

Original Research Article

ESTIMATION OF PREVALENCE AND QUALITY OF LIFE OF PEOPLE WITH IRRITABLE BOWEL SYNDROME IN RURAL FIELD PRACTICE AREA OF A MEDICAL COLLEGE IN NORTH INDIA

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ABSTRACT

Background: Irritable bowel syndrome (IBS) is a common functional gastrointestinal disorder that can substantially impair quality of life. Community-based evidence on IBS prevalence, subtype pattern, and symptom burden remains limited in rural Indian populations. **Objective:** To estimate the prevalence and subtype distribution of IBS and to examine the association between symptom severity and quality of life among adults in the rural field practice area of UPUMS, Saifai.

Materials and Methods: A community-based cross-sectional study was conducted among 260 adults aged 18 years and above. Participants were selected through multistage random sampling. IBS was diagnosed using Rome IV criteria, symptom severity was assessed using the IBS Severity Scoring System (IBS-SSS), and quality of life was measured using the IBS Quality of Life (IBS-QOL) questionnaire. Data were analyzed using descriptive statistics, chi-square test, Fisher's exact test, and Spearman's rank correlation coefficient.

Results: Of the 260 participants, 30 met the Rome IV diagnostic criteria for IBS, yielding a prevalence of 11.5% (95% CI: 7.8–15.4). Diarrhoea-predominant IBS was the commonest subtype (43.3%), followed by constipation-predominant IBS (26.7%), mixed IBS (20.0%), and unclassified IBS (10.0%). Among participants with IBS, 33.3% had mild, 40.0% moderate, and 26.7% severe disease. The mean IBS-SSS score was 228.4 ± 78.6 , and the mean IBS-QOL score was 64.9 ± 17.8 . No significant association was observed between IBS and age, sex, education, or socioeconomic status. However, IBS severity was significantly associated with quality of life, and IBS-SSS score showed a strong negative correlation with IBS-QOL score (Spearman's $r = -0.72$, $p = 0.001$).

Conclusion: IBS affected more than one in ten adults in this rural population, with diarrhoea-predominant IBS as the leading subtype. Greater symptom severity was associated with poorer quality of life, underscoring the need for early recognition and comprehensive management of IBS in primary care and community settings.

Keywords: Irritable bowel syndrome; Rome IV; prevalence; quality of life; IBS-SSS; IBS-QOL; rural population; cross-sectional study.

INTRODUCTION

Irritable bowel syndrome (IBS) is a common disorder of gut-brain interaction characterized by recurrent abdominal pain associated with altered bowel habits in the absence of identifiable structural or biochemical abnormalities.^[1,2] It is a chronic relapsing condition that imposes a substantial burden on affected individuals through impaired daily functioning, reduced work productivity, increased healthcare utilization, and diminished health-related quality of life.^[1,3] Beyond gastrointestinal symptoms, IBS is frequently associated with psychological distress, sleep disturbance, and social impairment, making it an important public health concern rather than merely a functional bowel disorder.^[1,3]

The diagnosis of IBS is primarily clinical and symptom based. According to the Rome IV criteria, IBS is diagnosed when recurrent abdominal pain occurs, on average, at least 1 day per week in the preceding 3 months, is associated with defecation and/or a change in stool frequency or stool form, and has symptom onset at least 6 months before diagnosis.^[2,4] Based on the predominant bowel habit, IBS is further classified into constipation-predominant, diarrhoea-predominant, mixed, and unclassified subtypes.^[4] Although Rome IV is more stringent than the earlier Rome III criteria, it provides a more specific and contemporary framework for epidemiological research and international comparison.^[4,5]

The reported prevalence of IBS varies widely across regions because of differences in study methodology, population characteristics, sociocultural context, and diagnostic criteria.^[1,5] A recent systematic review and meta-analysis showed that pooled IBS prevalence is substantially lower when Rome IV criteria are applied than when Rome III criteria are used, highlighting the major influence of diagnostic definitions on prevalence estimates.^[5] Nevertheless, IBS remains one of the most prevalent gastrointestinal disorders worldwide and contributes considerably to healthcare burden and reduced quality of life.^[1,3,5]

In India, IBS remains an important yet under-recognized clinical and public health problem. The Indian consensus statements on IBS in adults emphasized that IBS is common in the Indian population, is associated with significant morbidity, and requires context-specific understanding of symptom patterns, diagnostic approaches, and management strategies.^[6] Despite this, community-based epidemiological data from India remain limited, especially from rural settings. A major community-based study from North India reported an IBS prevalence of 4.0% among adults in rural communities and continues to serve as an important regional reference for epidemiological work.^[7] Most more recent Indian studies have been hospital based,

which may not accurately reflect the true burden of IBS in the general community.^[6,7]

Assessment of quality of life is particularly relevant in IBS because symptom severity often affects physical functioning, emotional well-being, social interaction, dietary behavior, travel, and occupational performance.^[1,3] Validated instruments such as the Irritable Bowel Syndrome Severity Scoring System and the IBS-Quality of Life questionnaire allow structured assessment of symptom burden and health-related quality of life in affected individuals.^[8,9] Evaluating prevalence together with quality of life and symptom severity in a community setting may therefore provide a more comprehensive understanding of the burden of IBS and help guide appropriate primary care and public health responses.^[1,6,9]

Therefore, the present study was undertaken to estimate the prevalence of irritable bowel syndrome among adults residing in the rural field practice area of Uttar Pradesh University of Medical Sciences, Saifai, to assess quality of life among individuals with IBS, and to examine the association between IBS symptom severity and quality of life.

MATERIALS AND METHODS

Study design and setting

This community-based cross-sectional study was conducted over four months among adults residing in the rural field practice area of the Department of Community Medicine, Uttar Pradesh University of Medical Sciences (UPUMS), Saifai, Etawah, Uttar Pradesh, India.

Study Participants

Adults aged 18 years and above who had been residing in the study area for at least six months and provided written informed consent were included. Individuals who were seriously ill or had previously diagnosed inflammatory bowel disease, colorectal malignancy, celiac disease, or other chronic organic gastrointestinal disorders were excluded.

Sample size

The sample size was calculated using the single population proportion formula ($n = Z^2pq/d^2$), taking an IBS prevalence of 4.0% reported by Makharia et al. in a community-based study from Northern India, with a 95% confidence level ($Z = 1.96$), an absolute precision of 2.5%, and a 10% allowance for non-response. The minimum required sample size was 236, which was increased to 260 after accounting for non-response.

Sampling technique

A multistage random sampling technique was used. Households were selected by simple random sampling from family registers maintained at the health centres, and when more than one eligible adult was present in a household, one participant was selected by lottery method.

Study tools and data collection

Data were collected using a pretested structured interview schedule that included sociodemographic details, Rome IV-based IBS screening and subtype assessment, the Irritable Bowel Syndrome Severity Scoring System (IBS-SSS), and the IBS Quality of Life (IBS-QOL) questionnaire. Eligible participants were interviewed at their residence after obtaining written informed consent.

Diagnostic criteria and outcome measures

IBS was diagnosed according to the Rome IV criteria, defined by recurrent abdominal pain occurring at least 1 day per week in the last 3 months, associated with at least two of the following: relation to defecation, change in stool frequency, or change in stool form, with symptom onset at least 6 months before diagnosis. The main outcome measures were presence of IBS, IBS subtype, IBS severity score, and quality-of-life score.

Statistical Analysis

Data were entered in Microsoft Excel and analyzed using IBM SPSS Statistics version 26.0. Categorical variables were summarized as frequencies and percentages, while continuous variables were expressed as mean with standard deviation or median with interquartile range, as appropriate. IBS

prevalence was reported with 95% confidence interval, associations between categorical variables were assessed using chi-square test or Fisher's exact test, and the relationship between IBS severity and quality of life was examined using Spearman's rank correlation coefficient; $p < 0.05$ was considered statistically significant.

Ethical considerations

The study protocol was approved by the Institutional Ethics Committee of UPUMS, Saifai, before data collection. Licence for use of ROME IV criteria for IBS was taken from ROME Foundation. Written informed consent was obtained from all participants, and confidentiality and anonymity were maintained throughout the study.

RESULTS

A total of 260 adults residing in the rural field practice area of UPUMS, Saifai, were included in the study (Table 1). The mean age of the participants was 42.8 ± 14.6 years (range: 18-78 years), 136 (52.3%) were female, 180 (69.2%) were married, and the largest proportion belonged to Modified BG Prasad socioeconomic class III (34.2%).

Table 1: Baseline sociodemographic characteristics of the study participants (N = 260)

Variable	Frequency, n (%)
Age group (years)	
18-29	64 (24.6)
30-44	78 (30.0)
45-59	72 (27.7)
≥60	46 (17.7)
Sex	
Male	124 (47.7)
Female	136 (52.3)
Marital status	
Married	180 (69.2)
Unmarried	80 (30.8)
Education	
Up to Secondary	160 (61.5)
Higher Secondary and above	100 (38.5)
Socioeconomic status (Modified BG Prasad)	
Upper (Class I)	15 (5.8)
Upper middle (Class II)	34 (13.1)
Middle (Class III)	89 (34.2)
Lower middle (Class IV)	76 (29.2)
Lower (Class V)	46 (17.7)

Among the 260 participants, 30 fulfilled the Rome IV diagnostic criteria for irritable bowel syndrome, yielding an overall prevalence of 11.5% (95% CI: 7.8%–15.4%). Among the IBS cases, diarrhoea-predominant IBS (IBS-D) was the most common

subtype (43.3%), followed by constipation-predominant IBS (IBS-C) (26.7%), mixed IBS (IBS-M) (20.0%), and unclassified IBS (IBS-U) (10.0%). The prevalence and subtype distribution of IBS are presented in Table 2 and Figure 1.

Table 2: Prevalence and subtype distribution of Irritable Bowel Syndrome (N = 260)

Variable	Frequency, n (%)
IBS Present	30 (11.5)
IBS Absent	230 (88.5)
IBS subtype (n = 30)	
IBS-D	13 (43.3)
IBS-C	8 (26.7)
IBS-M	6 (20.0)
IBS-U	3 (10.0)

Among the 30 participants diagnosed with irritable bowel syndrome, the diarrhoea-predominant subtype (IBS-D) was the most common, accounting for 43.3% of cases, followed by constipation-predominant IBS (IBS-C) (26.7%), mixed IBS (IBS-M) (20.0%), and unclassified IBS (IBS-U) (10.0%). The distribution of IBS subtypes is illustrated in Figure 1.

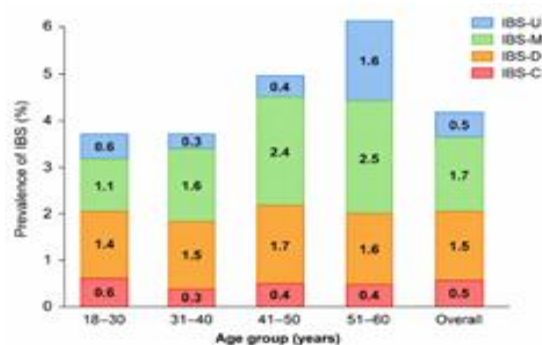


Figure 1: Distribution of irritable bowel syndrome (IBS) subtypes among participants diagnosed with IBS (n = 30)

Table 3: Severity of IBS and quality of life among participants with IBS (n = 30)

Variable	Value
IBS Severity	
Mild	10 (33.3)
Moderate	12 (40.0)
Severe	8 (26.7)
Mean IBS-SSS score	228.4 ± 78.6
Mean IBS-QOL score	64.9 ± 17.8

No significant association was found between IBS and age group, sex, education, or socioeconomic status (Table 4). However, IBS severity showed a significant association with quality of life, with poorer quality of life observed as symptom severity

increased. This was supported by a significant negative correlation between IBS-SSS and IBS-QOL scores (Spearman's $\rho = -0.72$, $p < 0.001$). [Table 5]

Table 4: Association of sociodemographic characteristics with irritable bowel syndrome

Variable	IBS present n (%)	IBS absent n (%)	Test statistic	p value
Age group (years)			$\chi^2 = 3.99$	0.263
18-29	11 (17.2)	53 (82.8)		
30-44	10 (12.8)	68 (87.2)		
45-59	6 (8.3)	66 (91.7)		
≥60	3 (6.5)	43 (93.5)		
Sex			$\chi^2 = 1.65$	0.199
Male	11 (8.9)	113 (91.1)		
Female	19 (14.0)	117 (86.0)		
Education			$\chi^2 = 0.38$	0.539
Up to Secondary	20 (12.5)	140 (87.5)		
Higher Secondary and above	10 (10.0)	90 (90.0)		
Socioeconomic status (Modified BG Prasad)			Fisher's exact test	0.942
Upper (Class I)	1 (6.7)	14 (93.3)		
Upper middle (Class II)	4 (11.8)	30 (88.2)		
Middle (Class III)	12 (13.5)	77 (86.5)		
Lower middle (Class IV)	8 (10.5)	68 (89.5)		
Lower (Class V)	5 (10.9)	41 (89.1)		

Table 5: Association between IBS severity and quality of life among IBS participants (n = 30)

IBS Severity	Good QoL	Moderate QoL	Poor QoL	Total
Mild	8	2	0	10
Moderate	2	8	2	12
Severe	0	1	7	8
Total	10	11	9	30

Footnote: Chi-square test was used to assess the association between IBS severity categories and quality-of-life categories. Spearman's rank correlation coefficient was used to evaluate the relationship between the continuous IBS-SSS and IBS-QOL scores.

Chi-square = 27.71, $p < 0.001$

Spearman's ρ (IBS-SSS vs. IBS-QOL scores) = -0.72, $p < 0.001$

DISCUSSION

The present study found that 11.5% of adults in the rural field practice area fulfilled Rome IV criteria for IBS, with diarrhoea-predominant IBS emerging as the most frequent subtype and with worsening symptom severity closely linked to poorer quality of life.^[12] These findings suggest that IBS in rural communities is not simply a symptom label but a disorder with meaningful functional consequences that likely extends into work, social life, and everyday decision-making.^[13,14]

The prevalence observed in this study is higher than that reported in several earlier Indian community studies, yet the difference should not be interpreted as a simple rise in disease burden.^[15,16] IBS prevalence varies markedly according to case definition, symptom wording, health-seeking behavior, and the sociocultural meaning attached to abdominal pain and altered bowel habits.^[16,17] Rome IV generally identifies a narrower but more symptomatically intense population than earlier criteria, so a relatively high prevalence in the present study may indicate a genuinely burdensome symptom profile in this rural setting rather than mere diagnostic inflation.^[16,18] In that sense, the present findings support the view that local context remains crucial in interpreting IBS epidemiology.^[17,18]

The predominance of IBS-D in the current study is also important. This pattern is consistent with reports from Indian and post-infectious settings in which diarrhoea-predominant disease has been relatively prominent, but it contrasts with studies from other populations where mixed IBS or constipation-predominant IBS has been more common.^[15,19,20] Such variation is unlikely to be random. It probably reflects the interaction of geography, diet, prior enteric exposure, sanitation, bowel habit perception, and health-care presentation patterns.^[15,19] In rural populations, urgency and loose stools may also be more disruptive to daily life because they directly affect mobility, travel, work, and participation in social activities, making IBS-D more visible both clinically and subjectively.^[20,21]

Another notable finding was the lack of statistically significant association between IBS and age, sex, education, or socioeconomic status in the corrected analysis.^[10] Although many studies have reported a female preponderance and greater disease visibility in younger adults, these associations are not uniform across all populations.^[14,22] Some recent population studies suggest that once symptom severity, psychological burden, and care-seeking patterns are considered, simple demographic contrasts may

become less consistent than previously assumed.^[14,23] The current findings therefore suggest that, in a rural community setting, IBS may be distributed more broadly across demographic groups than traditional stereotypes imply, which has implications for case detection at the primary-care level.^[10,23]

The strongest finding in the present study was the inverse relationship between IBS severity and quality of life. The significant negative correlation between IBS-SSS and IBS-QOL indicates that increasing symptom burden is accompanied by substantial deterioration in perceived well-being and daily functioning. This is in line with contemporary evidence showing that IBS affects not only gastrointestinal comfort but also productivity, social participation, emotional state, and sense of control over daily life.^[13,14,24] A recent Norwegian survey showed that IBS reduced quality of life in almost all affected individuals and impaired work or study performance in the vast majority, emphasizing that symptom burden translates into real-world disability rather than isolated discomfort.^[13]

At the same time, recent literature suggests that symptom severity alone does not explain the whole patient experience. A 2024 study reported that life satisfaction in IBS was more strongly associated with physical and mental quality-of-life domains than with gastrointestinal symptom severity alone, highlighting the multidimensional nature of IBS burden.^[24] This does not contradict the present findings; rather, it extends them. The present study demonstrates that symptom severity and quality of life move in opposite directions, whereas recent work indicates that the magnitude of this effect may be shaped by additional factors such as anxiety, depressive symptoms, illness perception, and coping style.^[14,24,25] Thus, symptom severity remains clinically important, but it should not be treated as the sole marker of disease impact.

Subtype-specific burden may also help explain the quality-of-life pattern observed here. Recent patient-reported research has shown that symptom subgroups characterized by higher gastrointestinal severity and higher psychological burden experience lower quality of life, reduced work capacity, and greater health-care utilization.^[23] Similarly, surveys of patients with IBS-D and IBS-C suggest that different symptom constellations disrupt daily living in different ways, with urgency, unpredictability, and planning around toilet access contributing heavily to distress in diarrhoea-predominant disease.^[20,21] In the present study, the predominance of IBS-D may therefore partly explain the substantial quality-of-life impairment observed among affected participants.^[20]

The discussion of quality of life in IBS is especially relevant in the context of community and primary-care practice. Recent evidence indicates that many patients remain dissatisfied with available care, experience long delays before diagnosis, and often feel that the broader gut-brain dimension of the illness is insufficiently addressed.^[13,26] This is important because a management approach focused only on bowel symptoms may miss the broader disability associated with IBS, particularly in patients with more severe or unpredictable disease.^[24,26] The present findings support a more integrated approach in which rural primary care does not stop at diagnosis, but also assesses symptom severity, daily functioning, and quality of life as part of routine IBS evaluation.^[13]

Overall, the present study suggests that IBS in this rural North Indian population is characterized by meaningful prevalence, a diarrhoea-predominant symptom profile, and clear quality-of-life impairment that worsens as severity increases.^[10,15] These findings align with current international literature emphasizing that IBS is a disorder of substantial functional burden, but they also add a rural community perspective that is still underrepresented in the evidence base.^[13,23,24] The broader implication is that community-level IBS research should move beyond prevalence estimation alone and incorporate symptom phenotype, lived burden, and patient-centered outcomes if it is to guide effective primary-care responses.^[14,23,26]

Strength and Limitations

This study's main strength is its community-based design with multistage random sampling, which improves representativeness, and the use of Rome IV criteria with validated IBS-SSS and IBS-QOL tools, which strengthens diagnostic and outcome assessment. Its main limitations are the cross-sectional design, which prevents causal inference, the small number of IBS cases, which limits subgroup analysis, and the reliance on self-reported symptoms without assessment of factors such as diet, psychological distress, sleep, or prior infection.

CONCLUSION

IBS was present in 11.5% of adults in this rural study population, with diarrhoea-predominant IBS as the most common subtype. Greater symptom severity was significantly associated with poorer quality of life, highlighting the need for early recognition and comprehensive management of IBS in community and primary-care settings

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