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A study to assess nutritional status and symptom severity among patients with inflammatory bowel disease at a tertiary care hospital, Chennai, India

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Abstract:
Inflammatory bowel disease (IBD) can adversely affect nutritional status and symptom severity. Therefore, it is of interest to assess the nutritional status and disease activity among 60 IBD patients at a tertiary care hospital in Chennai. Normal nutritional status, borderline nutritional risk and malnutrition were observed in 20%, 63.3% and 16.7% of participants, respectively. Nutritional status negatively correlated with Crohn's disease symptom severity ($r = -0.35$, $p = 0.01$) and ulcerative colitis activity ($r = -0.37$, $p = 0.01$). Thus, routine nutritional screening and individualized interventions may improve clinical management and patient outcomes.

Keywords: Inflammatory bowel disease, nutritional status, symptom severity, mini nutritional assessment, Harvey - bradshaw index, partial mayo scoring index

Background:
Inflammatory Bowel Disease (IBD) is a chronic, relapsing inflammatory condition of the gastrointestinal tract, comprising Crohn's disease and ulcerative colitis. IBD is characterized by a dysregulated immune response to gut microbiota, leading to symptoms such as diarrhea, abdominal pain, fatigue and weight loss, significantly affecting patients' quality of life **[1]**. Globally, IBD prevalence is rising, with developing countries like India reporting increasing cases due to urbanization, dietary changes and lifestyle factors. Nutritional compromise is common in IBD, stemming from decreased intake, malabsorption, increased metabolic demands and dietary restrictions during flare-ups **[2]**. Studies suggest that 60–85% of IBD patients experience some form of malnutrition. Symptom severity in IBD influences dietary patterns and nutritional intake. Patients often restrict foods during flare-ups, exacerbating nutritional deficiencies and contributing to a vicious cycle of worsening disease activity. Despite this, routine nutritional assessment is frequently overlooked in clinical settings, highlighting the need for systematic evaluation and intervention **[3]**. Therefore, it is of interest to assess the both nutritional status and symptom severity among IBD patients attending a tertiary care hospital in Chennai.

Materials and Methods:
This descriptive cross-sectional study was conducted at a tertiary care hospital in Chennai to assess the nutritional status and symptom severity among patients with Inflammatory Bowel Disease (IBD). A total of 60 patients diagnosed with either Crohn's disease or ulcerative colitis, aged 18 years and above, was included using a non-probability convenience sampling technique. Patients with cognitive impairment, psychiatric illness, other gastrointestinal disorders, or critical illness were excluded. Data collection was performed using validated instruments: the Mini Nutritional Assessment (MNA) for nutritional status, the Harvey-Bradshaw Index (HBI) for Crohn's disease symptom severity and the Partial Mayo Scoring Index for ulcerative colitis activity. Socio-demographic and clinical details-including age, sex, education, income, occupation and residence-were also documented. Ethical approval was obtained from the Institutional Ethical Committee and informed consent was secured from all participants. Quantitative data were analyzed using SPSS software. Descriptive statistics, such as frequencies, percentages, means and standard deviations, were used to summarize socio-demographic characteristics, nutritional status and symptom severity. Inferential statistics included Pearson correlation coefficients to examine relationships between nutritional status, symptom severity and disease activity, while Chi-square tests were used to assess associations with demographic variables. Statistical significance was considered at $p < 0.05$.

Data collection tools:
[1] Nutritional Status: Mini Nutritional Assessment (MNA) tool (scores: <17 malnourished, 17–23.5 borderline, 24–30 normal).
[2] Symptom Severity: Harvey-Bradshaw Index for Crohn's disease (<5 remission, 5–7 mild, 8–16 moderate, ≥16 severe).
[3] Ulcerative Colitis Activity: Partial Mayo Scoring Index (0–3 low, 4–6 moderate, 7–8 high).

Procedure:
Ethical approval was obtained and informed consent was secured. Sociodemographic data and clinical assessments were collected and scores were analyzed using SPSS software. Descriptive statistics, Chi-square tests and Pearson correlation coefficients were employed.

Results:
The study included 60 patients with inflammatory bowel disease (IBD) attending a tertiary care hospital in Chennai. The socio-demographic characteristics are presented in **Table 1**. Males constituted 51.67% of the participants, while females accounted for 48.33%. The largest age group was 36–45 years (31.67%),

followed by 26–35 years (28.33%) and 18–25 years (23.33%). Participants older than 45 years constituted 16.67% of the sample. Most participants had completed high school (51.67%) and 58.33% were married. Full-time employment was reported by 50% of participants, while 58.33% had a monthly income below ₹10,000. Urban residents accounted for 55% of the study population. Nutritional status assessed using the Mini Nutritional Assessment (MNA) is summarised in **Table 2**. Of the 60 participants, 38 (63.33%) were at borderline nutritional risk, while 10 (16.67%) were classified as nutritionally deficient. Only 12 participants (20.0%) had normal nutritional status. The mean nutritional score was 22.35 ± 2.37, corresponding to 74.5% of the maximum possible score. These findings indicate that most participants experienced some degree of nutritional vulnerability. Symptom severity among patients with Crohn's disease, assessed using the Harvey-Bradshaw Index (HBI), is presented in **Table 3**. Moderate symptoms were observed in 35 participants (58.33%), while 25 (41.67%) experienced mild symptoms. No participants were classified as having severe symptoms. The mean HBI score was 7.62 ± 1.06, equivalent to 30.48% of the maximum score, indicating that moderate symptom severity was common in the study population. Ulcerative colitis activity assessed using the Partial Mayo Scoring Index is presented in **Table 4**. Low disease activity was observed in 49 participants (81.67%), whereas 11 (18.33%) had moderate activity. No participants exhibited high disease activity. The mean Partial Mayo score was 2.73 ± 0.86, corresponding to 34.13% of the maximum possible score. Overall, low disease activity was the predominant finding among the assessed participants. The correlation between nutritional status and clinical disease scores is presented in **Table 5**. Nutritional status showed a significant negative correlation with Crohn's disease symptom severity (HBI; r = −0.35, p = 0.01), indicating that poorer nutritional status was associated with greater symptom severity. Similarly, a significant negative correlation was observed between nutritional status and ulcerative colitis activity (Partial Mayo score; r = −0.37, p = 0.01). Both relationships were classified as fair negative correlations, suggesting that worsening clinical status was associated with poorer nutritional status. Demographic comparisons further indicated that younger participants (≤35 years) and those with higher monthly incomes tended to have better nutritional status. Male participants and rural residents were reported to have greater symptom severity and lower disease activity. However, the corresponding statistical estimates are not provided in the supplied tables; therefore, these demographic associations should be interpreted cautiously.

Table 1: Socio-demographic profile

Variable	Frequency (n)	Percentage (%)
Age 18–25	14	23.3
Age 26–35	17	28.3
Age 36–45	19	31.7

Table 2: Nutritional status

Status	Frequency (n)	Percentage (%)
Normal	12	20
Borderline deficiency	38	63.3
Deficient	10	16.7

Table 3: Symptom severity (HBI)

Severity	Frequency (n)	Percentage (%)
Mild	25	41.7
Moderate	35	58.3
Severe	0	0

Table 4: Ulcerative colitis activity (partial mayo)

Activity	Frequency (n)	Percentage (%)
Low	49	81.7
Moderate	11	18.3
High	0	0

Table 5: Correlation between nutritional status and clinical scores

Correlation	r	p	Interpretation
Nutritional status vs symptom severity (HBI)	–0.35	0.01	Negative fair correlation
Nutritional status vs ulcerative colitis activity (Partial Mayo)	–0.37	0.01	Negative fair correlation

Discussion:

The present study highlights a substantial prevalence of malnutrition among patients with Inflammatory Bowel Disease (IBD), with 63.33% of participants classified as borderline malnourished and 16.67% as clearly malnourished. These findings are consistent with global literature, where malnutrition affects 60–70% of IBD patients, particularly during active disease phases **[4, 5]**. Indian studies similarly report high rates of under nutrition, with 42–68% of IBD patients exhibiting moderate to severe nutritional deficits **[6, 7]**, indicating that nutritional compromise is a significant clinical concern in both Western and Indian populations. Symptom severity assessment revealed that the majority of participants experienced mild to moderate symptoms, with moderate symptomatology observed in 58.33% of patients. These results align with findings from South India and other tertiary hospital studies, where symptom burden correlates closely with disease activity and nutritional status **[8, 9]**. The significant negative correlation observed between nutritional status and both Harvey-Bradshaw Index and Partial Mayo scores (r = –0.35 to –0.37, p = 0.01) underscores the bidirectional relationship between malnutrition and disease severity **[10]**. Clinically, malnutrition in IBD patients exacerbates complications such as impaired immune function, delayed wound healing, increased hospitalization and reduced quality of life **[11]**. Our findings emphasize the importance of incorporating routine nutritional screening into standard care protocols. Tools like the Mini Nutritional Assessment (MNA) provide a rapid, validated method for identifying at-risk patients and guiding timely interventions, which may include individualized dietary counseling, micronutrient supplementation and enteral nutrition strategies **[12]**. Early recognition and management of nutritional deficits not only improve clinical outcomes but also mitigate symptom severity, enhance treatment tolerance and support long-term remission. Integrating routine nutritional assessment into multidisciplinary

IBD care, especially in tertiary care settings, is therefore essential to optimize patient health and quality of life **[13, 14]**.

Conclusion:
Most patients with inflammatory bowel disease (IBD) exhibited borderline nutritional risk or malnutrition, alongside mild to moderate symptom severity. Nutritional status was significantly negatively correlated with Crohn's disease symptom severity ($r = -0.35$, $p = 0.01$) and ulcerative colitis activity ($r = -0.37$, $p = 0.01$). Routine nutritional screening and individualised dietary interventions are recommended to support disease management and improve patient outcomes.

Ethical approval: Ethical approval was obtained from the Institutional Ethical Committee and written informed consent was secured from all participants.

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Conflicts of interest: The authors declare no conflicts of interest.

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