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# PREVALENCE OF IRRITABLE BOWEL SYNDROME AND ITS ASSOCIATION WITH QUALITY OF LIFE, COPING, AND ACADEMIC IMPACT AMONG UNDERGRADUATE STUDENTS: A CROSS-SECTIONAL STUDY

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**ABSTRACT**

**Background:** Irritable Bowel Syndrome (IBS) is a common functional gastrointestinal disorder in young adults, often underdiagnosed and influenced by stress, lifestyle, and psychosocial factors. This study aimed to estimate the prevalence of IBS and assess its association with quality of life (QOL), coping mechanisms, mental well-being, and academic performance in undergraduate students.

**Materials and Methods:** A cross-sectional analytical study was conducted among 217 undergraduate students. Rome III criteria were used to diagnose IBS. Participants completed validated tools assessing QOL, coping skills, and academic performance impact. Statistical analyses included Chi-square tests and confidence interval estimation.

**Results:** The prevalence of IBS was 5.1% (95% CI: 2.15%–7.99%). IBS prevalence showed an increasing trend with poorer QOL and poorer coping mechanisms, although these were not statistically significant ($p = 0.105$ and $p = 0.087$, respectively). A significant association was found between IBS and academic impact ($p = 0.005$); 17.4% of those reporting severe academic difficulty had IBS.

**Conclusion:** Although the prevalence of IBS was low, its association with academic difficulties suggests the need for early psychological and academic support strategies. Larger studies are needed to further validate these associations in the Indian context.

**Keywords:** Irritable Bowel Syndrome, Quality of Life, Coping, Academic Stress, Undergraduate Students, India.

## INTRODUCTION

Irritable bowel syndrome (IBS) is a condition that affects one-tenth of the world's population. It is not a life-threatening condition but has significant impact on one's quality of life. Globally, the prevalence ranges from 4% to 10%, and the disorder is increasingly recognized among adolescents and young adults.[1]

The exact mechanism of IBS in not yet fully understood. Infact it has led to clinicians and researches defining IBS on phenotypic basis alone. This condition not only produces troublesome gastrointestinal symptoms but also affect everyday life activities, productivity at work, and social life.[2,3]

IBS is now understood as a gut brain disorder and more psychological comorbidities are reported among patients with IBS. Symptoms such as anxiety and depression which are congruous to mental disorders are seen in greater proportion in these patients.[4]

Youngsters who study in various universities are particularly exposed to circumstances that affect there IBS related quality of life. This includes factors like stress, pressure from parents and teachers to succeed , financial issues to pay fee, attendance

requirement for eligibility etc , all this which might lead to diminished quality of life.[5] Despite this, data from Indian undergraduate populations remain limited.

The severity of the GI symptoms in IBS can be fully understood only if its impact on quality of life is assessed. Therefore, it is not just necessary that we discover the factors causing IBS but also evaluate the severity of the symptoms before planning a treatment strategy.[6]

Medical practitioners and clinical researchers have used various questionnaires to describe the patient's symptoms and to try and differentiate irritable bowel syndrome from inflammatory bowel disease. But these questionnaires never had questions dedicated to quality of life and other psychological factors. Emerging evidence suggests that psychosocial factors, including stress, coping style, and academic pressures, may influence the onset and exacerbation of IBS symptoms. Our knowledge about how psychological factors in IBS and other health related quality of life is limited.[7]

Therefore, in this study we used the Irritable Bowel syndrome Quality of Life questionnaire [IBSQOL] which helped to assess 10 domains found to be relevant to subjects with irritable bowel syndrome such as emotional health, mental well-being, sleep, physical functioning, diet, social role. In order to understand their coping mechanism and academic performance we also administered Brief COPE Inventory and a structured self-reported academic performance questionnaire.[8]

## MATERIALS AND METHODS

**Study type and design:** The study is a Cross sectional analytical (observational) study.

**Study population:** All consenting students belonging to the age group of 18-25 years studying in various Universities in South Kerala.

**Sample size:**

In a study conducted by Al Zahrani al et al assessing the prevalence of irritable bowel syndrome and its association with academic performance, prevalence of IBS was found to be 33%.[9]

Using this data, minimum sample size required for the current study wascalculated using the formula

$n = Z\alpha^2 PQ / d^2$

$Z\alpha$ = Z value of α error at 5% = 1.96

P = Prevalence of IBS = 33.0% = 0.33

Q = 1- P = 1-0.33= 0.67

d = relative precision =20 % of P= 6.6 %

$n = \frac{(1.96)^2 \times 0.33 \times 0.67}{(0.066)^2}$

= 195

Hence this study was conducted in a minimum of 195 students.

The study was initiated only after the approval of institutional ethics committee. The participants were selected according to the selection criteria mentioned below.

**Selection Criteria**

**Inclusion Criteria:** All subjects literate enough to understand the questionnaire and in the age group 18years to 25 years were included in the study.

**Exclusion Criteria:** Post graduate students, house surgeons, those having known organic gastrointestinal disease or any Chronic comorbidities affecting GI health and those who were not willing to give consent were excluded from the study.

Data collection procedure: The data was collected using a standard questionnaires. The Rome III Diagnostic Questionnaire was used for identifying IBS.10 IBSQOL was used to assess quality of life, Brief COPE Inventory was used to evaluate coping mechanisms and a well structured self-reported academic performance questionnaire was administered to assess academic performances in those affected by IBS.[11]

The above questionnaires were self-administered and was administered as anonymous and unlinked. Data of this questionnaires was collected, analysed and stored.

**Quality control:** Feedback from the participants was taken at the end of the questionnaire. Subject expert was consulted to review the data collection and analysis procedure. The guide ensured the quality of the entire process. In addition, due importance was given to maintaining the Research ethics at all levels of the project.

**Confidentiality:** All participants data was stored in a separate folder in Laptop which was accessible only by the principle investigator. Since the questionnaire was anonymous and unlinked the chance of breach of confidentiality was nil.

Statistical Analysis: Data was properly coded and entered in Microsoft excel and was analysed using statistical software SPSS Version 25. Qualitative variables was summarised as percentages and for quantitative variables mean with standard deviation was calculated. Prevalence of IBS was calculated with 95% CI. Association of IBS with qualitative variables was assessed using chi-square test. For testing association of IBS with quantitative variables t test / ANOVA was used. Non parametric test was used in case of non-normal distribution of data. Statistical significance was set at a p value <0.05.

## RESULTS

**Age Distribution**

| Mean ± SD |
|---|
| 20.37 ± 1.58 |

The mean age of the participants was 20.37 years, with a standard deviation of 1.58 years, indicating that the sample was relatively homogeneous in terms of age. The majority of participants were clustered within a narrow age range, approximately between 18.79 and 21.95 years.

**Table 1: Gender distribution and related frequency of abdominal discomfort over 3 months**

| Variables | Categories | Frequency | Percent |
|---|---|---|---|
| Gender | Female | 142 | 65.4 |
| | Male | 75 | 34.6 |
| In the last 3 months, how often had discomfort or pain anywhere in abdomen | never | 86 | 39.6 |
| | less than one day a month | 25 | 11.5 |
| | 1-3 days a month | 85 | 39.2 |
| | one day a week | 8 | 3.7 |
| | more than one day a week | 12 | 5.5 |
| | every day | 1 | 0.5 |

The study sample consisted of 142 females (65.4%) and 75 males (34.6%), indicating a higher representation of female participants. Regarding abdominal discomfort or pain experienced in the past three months, Table 1 depicts that the most commonly reported frequency was "never" (39.6%), followed closely by "1–3 days a month" (39.2%). Smaller proportions experienced discomfort less than one day a month (11.5%), one day a week (3.7%), more than one day a week (5.5%), and every day (0.5%).

**Table 2: Prevalence of Irritable Bowel Syndrome (IBS) Among Participants**

| | Categories | Frequency | Percentage | 95 % CI | P value |
|---|---|---|---|---|---|
| IBS | Yes | 11 | 5.1 | (0.0215, 0.0799) | 0.000 |
| | No | 206 | 94.9 | | |

Based on the Rome III diagnostic criteria, Table 2 shows the prevalence of Irritable Bowel Syndrome (IBS) among the study participants was found to be 5.1%, with a 95% confidence interval (CI) ranging from 2.15% to 7.99%, indicating a low occurrence within the population. The remaining 94.9% of participants did not meet the criteria for IBS. The associated p-value was 0.000, suggesting that the observed prevalence is statistically significant.

**Table 3: Association between Quality of Life (QOL) and Irritable Bowel Syndrome (IBS) Among Participants with Recent Abdominal Discomfort**

| | | IBS | | p value |
|---|---|---|---|---|
| | | No | Yes | |
| QOL (n= 131) | Excellent QOL | 103 (93.6%) | 7 (6.4%) | 0.105 |
| | Good QOL | 10 (83.3%) | 2 (16.7%) | |
| | Moderate Impairment | 3 (75%) | 1 (25%) | |
| | Poor QOL | 4 (80%) | 1 (20%) | |

Among participants who reported experiencing abdominal discomfort in the past three months, the majority with excellent QOL (93.6%) did not meet the criteria for IBS, while only 6.4% did as shown in Table 3 .The proportion of IBS cases was higher among those with lower QOL levels, with 16.7% in the good QOL group, 25% in the moderate impairment group, and 20% in the poor QOL group. Although the trend suggests that poorer QOL may be associated with a higher likelihood of IBS, the Chi-square test did not show a statistically significant association between QOL and IBS (p = 0.105).

**Table 4: Association between Coping and Mental Well-Being with Irritable Bowel Syndrome (IBS)**

| | | IBS | | P value |
|---|---|---|---|---|
| | | No | Yes | |
| Coping & Mental Well being | Good Adaptive Coping | 76 (95%) | 4 (5%) | 0.087 |
| | Moderate coping | 114 (96.6%) | 4 (3.4%) | |
| | Poor coping and high distress | 16 (84.2%) | 3 (15.8%) | |

Table 4 depicts that among the total participants, the prevalence of IBS varied across levels of coping and mental well-being. Among participants with good adaptive coping, 5% had IBS, while those with moderate coping had a slightly lower prevalence of 3.4%. In contrast, the highest prevalence of IBS (15.8%) was observed among participants with poor coping and high distress. Although these findings suggest a possible trend toward higher IBS rates in individuals with poorer coping and mental health, the Chi-square test did not show a statistically significant association between coping levels and IBS status (p = 0.087).

The prevalence of IBS as shown in Table 5 was found to be associated with the level of academic performance impact among participants. Those reporting no academic impact had the lowest prevalence of IBS (1.6%), while the rate increased with greater levels of academic difficulty: 9.5% in the mild group, 3.6% in the moderate group, and the highest prevalence (17.4%) among those reporting severe academic impact. This pattern suggests that greater academic difficulties may be linked to a higher occurrence of IBS. The association was found to be statistically significant (p = 0.005).

**Table 6: Association between Academic Performance Impact and Irritable Bowel Syndrome (IBS)**

| | | IBS | | p Value |
|---|---|---|---|---|
| | | No | Yes | |
| Academic Performance | No academic impact | 122 (98.4%) | 2 (1.6%) | 0.005 |
| | Mild | 38 (90.5%) | 4 (9.5%) | |
| | Moderate | 27 (96.4%) | 1 (3.6%) | |
| | Severe | 19 (82.6%) | 4 (17.4%) | |

As shown in Table 6 prevalence of IBS was found to be associated with the level of academic performance impact among participants. Those reporting no academic impact had the lowest prevalence of IBS (1.6%), while the rate increased with greater levels of academic difficulty: 9.5% in the mild group, 3.6% in the moderate group, and the highest prevalence (17.4%) among those reporting severe academic impact. This pattern suggests that greater academic difficulties may be linked to a higher occurrence of IBS. The association was found to be statistically significant (p = 0.005).

## DISCUSSION

This cross-sectional analytical study investigated the prevalence of Irritable Bowel Syndrome (IBS) and its associations with quality of life (QOL), coping mechanisms, and academic performance among university students in South Kerala. The study revealed a relatively low prevalence of IBS (5.1%) in this population, with higher incidence among students reporting impaired coping, poor QOL, and significant academic impact.

The observed prevalence of 5.1% is lower than that reported in similar populations across different geographic regions. For instance, Al Sahrani et al. (2023) reported a 33% prevalence of IBS among university students in Saudi Arabia.12 The variability in prevalence may be attributable to differences in diagnostic criteria (Rome III vs Rome IV), study design, dietary habits, psychosocial stressors, and cultural attitudes toward bowel-related symptoms. Our use of the Rome III criteria may partly explain the lower prevalence, as Rome IV criteria—considered more restrictive—tend to yield lower IBS prevalence estimates in population-based studies.13

The mean age of the participants was 20.37 years, consistent with the age group that is frequently exposed to academic, social, and financial stressors. This stage of life coincides with a transition from adolescence to adulthood, during which individuals experience heightened emotional responses to academic pressure, self-expectations, and social identity formation. Previous literature has consistently indicated that psychological stress is a significant risk factor for the development and exacerbation of IBS.[14]

A key finding of the present study is the statistically significant association between IBS and academic performance. Students with severe academic impact showed the highest prevalence of IBS (17.4%), whereas only 1.6% of those reporting no academic impact had IBS. These findings are in line with previous studies suggesting that stress related to academic deadlines, examinations, and fear of failure can aggravate gastrointestinal symptoms.[15] The gut-brain axis plays a central role in this interaction. Stress activates the hypothalamic-pituitary-adrenal (HPA) axis and alters gastrointestinal motility and sensitivity, thereby contributing to IBS symptomatology.[16] Students under academic stress may also adopt irregular eating habits, reduced physical activity, and sleep disturbances—all of which can exacerbate IBS.

Although our study did not find a statistically significant association between QOL and IBS (p = 0.105), the trend was clearly indicative. IBS prevalence increased with worsening QOL—from 6.4% among those with excellent QOL to 25% among those with moderately impaired QOL. These findings are congruent with the broader literature, which consistently shows that IBS significantly impairs daily functioning and overall well-being.[17] The domains affected include sleep quality, emotional health, social functioning, and physical activity—all of which are captured in the IBSQOL instrument used in this study.

The lack of statistical significance may be due to the relatively small number of IBS-positive participants (n=11), which could have limited the power to detect associations. However, the presence of a clinically meaningful trend justifies further exploration in larger cohorts. Additionally, cultural factors in India may influence how students perceive and report quality of life. For example, individuals may underreport emotional distress due to stigma or lack of awareness about mental health.

Similarly, the association between coping mechanisms and IBS, though not statistically significant (p = 0.087), showed an important trend. IBS was more prevalent among students with poor coping and high psychological distress (15.8%), compared to those with moderate coping (3.4%) and good adaptive coping (5%). This aligns with findings from international literature suggesting that maladaptive coping strategies—such as avoidance, denial, or substance use—may worsen IBS symptoms by perpetuating stress and emotional dysregulation.18 The Brief COPE Inventory allowed us to assess adaptive (e.g., planning, acceptance) and maladaptive (e.g., self-blame, disengagement) strategies, providing valuable insights into the psychological resilience of the participants.

Our study adds to the growing body of evidence that IBS is not merely a gastrointestinal disorder but a multifaceted biopsychosocial condition. The concept of IBS as a "gut-brain interaction disorder" highlights

the need for a more holistic management approach that goes beyond symptomatic relief. Interventions that address psychological distress, improve coping strategies, and foster academic support may significantly improve outcomes in this population.

Given the rising mental health burden among Indian university students, the implications of our findings are significant. The National Mental Health Survey (2015-16) revealed that young adults in India face high levels of anxiety and depression, which are often unrecognized and untreated.[19] Our findings suggest that screening for IBS could serve as a gateway to identifying students at risk of psychological distress and academic difficulties.

Moreover, IBS remains underdiagnosed in primary care and college health settings in India. Students may be reluctant to seek help for bowel-related symptoms due to embarrassment, normalization of symptoms, or lack of awareness. This underscores the need for awareness campaigns and student wellness programs that incorporate gastrointestinal health as part of comprehensive health promotion.

From a clinical standpoint, the low prevalence of IBS in our study does not negate the considerable burden faced by affected individuals. Even a small proportion of students with IBS can experience debilitating symptoms that interfere with their education and quality of life. In our study, those with IBS had higher rates of poor QOL, high distress, and academic disruption—indicating the need for early identification and targeted interventions.

Several limitations must be acknowledged. First, the cross-sectional design precludes any causal inferences. Second, the reliance on self-reported questionnaires may have introduced reporting bias. Third, while the Rome III criteria are validated, the newer Rome IV criteria might have yielded different prevalence rates. Fourth, the study was limited to students in South Kerala, which may limit generalizability to other regions of India. Additionally, the sample had a female predominance, which may have influenced the findings, as IBS is generally more prevalent in women.[20]

Future research should focus on longitudinal studies to assess the temporal relationship between stress, coping, and IBS. Qualitative studies could also provide deeper insights into students' lived experiences of IBS and its psychosocial impact. Moreover, interventional studies testing stress-reduction techniques such as mindfulness, cognitive-behavioral therapy, and dietary counseling in students with IBS could offer practical solutions.

In conclusion, while the prevalence of IBS in this South Kerala university student population was relatively low, its impact on academic performance and the associated trends in coping and QOL warrant attention. IBS in young adults should not be overlooked, as it may be a marker of deeper psychological or functional difficulties. Multidisciplinary strategies involving educators, psychologists, and healthcare providers are essential for managing this condition and supporting student well-being.

## CONCLUSION

The study highlights a measurable burden of IBS among undergraduate students, with a significant impact on academic functioning. Early identification and interventions targeting stress and coping mechanisms could mitigate this burden and improve student well-being.

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**Authors' contributions**

Mr Abed Benny came up with the research question and did the entire collection of data followed by sample analysis

Dr. Leya Elizabeth Babu guided her in writing the proposal, analysis of the final result and writing the report and preparing the manuscript

**Conflict of interest:** There was no conflict of interest

## REFERENCES

1. Hahn BA, Yan S, Strassels S. 1999 . Impact of irritable bowel syndrome on quality of life and resource use in the United States and United Kingdom. Digestion. 60 . 77-81.
2. Lea R, Whorwell PJ. 2001 June . Quality of life in irritable bowel syndrome. Pharmacoeconomics.19,643-53.
3. Goodoory VC et al. 2023 Feb. Factors associated with lower disease- specific and generic health- related quality of life in Rome IV irritable bowel syndrome. Alimentary Pharmacology & Therapeutics.57(3),323-34.
4. Black CJ, et al. 2023 Feb. Novel symptom subgroups in individuals with irritable bowel syndrome predict disease impact and burden. Clinical Gastroenterology and Hepatology.27
5. Cañón M, et al. 2017. Prevalence of irritable bowel syndrome and health-related quality of life in adults aged 18 to 30 years in a Colombian University: an electronic survey. Annals of Gastroenterology: Quarterly Publication of the Hellenic Society of Gastroenterology.30(1),67.
6. Mönnikes H. 2011 Aug . Quality of life in patients with irritable bowel syndrome. Journal of Clinical Gastroenterology. 1;45,98-101.
7. Madva EN, et al..2023 April. Positive psychological well-being: A novel concept for improving symptoms, quality of life, and health behaviors in irritable bowel syndrome. Neurogastroenterology & Motility.35(4)
8. Hahn BA, et al. 1997 June. Evaluation of a new quality of life questionnaire for patients with irritable bowel syndrome. Alimentary pharmacology & therapeutics.11(3),547-52.
9. Al-Zahrani A, et al. 2022 Jul 1.Prevalence of irritable bowel syndrome and its association with academic performance in Umm Al-Qura University medical students. Med Sci.26,1–8.
10. Drossman DA, Dumitrascu DL. 2006.Rome III: New standard for functional gastrointestinal disorders J Gastrointestin Liver Dis.15,237–41
11. Carver, C. S. (1997). Brief COPE Inventory [Database record]. APA PsycTests.https://doi.org/10.1037/t04102-000
12. Alsahrani AS. Med J Cairo .2020.Prevalence and risk factors for irritable bowel syndrome among male secondary school Saudi students in Najran City, Saudi Arabia. Univ.88,1917–1921

13. Almasary M, et al. 2023 Sep. Prevalence of Irritable Bowel Syndrome in Saudi Arabia: A Systematic Review and Meta-Analysis. Cureus. 16,15(9):e45357. doi: 10.7759/cureus.45357. PMID: 37849586; PMCID: PMC10577611.
14. Qin HY, Cheng CW, Tang XD, Bian ZX. Impact of psychological stress on irritable bowel syndrome. World J Gastroenterol. 2014 Oct 21;20(39):14126-31. doi: 10.3748/wjg.v20.i39.14126. PMID: 25339801; PMCID: PMC4202343.
15. Balmus IM, et al. 2019 Apr-Jun. D. Perceived stress and gastrointestinal habits in college students. Acta Endocrinol (Buchar)15(2):274-275. doi: 10.4183/aeb.2019.274. PMID: 31508190; PMCID: PMC6711640.
16. Marano G, et al.2025 Feb 11. Irritable Bowel Syndrome: A Hallmark of Psychological Distress in Women? Life (Basel).15(2):277. doi: 10.3390/life15020277. PMID: 40003686; PMCID: PMC11856493.
17. In^es A. Trindade .2022. Quality of life in irritable bowel syndrome: Exploring mediating factors through structural equation modelling Journal of Psychosomatic Research 159 1-9
18. Torkzadeh F et al. 2019 May 17. Relations between Coping Skills, Symptom Severity, Psychological Symptoms, and Quality of Life in Patients with Irritable Bowel Syndrome. Int J Prev Med.10:72. doi: 10.4103/ijpvm.IJPVM_464_17. PMID: 31198507; PMCID: PMC6547787.
19. Murthy RS. 2017 Jan-Mar .National Mental Health Survey of India 2015-2016. Indian J Psychiatry.59,(1),21-26. doi: 10.4103/psychiatry.IndianJPsychiatry_102_17. PMID: 28529357; PMCID: PMC5419008.
20. Kim YS, Kim N. 2018 Oct .Sex-Gender Differences in Irritable Bowel Syndrome. J Neurogastroenterol Motil. 1;24(4):544-558. doi: 10.5056/jnm18082. PMID: 30347934; PMCID: PMC6175559.