made up 27% of the patients, with a near-even gender split (14% males, 13% females). Grade III hemorrhoids (prolapse requiring manual reduction) were present in 25% of patients and were slightly more common in males (14%) than in females (11%). Grade IV (irreducible prolapse) was the least common at 11 percent, with males at 5 percent and females at 6%.

3. Discussion

The aim of this study was to estimate the prevalence of constipation-induced hemorrhoidal symptoms and their burden in this target population as well as related risk factors. Hemorrhoidal symptoms were highly prevalent, and constipation was among the leading risk factors according to our results. The researchers also identified low intake of fiber, sedentary lifestyle and prolonged sitting as key risk factors. This study aims to summarize the main findings of this research and implications for the prevention and management of constipation-related hemorrhoidal disease. Discuss the conclusion regarding the potential role of constipation as a recognizable modifiable risk factor for hemorrhoidal disease and the necessity of future studies to clarify the pathophysiological connections. The study aims to provide recommendations to improve the diagnosis and treatment in the patients with both conditions best with the purpose to improve their quality of life.

Constipation-related hemorrhoidal disease (HD) is a multifaceted condition involving a combination of lifestyle factors, anatomical alteration, and physiological mechanism. In this manuscript, we provide a structured discussion of current evidence from various epidemiological and pathophysiological studies. About 59% of adult's report hemorrhoid symptoms, and concurrent constipation is also reported in 24–39% of hemorrhoid patients (Oberi et al., 2023). Accordingly, constipation was CDA in Saudi Arabia as 40% of patients who carrier hemorrhoid has ≤ 3 times weekly constipation. Compared to controls, meta-analyses indicate patients with hemorrhoid have twice the chance of constipation (18).

The higher prevalence of constipation among females in Pakistan may be related to hormonal factors, dietary restrictions, and decreased physical activity, Abbasi et al., (2024) suggested. This difference in gender suggests that management should be targeted. Constipation is a common problem such in Pakistan that is often under-reported due to cultural factors and limited access to healthcare services (19).

Although the reported global prevalence of chronic constipation ranges from approximately 2%-28% due to variation in definitions and thresholds, Bittencourt (2022) estimated that chronic constipation affects around 15% of the population. This variation exists because of differences in

methodology and the implementation of Rome criteria, which have been recognized as adjunctive tools for the diagnosis of functional constipation (20). Hemorrhoidal disease is seen in between 4% as well as 33% of the United States populace, and an estimated 10 million individuals experience symptoms related to hemorrhoids [1]. But symptomatic hemorrhoids are estimated to affect at least 50 percent of the U.S. population at some point, and around 5 percent have symptoms at any one time. This discrepancy shows the actual cases of hemorrhoids due to stigma and lack of access to healthcare (21).

Studies showed that patients with hemorrhoids have a markedly increased prevalence of functional constipation as compared to healthy controls (odds ratio=2.09), according to the Kalkdijk et al., (2022). While this indicates a significant correlation between the two disorders, the precise causal relationship is still being studied (22). Hemorrhoids are characterized by abnormal dilatation of vascular channels and changes in connective tissue, with increased anal pressure being another physiology abnormality (23).

Pregnant women also represent a particularly vulnerable group, with the prevalence of hemorrhoidal disease increasing across the trimesters and postpartum (24). Additionally, pregnant women are a notably susceptible population, as the prevalence of hemorrhoidal disease rises per each trimester of pregnancy, as well as postpartum. It has been shown that hemorrhoids develop in about 40% of pregnant women, with the highest incidence occurring in the third trimester (61%) or immediately postpartum (34%), all due to increases in venous pressure, hormonal changes, and prolonged straining during delivery. The sedentary nature of many office occupations also comes into play here, augmenting venous stasis and diminutive blood flow from the pelvic area (25).

Conclusion

Hemorrhoidal disease secondary to constipation has a considerable impact on people and the most frequent age group is 41–50 years. The primary risk factors were considered a low intake of fiber (68%), low fluid (74%) and lack of physical activity (61%). Males were most likely to smoke and consume alcohol, and females, particularly pregnant, were at a higher risk due to hormonal and physiological changes. The most common grade was grade II (37%); hence the need for early diagnosis and treatment. Dietary modifications, physical activity, and public health education were found to be critical preventive measures, pointing to the importance of lifestyle and preventive healthcare in reducing the overall disease burden. It is suggested that more studies should be conducted to identify more mechanisms or improve long-term management.

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