

# Symptoms of Irritable Bowel Syndrome (IBS), Dietary Habits and Stress in Working Women

Sangeeta BSR<sup>1</sup>, Melita Sheilini<sup>2</sup>, Charlet Jasmine Vaz<sup>3</sup>

<sup>1</sup>MSc Nursing Student, <sup>2</sup>Assistant Professor-Selection Grade, Department of Medical-Surgical Nursing, <sup>3</sup>Lecturer Department of Fundamentals of Nursing, Manipal College of Nursing Manipal, MAHE, Manipal, Udupi District, Karnataka

## Abstract

**Background:** Functional gastro-intestinal disorders are mostly found in women due to the fluctuations in female sex hormones. The effects of hormones and stress have a great influence over the gastrointestinal symptoms and causes impaired bowel symptoms.

**Objective:** The aim of this study was to identify the symptoms of Irritable Bowel Syndrome and the findings may fetch more data on the influence of dietary habits and stress in the causation of IBS.

**Materials and Method:** The study was conducted among 188 women employees from Manipal Academy of Higher Education institutes of Manipal using stratified proportionate sampling. A validated questionnaire was used for assessing the symptoms, dietary habits and stress causing IBS.

**Results:** The results revealed that, 19(10.1%) participants reported having IBS symptoms. Majority, 12(63.3%) expressed having moderate perceived stress. Chi-square analysis proved statistically significant association between the IBS symptoms experienced and milk intake ( $\chi^2=11.329$ ,  $p=.010$ ) as well as stress ( $\chi^2=14.293$ ,  $p=.001$ ).

**Conclusion:** The working women population remains the vulnerable group of IBS sufferers due to lack of time and being negligent towards their health.

**Keywords:** Syndrome, Irritable Bowel, Diet, Stress, Habits, Women, Work.

## Introduction

The IBS global impact report of 2018 states that the rate of prevalence of IBS in women is approximately 1.5-3 times higher as compared to men. It is mostly seen in working women with a peak incidence rate ranging between the ages 25-54 years.<sup>1</sup> The study aimed at exploring the role of dietary habits and

stress over IBS and the prevalence of IBS. The brain-gut interaction plays a major role in the exacerbation of IBS in women. Foods rich in high Fermentable Oligosaccharides, Disaccharides, Monosaccharides and Polyols (FODMAPs) disturbs the gut and lead to the intensification of IBS.<sup>2</sup> Interestingly, there is an association between the IBS symptoms and dietary habits and stress as reported in this study. Irritable Bowel Syndrome is a chronic disease and its symptoms (abdominal pain, diarrhoea, etc) causes excessive discomfort, limitation of activities and changes in mental images. This study aimed at investigating the symptoms of IBS, dietary habits and stress among the women employees considering the fact that working women have very little time to concentrate on their health and the food habits. As they have a dual role of managing their work as well as their family, they are

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### Corresponding Author:

**Dr. Melita Sheilini**

Department of Medical-Surgical Nursing, Manipal College of Nursing Manipal, MAHE, Manipal, Udupi District, Karnataka-576104

e-mail: shyli.mel@manipal.edu

Telephone No.: 8095976561

Fax: 0091-08202922572

prone for higher perceived stress which in turn may lead to neglecting the various symptoms of their body.

## Materials and Method

The study adopted the quantitative survey approach with a descriptive survey design considered as appropriate. Participants were recruited from the teaching institutes of Manipal which included 188 women employees i.e., teaching faculty and non-teaching staff (clerical) of MAHE, Manipal. Stratified proportionate sampling was used in which each institute was considered as strata and proportionately the number of subjects from each stratum were taken.

The symptom Assessment scale for IBS was developed by the researcher. It is a dichotomous questionnaire with four items as abdominal pain relieved with defecation, abdominal pain associated with altered bowel frequency, abdominal pain with bloating/abdominal distension and abdominal pain associated with altered stool formation and passage. The reliability for this tool was 0.99 and was calculated using test-retest method.

Scale to assess the dietary habits influencing IBS was developed by the researcher, which included 16 items that were rich in high FODMAPs to assess the dietary habits of employees who were reported to have Irritable Bowel Syndrome (IBS). It was a 4-point rating scale (4- daily, 3-frequently, 2- rarely, 1- never). Cronbach's alpha was used to assess the reliability and it was found to be 0.86.

The Perceived Stress Scale (PSS) is a standardized tool developed by Sheldon Cohen, used for measuring the perception of stress and the due permission from the author was taken prior its usage in the study.<sup>3</sup> The PSS consisted of 10 items. The items in the PSS ask about feelings of stress perceived during the last one month. It is a 5-point scale (4- never, 3- almost never, 2- sometimes, 1- fairly often, 0- never). Among the 10 items, six items were negatively stated, for those statements the scoring was reversed. The interpretation was based on the total score, higher the score, more is the stress perceived (0-13= low stress, 14-26= moderate stress, 27-40= high perceived stress). Cronbach's alpha was used to assess the reliability and was found to be 0.803 and the established one was 0.810.

## Results and Discussion

Overall, 188 participants completed the survey. Apparently 111 (59%) of the sample were above 35 years of age, 124 (66%) were non-vegetarians while 107 (56.9%) were non-teaching staff and 103 (54.8%) were with <10 years of experience (Table 1).

Minimal 15 (8%) participants reported the presence of illness (Table 2). About 19 (10.1%) participants reported to have abdominal pain with varying symptoms of IBS (Table 3).

Out of 19 who had symptoms, 16 (84.2%) reported the consumption of patties daily and 15 (78.9%) reported the consumption of milk daily (Table 4). Majority 12 (63.3%) reported having moderate level of perceived stress (Table 5). Statistically significant association was found between the IBS symptoms, consumption of milk ( $p=.010$ ) and stress ( $p=.001$ ) (Table 6).

The symptoms reported in this study included mainly abdominal pain with bloating/distension and abdominal pain with hard/lumpy stools 3 (1.6%). About 16 (8.5%) of them were on regular medications prescribed by doctor for their illnesses. The findings of the study conducted in United States among the patients of IBS revealed that out of 1718 respondents, 161 reported with the symptoms of IBS. The most frequently reported symptoms were abdominal pain with bloating 86 (53.4%), abdominal pain with diarrhoea 51 (31.7%) and abdominal pain with constipation 24 (14.9%). About 127 (79%) consumed over the counter drugs.<sup>4</sup> In support to the study findings a prospective study done in Nigeria among 858 patients to investigate the most common symptoms of IBS reveal that 37.2% had abdominal pain with diarrhoea, 25.4% had alternating diarrhoea and constipation 41.3% had abdominal pain with bloating and 50.4% had abdominal pain which relieved on defecation.<sup>5</sup>

The data on dietary habits in this study reported that, 16 (84.2%) participants reported to consuming patties under deep fried foods daily, 15 (78.9%) consumed milk under the item milk products and 11 (57.9%) reported consumption of wheat frequently. The above study findings contradict the findings of the study conducted in Northern India among 33 patients with IBS which reported that the total dietary fibre intake and intake of fibre from vegetables, fruits and pulses are lower in patients with IBS.<sup>6</sup> Another study carried out in Poland among 32 women who reported to have IBS, the most frequently consumed food items daily included sweets

(83%), mango (10%), and cereals (7%). Women consuming foods rich in high FODMAPS such as sweets and mangoes had the most prominent IBS symptoms. An association was found between the IBS symptoms and the intake of milk ( $\chi^2=11.329$ ,  $p=.010$ ).<sup>7</sup> The findings of a cross-sectional study done in Norway among 4621 pre-university students of 20 colleges to identify the relationship between the symptoms of IBS and foods such as coffee, milk and cabbage. Dietary assessment was done using FODMAPs questionnaire. About 388 subjects were diagnosed with IBS. Higher intake of foods such as milk, coffee, carbonated beverages and cabbage were associated with IBS ( $p>.001$ ,  $p>.0035$ ,  $p>.012$ ,  $p>.0015$ ). The severity of symptoms was associated with a higher intake of coffee and milk.<sup>8</sup>

In this study, 12 (63.3%) participants had moderately perceived stress. There was statistically significant association found between the symptoms of IBS and the perceived stress ( $\chi^2=14.293$ ,  $p=.001$ ). In contrast to this study findings, a cross-sectional study was done among the nursing students at the International Islamic University in Malaysia, which revealed that there was no association between the students with IBS and their level of stress ( $p=.214$ ).<sup>9</sup> The findings of the present study support the findings of a case-controlled study done on 123 IBS patients revealed a significant association between the IBS symptoms and stress ( $p=.0254$ ).<sup>10</sup>

## Conclusion

The present study revealed that women population is the most affected group prone to symptoms of IBS and its ill effects. Most of the vulnerable group of IBS sufferers remain in the age group of 20-50 years. Diet plays a major role in the exacerbation of the IBS symptoms and stress intensifies these symptoms simultaneously. Most of the women neglect it and take over-the-counter medicines to have cure, but IBS requires a prompt identification and the right treatment to prevent complications in long run.

**Table 1: Frequency and Percentage of Sample Characteristics. N=188**

Variables	Frequency	Percentage
<b>Age in years</b>		
20-35	77	41
> 35	111	59
<b>Type of diet</b>		
Vegetarian	64	34

Variables	Frequency	Percentage
Non- vegetarian	124	66
<b>Type of duty/job</b>		
Teaching staff	81	43.1
Non- teaching staff	107	56.9
<b>Years of experience</b>		
<10	103	54.8
11-20	48	25.5
> 20	37	19.7

**Table 2: Frequency and Percentage of Clinical Variables. N=188**

Clinical variables	Frequency	Percentage
<b>Are you suffering from any illness?</b>		
Yes	15	8
No	173	92
<b>If yes, specify</b>		
Blood pressure	2	1.1
Thyroid	4	2.1
Arthritis	1	0.5
Asthma	2	1.1
Diabetes	2	1.1
Migraine	1	0.5
Wheezing and cold	1	0.5
Bronchitis	1	0.5
Neck pain	1	5
<b>Are you on any prescribed regular medications?</b>		
Yes	16	8.5
No	172	91.5
<b>If yes, specify</b>		
Tab Amlonpress	3	1.6
Tab Thyronorm	4	2.1
Tab Stamlo	1	0.5
Inhalers	2	1.1
Ayurvedic	1	0.5
Mucaine gel	2	1.1
Haemoglobin tablets	1	0.5
Tab Obimet	1	0.5
Steroids	1	0.5
<b>Are you taking medications without prescriptions?</b>		
Yes	1	0.5
No	187	99.5

Clinical variables	Frequency	Percentage
<b>If yes,</b>		
Number of tablets per day	1	0.5
<b>Duration of taking medications</b>		
< 6 months	1	0.5
6 months- 1 year	0	0
>1 year	0	0

**Table 3: Symptoms of IBS in frequency and percentage. N=188**

Symptoms of IBS	Frequency (f)	Percentage (%)
<b>Abdominal pain</b>		
Yes	19	10.1
No	169	89.9
<b>If yes,</b>		
Relieved with defecation	1	0.5

Symptoms of IBS	Frequency (f)	Percentage (%)
Relieved with defecation and constipation	1	0.5
Relieved with defecation and diarrhoea	1	0.5
Relieved with defecation, constipation and bloating	2	1.1
Relieved with diarrhoea and constipation	1	0.5
With diarrhoea	2	1.1
With bloating and hard stools	1	0.5
With diarrhoea and bloating	1	0.5
With bloating, hard stools and mucus passage	1	0.5
With hard stools and mucus	1	0.5
With diarrhoea & constipation	1	0.5
With bloating/distension	3	1.6
With hard or lumpy stools	3	1.6

**Table 4: Dietary habits influencing IBS in Frequency and Percentage. N=19**

Dietary habits	Daily		Frequently		Rarely		Never	
	f	(%)	f	(%)	f	(%)	f	(%)
<b>Fast foods</b>								
Burger	0	(0)	0	(0)	4	(21.1)	15	(78.9)
French fries	0	(0)	0	(0)	4	(21.1)	15	(78.9)
Pattie	16	(84.2)	0	(0)	3	(15.8)	0	(0)
Sandwich	0	(0)	0	(0)	5	(26.3)	14	(73.7)
Chicken fingers	0	(0)	0	(0)	1	(5.3)	18	(94.7)
<b>Caffeine</b>								
Coffee	7	(36.8)	1	(5.3)	5	(26.3)	6	(31.6)
Black tea	4	(21.1)	1	(5.3)	1	(5.3)	13	(68.4)
<b>Vegetable</b>								
Cabbage	2	(10.5)	9	(47.4)	6	(31.6)	2	(10.5)
<b>Milk products</b>								
Ice cream	1	(5.3)	3	(15.8)	12	(63.2)	3	(15.8)
Milk	15	(78.9)	4	(21.1)	0	(0)	0	(0)
Yogurt	7	(36.8)	3	(15.8)	3	(15.8)	6	(31.6)
Buttermilk	6	(31.6)	7	(36.8)	5	(26.3)	1	(5.3)
<b>Sweeteners</b>								
Sugar	9	(47.4)	3	(15.8)	3	(15.8)	4	(21.1)
Jam	0	(0)	1	(5.3)	7	(36.8)	11	(57.9)
Honey	1	(5.3)	2	(10.5)	7	(36.8)	9	(47.4)

**Table 5: Perceived Stress of sample in Frequency and Percentage. N=19**

Level of perceived stress	Frequency	Percentage
Low stress (0-13)	6	31.7
Moderate stress (14-26)	12	63.3
High perceived stress (27-40)	1	5

**Table 6: Association between IBS symptoms and dietary habits. N=188**

Symptoms of IBS	Milk			$\chi^2_{(df)}$	p value
	Rarely		Frequently		
Experienced	3		16	11.329 <sub>(3)</sub>	.010*
Not experienced	31		138		
Symptoms of IBS	Stress			$\chi^2_{(df)}$	P value
	Low	Moderate	Severe		
Experienced	4	12	3	14.293 <sub>(2)</sub>	.001*
Not experienced	33	134	2		

\*Significant at  $p < .05$

**Ethical Clearance:** The ethical clearance was obtained from the Institutional Ethical Committee (IEC No. 704/2018) and CTRI registration (CTRI/2018/12/016636) was done. Informed consent was taken from the patients before collecting the data.

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