



Daffodil
International
University

**A COMPREHENSIVE STUDY ON IRRITABLE BOWEL SYNDROME
USING THE IBS-36 QUALITY OF LIFE MEASUREMENT TOOL AND
PATIENTS' ATTITUDES, CONCERNS, AND KNOWLEDGE**

A PROJECT REPORT

BY

Kaniz Fatema

ID: 191-34-933

Submitted to the Department of Nutrition and Food Engineering in the partial fulfillment of
B.Sc. in Nutrition and Food Engineering

Supervised By

Tasmia Tasnim

Assistant Professor

Department of Nutrition and Food Engineering

FACULTY OF HEALTH AND LIFE SCIENCES

DAFFODIL INTERNATIONAL UNIVERSITY

MARCH 2024

APPROVAL

This project, “**A comprehensive study on irritable bowel syndrome using the IBS-36 quality of life measurement tool and patients’ attitudes, concerns, and knowledge**”, has been turned in by **Kaniz Fatema** to the Department of Nutrition and Food Engineering at Daffodil International University. It has been accepted as a partial fulfillment of the requirements for the degree of B.Sc. in Nutrition and Food Engineering and approved for its style and content.

EXAMINING COMMITTEE

Chairman of the Board _____

External Member _____

Internal Member-1 _____

Internal Member-2 _____

Dr. Nizam Uddin

Head

Nutrition and Food Engineering

Faculty of Health and Life Sciences

Daffodil International University

DECLARATION

I hereby declare that this project has been done by me under the supervision of **Tasmia Tasnim, Assistant Professor**, Department of Nutrition and Food Engineering, Daffodil International University. I also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

Supervised by:

Tasmia Tasnim

Tasmia Tasnim

Assistant Professor

Department of Nutrition and Food Engineering

Faculty of Health and Life Sciences

Daffodil International University

Submitted by:

Kaniz

Kaniz Fatema

ID: 191-34-933

Department of Nutrition and Food Engineering

Daffodil International University

ACKNOWLEDGMENT

First, I express my heartiest thanks and gratefulness to almighty for His divine blessing makes it possible to complete the final year project successfully.

I am really grateful and wish my profound indebtedness to **Tasmia Tasnim, Assistant Professor**, Department of Nutrition and Food Engineering, Daffodil International University. Her endless patience, scholarly guidance, continual encouragement, constant and energetic supervision, constructive criticism, valuable advice, reading many inferior drafts and correcting them at all stages have made it possible to complete this project.

I would like to express my heartiest gratitude to **Dr. Nizam Uddin, Associate professor, and Head**, Department of Nutrition and Food Engineering, for his kind help to finish our project and also to other faculty members and the staffs of the Department.

I would like to thank my entire course mate in Daffodil International University, who took part in this discussion while completing the course work.

Finally, I must acknowledge with due respect the constant support and patients of my parents

.

ABSTRACT

This cross-sectional study conducted at Mugda Medical College and Hospital in Dhaka, Bangladesh, explores various aspects related to Irritable Bowel Syndrome (IBS), including knowledge, attitudes, concerns, and QoL. The study population comprises adults aged 20 years and above, either diagnosed with IBS or experiencing symptoms consistent with the condition. A sample size of 200 participants was determined using a standard formula. Data were collected through a structured questionnaire, and pre-constructed questionnaires by Lacy et al. (2007) and IBS-36 by Groll et al. (2002) were utilized to assess knowledge, attitudes, concerns, and quality of life (QoL). The mean age of the participants was 38.27 years, with a balanced distribution across age groups, ranging from 20 to 59 years. The gender distribution indicated a slight predominance of females (62.5%). 64.5% of respondents were overweight, while 14.5% were classified as obese. 70.5% of respondents resided in urban areas, 77.0% were married. Among the identified IBS signs and symptoms, majority of the patients had constipation (34.5%). Colonoscopy being the most frequently (48.0%) employed in diagnosing of IBS. 32.0% experiencing symptoms for 3-5 years and 94.0% of respondents reported using IBS medications. Additionally, dietary restrictions were common, with 58.0% restricting dairy products. 23.5% of participants fall into the Poor category, indicating high IBS severity and A majority of respondents, comprising 56.5%, exhibit a good category, denoting low IBS severity. 62.0% of the respondents, falls under the Good Knowledge category. The findings reveal a statistically significant association between knowledge levels and IBS severity (p value = 0.001). Only the Social Functioning scale demonstrates lower reliability (α = 0.104), as does the Pain scale (α = 0.284), suggesting potential limitations in patients' quality of life. The study also revealed significant associations($p < 0.05$) in several key variables with IBS severity.

Keywords: Irritable Bowel Syndrome (IBS), Knowledge, Attitudes, Concerns, Quality of Life (QoL)

TABLE OF CONTENTS

CONTENTS	PAGE
Approval	i
Declaration	ii
Acknowledgment	iii
Abstract	iv
CHAPTER 1: INTRODUCTION	1-2
1.1 Introduction	1
1.2 Background	1
1.2 Objectives of the study	2
CHAPTER 2: LITERATURE REVIEW	3-5
CHAPTER 3: MATERIALS AND METHODS	6-8
3.1 Study Design	6
3.2 Study area and location	6
3.3 Study Population	6
3.4 Sample size determination	6
3.5 Data collection methods	6
3.6 Scoring System	7
3.7 Data Analysis	8
3.8 Ethical Consideration	8
CHAPTER 4: RESULTS AND DISCUSSION	9-26
4.1 Results	9
4.2 Discussion	24
CHAPTER 5: CONCLUSION	27
REFERENCES	28-31
APPENDICES	32-44

LIST OF TABLES

Tables	Page no
Table 1: Scoring system for knowledge level	7
Table 2: Scoring system for IBS severity on scale of 216	7
Table 3: Recoding Items for IBS-36 responses	7
Table 4: Averaging IBS-36 Items to Form Scales	7
Table 5: Socio-demographic characteristics of the respondents	9
Table 6: Clinical characteristics of the respondents	10
Table 7: Respondents' Knowledge on Epidemiology and Natural History of IBS	11
Table 8: Respondents' Knowledge on Etiology of IBS	12
Table 9: Respondents' Knowledge on Symptoms and Diagnosis of IBS	13
Table 10: Respondents' Knowledge on Treatment of IBS	13
Table 11: Respondents' attitudes and concerns on Ability of medical system of IBS	14
Table 12: Respondents' attitudes and concerns on Concerns and Fear of IBS	15
Table 13: Respondents' attitudes on Functional status and Relationships of IBS	15
Table 14: IBS categories based on IBS score scale of 216	15
Table 15: Knowledge level of respondents	16
Table 16: Association between Knowledge Levels and IBS Severity	16
Table 17: Reliability, Central Tendency, and Variability of Scales in IBS-36	16
Table 18: Relationship of IBS severity with different variables	16

CHAPTER 1

INTRODUCTION

1.1 Introduction

The subjective perception of a patient about their health is a key determinant of the efficacy of a treatment. Various studies have shown that there is frequently a discrepancy between the evaluations of patients and doctors on the effectiveness of medical and surgical treatments (Wright et al., 1995).

Therefore, it is crucial to assess patient quality of life (QOL) when the primary objective is to control symptoms rather than cure the condition. The most accurate approach to do this is via the use of surveys that assess the quality of life (QOL) in a valid and reliable manner. These strategies are particularly vital for chronic disorders such as functional gastrointestinal diseases, where one of the primary goals of treatment is to achieve subjective symptom reduction (Bombardier et al., 1995).

Within Western countries, the prevalence of this condition impacts around 10-20% of persons and constitutes up to 40% of the cases referred to general gastrointestinal clinics (6). The absence of "red flags" and precise symptom criteria (Paterson et al., 199).

In fact, this ailment may only be diagnosed based on its clinical manifestations, since there are no physiological markers associated with it. The objective of treating IBS is to enhance the quality of life for patients by alleviating symptoms, given the absence of a universally acknowledged cause for the disorder. Despite the high prevalence and substantial economic effect on society, there is a scarcity of data about the attitudes, concerns, and degree of comprehension among IBS patients (Sandler et al., 2002).

1.1.1 Bangladesh perspective

Multiple population-based studies have investigated the epidemiology of IBS in Bangladesh using various diagnostic criteria (Rahman et al., 2017). The reported incidence of IBS in Bangladesh ranges from 7.7% to 12.9%, according to research conducted by Masud et al. (2001), Perveen et al. (2009), and Perveen et al. (2014). Urban living is linked to increased psychological stress levels, which may result in a higher occurrence of IBS when compared to rural areas (Rahman et al., 2017). Epidemiological research on IBS has been conducted in both urban and rural populations in Bangladesh. A study conducted in Bangladesh found an irritable bowel syndrome (IBS) prevalence of 8.5% based on the Rome I criteria. The study included 2,426 participants from rural households (Masud et al., 2001). Urban surveys in this nation do not reveal a substantial difference in the occurrence of IBS compared to rural populations. A study of 1503 adult respondents in Dhaka City, Bangladesh, revealed an irritable bowel syndrome (IBS) prevalence of 7.7% based on the Rome II criteria (Perveen et al., 2009).

1.2 Background

Irritable bowel syndrome (IBS) is a prevalent chronic functional gastrointestinal (GI) disorder that may occur sporadically or persistently. The clinical presentation is diverse, manifesting with a spectrum of symptom combinations including diarrhea, constipation,

bloating, and abdominal pain. The prevalence of IBS is influenced by factors such as geographical location, demographic characteristics, and diagnostic criteria (Sperber et al., 2016). Irritable bowel syndrome has a significant influence on healthcare systems that have limited resources. Individuals afflicted with Irritable Bowel Syndrome (IBS) had medical costs that were 50% higher compared to those without the ailment. The cost of prescriptions was less substantial compared to the rise in utilization of medical services, which included therapy unrelated to lower gastrointestinal disorders (Levy et al., 2001). The existence of irritable bowel syndrome (IBS) has been acknowledged for over 150 years, and it is believed that functional gastrointestinal illnesses are quite prevalent (Thompson et al., 1999). Individuals suffering from irritable bowel syndrome (IBS) often seek medical assistance from general practitioners, hospital outpatient departments, and community healthcare facilities (Kettell et al., 1992). IBS is the primary reason for patients being sent to gastroenterologists in developed countries. In Western Europe and North America, around 30% of the overall population has received a diagnosis of this ailment (Thompson et al., 1999). While the exact underlying mechanisms of IBS remain unclear, scientists have attempted to classify the disorder by analyzing its symptoms (Thompson et al., 1984). IBS symptoms, however, are not specific. Talley et al. (1991) observed that the Manning criteria's discriminatory value and reliability are not extremely sensitive, but it is useful for confirming a diagnosis of IBS. IBS is believed to have a high prevalence in Bangladesh. Regrettably, Bangladesh is deficient in data pertaining to several facets of IBS. This deficiency has prompted us to investigate the quality of life and the knowledge/attitude components of IBS patients.

1.3 Objectives

1.3.1 General objectives

The general objectives of the study were to measure QoL using IBS-36 tool and evaluation of respondents' knowledge level, attitudes and concerns of IBS.

1.3.2 Specific objectives

- Evaluate knowledge levels of respondents regarding IBS and its various aspects.
- To investigate the attitudes and concerns of individuals diagnosed with or experiencing symptoms of IBS, focusing on how IBS impacts different aspects of their lives, including daily activities, relationships, and professional life.
- To assess the IBS severity in respondents, categorizing participants into groups representing high, moderate, or low severity based on their scores.
- To Investigate association between the knowledge levels and the severity of symptoms.
- Examine demographic and clinical factors that may influence the knowledge levels of individuals regarding IBS, including age, gender, educational background, and duration of symptoms.
- Assess the overall impact of IBS on the QoL of individuals, exploring how the condition affects various domains such as physical functioning, emotional well-being, and social interactions.

CHAPTER 2

LITERATURE REVIEW

Belogianni et al. developed and validated a questionnaire in 2023 to assess knowledge, attitudes, and behaviors related to the dietary management of IBS. Dietitians with different levels of expertise in managing Irritable Bowel Syndrome (IBS) exhibited significant differences in their overall rankings. The internal dependability of every component exceeded 0.7. The external reliability of all factors was more than 0.6, while the external reliability of all domains' total items was greater than 0.7. Belogianni et al. (2023) have developed a reliable questionnaire that may be used in both research and practical settings to assess knowledge, attitudes, and behaviors related to the dietary management of IBS.

As to Brown-Lieberson (2019), irritable bowel syndrome (IBS) is a functional gastrointestinal ailment (FGID) that encompasses a biopsychosocial interplay between the gut and the brain. Irritable bowel syndrome is characterized by the absence of a distinct biological marker and is often diagnosed by excluding other potential causes. This diagnostic approach makes therapy challenging and sometimes distressing for those affected by the condition. Given its high prevalence among functional gastrointestinal disorders (FGIDs), the majority of patients with irritable bowel syndrome (IBS) often seek first medical attention from their primary care physicians. Based on this study, there exists a disparity in understanding of IBS between family care providers and patients. This study also revealed that family medicine practitioners perceive themselves to have less agency over their disease, experience heightened unpleasant emotions related to it, and hold the belief that IBS is more enduring, when compared to individuals with IBS. In addition, IBS patients see their ailment as more mysterious and puzzling when compared to general medicine specialists. These results suggest that family care physicians need further training and education on irritable bowel syndrome (IBS) to effectively educate their patients about the condition (Brown-Lieberson, 2019).

Irritable bowel syndrome (IBS) is a functional gastrointestinal disorder marked by recurring stomach pain or discomfort and irregular bowel movements (Issa et al., 2022). Due of its global scope and significant influence on both public health and the economy, several experts are intrigued by this issue. Among the 542 participants in the study, 39.5% were male and 60.5% were female. The age group of 20-25 was represented by 56.6% of the participants. 56.5% of individuals are familiar with irritable bowel syndrome. Only 18.5% of individuals have been officially diagnosed with irritable bowel syndrome (IBS). Among the participants, 67.3% hold the belief that having IBS has a negative impact on the overall quality of life. This poll highlights the little knowledge of the Saudi population about irritable bowel syndrome. Enhancing the quality of life for those with IBS may reduce their anxiety levels, decrease their frequency of hospital visits, and encourage them to seek assistance promptly. To get these benefits, it is essential to educate the general populace about IBS, so dispelling any misconceptions and augmenting their understanding of the pathophysiology of this significant ailment (Issa et al., 2022).

IBS affects almost 20% of the worldwide population. The typical objectives of therapy for IBS are managing the etiology, including visceral hypersensitivity, and addressing the main symptoms. The objective was to assess the knowledge, attitudes, and practices of community chemists. The proportion of female chemists was 68%, with a sample size of 70 ($n = 70$). Out of the 60 participants, 58% had sufficient understanding about IBS. Out of a total of 96 participants, 93% were knowledgeable of the usual indicators. Out of the participants, 86% ($n=89$) said that the diagnosis of IBS was solely based on symptoms. Despite achieving a high knowledge score, their comprehension of medications and lifestyle modifications was lacking. Out of the 57 chemists, 55% exhibited a favorable perspective. Out of a total of 63 chemists surveyed, 61% expressed agreement on the need of taking IBS courses. 51 percent ($n=53$) of respondents said that IBS had become one of the prevailing health conditions they encountered. Furthermore, a majority of 51% ($n = 53$) agree that symptoms of IBS are persistent and do not subside. Out of a total of 65 chemists surveyed, 63% ($n = 65$) reported having good practice. Issa et al. (2022) found that most participants had exceptional knowledge, attitudes, and behaviors about IBS.

Primary health care (PHC) professionals manage the majority of patients with irritable bowel syndrome (IBS) (Al-Hazmi et al., 2012). Scant information exists on the comprehension, attitudes, and actions of Saudi Arabians towards this ailment. According to the survey, a significant proportion of physicians (83.1%) believed that IBS is a widespread health concern in Saudi Arabia, whereas 55.4% said that it is not being diagnosed adequately. The use of diagnostic tools for assisting in the diagnosis of IBS had a noteworthy correlation with the qualifications of the physicians (14.3% vs. 35.5%; $P<0.05$). Doctors with master's degrees exhibited a higher inclination (35.5%) towards using the "Rome or Manning criteria" compared to residents (14.3%). Furthermore, a significant proportion of physicians, namely 35.4%, consisting of 15 male and 8 female individuals, expressed uncertainty about the diagnosis of IBS. Summary: Al-Hazmi et al. (2012) found that primary healthcare (PHC) physicians had a positive attitude towards irritable bowel syndrome (IBS), but lacked knowledge about the condition and made mistakes in their management of it.

The impact of IBS on quality of life (QoL) has been undervalued (Mönnikes et al., 2011). People of all ages who have IBS often have more negative health consequences in comparison to the general population. Currently, there is a wide variety of disease-specific measures that are readily available and often used in clinical trials to evaluate improvements in the quality of life of patients with irritable bowel syndrome (IBS) after therapeutic interventions. Individuals who exhibit positive responses to medicine for irritable bowel syndrome (IBS) also have enhanced health-related quality of life (HRQoL), despite the limited amount of supporting data from existing clinical research. The HRQoL seems to be very consistent regardless of the IBS subtype, whether it is prevalent in diarrhea or constipation. Conversely, those symptoms report a greater decline in their Quality of Life (QoL) compared to those with milder symptoms. This suggests that the severity of gastrointestinal symptoms has a proportional impact on HRQoL. Additionally, studies indicate that both sexual and psychological factors significantly influence the HRQoL of individuals with IBS. To optimize long-term outcomes, a therapeutic method may be

tailored by taking into account these qualities with meticulous deliberation (Mönnikes et al., 2011).

This study aimed to determine if observed deficiencies could be attributed to neuroticism and to evaluate the impact of irritable bowel syndrome on quality of life using the SF-36, a highly standardized assessment tool (Whitehead et al., 1996). Undergraduate students diagnosed with irritable bowel syndrome who had sought medical attention (41 females, 42 males), students diagnosed with irritable bowel syndrome who had not sought medical attention (91 females, 74 males), and asymptomatic controls (52 females, 70 males) completed questionnaires regarding quality of life, neuroticism, and psychological distress. The quality of life of patients was more significantly affected compared to no consulters compared to controls. When assessing the SF-36 as an outcome measure in therapeutic trials, researchers need to consider the complicating effects of neuroticism (Whitehead et al., 1996).

.

CHAPTER 3

MATERIALS AND METHODS

3.1 Study design

This study adopts a cross-sectional study design to examine various aspects related to Irritable Bowel Syndrome (IBS), encompassing knowledge, attitudes, concerns, and IBS severity.

3.2 Study area and location

The study is conducted in “Mugda Medical College and Hospital”, situated at Hazi Kadam Ali Rd, Dhaka, Bangladesh. To ensure diversity in participant demographics the inclusion of both urban and rural settings contributes to a comprehensive understanding of IBS experiences across different environments.

3.3 Study population

The target population consists of adults aged 18 years and above who either have a confirmed diagnosis of IBS or are experiencing symptoms consistent with IBS.

3.4 Sample size determination

$$\begin{aligned}\text{Sample size} &= \frac{z^2 \hat{p}(1 - \hat{p})}{\epsilon^2} \\ &= \frac{(1.96)^2 \times 0.5 \times (1 - 0.5)}{0.05^2} \\ &= \frac{3.8416 \times 0.25}{0.0025} \\ &= 385\end{aligned}$$

The sample size was determined using a standard formula based on the (ϵ) margin of error:5%; ($\hat{p}$) population proportion: 50.00%; (z) z-score:1.96 (Das et al., 2016). A total of 200 participants were interviewed to achieve a representative sample.

3.5 Data collection methods

A structured questionnaire(Appendix 1) was designed to collect socio-demographic information of the respondents. For assessing the level of knowledge, attitude and concerns of the IBS patients, pre-constructed questionnaire(Appendix 2) by Lacy et al. (2007) was utilized. QoL was assessed by IBS-36(Appendix 3) constructed by Groll et al. (2002).

3.5.1 Inclusion criteria

- Adults aged 18 years and above.
- Individuals with a confirmed diagnosis of IBS or experiencing symptoms consistent with IBS.

3.5.2 Exclusion criteria

- Individuals below 18 years of age.

- Those with pre-existing gastrointestinal disorders other than IBS.

3.6 Scoring System

3.6.1 Level of knowledge

Table 1: Scoring system for knowledge level

Category	Score	Reference
Good knowledge	>16	Lacy et al. (2007)
Poor knowledge	≤16	

3.6.2 IBS severity

Table 2: Scoring system for IBS severity on scale of 216

Category	Score	Reference
Poor (High Severity)	>120	Groll et al. (2002)
Moderate (Moderate Severity)	90-120	
Good (Low Severity)	<90	

3.6.3 IBS-36 SF scoring

Table 3: Recoding Items for IBS-36 responses

Questions	Original Response	Recoded value	Reference
Q1, Q2, Q3, Q4, Q5, Q6, Q7, Q8, Q9, Q10, Q11, Q12, Q13, Q14, Q15, Q16, Q17, Q19, Q20, Q21, Q22, Q23, Q24, Q25, Q26, Q27, Q28, Q29, Q30, Q31, Q32, Q33, Q34, Q35, Q36.	1	0	Groll et al. (2002)
	2	20	
	3	40	
	4	60	
	5	80	
	6	100	
Q18	1	100	
	2	80	
	3	60	
	4	40	
	5	20	
	6	0	

Table 4: Averaging IBS-36 Items to Form Scales

Scale	Number of items	After recoding per Table 1, average the following items
Physical functioning	10	3 4 5 6 7 8 9 10 11 12
Role limitations due to physical health	4	13 14 15 16
Role limitations due to emotional problems	3	17 18 19
Energy/fatigue	4	23 27 29 31

Emotional well-being	5	24 25 26 28 30
Social functioning	2	20 32
Pain	2	21 22
General health	5	1 33 34 35 36

3.7 Statistical Analysis

Data are analyzed using SPSS(Statistical Package for Social Sciences) version 25 manufactured by IBM. Descriptive statistics, such as frequencies and percentages, mean, standard deviation, were utilized for demographic characteristics. Inferential statistics, including chi-square tests and Cronbach's alpha were utilized to explore associations between variables and assess statistical significance($p < 0.05$) calculated at a confidence level of 95%.

3.8 Ethical Considerations

Participants were provided with detailed information about the study's purpose, procedures, and potential risks. Informed consent is obtained from each participant before their inclusion in the study. The collected data are anonymized, ensuring that participants' identities remain confidential throughout the study.

CHAPTER 4

RESULTS AND DISCUSSION

4.1 Results

4.1.1 Socio-demographic characteristics

Table 5 represents a comprehensive overview of the socio-demographic characteristics of the respondents, shedding light on various factors such as age, gender, body mass index (BMI), living status, marital status, occupation, educational background, and monthly family income.

Table 5: Socio-demographic characteristics of the respondents

Characteristics	Statistics (n = 200)
Mean Age $\pm$ SD	38.27 $\pm$ 8.77 years
Mean Weight $\pm$ SD	69.72 $\pm$ 7.36 kg
Mean Height $\pm$ SD	162.03 $\pm$ 7.62 cm
Age groups	
20-29 yrs.	37(18.5%)
30-39 yrs.	68(34.0%)
40-49 yrs.	69(34.5%)
50-59 yrs.	26(13.0%)
Gender	
Male	75(37.5%)
Female	125(62.5%)
Body Mass Index	
Normal	42(21.0%)
Overweight	129(64.5%)
Obese	29(14.5%)
Living status	
Urban	141(70.5%)
Rural	59(29.5%)
Marital Status	
Married	154(77.0%)
Unmarried	46(23.0%)
Occupation	
Service/Student	57(28.5%)
Housewife/Businessman/Retired	129(64.5%)
Labor	14(7.0%)
Educational Background	
Illiterate	3(1.5%)
Primary	59(29.5%)
Secondary or above	138(69.0%)
Monthly Family Income	

Below 15,000	8(4.0%)
15,000 - 25,000	31(15.5%)
25,000 - 35,000	50(25.0%)
35,000 - 45,000	54(27.0%)
45,000 - 55,000	40 (20.0%)
55,000 - 65,000	16(8.0%)
Above 65,000	1(.5%)

The respondents have been categorized into four age groups. The majority fall within the 30-39 years and 40-49 years categories, accounting for 34.0% and 34.5% of the total respondents, respectively. The gender distribution reveals a slight female predominance, with 62.5% of the respondents being female. The BMI distribution indicates that a significant portion of the respondents is overweight, constituting 64.5%. Urban and rural living status is presented, with a substantial majority residing in urban areas (70.5%). The majority of respondents are married (77.0%). The occupation distribution reveals that a significant proportion comprises housewives, businessmen, and retirees (64.5%). A notable proportion of respondents have attained secondary education or above (69.0%), indicating a relatively high level of education within the sample. The distribution of monthly family income provides insights into the economic diversity of the respondents. Notably, the majority fall within the 25,000 - 45,000 income range.

4.1.2 Clinical characteristics

The clinical characteristics data representing table 6 provides valuable insights into the signs, symptoms, diagnostic tests, duration, medication usage, and dietary restrictions associated with Irritable Bowel Syndrome (IBS) among the surveyed population.

Table 6: Clinical characteristics of the respondents

Characteristics	Statistics (n = 200)
IBS signs and symptoms	
Bloating	14(7.0%)
Constipation	69(34.5%)
Abdominal Pain	23(11.5%)
Diarrhea	41(20.5%)
Muscle pain	5(2.5%)
Fluctuation	10(5.0%)
Heart burn	20(10.0%)
Regurgitation	18(9.0%)
Type of tests	
Blood test	40(20.0%)
Colonoscopy	96(48.0%)
Abdominal USG	38(19.0%)
Physical Examination	26(13.0%)
IBS Duration	
Less than a year	55(27.5%)

1-2 years	50(25.0%)
2-3 years	4(2.0%)
3-5 years	64(32.0%)
More than 5 years	27(13.5%)
IBS Medicine	
Yes	188(94.0%)
No	12(6.0%)
Diet Restriction	
Dairy	116(58.0%)
Leafy Vegetables	47(23.5%)
Meat	37(18.5%)

The prevalence of different IBS signs and symptoms within the respondent population is notable. Constipation appears to be the most common symptom, affecting 34.5% of respondents, followed by diarrhea (20.5%) and abdominal pain (11.5%). The diagnostic procedures employed to identify IBS are diverse, with colonoscopy being the most frequently utilized test (48.0%). Blood tests, abdominal ultrasonography (USG), and physical examinations are also commonly employed.

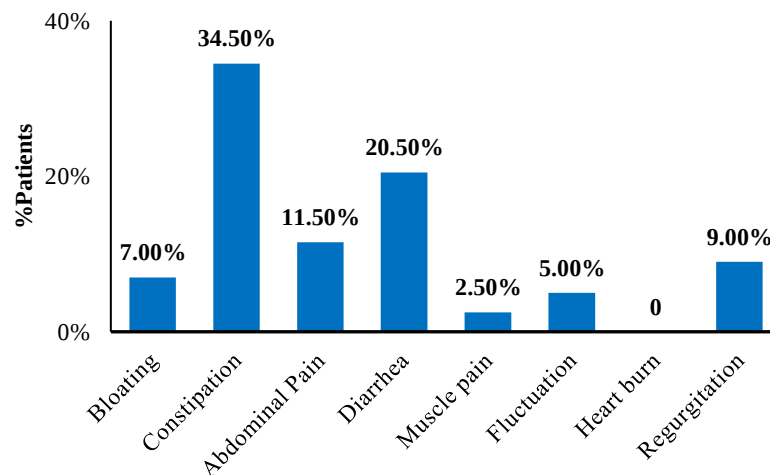


Figure 1: Patients' Symptoms of IBS

The duration of IBS symptoms varies within the respondent population. A substantial number report experiencing symptoms for 3-5 years (32.0%), emphasizing the chronic nature of IBS. The high prevalence of IBS medication usage (94.0%) among respondents suggests a significant reliance on pharmacological interventions for symptom management. Dietary restrictions are prevalent among respondents, with dairy being the most commonly restricted item (58.0%).

4.1.3 Knowledge on IBS

4.1.3.1 Epidemiology and Natural History of IBS

Table 7 provides insights into the respondents' knowledge and perceptions regarding the epidemiology and natural history of Irritable Bowel Syndrome (IBS).

Table 7: Respondents' Knowledge on Epidemiology and Natural History of IBS

Variables	Statistics n=200
Compared to hypertension	
As frequently	112(56.0%)
Less frequently	78(39.0%)
More frequently	5(2.5%)
Much less frequently	5(2.5%)
Compared to colon cancer	
As frequently	80(40.0%)
Less frequently	2(1.0%)
More frequently	106(53.0%)
Much less frequently	4(2.0%)
Much more frequently	8(4.0%)
IBS only in women	
True	51(25.5%)
False	145(72.5%)
Not sure	4(2.0%)
IBS shortens lifespan.	
True	95(47.5%)
False	53(26.5%)
Not sure	52(26.0%)
IBS never go away	
True	195(97.5)
False	1(0.5%)
Not sure	4(2.0%)
Risk of developing inflammatory bowel disease	
I've never heard of these conditions	64(32.0%)
No, no change in risk	74(37.0%)
Not sure	49(24.5%)
Yes, decreased risk	12(6.0%)
Yes, increased risk	1(.5%)
IBS changes your risk of developing cancer of the colon or rectum.	
I've never heard of these conditions	20(10.0%)
No, no change in risk	70(35.0%)
Not sure.	105(52.5%)
Yes, increased risk	5(2.5%)
Patients with IBS develop symptoms because they are	
Both Allergic and Intolerant to different foods	77(38.5%)
Intolerant to different foods	123(61.5%)

A majority of respondents (56.0%) believe that IBS occurs as frequently as high blood pressure (hypertension), indicating a perception of IBS as a prevalent condition. In comparison to colon cancer, a significant proportion (53.0%) believe that IBS occurs more frequently. A quarter of respondents (25.5%) believe that it occurs only in females. However, the majority (72.5%) correctly identify that IBS is not exclusive to women. Almost half of the respondents (47.5%) believe that IBS shortens a patient's lifespan. This perception highlights a potential misunderstanding about the nature and impact of IBS. A striking finding is that 97.5% of respondents believe that IBS never go away. This perception may contribute to increased anxiety and distress among individuals with IBS. A significant proportion of respondents (32.0%) have not heard of inflammatory bowel diseases (Ulcerative Colitis or Crohn's disease), emphasizing potential gaps in awareness. Regarding the association between IBS and inflammatory bowel diseases, a notable number of respondents (37.0%) believe there is no change in risk. A substantial proportion of respondents (52.5%) are unsure about whether IBS changes the risk of developing colon or rectal cancer. The data reveals that a majority of respondents (61.5%) believe that patients with IBS develop symptoms because they are intolerant to different foods.

4.1.3.2 Etiology of IBS

Table 8 reveals insights into the respondents' understanding of the etiological factors associated with IBS.

Table 8: Respondents' Knowledge on Etiology of IBS

Variables	Statistics n=200
Genetic factors(inherited)	
Strongly agree	11(5.5)
Agree	89(44.5)
Disagree	98(49.0)
Strongly disagree	2(1.0)
Environmental exposures	
Strongly agree	7(3.5)
Agree	86(43.0)
Disagree	105(52.5)
Strongly disagree	2(1.0)
Home environment	
Strongly agree	20(10.0)
Agree	101(50.5)
Disagree	78(39.0)
Strongly disagree	1(.5)
Dietary factors	
Agree	4(2.0)
Strongly agree	196(98.0)
Anxiety	
Disagree	4(2.0)

Agree	28(14.0)
Strongly agree	168(84.0)
Depression	
Agree	9(4.5)
Disagree	1(.5)
Strongly agree	190(95.0)
Change in daily routine	
Agree	10(5.0)
Strongly agree	189(94.5)
Strongly disagree	1(.5)
Sense things GI tract.	
False	8(4.0)
Not sure	2(1.0)
True	190(95.0)
Motility disorder	
False	8(4.0)
Not sure	12(6.0)
True	180(90.0)
Most common sign or symptom	
Abdominal pain	9(4.5)
Bloating	6(3.0)
Constipation	120(60.0)
Diarrhea	58(29.0)
Flatulence (gas)	2(1.0)
Heartburn	2(1.0)
Regurgitation	3(1.5)

A significant portion of respondents (44.5%) agrees that genetic factors play a role in IBS. A substantial number of respondents (43.0%) agrees that environmental exposures, such as molds, chemicals, and toxins, may contribute to IBS. This acknowledgment indicates an awareness of the potential impact of environmental factors on gastrointestinal health. The majority of respondents (50.5%) agree that the home environment, excluding environmental exposures, could be linked to IBS. An overwhelming majority (98.0%) agrees that dietary factors, specifically what individuals eat, contribute to IBS. Respondents overwhelmingly recognize the impact of anxiety (84.0%) and depression (95.0%) on IBS. A vast majority (94.5%) agrees that a change in daily routine can contribute to IBS. The majority of respondents (95.0%) believe that individuals sense things differently in their GI tract. A significant proportion (90.0%) agrees that individuals with IBS may have a motility disorder in their gastrointestinal (GI) tract, indicating an understanding of the role of muscle or nerve problems in IBS. Respondents identified constipation (60.0%) as the most common sign or symptom of IBS, followed by diarrhea (29.0%).

4.1.3.3 Symptoms, Diagnosis, and Treatment of IBS

Table 9 offer insights into the respondents' knowledge and perceptions regarding the symptoms, diagnosis, and treatment of IBS.

Table 9: Respondents' Knowledge on Symptoms and Diagnosis of IBS

Variables			Statistics n=200
Other signs and symptoms of IBS			
Abdominal pain			70(35.0%)
Bloating			43(21.5%)
Constipation			22(11.0%)
Fevers			2 (1.0%)
Flatulence (gas)			17(8.5%)
Heartburn			19(9.5%)
Muscle pain			6(3.0%)
Regurgitation			21(10.5%)
Symptoms never go away			
True			199(99.5%)
False			1(.5%)
Diagnosed by	True	False	Not Sure
Blood tests	200(100.0%)	--	--
Colonoscopy	194(97.0%)	1(.5%)	5(2.5%)
Abdominal ultrasound	198(99.0%)	1(.5%)	1(.5%)
CT scan	128(64.0%)	14(7.0%)	58(29.0%)
Physical Exam	159(79.5%)	11(5.5%)	30(15.0%)

Abdominal pain is recognized by a significant portion (35.0%) as a common symptom of IBS, followed by bloating (21.5%), constipation (11.0%), and other symptoms like flatulence, heartburn, and regurgitation. An overwhelming majority (99.5%) believes that IBS never go away once developed. Respondents demonstrate a high level of awareness regarding the diagnostic methods for IBS. Almost all respondents believe that blood tests, colonoscopy, abdominal ultrasound, and physical examinations can be used for the diagnosis of IBS. However, there is some uncertainty regarding the role of a CT scan, with 29.0% expressing uncertainty.

The majority of respondents believe that symptoms can be improved through dietary changes (99%), prescription medications (99.5%), and alternative medications such as herbs (33.5%). There is some uncertainty among respondents regarding the efficacy of over-the-counter medications, with 53.0% expressing uncertainty. A notable proportion of respondents recognize the potential benefits of counseling (55.5%) and support groups (54.5%) in managing IBS symptoms. A significant number of respondents (33.0%) believe that surgery can improve symptoms of IBS.

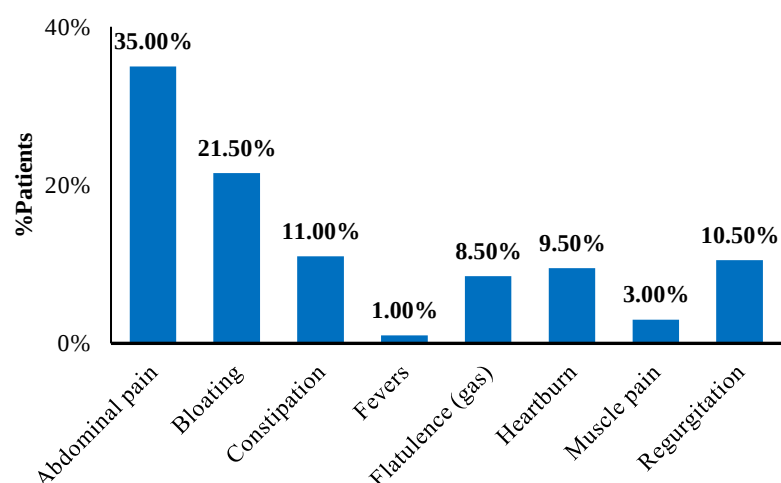


Figure 2: Knowledge on symptoms of IBS reported by respondents.

4.1.3.4 Treatment of IBS

Table 10 offers insights into respondents' perceptions regarding the various treatment modalities for IBS.

Table 10: Respondents' Knowledge on Treatment of IBS

Symptoms improved by	True	False	Not Sure
Dietary changes	198(99%)	2(1.0%)	--
Over the counter medications	50(25.0%)	44(22.0%)	106(53.0%)
Prescription medications	199(99.5%)	--	1(.5%)
Alternative medications (herbs, etc.)	67(33.5%)	44(22.0%)	89(44.5%)
Counselling	25(12.5%)	64(32.0%)	111(55.5%)
Support groups	22(11.0%)	69(34.5%)	109(54.5%)
Surgery	66(33.0%)	34(17.0%)	100(50.0%)

An overwhelming majority (99%) of respondents acknowledge that symptoms improved through dietary changes. There is some uncertainty among respondents regarding the effectiveness of over-the-counter medications (OTC), with 53.0% expressing uncertainty. A vast majority (99.5%) of respondents believe that prescription medications can improve symptoms of IBS.

Respondents express varied opinions on the effectiveness of alternative medications, such as herbs, with 33.5% agreeing and 44.5% expressing uncertainty. A notable proportion (55.5%) of respondents recognize the potential benefits of counseling in improving IBS symptoms. Support groups are recognized by 54.5% of respondents as a means to improve IBS symptoms. A significant number of respondents (33.0%) believe that surgery can improve symptoms of IBS.

4.1.4 Attitudes and Concerns

4.1.4.1 Medical System and IBS

Table 11 presents insights into the attitudes and concerns of respondents regarding the impact of IBS on their lives and their experiences with the medical system.

Table 11: Respondents' attitudes and concerns on Ability of medical system of IBS

Variables	Statistics n=200
IBS affects life	200(100.0%)
Areas of life are affected	
Daily activities	63(31.5%)
Home life	43(21.5%)
School	14(7.0%)
Social/Friends	1(.5%)
Work life	79(39.5%)
Affected the most	
Daily activities	72(36.0%)
Home life	35(17.5%)
School	14(7.0%)
Work life	79(39.5%)
Believes primary care provider concerned	
Yes	178(89.0%)
No	22(11.0%)
Believes primary care provider taken complaints	
No	16(8.0%)
Yes	184(92.0%)
Believes the best qualified personnel to treat IBS symptoms is	
Gastroenterologist	200(100.0%)
Referred to a gastroenterologist	
Yes	200(100.0%)
Gastroenterologist address concerns	
No	1(.5%)
Yes	199(99.5%)
Believes gastroenterologist taken complaints	
No	3(1.5%)
Yes	197(98.5%)
Someone to talk	
No	1(.5%)
Yes	199(99.5%)
Most likely to talk	
Family member	32(16.0%)
Friend.	3(1.5%)

Primary care provider	3(1.5%)
Spouse/significant other	162(81.0%)

All respondents (100.0%) acknowledge that IBS affects their lives. Respondents identify various areas of life affected by IBS, with work life (39.5%) and daily activities (31.5%) being the most commonly mentioned. Daily activities (36.0%) and work life (39.5%) are identified as the primary areas most affected by IBS. A significant majority (89.0%) of respondents believe that their primary care provider addressed concerns. An overwhelming majority (92.0%) believe that their primary care provider has taken complaints related to IBS seriously. All respondents (100.0%) believe that a gastroenterologist is the best-qualified personnel to treat IBS symptoms.

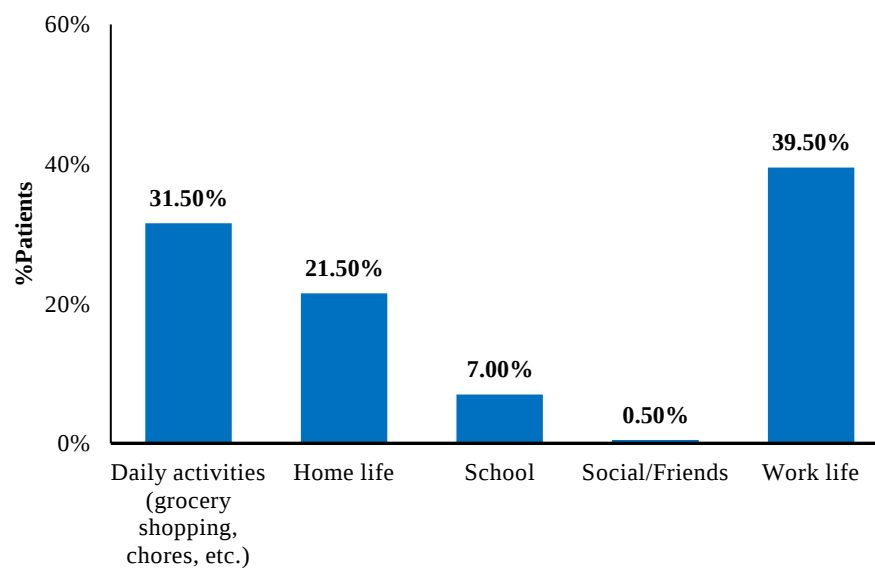


Figure 3: IBS impact on life activities.

All respondents (100.0%) have been referred to a gastroenterologist. The majority (99.5%) believe that gastroenterologists adequately address concerns about IBS, indicating a high level of satisfaction with the specialized care received. An overwhelming majority (98.5%) believe that gastroenterologists take complaints related to IBS seriously. Almost all respondents (99.5%) have someone to talk to about IBS symptoms, with spouses or significant others (81.0%) being the most common confidants. The majority prefer talking to their spouse or significant other (81.0%) about IBS symptoms, emphasizing the importance of emotional support within the close relationship.

4.1.4.2 Concerns and Fear of IBS

Table 12 sheds light on the concerns and fears of respondents related to Irritable Bowel Syndrome (IBS).

Table 12: Respondents' attitudes and concerns on Concerns and Fear of IBS

Concerns and Fear	Statistics(n=200)
Most significant fear or concern	
Never feel better	43(21.5%)

Shorten lifespan	8(4.0%)
Interfere with home life	1(.5%)
Interfere with professional life	6(3.0%)
Symptoms never go away	142(71.0%)

The most prevalent fear or concern among respondents is that their symptoms will never go away, with a substantial majority (71.0%) expressing this apprehension. A notable proportion (21.5%) expresses the fear that they will never feel better. A smaller percentage (4.0%) is concerned that IBS will shorten their lifespan. Few respondents' express concerns about their symptoms interfering with their home life (0.5%) or professional life (3.0%).

4.1.4.3 Functional Status and Relationships in IBS

Table 13 offers insights into how individuals with IBS perceive the impact of the condition on their functional status and relationships.

Table 13: Respondents' attitudes on Functional status and Relationships of IBS

Variables	Yes	No	Not Sure
IBS affects relationships with			
Spouse/significant other	1(.5%)	198(99.0%)	1(.5%)
Family members	5(2.5%)	195(97.5%)	--
Friends	5(2.5%)	195(97.5%)	--
Coworkers	1(.5%)	197(98.5%)	2(1.0%)
Individuals that treat differently			
Spouse/significant other	2(1.0%)	198(99.0%)	--
Family members	15(7.5%)	185(92.5%)	--
Friends	6(3.0%)	190(95.0%)	4(2.0%)
Coworkers	3(1.5%)	196(98.0%)	1(.5%)

The majority of respondents indicate that IBS has not significantly affected their relationships with their spouse/significant other (99.0%), family members (97.5%), friends (97.5%), and coworkers (98.5%). A small percentage of respondent's express feelings that individuals treat them differently because of IBS. Specifically, this perception is reported in relationships with family members (7.5%), friends (3.0%), and coworkers (1.5%). The impact on relationships, although not universal, indicates that some individuals may experience social challenges related to their IBS. The data highlights a low percentage (1.0%) of respondents who feel that their spouse or significant other treats them differently due to IBS.

4.1.5 IBS SCORE

Table 14 categorizes individuals with Irritable Bowel Syndrome (IBS) based on a severity score scale

Table 14: IBS categories based on IBS score scale of 216

Categories	Frequency(n=200)	Percentages
Poor (High Severity)	47	23.5%
Moderate (Moderate Severity)	40	20.0%
Good (Low Severity)	113	56.5%

The "Poor" category, representing 23.5% of respondents, indicates a higher severity level, suggesting a significant symptom burden. The "Moderate" category, with 20.0%, signifies a moderate severity level. The majority, 56.5%, falls into the "Good" category, indicating a lower severity level and potentially milder symptoms.

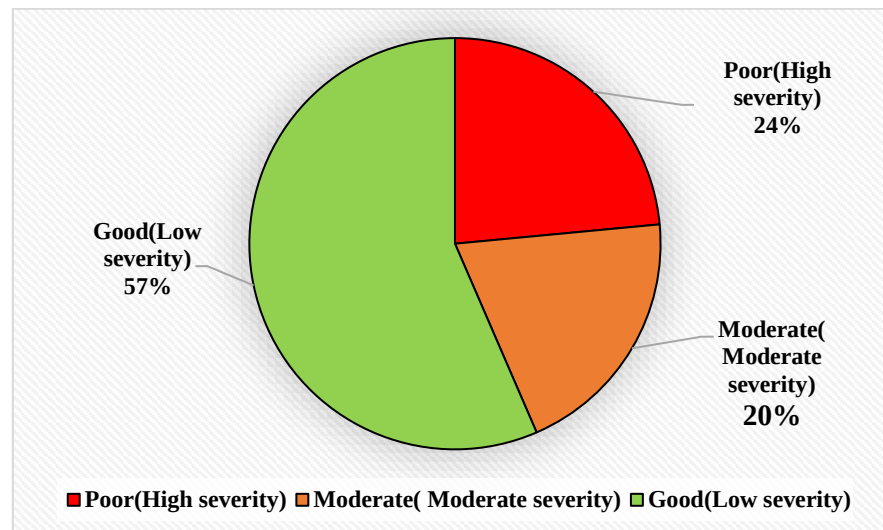


Figure 4: IBS Scores severity category

4.1.6 Knowledge level

Table 15 presents the knowledge level of respondents, categorizing them into "Good" and "Poor" based on their knowledge.

Table 15: Knowledge level of respondents

Categories	Frequency(n=200)	Percentages
Good	124	62.0
Poor	76	38.0

The majority of respondents (62.0%) are categorized as having good knowledge, while a notable portion (38.0%) falls into the poor knowledge category.

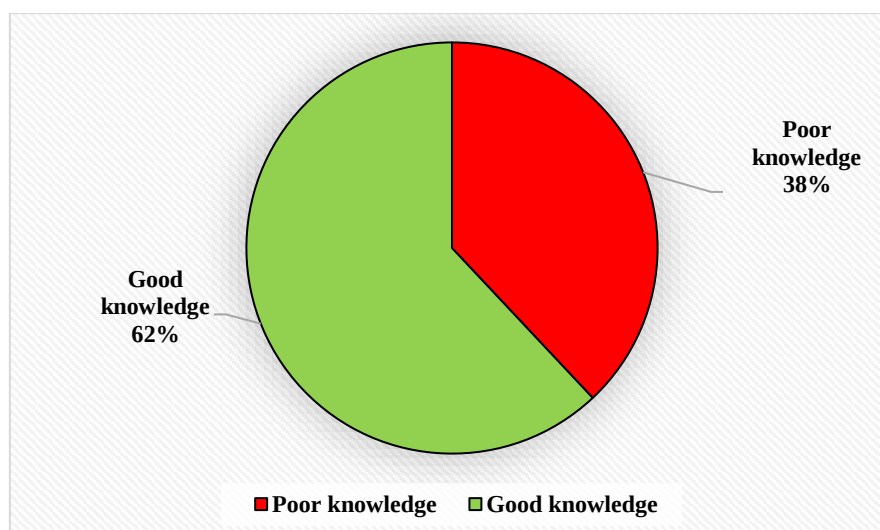


Figure 5: Knowledge level of respondents

4.1.7 IBS and knowledge level

Table 16 represents the association between knowledge levels of respondents and the severity of IBS.

Table 16: Association between Knowledge Levels and IBS Severity

Knowledge level	IBS Score			p value*
	High Severity	Moderate Severity	Low Severity	
Good	38(19.0%)	28(14.0%)	58(29.0%)	.001
Poor	9(4.5%)	12(6.0%)	55(27.5%)	

*chi-square tests; $P < 0.05$ statistically significant

Respondents with "Good" knowledge levels tend to have higher proportions of "Low Severity" IBS scores (29.0%) compared to those with "Poor" knowledge levels (27.5%). The p-value of .001 indicates a statistically significant association, suggesting that there is a relationship between the knowledge levels of respondents and the severity of their IBS symptoms.

4.1.8 IBS 36

Table 17 presents information on the reliability (Cronbach's alpha), central tendency (mean), and variability (standard deviation) of different scales within the IBS-36 questionnaire.

Table 17: Reliability, Central Tendency, and Variability of Scales in IBS-36

Scale	Items	Alpha	Mean	SD
Physical functioning	10	0.934	33.15	19.22
Role functioning/physical	4	0.718	38.38	16.70
Role functioning/emotional	3	0.522	42.40	23.07
Energy/fatigue	4	0.733	33.18	15.48

Emotional well-being	5	0.869	52.24	21.72
Social functioning	2	0.104*	16.85	12.05
Pain	2	0.284*	52.20	24.44
General health	5	0.702	23.26	13.05
Health change	1	--	19.70	29.16

Alpha should be ≥ 0.7 for 10 items | If less than 10 items, Alpha should be ≥ 0.5

The Physical Functioning scale demonstrates excellent internal consistency (Cronbach's alpha 0.934), with a high mean score 33.15 indicating a moderate level of variability 19.22 in respondents' perceptions of physical functioning. While the internal consistency 0.718 is acceptable, the Role Functioning/Physical scale has a moderate mean 38.38 and variability 16.70, suggesting reasonable reliability in measuring role functioning related to physical health. The Role Functioning/Emotional scale shows 0.522 internal consistency, with a relatively high mean 42.40 and variability 23.07, indicating potential challenges in reliability for measuring emotional aspects. The Energy/Fatigue scale has acceptable internal consistency 0.733, and the mean 33.18 and variability 15.48 suggest reasonable reliability in measuring energy and fatigue. The Emotional Well-being scale exhibits excellent internal consistency 0.869, with a high mean 52.24 indicating positive emotional health and a moderate level of variability 21.72. The Social Functioning scale has poor internal consistency 0.104*, with a low mean 16.85 and variability 12.05, suggesting caution in interpreting results related to social functioning. The Pain scale exhibits poor internal consistency 0.284*, with a high mean 52.20 and variability 24.44, indicating challenges in reliability for measuring pain. The General Health scale shows acceptable internal consistency 0.702, with a moderate mean 23.26 and variability 13.05, suggesting reasonable reliability in measuring general health. The Health Change scale consists of a single item, and Cronbach's alpha is not applicable. The high standard deviation suggests significant variability 29.16 in respondents' perceptions of health change.

4.1.9 Relationship of IBS Scores with Different Variables

Table 18 illustrates the relationship among the severity and various demographic and clinical variables.

Table 18: Relationship of IBS severity with different variables

Categories	Variables	IBS Scores			p value*
		High Severity	Moderate Severity	Low Severity	
Gender	Male	10.5%	6.5%	20.5%	.465
	Female	13.0%	13.5%	36.0%	
Age	20-29	--	3.5%	15.0%	.000
	30-39	1.0%	7.0%	26.0%	
	40-49	11.5%	8.0%	15.0%	
	50-59	11.0%	1.5%	0.5%	
Location	Urban	17.0%	14.5%	39.0%	.873

	Rural	6.5%	5.5%	17.5%	
Marital status	Married	22.0%	16.0%	39.0%	.003
	Unmarried	1.5%	4.0%	17.5%	
Occupation	Service/Student	2.5%	6.5%	19.5%	.017
	Housewife/Businessman/Retired	20.0%	11.5%	33.0%	
	Labor	1.0%	2.0%	4.0%	
IBS signs and symptoms	Bloating	--	0.5%	6.5%	.000
	Constipation	14.5%	6.0%	14.0%	
	Abdominal Pain	--	3.5%	8.0%	
	Diarrhea	8.5%	4.0%	8.0%	
	Muscle pain	--	--	2.5%	
	Fluctuation	0.5%	0.5%	4.0%	
	Heart burn	--	3.0%	7.0%	
	Regurgitation	--	2.5%	6.5%	
Type of tests	Blood test	--	6.0%	14.0%	.000
	Colonoscopy	23.0%	9.0%	16.0%	
	Abdominal USG	0.5%	3.5%	15.0%	
	Physical Examination	--	1.5%	11.5%	
IBS Medicine	Take medicine	23.5%	20.0%	50.5%	.007
	Don't take	--	--	6.0%	
Diet Restriction	Dairy	10.5%	13.5%	34.0%	.223
	Leafy Vegetables	8.0%	3.5%	12.0%	
	Meat	5.0%	3.0%	10.5%	
IBS Duration	Less than a year	--	2.0%	25.5%	.000
	1-2 years	--	5.0%	20.0%	
	2-3 years	--	--	2.0%	
	3-5 years	10.5%	12.5%	9.0%	
	More than 5 years	13.0%	0.5%	--	
BMI	Normal	2.0%	5.0%	14.0%	.146
	Overweight	16.5%	12.5%	35.5%	
	Obese	5.0%	2.5%	7.0%	

*chi-square tests; P<0.05 statistically significant

There is no significant association among IBS severity and gender ($p = 0.465$). Both genders show a similar distribution across high, moderate, and low severity categories. There is a significant association between age and IBS severity ($p < 0.001$). Younger individuals (20-29 years) are more likely to have low severity, while the 30-39 age group has a higher proportion with moderate severity. There is no significant association exists between location and IBS severity ($p = 0.873$). Urban areas have a higher percentage in the low severity category compared to rural areas. Marital status is significantly associated with IBS severity ($p = 0.003$). Married individuals are more likely to experience high severity compared to unmarried individuals. There is a significant association between occupation and IBS severity ($p = 0.017$). Housewives, businessmen, and retired individuals show a

higher percentage in the low severity category compared to service or student occupations. There are significant associations between bloating, constipation, abdominal pain, diarrhea, fluctuation, heartburn, regurgitation, and IBS severity ($p < 0.001$). These symptoms show varying degrees of association with severity levels. All types of diagnostic tests (blood test, colonoscopy, abdominal USG, and physical examination) are significantly associated with IBS severity (all p -values < 0.001). Notably, individuals undergoing colonoscopy have a higher percentage in the high severity category. There is a significant association between taking medicine for IBS and severity ($p = 0.007$). Individuals taking medicine are more likely to fall into the low severity category. Diet restriction, including dairy, leafy vegetables, and meat, is not significantly associated with IBS severity ($p > 0.05$). IBS duration is significantly associated with severity ($p < 0.001$). Those with IBS for less than a year are more likely to be in the low severity category, while those with longer durations show more variability. BMI is not significantly associated with IBS severity ($p = 0.146$). There is no clear pattern of association between BMI categories and severity levels.

4.2 Discussion

Irritable bowel syndrome places a substantial financial strain on the healthcare system in the United States. According to Sandler et al. (2002), conservative estimates suggest that the yearly healthcare expenses in the United States for the assessment and management of irritable bowel syndrome (IBS) surpass 20 billion dollars. This includes a minimum of 2 billion dollars per year in direct expenditures and an additional 20 billion dollars in indirect costs. According to Levy et al. (2001), the average healthcare expenses for individuals with IBS are 50% more compared to people of the same age and gender who do not have IBS. Irritable bowel syndrome significantly impacts the quality of life for sufferers (Luscombe, 2000). The reduced quality of life experienced by patients may be attributed to several variables, such as the prolonged duration of symptoms and the existence of pain. Additional significant elements that have a negative impact on the quality of life among individuals with irritable bowel syndrome (IBS) include particular anxieties or apprehensions around the diagnosis, insufficient understanding of the diagnosis and treatment options, misunderstandings pertaining to the disorder's natural progression, and perplexity surrounding analogous conditions. The present research used a validated questionnaire to evaluate the level of knowledge among individuals with irritable bowel syndrome (IBS) on their disease, as well as to initiate the identification of anxieties and concerns associated with their symptoms. Our study validates prior research that establishes the significant impact of IBS symptoms on patients' everyday functioning. Luscombe (2000) has provided a comprehensive summary of the impact of irritable bowel syndrome (IBS) on several aspects of quality of life, including general health, energy, sexual function, sleep, social functioning, and physiological discomfort.

The scope of these results is constrained by the exclusive inclusion of women in the US research, while the UK study included subscribers of 'IBS Bulletin'. The research included individuals of both genders who had been diagnosed with irritable bowel syndrome (IBS) throughout a wide geographic region. This approach was used to mitigate the potential effect of selection bias that may arise from focusing either on subscribers to an IBS

newsletter or exclusively on women. The patients in our study also indicated a notably lower level of influence on their marital life (1.0%) compared to two other investigations conducted in the United Kingdom. These studies claimed that 45-52% of patients had sexual issues. Nevertheless, it is possible that these figures may have exaggerated the gravity of this issue, since one research focused on individuals who subscribed to an IBS newsletter (Silk, 2001), while the other study examined patients with dyspareunia who had clinical symptoms of IBS and were assessed at a gynecology clinic (Prior et al., 1989).

In addition to the impact on quality of life, patient well-being is influenced by several variables, such as particular anxieties or apprehensions around the diagnosis of irritable bowel syndrome (IBS), as well as insufficient understanding of the diagnosis, treatment, and progression of their condition. Indeed, our research has shown that individuals diagnosed with irritable bowel syndrome (IBS) have notable misunderstandings pertaining to their condition, particularly in relation to apprehensions around the potential development of more severe ailments like cancer or IBD. Within the scope of our investigation, a mere 2.5% of patients expressed that IBS would either directly precipitate cancer or heighten their susceptibility to getting colorectal cancer. This data substantiates and expands upon the findings of two distinct European investigations. The study conducted by Caballero et al. (1999) revealed that 16.5% of individuals diagnosed with irritable bowel syndrome (IBS) in Spain expressed concerns about cancer as a potential etiological factor for their symptoms. Similarly, van Dulmen et al. (1994) documented that 10% of their patients held the belief that their symptoms were attributable to cancer. The apprehension about cancer significantly influences the likelihood of an individual with IBS seeking medical advice for their symptoms (1992).

Providing people with information on IBS and addressing their unfounded fears about cancer might potentially reduce the number of individuals seeking medical advice. A research conducted by Saito et al. (2004) revealed that an educational program for patients with irritable bowel syndrome (IBS) resulted in a decrease in the frequency of office visits after 6 months of observation. However, it is important to note that this reduction did not achieve statistical significance. Studies have shown that patient-centered educational programs targeting asthma, cardiovascular disease, and diabetes may enhance lifestyle habits and decrease healthcare consumption (Morisky et al., 1980; Vinicor et al., 1987). According to a recent research conducted in the United Kingdom, the provision of a self-help manual on irritable bowel syndrome (IBS) to patients resulted in a 60% drop in primary care appointments and a 40% reduction in per patient medical expenses (Robinson et al., 2006).

Cumulatively, these research underscore the need of augmenting the duration and exertion dedicated to patient education, as it has the potential to enhance patients' holistic health and welfare, potentially resulting in diminished healthcare expenditures. The results of our study indicate that patients often have a limited comprehension about the underlying causes of their condition. According to Camilleri et al. (2002) and Lacy et al. (2006), the prevailing hypothesis posits that the onset of irritable bowel syndrome (IBS) and the subsequent symptomatology can be attributed to a combination of various factors. These factors

encompass a genetic predisposition, a preceding viral or bacterial infection, previous instances of abuse, or psychological distress.

In contrast to the prevailing perspectives on the genesis of irritable bowel syndrome (IBS), the findings of this research indicate that a majority of patients attribute their symptoms to anxiety (84.0%), dietary variables (98.0%), or depression (95.0%). Curiously, although a significant proportion of patients held the belief that anxiety and sadness were the cause of IBS, just a minority suggested seeking counseling to ease symptoms. The observed disparity might perhaps be attributed to patients' dependence on pharmaceutical interventions, limited awareness of the advantages of counseling, or challenges in accessing suitable mental health practitioners.

The findings on the association between anxiety and depression and irritable bowel syndrome (IBS) may first seem unexpected. However, it is important to note that these beliefs are not exclusive to patients, but are also prevalent among a significant proportion of healthcare professionals (Lacy et al., 2006).

These statistics underscore the need of educating both healthcare practitioners and patients about the etiology of this prevalent condition, in order to commence appropriate therapy. Ultimately, a significant number of patients continue to be uninformed on the accurate diagnosis of IBS. According to Cash et al. (2002), a significant proportion of patients expressed that colonoscopy is a suitable diagnostic procedure for identifying irritable bowel syndrome (IBS), despite evidence in the medical literature suggesting that colonoscopy is unlikely to alter the diagnosis or reveal a severe organic disorder in individuals who meet the Rome II criteria and do not exhibit any warning signs.

The perspective of the patient is significant as it might explain the reluctance of many individuals to have a colonoscopy or other invasive examinations, even if they are young and do not exhibit any indications of potential issues in their medical history or physical examination. Regrettably, doing regular invasive testing fails to provide reassurance to the patient (Spiegel et al., 2005), incurs high costs, and heightens the likelihood of problems. In a prior investigation conducted by Lembo et al. (1999) and Cain et al. (2006), it was determined that abdominal pain constituted the most distressing symptom of irritable bowel syndrome (IBS) for 29% of patients. Similarly, Cain et al. (2006) identified abdominal pain as the most disruptive symptom of IBS.

While not intended to reproduce these studies, 34.5% of our patients indicated that constipation was the predominant symptom of IBS. These findings underscore the significance of constipation as a major concern for many patients, often prompting them to seek medical attention. There is a clear need for more advanced therapies that effectively address visceral pain. In this study, all participants were referred to a gastroenterologist for symptom evaluation. Regrettably, this questionnaire did not capture potentially pertinent information such as the frequency of specialty visits, the duration of consultations, the intervals between specialty visits and questionnaire responses, and the availability of gastroenterologists.

CHAPTER 5

CONSLUSION

5. Conclusion

The majority of respondents belong to the 30-49 age groups, with a slight female predominance. A significant proportion resides in urban areas, is married, and has attained secondary education or above. Respondents with good knowledge levels tend to have lower severity of IBS symptoms($p < 0.05$). Only the social functioning and pain has poor internal consistency(< 0.30), indicating challenges in management of IBS. Associations between IBS severity and variables such as age, marital status, occupation, specific symptoms, diagnostic tests, medication usage, and IBS duration are statistically significant($p < 0.05$).

REFERENCES

- Al-Hazmi, A. H. (2012). Knowledge, attitudes, and practices of primary care physicians about irritable bowel syndrome in Northern Saudi Arabia. *Saudi Journal of Gastroenterology: Official Journal of the Saudi Gastroenterology Association*, 18(3), 173.
- Belogianni, K., Seed, P. T., & Lomer, M. C. E. (2023). Development and validation of a knowledge, attitudes and practices questionnaire in the dietary management of irritable bowel syndrome. *European Journal of Clinical Nutrition*, 77(9), 911-918.
- Bombardier, C., Melfi, C. A., Paul, J., Green, R., Hawker, G., Wright, J., & Coyte, P. (1995). Comparison of a generic and a disease-specific measure of pain and physical function after knee replacement surgery. *Medical care*, AS131-AS144.
- Brown-Lieberson, S. (2019). Attitudes and Knowledge about Irritable Bowel Syndrome (IBS) among Family Medicine Physicians and IBS Patients.
- Caballero-Plasencia, A. M., Sofos-Kontoyannis, S., Valenzuela-Barranco, M., Martin-Ruiz, J. L., Casado-Caballero, F. J., & López-Maas, J. G. (1999). Irritable bowel syndrome in patients with dyspepsia: a community-based study in southern Europe. *European journal of gastroenterology & hepatology*, 11(5), 517-522.
- Cain, K. C., Headstrom, P., Jarrett, M. E., Motzer, S. A., Park, H., Burr, R. L., ... & Heitkemper, M. M. (2006). Abdominal pain impacts quality of life in women with irritable bowel syndrome. *Official journal of the American College of Gastroenterology| ACG*, 101(1), 124-132.
- Camilleri, M., Heading, R. C., & Thompson, W. G. (2002). Consensus report: clinical perspectives, mechanisms, diagnosis and management of irritable bowel syndrome. *Alimentary pharmacology & therapeutics*, 16(8), 1407-1430.
- Cash, B. D., Schoenfeld, P., & Chey, W. D. (2002). The utility of diagnostic tests in irritable bowel syndrome patients: a systematic review. *Official journal of the American College of Gastroenterology| ACG*, 97(11), 2812-2819.
- Das, S., Mitra, K., & Mandal, M. (2016). Sample size calculation: Basic principles. *Indian Journal of Anaesthesia*, 60(9), 652-656.
- Groll, D., Vanner, S. J., Depew, W. T., DaCosta, L. R., Simon, J. B., Groll, A., ... & Paterson, W. G. (2002). The IBS-36: a new quality of life measure for irritable bowel syndrome. *The American journal of gastroenterology*, 97(4), 962-971.
- Hummaida, T. E. D. A., Daf-Elseed, A. M. D., Ali, S. A. A., Ebrahim, F. A. Y., Hassan, D. J. M. A., & Abd El-Raheem, G. O. H. (2023). Knowledge, Attitude and Practice of Community Pharmacists toward Irritable Bowel Syndrome, Sudan. *Scientific African*, e02023.
- Issa, L. F., Sonbul, Y., Alzahrani, S., Bajunaid, R., Alqefari, O., Alahmadi, Y., ... & Alzahrani, K. T. (2022). Knowledge, attitude and practice towards irritable bowel syndrome among young adults in Jeddah, Saudi Arabia.

- Kettell, J. O. N. A. T. H. A. N., Jones, R. O. G. E. R., & Lydeard, S. (1992). Reasons for consultation in irritable bowel syndrome: symptoms and patient characteristics. *British Journal of General Practice*, 42(364), 459-461.
- Kettell, J. O. N. A. T. H. A. N., Jones, R. O. G. E. R., & Lydeard, S. (1992). Reasons for consultation in irritable bowel syndrome: symptoms and patient characteristics. *British Journal of General Practice*, 42(364), 459-461.
- Lacy, B. E., & Weiser, K. (2006). Gastrointestinal motility disorders: an update. *Digestive diseases*, 24(3-4), 228-242.
- Lacy, B. E., Rosemore, J., Robertson, D., Corbin, D. A., Grau, M., & Crowell, M. D. (2006). Physicians' attitudes and practices in the evaluation and treatment of irritable bowel syndrome. *Scandinavian journal of gastroenterology*, 41(8), 892-902.
- Lacy, B. E., Weiser, K., Noddin, L., Robertson, D. J., Crowell, M. D., Parratt-Engstrom, C., & Grau, M. V. (2007). Irritable bowel syndrome: patients' attitudes, concerns and level of knowledge. *Alimentary pharmacology & therapeutics*, 25(11), 1329-1341.
- Lembo, T., Naliboff, B., Munakata, J., Fullerton, S., Saba, L., Tung, S., ... & Mayer, E. A. (1999). Symptoms and visceral perception in patients with pain-predominant irritable bowel syndrome. *Official journal of the American College of Gastroenterology| ACG*, 94(5), 1320-1326.
- Levy, R. L., Von Korff, M., Whitehead, W. E., Stang, P., Saunders, K., Jhingran, P., & Feld, A. D. (2001). Costs of care for irritable bowel syndrome patients in a health maintenance organization. *The American journal of gastroenterology*, 96(11), 3122-3129.
- Levy, R. L., Von Korff, M., Whitehead, W. E., Stang, P., Saunders, K., Jhingran, P., ... & Feld, A. D. (2001). Costs of care for irritable bowel syndrome patients in a health maintenance organization. *Official journal of the American College of Gastroenterology| ACG*, 96(11), 3122-3129.
- Luscombe, F. A. (2000). Health-related quality of life and associated psychosocial factors in irritable bowel syndrome: a review. *Quality of Life Research*, 9, 161-176.
- Masud, M. A., Hasan, M., & Khan, A. A. (2001). Irritable bowel syndrome in a rural community in Bangladesh: prevalence, symptoms pattern, and health care seeking behavior. *The American journal of gastroenterology*, 96(5), 1547-1552.
- Mönnikes, H. (2011). Quality of life in patients with irritable bowel syndrome. *Journal of Clinical Gastroenterology*, 45, S98-S101.
- Morisky, D. E., Levine, D. M., Green, L. W., Russell, R. P., Smith, C., Benson, P., & Finlay, J. (1980). The relative impact of health education for low-and high-risk patients with hypertension. *Preventive medicine*, 9(4), 550-558.
- Paterson, W. G., Thompson, W. G., Vanner, S. J., Faloona, T. R., Rosser, W. W., Birtwhistle, R. W., ... & Touzel, T. A. (1999). Recommendations for the management of irritable bowel syndrome in family practice. *Cmaj*, 161(2), 154-160.

- Perveen, I., Hasan, M., Masud, M. A., Bhuiyan, M. M., & Rahman, M. M. (2009). Irritable bowel syndrome in a Bangladeshi urban community: prevalence and health care seeking pattern. *Saudi journal of gastroenterology: official journal of the Saudi Gastroenterology Association*, 15(4), 239.
- Perveen, I., Rahman, M. M., Saha, M., Rahman, M. M., & Hasan, M. Q. (2014). Prevalence of irritable bowel syndrome and functional dyspepsia, overlapping symptoms, and associated factors in a general population of Bangladesh. *Indian Journal of Gastroenterology*, 33, 265-273.
- Prior, A., Wilson, K., Whorwell, P. J., & Faragher, E. B. (1989). Irritable bowel syndrome in the gynecological clinic: survey of 798 new referrals. *Digestive diseases and sciences*, 34, 1820-1824.
- Rahman, M. M., Mahadeva, S., & Ghoshal, U. C. (2017). Epidemiological and clinical perspectives on irritable bowel syndrome in India, Bangladesh and Malaysia: a review. *World journal of gastroenterology*, 23(37), 6788.
- Robinson, A., Lee, V., Kennedy, A., Middleton, L., Rogers, A., Thompson, D. G., & Reeves, D. (2006). A randomised controlled trial of self-help interventions in patients with a primary care diagnosis of irritable bowel syndrome. *Gut*, 55(5), 643-648.
- Saito, Y. A., Prather, C. M., Van Dyke, C. T., Fett, S., Zinsmeister, A. R., & Locke III, G. R. (2004). Effects of multidisciplinary education on outcomes in patients with irritable bowel syndrome. *Clinical Gastroenterology and Hepatology*, 2(7), 576-584.
- Sandler, R. S., Everhart, J. E., Donowitz, M., Adams, E., Cronin, K., Goodman, C., & Rubin, R. (2002). The burden of selected digestive diseases in the United States. *Gastroenterology*, 122(5), 1500-1511.
- Sandler, R. S., Everhart, J. E., Donowitz, M., Adams, E., Cronin, K., Goodman, C., ... & Rubin, R. (2002). The burden of selected digestive diseases in the United States. *Gastroenterology*, 122(5), 1500-1511.
- Silk, D. B. (2001). Impact of irritable bowel syndrome on personal relationships and working practices. *European journal of gastroenterology & hepatology*, 13(11), 1327-1332.
- Sperber, A. D., Dumitrascu, D., Fukudo, S., Gerson, C., Ghoshal, U. C., Gwee, K. A., & Whitehead, W. (2016). The global prevalence of IBS in adults remains elusive due to the heterogeneity of studies: a Rome Foundation working team literature review. *Gut*, gutjnl-2015.
- Spiegel, B. M., Gralnek, I. M., Bolus, R., Chang, L., Dulai, G. S., Naliboff, B., & Mayer, E. A. (2005). Is a negative colonoscopy associated with reassurance or improved health-related quality of life in irritable bowel syndrome?. *Gastrointestinal endoscopy*, 62(6), 892-899.
- Talley, N. J., Zinsmeister, A. R., Van Dyke, C. A. R. O. L., & Melton III, L. J. (1991). Epidemiology of colonic symptoms and the irritable bowel syndrome. *Gastroenterology*, 101(4), 927-934.

- Thompson, W. G. (1984). Gastrointestinal symptoms in the irritable bowel compared with peptic ulcer and inflammatory bowel disease. *Gut*, 25(10), 1089.
- Thompson, W. G., Longstreth, G. F., Drossman, D. A., Heaton, K. W., Irvine, E. J., & Müller-Lissner, S. A. (1999). Functional bowel disorders and functional abdominal pain. *Gut*, 45(suppl 2), II43-II47.
- Van Dulmen, A. M., Fennis, J. F. M., Mookink, H. G. A., Van der Velden, H. G. M., & Bleijenberg, G. (1994). Doctors' perception of patients' cognitions and complaints in irritable bowel syndrome at an out-patient clinic. *Journal of Psychosomatic Research*, 38(6), 581-590.
- Vinitor, F., Cohen, S. J., Mazzuca, S. A., Moorman, N., Wheeler, M., Kuebler, T., ... & Clark Jr, C. M. (1987). DIABEDS: a randomized trial of the effects of physician and/or patient education on diabetes patient outcomes. *Journal of chronic diseases*, 40(4), 345-356.
- Whitehead, W. E., Burnett, C. K., Cook, E. W., & Taub, E. (1996). Impact of irritable bowel syndrome on quality of life. *Digestive diseases and sciences*, 41, 2248-2253.
- Wright, J. G., Coyte, P., Hawker, G., Bombardier, C., Cooke, D., Heck, D., & Freund, D. (1995). Variation in orthopedic surgeons' perceptions of the indications for and outcomes of knee replacement. *CMAJ: Canadian Medical Association Journal*, 152(5), 687.

APPENDICES

Appendix 1: Questionnaires

Socio-Demographic Information

Case Study No.

Date:

Name:

Age:

Gender:

Health Status:

Marital Status:

Address:

Phone Number:

Occupation:

Educational Background:

Monthly Family Income:

Living Status:

Clinical Information:

1. What are the signs and symptoms of your IBS?

Ans:

2. How long have you been suffering from IBS?

Ans:

3. Have you done any tests for IBS? (If yes, then what type)

Ans:

4. How long have you been taking medicines for IBS?

Ans:

5. Do you have any diet restriction? (If yes, then what type)

Ans:

Appendix 2: Irritable Bowel Syndrome: Patient's attitude, concerns and level of Knowledge

Questionnaire

1. Compared to high blood pressure (hypertension), IBS occurs:

- a. Much less frequently
- b. Less frequently
- c. As frequently
- d. More frequently
- e. Much more frequently

2. Compared to colon cancer, IBS occurs:

- a. Much less frequently
- b. Less frequently
- c. As frequently
- d. More frequently
- e. Much more frequently

3. IBS is a disorder that occurs only in women.

True False Not sure

4. IBS is a disorder that shortens a patient's lifespan.

True False Not sure

5. Once you develop symptoms of IBS, they will never go away

True False Not sure

6. IBS changes your risk of developing inflammatory bowel disease. (either Ulcerative Colitis or Crohn's disease)

A. Yes, increased risk

B. Yes, decreased risk

C. No, no change in risk

D. Not sure

E. I've never heard of these conditions

7. IBS changes your risk of developing cancer of the colon or rectum.

A. Yes, increased risk

B. Yes, decreased risk

C. No, no change in risk

D. Not sure.

E. I've never heard of these conditions

8. Patients with IBS develop symptoms because they are:

A. Allergic to different foods

B. Intolerant to different foods

C. Both A and B

D. No relationship between IBS symptoms and food

E. Not sure

The next section asks questions about why IBS develops in some people. For each question below, please circle only one answer.

In your opinion, IBS is caused by:

9. Genetic factors(inherited)

Strongly agree Agree Disagree Strongly disagree

10. Environmental exposures(ie: Molds, chemicals, toxins, cleaning agents, etc.)

Strongly agree Agree Disagree Strongly disagree

11. Home environment/ upbringing (ie: where you lived, how you were raised, who you lived with – this does not include environmental exposures)

Strongly agree Agree Disagree Strongly disagree

12. Dietary factors (due to what you eat)

Strongly agree Agree Disagree Strongly disagree

13. Anxiety

Strongly agree Agree Disagree Strongly disagree

14. Depression

Strongly agree Agree Disagree Strongly disagree

15. Change in daily routine

Strongly agree Agree Disagree Strongly disagree

16. Other (Please List)

17. One reason why patients with IBS develop symptoms is that IBS patients sense things differently in their gastrointestinal (GI) tract.

True

False

Not sure

18. Patients with IBS develop symptoms because they have a motility disorder (a muscle or nerve problem) of their gastrointestinal (GI) tract.

True False Not sure

As best you can, please answer the following questions that focus on the diagnosis of IBS in the general population.

19. For patients with IBS, what is the most common sign or symptom? (Please circle only one)

- | | |
|------------------------------|-------------------|
| A. Anaemia (low blood count) | B. Diarrhoea |
| C. Flatulence (gas) | D. Bloating |
| E. Joint pain | F. Heartburn |
| G. Constipation | H. Rashes |
| I. Regurgitation | J. Fevers |
| K. Arthritis | L. Abdominal pain |
| M. Muscle pain | |

20. For patients with IBS, what are other signs and symptoms of IBS? (Please circle all that apply)

- | | |
|-----------------------------|-------------------|
| A. Anemia (low blood count) | B. Diarrhoea |
| C. Flatulence (gas) | E. Bloating |
| F. Joint pain | G. Heartburn |
| H. Constipation | I. Rashes |
| J. Fevers | K. Regurgitation |
| L. Arthritis | M. Abdominal pain |
| N. Muscle pain | |

21. Symptoms of IBS will never go away, once they develop.

A. True B. False C. Not sure

In your opinion, IBS can be diagnosed in the general population by:

- | | | | |
|---------------------------|------|-------|----------|
| 22. Blood tests: | True | False | Not Sure |
| 23. Colonoscopy: | True | False | Not Sure |
| 24. Abdominal ultrasound: | True | False | Not sure |
| 25. CT scan: | True | False | Not sure |
| 26. Physical Exam: | True | False | Not sure |

The following questions focus on the treatment of IBS.

In your opinion, symptoms of IBS can be improved by:

- | | | | |
|--|------|-------|----------|
| 27. Dietary changes: | True | False | Not Sure |
| 28. Over the counter medications: | True | False | Not Sure |
| 29. Prescription medications: | True | False | Not sure |
| 30. Alternative medications or treatments (acupuncture, herbs, teas, roots, crystals, etc) : | True | False | Not sure |
| 31. Counselling (with a socialworker,psychiatrist,or psychologist): | True | False | Not Sure |
| 32. Support groups: | True | False | Not Sure |
| 33. Surgery: | True | False | Not Sure |

The following questions relate to your attitudes and concerns about IBS.

34. Does IBS affect your life?

Yes (go to question # 35)

No (go to question # 37)

35. If you answered Yes to the above question, what areas of your life are affected? (Circle all that apply)

- | | |
|---|-------------------------|
| A. Relationship with spouse/significant other | F. School |
| B. Work life | G. Home life |
| C. Social/Friends | H. Sexual relationships |
| D. Children | I. Other, please list: |
| E. Daily activities (grocery shopping, chores, etc) | |

36. If you answered yes to question # 34, what one area of your life is affected the most?

- | | |
|---|-------------------------|
| A. Relationship with Spouse/ Significant another | F. School |
| B. Work life | G. Home life |
| C. Social/Friends | H. Sexual relationships |
| D. Children | I. Other, please list: |
| E. Daily activities (grocery shopping, chores, etc) | |

37. Do you believe your primary care provider has adequately addressed your concerns about IBS?

Yes No

38. Do you believe your primary care provider has taken your complaints (pain, bloating, diarrhoea, etc.) seriously?

Yes No

39. In your opinion, who do you believe is best qualified to treat your IBS symptoms?

A. Primary care provider

B. Gastroenterologist

C. Surgeon

D. Alternative medicine provider (Chiropractor, Naturopath, Allopath)

E. Other, please list:

F. Not sure

40. Have you ever been referred to a gastroenterologist for your IBS symptoms?

Yes (go to question # 41) No (go to question # 43)

41. If you answered Yes to question #40, did your gastroenterologist adequately address your concerns about IBS?

Yes No

42. Do you believe your gastroenterologist has taken your complaints (pain, bloating, diarrhoea, etc.) seriously?

Yes No

43. Do you have someone you can talk to about your IBS symptoms?

Yes (go to question # 44) No (go to question #45)

44. If yes to question #43, who is the one person you are most likely to talk to? (Please circle only one)

A. Family member

B. Spouse/significant other

C. Friend.

D. Clergy

E. Psychologist/Psychiatrist

F. Primary care provider

45. Many people with IBS have concerns or fears about their disorder. What is your most significant fear or concern? (Please circle only one)

A. That IBS will turn into cancer

B. That my symptoms will never go away

C. That I will pass my problem on to my children

- D. That I will develop inflammatory bowel disease (Crohn's or ulcerative colitis)
- E. That IBS will shorten my lifespan
- F. That I will never feel better
- G. That my symptoms will interfere with my social life
- H. That my symptoms will interfere with my professional life
- I. That my symptoms will interfere with my home life
- J. That my symptoms will interfere with my sexual life
- K. Other: please list

46. Many people with IBS have concerns or fears about their disorder. Please rank your concerns fears in order of importance, 1 (one) being most concerning, 10 (ten) being least concerning.

- A. That my symptoms will interfere with my professional life
- B. That I will pass my problem on to my children
- C. That my symptoms will interfere with my home life
- D. That IBS will turn into cancer
- E. That IBS will shorten my lifespan
- F. That my symptoms will interfere with my social life
- G. That my symptoms will never go away
- H. That my symptoms will interfere with my sexual life
- I. That I will develop inflammatory bowel disease (Crohn's or ulcerative colitis)
- J. That I will never feel better

In your opinion, do you believe that having IBS affects relationships with your:

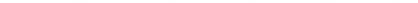
47. Spouse/significant other:	Yes	No	Not Sure
48. Family members:	Yes	No	Not Sure
49. Friends:	Yes	No	Not sure
50. Coworkers:	Yes	No	Not sure

Do you feel like the individuals listed below treat you differently because of your IBS?51.

Spouse/significant other:	Yes	No	Not Sure
52. Family members:	Yes	No	Not Sure
53. Friends:	Yes	No	Not sure
54. Coworkers:	Yes	No	Not sure

Appendix 3: The IBS 36 : A Quality of Life Measure for Irritable Bowel Syndrome.

Please **circle the number** that explains how you have been **IN THE PAST TWO MONTHS**.
Please say "In the Past two months" ahead of each question as you think about the answer.
If the question does not apply to you, please circle **not applicable**.

Example:  Not applicable

IN THE PAST TWO MONTHS

- 1) Have you been afraid to eat out because of food causing bowel symptoms?

/-----/-----/-----/-----/-----/-----/ Not applicable
 0 1 2 3 4 5 6
 Never Always

- 2) Have you felt angry as a result of your bowel problem?

/-----/-----/-----/-----/-----/-----/ Not applicable
 0 1 2 3 4 5 6
 Never Always

- 3) Did you need to go suddenly when you had a bowel movement?

/-----/-----/-----/-----/-----/-----/ Not applicable
 0 1 2 3 4 5 6
 Never Always

- 4) Did your bowel symptoms interfere with your relationship with your children and/or partner?

0 1 2 3 4 5 6 Not applicable

Never Always

- 5) Did you avoid foods that you like because you were afraid that they might cause bowel symptoms?

/-----/-----/-----/-----/-----/-----/ Not applicable
 0 1 2 3 4 5 6
 Never Always

- 6) Did your bowel symptoms interfere with being able to do well at work/school/usual daily activities?

/-----/-----/-----/-----/-----/-----/ Not applicable
 0 1 2 3 4 5 6
 Never Always

- 7) Have you felt tearful or discouraged as a result of your bowel problem?

0 1 2 3 4 5 6 Not applicable

Never Always

- 8) Did you feel that your family/friends thought your symptoms were not real?

0 1 2 3 4 5 6 Not applicable

Never Always

- 9) How often, while participating in leisure or sport activities did you have to stop because of your bowel symptoms?

0 1 2 3 4 5 6 Not applicable
Never Always

- 10) Have you felt worried or anxious about never feeling any better?

0 1 2 3 4 5 6 Not applicable

Never Always

- 11) Did you miss work/school/usual daily activities because of your bowel problem?

0 1 2 3 4 5 6 Not applicable

Never Always

12) Did your bowel symptoms interfere with being able to concentrate?

/-----/-----/-----/-----/-----/-----/ Not applicable
0 1 2 3 4 5 6
Never Always

13) Have you felt alone or isolated from your family because of bowel symptoms?

/-----/-----/-----/-----/-----/-----/ Not applicable
0 1 2 3 4 5 6
Never Always

14) Were you embarrassed because of your bowel symptoms?

/-----/-----/-----/-----/-----/-----/ Not applicable
0 1 2 3 4 5 6
Never Always

15) Were you troubled by pain in your abdomen?

/-----/-----/-----/-----/-----/-----/ Not applicable
0 1 2 3 4 5 6
Never Always

16) Were you afraid that your bowel symptoms were getting worse?

/-----/-----/-----/-----/-----/-----/ Not applicable
0 1 2 3 4 5 6
Never Always

17) Were you troubled by bowel movements that were hard/difficult to pass?

/-----/-----/-----/-----/-----/-----/ Not applicable
0 1 2 3 4 5 6
Never Always

18) Did you check your diet from the previous day trying to find foods that might cause bowel symptoms?

/-----/-----/-----/-----/-----/-----/ Not applicable
0 1 2 3 4 5 6
Never Always

19) Did you avoid traveling due to worry about bowel symptoms?

/-----/-----/-----/-----/-----/-----/ Not applicable
0 1 2 3 4 5 6
Never Always

20) Did your bowel problems shorten the length of time you could work each day?

/-----/-----/-----/-----/-----/-----/ Not applicable
0 1 2 3 4 5 6
Never Always

21) Did your bowel symptoms keep you from sleeping soundly during the night?

/-----/-----/-----/-----/-----/-----/ Not applicable
0 1 2 3 4 5 6
Never Always

22) Were you troubled by loose bowel movements?

/-----/-----/-----/-----/-----/-----/ Not applicable
0 1 2 3 4 5 6
Never Always

23) Did your bowel condition interfere with having sexual relations?

/-----/-----/-----/-----/-----/-----/ Not applicable
0 1 2 3 4 5 6
Never Always

24) Has being bloated troubled you?

/-----/-----/-----/-----/-----/-----/ Not applicable
0 1 2 3 4 5 6
Never Always

25) Did your bowel symptoms interfere with your enjoyment of leisure or sport activities?

/-----/-----/-----/-----/-----/-----/ Not applicable
0 1 2 3 4 5 6
Never Always

26) Was passing large amount of gas a problem?

/-----/-----/-----/-----/-----/-----/ Not applicable
0 1 2 3 4 5 6
Never Always

27) Were you concerned that your symptoms may be due to cancer?

/-----/-----/-----/-----/-----/-----/ Not applicable
0 1 2 3 4 5 6
Never Always

28) Have you had to delay or cancel going out socially because of your bowel problem?

/-----/-----/-----/-----/-----/-----/ Not applicable
0 1 2 3 4 5 6
Never Always

29) Were you tired in the morning because of your bowel symptoms?

/-----/-----/-----/-----/-----/-----/ Not applicable
0 1 2 3 4 5 6
Never Always

30) Did your bowel symptoms interfere with your desire to have sexual relations with your partner?

/-----/-----/-----/-----/-----/-----/ Not applicable
0 1 2 3 4 5 6
Never Always

31) Has feeling that you need to go to the bathroom even though your bowels are empty troubled you?

/-----/-----/-----/-----/-----/-----/ Not applicable
0 1 2 3 4 5 6
Never Always

32) Did you feel that your doctor/health professionals did not believe that your bowel symptoms were real?

/-----/-----/-----/-----/-----/-----/ Not applicable
0 1 2 3 4 5 6
Never Always

33) How often do you immediately need to find where washrooms are when you are in a new place?

/-----/-----/-----/-----/-----/-----/ Not applicable
0 1 2 3 4 5 6
Never Always

34) Did you avoid planning activities ahead of time because you were unsure of how your bowel symptoms would be?

/-----/-----/-----/-----/-----/-----/ Not applicable
0 1 2 3 4 5 6
Never Always

35) Has accidental soiling of your underwear troubled you?

/-----/-----/-----/-----/-----/-----/ Not applicable
0 1 2 3 4 5 6
Never Always

36) Were you late for or did you delay work/school/usual daily activities because of your bowel symptoms.

/-----/-----/-----/-----/-----/-----/ Not applicable
0 1 2 3 4 5 6
Never Always

Appendix 4: Synopsis

Department of Nutrition and Food Engineering (NFE)

Faculty Of Health and Life Sciences

Daffodil International University

Daffodil Smart City, Birulia, Savar, Dhaka – 1216, Bangladesh

1. Student's Name: Kaniz Fatema

2. Id: : 191-34-933

3. Section: A

1.Title: A Comprehensive Study on Irritable Bowel Syndrome: Utilizing the IBS-36 Quality of Life Measurement Tool to Explore Patients' Attitudes, Concerns, and Knowledge

2.Introduction:

The research project focuses on understanding the multifaceted impact of Irritable Bowel Syndrome (IBS) on individuals by employing the IBS-36 Quality of Life Measurement Tool. IBS, a prevalent gastrointestinal disorder, poses significant challenges to affected individuals, necessitating a holistic investigation into their attitudes, concerns, and knowledge about the condition.

3.Objectives:

1. To assess the quality of life among individuals with IBS using the IBS-36 Quality of Life Measurement Tool.
2. To explore patients' attitudes towards IBS, including coping mechanisms, emotional responses, and psychological well-being.
3. To identify and analyze concerns related to symptom management, healthcare access, and social implications for individuals with IBS.
4. To assess the level of knowledge among individuals with IBS regarding the nature of the disorder, available treatments, and lifestyle modifications.

4.Methodology:

The study will adopt a cross-sectional design, recruiting a diverse sample of individuals diagnosed with IBS from healthcare facilities and online platforms. Participants will be asked to complete the IBS-36 Quality of Life Measurement Tool, as well as structured questionnaires probing attitudes, concerns, and knowledge about IBS. Additionally, qualitative interviews will be conducted to capture in-depth insights into patients' experiences. Data collection will be conducted over a defined period, ensuring a representative and comprehensive dataset.

5.Statistical Analysis:

Quantitative data will be analyzed using SPSS version 25 such as descriptive statistics, Pearson chi-square test to examine associations between variables. The IBS-36 scores will be analyzed to identify patterns in quality of life across different dimensions. Qualitative data from interviews will undergo analysis, providing a understanding of subjective experiences. The combined analysis will yield a comprehensive overview of the impact of IBS on patients' lives.

6.Expected Findings:

1. The study anticipates variations in quality of life scores across physical, emotional, and social dimensions, highlighting specific areas that significantly affect individuals with IBS.
2. Insights into coping mechanisms and emotional responses will shed light on psychological aspects, aiding in the development of targeted interventions.
3. Identification of concerns related to symptom management, healthcare access, and social implications will inform recommendations for improved support systems.
4. Evaluation of knowledge gaps will guide the development of educational interventions to empower individuals with accurate information, fostering proactive management of IBS.

Signature of Supervisor

Signature of Fellow

Appendix 5: Plagiarism report

A comprehensive study on irritable bowel syndrome using the IBS-36 quality of life measurement tool and patients attitude, concerns and knowledge.

ORIGINALITY REPORT

22%

SIMILARITY INDEX

20%

INTERNET SOURCES

15%

PUBLICATIONS

12%

STUDENT PAPERS

PRIMARY SOURCES

1

Submitted to Daffodil International University

Student Paper

2%

2

www.rand.org

Internet Source

1%

3

www.researchsquare.com

Internet Source

1%

4

digitalcommons.pcom.edu

Internet Source

1%

5

www.researchgate.net

Internet Source

1%

6

Claire Jungyoun Han, Chaoqun Dong, Monica E. Jarrett, Margaret M. Heitkemper. "Symptom Comparisons Between Asian American and White American Women With Irritable Bowel Syndrome", Gastroenterology Nursing, 2018

Publication

1%

7

discoveryjournals.org

Internet Source

1%