

# RELATIONSHIP OF IRRITABLE BOWEL SYNDROME TO BURNOUT SYNDROME IN MEDICAL STUDENTS AND MEDICAL HEALTHCARE PROVIDERS- A COMPARATIVE EVALUATION

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## ABSTRACT

**Background:** Burnout syndrome has been usually associated with unmanageable and chronic stress in the workplace. It has been associated with various disorders of the lower gastrointestinal tract, including irritable bowel syndrome. In the Indian context, the relationship between irritable bowel syndrome and burnout syndrome in medical students and medical healthcare providers has not been assessed largely.

**Aim:** The present study aimed to assess the relationship of irritable bowel syndrome to burnout syndrome in medical students and medical healthcare providers.

**Methods:** The study included 465 medical students and healthcare providers from the institute that were assessed using the performed structured questionnaire to evaluate any existing relationship along with the Severity and presence of irritable bowel syndrome disease and burnout syndrome. Validated tools were used to assess the Severity and presence of irritable bowel syndrome, and MBI-SS (Maslach Burnout Inventory-Student Survey) was used to assess the Burnout syndrome.

**Results:** High levels of irritable bowel syndrome and burnout syndrome were experienced by 84.94% (n=395) of the medical students and healthcare providers, with nurses and physicians being the most commonly affected. Depersonalization and occupational exhaustion were seen in 52.90% (n=246) and 44.08% (n=205) subjects. Low personal accomplishment was seen in 72.90% (n=339) of study subjects. Mild, moderate, and severe irritable bowel syndrome was seen respectively in 24.94% (n=116), 24.08% (n=112), and 12.04% (n=56) study subjects.

**Conclusion:** The present study depicts a significant association between the Severity of irritable bowel syndrome and burnout syndrome in medical students and medical healthcare providers in India. The findings of the present study point that it is vital to develop effective treatment strategies for the management and prevention of burnout syndrome and health issues associated with it in medical students and healthcare providers in India.

**Keywords:** Burnout syndrome, irritable bowel syndrome, healthcare providers, medical students

## INTRODUCTION

To maintain the quality and safety of patient care, it is vital to maintain the mental and physical health of the healthcare providers. However, burnout is a significant and common issue encountered by healthcare providers globally, including in India. Burnout syndrome is a clinical condition seen as secondary to unmanageable and prolonged stress at the workplace and is highly prevalent during the complete career of healthcare providers. Burnout syndrome is a condition having particular characteristics of three main aspects, including the sense of reduced personal accomplishment and professional efficacy.<sup>1</sup>

Irritable bowel syndrome, on the other hand, is another well-defined clinical entity having typical features of pain in the abdomen or abdominal discomfort in association with the change in bowel habits for a minimum of three days a month for the last consecutive three months. The common symptoms associated with irritable bowel syndrome are alternating diarrhea and constipation, constipation, diarrhea, cramping pain, and abdominal pain. The treatment modality for irritable bowel syndrome mainly depends on improving the quality of life in the affected subjects and on the symptomatic relief.<sup>2</sup>

Healthcare providers in India face various stresses at their workplaces in day-to-day life as they work to provide medical and physical care to their patients. In healthcare providers, mental health concerns and issues are prevalent, with nursing being considered at the 27<sup>th</sup> position among the 100 occupations having high stress concerning health disorder prevalence based on the data of the National Institutes of Health.<sup>3</sup> The pressures and demands of providing medical care can lead to high levels of stress among healthcare providers. The prolonged existence of stress can harm the behavior and attitude of the healthcare providers toward the patients and the quality of care they provide to their patients.<sup>4</sup>

Considering all the mentioned factors, healthcare providers are at high risk of burnout and other medical concerns of the gastrointestinal tract, including bowel dysfunction mainly. The present study aimed to assess the relationship of irritable bowel syndrome to burnout syndrome in medical students and medical healthcare providers. The study also aimed to assess the Severity of burnout disorder and irritable bowel syndrome among healthcare providers in India.

## MATERIALS AND METHODS

The present cross-sectional clinical study aimed to assess the relationship of irritable bowel syndrome to burnout syndrome in medical students and medical healthcare providers. The study also aimed to assess the Severity of burnout disorder and irritable bowel syndrome among healthcare providers in India. The study included the medical students and healthcare providers after taking a written and verbal informed consent.

The data for the study were gathered using a preformed structures questionnaire particularly designed for medical students and healthcare providers. The questionnaire for the study was developed by experts in the field after going through the relevant literature studies and assessing the literature review. The questionnaire also collected demographic data concerning the work settings, jobs, and the age of the study participants.

Burnout syndrome was assessed using the MBI-SS (Maslach Burnout Inventory-Student Survey) in the study subjects. The scores for the items of MBI-SS were assessed on the seven tools in the range of never to daily. The Maslach Burnout Inventory-Student Survey was assessed on three scales where personal achievement included the eight items, depersonalization included the five items, and emotional exhaustion included the nine items, respectively. Each scale was designed to assess the unique burnout dimension.

Irritable bowel syndrome was assessed with the GERD (gastroesophageal reflux disease) symptoms, assessment of the Severity of irritable bowel syndrome, and criteria of irritable bowel syndrome having a total score of 500 for five main components where mild, moderate, and severe irritable bowel syndrome was depicted with the scores of <75, 75-300, and >300 scores respectively.

To maintain the clarity and validity of the questionnaire of the study, three experts in the field reviewed the questionnaire and made changes, if necessary. The questionnaire was then uploaded on social media platforms to be answered by the participants of the study.

The data gathered were analyzed statistically using the SPSS software version 22.0 (SPSS Inc. Chicago, IL) with two-tailed tests with a p-value of >0.05 taken as statistically significant. MBI-SS (Maslach Burnout Inventory-Student Survey) scores were assessed for various domains and categorized as low, moderate, and high based on the documented cut-off values.<sup>5,6</sup> Severity and criteria of irritable bowel syndrome were assessed and categorized as mild, moderate, and severe.<sup>7,8</sup> Pearson's chi-square test was used to assess the relationship between burnout syndrome and irritable bowel disease in the study subjects.

## RESULTS

The present cross-sectional clinical study aimed to assess the relationship of irritable bowel syndrome to burnout syndrome in medical students and medical healthcare providers. The study also aimed to assess the Severity of burnout disorder and irritable bowel syndrome among healthcare providers in India. The study included 465 subjects from both genders that were either medical students or medical healthcare providers. The mean age of the study subjects was 25.4±11.7 years. The majority of the study participants were in the age range of 20-29 years, with 63.22% (n=294) subjects followed by 24.08% (n=112) subjects from 30-39 years, 9.89% (n=46) subjects from 40-49 years of age, 1.72% (n=8) subjects from >50 years of age range, and least 1.07% (n=5) subjects from <20 years of age. The practice was institutional in 39.13% (n=182) subjects, hospital-based in 47.52% (n=221) study subjects, and primary healthcare centers in 13.33% (n=62) study subjects, respectively. The majority of the participants were physicians with 43.22% (n=201) subjects, followed by nurses with 28.38% (n=132) subjects, students in 21.07% (n=98), and paramedics with 7.31% (n=34) subjects respectively (Table 1).

For burnout syndrome, depending on the job of the participants, it was seen that a high proportion of subjects had occupational exhaustion among students, paramedics, nurses, and physicians with 35.71% (n=35), 47.05% (n=16), 43.93% (n=58), and 45.27% (n=91) subjects respectively. Concerning personal accomplishment, the lowest sense was seen in nurses with 77.27% (n=102) subjects, followed by students with 75.51% (n=74), physicians with 71.64%

(n=144), and paramedics with 64.70% (n=102) subjects. High personal accomplishment was seen in paramedics, with 14.70% (n=5), followed by physicians, nurses, and students with 9.95% (n=20), 9.09% (n=12), and 7.14% (n=7) subjects, respectively. This was statistically significant with  $p=0.03$ . The highest depolarization was seen in nurses, with 59.09% (n=78) subjects, followed by physicians, with 51.24% (n=103) subjects. On the contrary, low depolarization was seen in paramedics with 23.52% (n=8) subjects, followed by students with 17.34% (n=17) subjects which was statistically non-significant with  $p=0.121$  (Table 2).

Concerning the comparison of irritable bowel syndrome severity in the study subjects based on their job position, mild IBS (irritable bowel syndrome) was seen in 29.59% (n=29) students, 26.47% (n=35) paramedics, 26.51% (n=35) nurses, and 22.88% (n=46) physicians. Moderate IBS was seen in 20.20% (n=20) students, 26.47% (n=9) paramedics, 24.24% (n=32) nurses, and 24.87% (n=50) physicians. Severe IBS was seen in 7.14% (n=7) students, 11.76% (n=4) paramedics, 12.12% (n=16) nurses, and 13.93% (n=28) physicians. The difference was statistically non-significant, with  $p=0.322$  (Table 3).

A high proportion of study subjects reported abnormal bowel movements, with 49.46% (n=230) subjects reporting a feeling of incomplete bowel emptying and 38.06% (n=177) subjects reporting the need to push/strain following bowel emptying. 40.64% (n=189) subjects reported hurrying to rush to use the toilet, 19.35% (n=90) subjects reported blood with bowel movement, and 37.84% (n=176) subjects reported mucus/gel with bowel movement. Loose/watery bowel movement was commonly reported by 16.77% (n=78) subjects, mushy bowel movement was commonly reported by 17.20% (n=80) subjects, and small and broken bowel movements by 21.50% (n=100) study subjects. Very thin bowel movements were commonly and occasionally reported by 18.70% (n=87) and 43.44% (n=202) subjects, respectively. Difficulty in passing stools was commonly reported by 20.43% (n=95) subjects, and typically normal bowel movements were common in 53.33% (n=248) subjects (Table 4).

On assessing the relationship between irritable bowel syndrome to burnout syndrome in the study subjects, a significant relationship was seen in the Severity of IBS and occupational exhaustion, with mild, moderate, and severe IBS seen in 37.81% (n=45), 54.05% (n=60), and 64.54% (n=41) study subjects respectively with high occupational exhaustion compared to 12.60% (n=15), 9.09% (n=11), and 3.63% (n=2) study subjects respectively with low occupational exhaustion which was statistically significant with  $p=0.01$ . Subjects with high levels of depolarization depicted a high prevalence of IBS of mild, moderate, and severe Severity compared to subjects with moderate and low depolarization, which was statistically significant with  $p=0.001$ . A non-significant relationship was seen in the Severity of IBS to personal accomplishment with  $p=0.442$ , as shown in Table 5.

## DISCUSSION

The present study included 465 subjects from both genders that were either medical students or medical healthcare providers. The mean age of the study subjects was  $25.4 \pm 11.7$  years. The majority of the study participants were in the age range of 20-29 years, with 63.22% (n=294) subjects followed by 24.08% (n=112) subjects from 30-39 years, 9.89% (n=46) subjects from

40-49 years of age, 1.72% (n=8) subjects from >50 years of age range, and least 1.07% (n=5) subjects from <20 years of age. The practice was institutional in 39.13% (n=182) subjects, hospital-based in 47.52% (n=221) study subjects, and primary healthcare centers in 13.33% (n=62) study subjects, respectively. The majority of the participants were physicians with 43.22% (n=201) subjects, followed by nurses with 28.38% (n=132) subjects, students in 21.07% (n=98), and paramedics with 7.31% (n=34) subjects respectively. These data were similar to the studies of O'Connor P et al.<sup>9</sup> in 2017 and Friganovic A et al.<sup>10</sup> in 2019, where authors assessed subjects with demographic data comparable to the present study.

The study results showed that for burnout syndrome, depending on the job of the participants, it was seen that a high proportion of subjects had occupational exhaustion, among students, paramedics, nurses, and physicians with 35.71% (n=35), 47.05% (n=16), 43.93% (n=58), and 45.27% (n=91) subjects respectively. Concerning personal accomplishment, the lowest sense was seen in nurses with 77.27% (n=102) subjects, followed by students with 75.51% (n=74), physicians with 71.64% (n=144), and paramedics with 64.70% (n=102) subjects. High personal accomplishment was seen in paramedics, with 14.70% (n=5), followed by physicians, nurses, and students with 9.95% (n=20), 9.09% (n=12), and 7.14% (n=7) subjects, respectively. This was statistically significant with p=0.03. The highest depolarization was seen in nurses, with 59.09% (n=78) subjects, followed by physicians, with 51.24% (n=103) subjects. On the contrary, low depolarization was seen in paramedics with 23.52% (n=8) subjects, followed by students with 17.34% (n=17) subjects which was statistically non-significant with p=0.121. These results were consistent with the previous studies of Cholongitas E et al.<sup>11</sup> in 2010 and Hod K et al.<sup>12</sup> in 2020, where a similar prevalence of burnout factors in the subjects of their studies was seen in the present study.

It was seen that concerning the comparison of irritable bowel syndrome severity in the study subjects based on their job position, mild IBS (irritable bowel syndrome) was seen in 29.59% (n=29) students, 26.47% (n=35) paramedics, 26.51% (n=35) nurses, and 22.88% (n=46) physicians. Moderate IBS was seen in 20.20% (n=20) students, 26.47% (n=9) paramedics, 24.24% (n=32) nurses, and 24.87% (n=50) physicians. Severe IBS was seen in 7.14% (n=7) students, 11.76% (n=4) paramedics, 12.12% (n=16) nurses, and 13.93% (n=28) physicians. The difference was statistically non-significant, with p=0.322. These results were in agreement with the findings of Jafei W et al.<sup>13</sup> 2003 and Leonardi M et al.<sup>14</sup> in 2013, where authors reported physicians to be most commonly having severe irritable bowel syndrome.

The study results showed that a high proportion of study subjects reported abnormal bowel movements, with 49.46% (n=230) subjects reporting a feeling of incomplete bowel emptying and 38.06% (n=177) subjects reporting a need to push/strain following bowel emptying. 40.64% (n=189) subjects reported hurrying to rush to use the toilet, 19.35% (n=90) subjects reported blood with bowel movement, and 37.84% (n=176) subjects reported mucus/gel with bowel movement. Loose/watery bowel movement was commonly reported by 16.77% (n=78) subjects, mushy bowel movement was commonly reported by 17.20% (n=80) subjects, and small and broken bowel movements by 21.50% (n=100) study subjects. Very thin bowel movements were

commonly and occasionally reported by 18.70% (n=87) and 43.44% (n=202) subjects, respectively. Difficulty in passing stools was commonly reported by 20.43% (n=95) subjects, and typically normal bowel movements were common in 53.33% (n=248) subjects. These findings were in line with the findings of Gosseries O et al<sup>15</sup> in 2012 and Wang J et al<sup>16</sup> in 2020, where authors reported abnormal bowel movements in the majority of their study subjects, as seen in the present study.

It was seen that concerning the relationship of irritable bowel syndrome to burnout syndrome in the study subjects, a significant relationship was seen in the Severity of IBS and occupational exhaustion with mild, moderate, and severe IBS seen in 37.81% (n=45), 54.05% (n=60), and 64.54% (n=41) study subjects respectively with high occupational exhaustion compared to 12.60% (n=15), 9.09% (n=11), and 3.63% (n=2) study subjects respectively with low occupational exhaustion which was statistically significant with  $p=0.01$ . Subjects with high levels of depolarization depicted a high prevalence of IBS of mild, moderate, and severe Severity compared to subjects with moderate and low depolarization, which was statistically significant with  $p=0.001$ . A non-significant relationship was seen between the Severity of IBS the personal accomplishment with  $p=0.442$ . These results were consistent with the studies of Bridgeman PJ et al<sup>17</sup> in 2018 and Tosun O et al<sup>18</sup> in 2016, where authors suggested a similar relationship between irritable bowel syndrome and burnout syndrome, as reported by the authors of the present study.

## CONCLUSION

Considering its limitations, the present study depicts a significant association between the Severity of irritable bowel syndrome and burnout syndrome in medical students and medical healthcare providers in India. The findings of the present study point that it is vital to develop effective treatment strategies for the management and prevention of burnout syndrome and health issues associated with it in medical students and healthcare providers in India.

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## TABLES

Characteristics	Number (n=465)	Percentage (%)
Mean age (years)	25.4±11.7	
Age range (years)		
<20	5	1.07
20-29	294	63.22
30-39	112	24.08
40-49	46	9.89
>50	8	1.72
Practice		
Institution (teaching)	182	39.13
Primary health care	62	13.33

Hospital	221	47.52
<b>Position</b>		
Student	98	21.07
Paramedics	34	7.31
Nurses	132	28.38
Physician	201	43.22

Table 1: Demographic and job data of the study participants

Burnout syndrome	Student (n=98)		Paramedics (n=34)		Nurses (n=132)		Physicians (n=201)		p-value
	n	%	n	%	n	%	n	%	
<b>Personal accomplishment</b>									
Low	74	75.51	22	64.70	102	77.27	144	71.64	<b>0.036</b>
Moderate	17	17.34	7	20.58	18	13.63	37	18.40	
High	7	7.14	5	14.70	12	9.09	20	9.95	
<b>Depolarization</b>									
Low	17	17.34	8	23.52	17	12.87	30	14.92	0.121
Moderate	33	33.67	9	26.47	37	28.03	68	33.83	
High	48	48.97	17	50	78	59.09	103	51.24	
<b>Occupational exhaustion</b>									
Low	14	14.28	6	17.64	23	17.42	30	14.92	0.334
Moderate	49	50	12	35.29	51	38.63	80	39.80	
High	35	35.71	16	47.05	58	43.93	91	45.27	

Table 2: Comparison of burnout rates in the study subjects based on their job position

The severity of irritable bowel syndrome	Student (n=98)		Paramedics (n=34)		Nurses (n=132)		Physicians (n=201)		p-value
	n	%	n	%	n	%	n	%	
<b>No</b>	42	42.85	12	35.29	49	37.12	77	38.30	0.322
<b>Mild</b>	29	29.59	9	26.47	35	26.51	46	22.88	
<b>Moderate</b>	20	20.40	9	26.47	32	24.24	50	24.87	
<b>Severe</b>	7	7.14	4	11.76	16	12.12	28	13.93	

Table 3: Comparison of irritable bowel syndrome severity in the study subjects based on their job position

Bowel characteristics	Number (n=465)	Percentage (%)
<b>The feeling of incomplete bowel emptying</b>	230	49.46
<b>Need to push/strain after bowel</b>	177	38.06
<b>Hurry/rush to use the toilet</b>	189	40.64
<b>Blood with bowel movement</b>	90	19.35
<b>Mucus/gel with bowel movement</b>	176	37.84
<b>Loose/watery bowel movement</b>		
Commonly	78	16.77
Occasionally	194	41.72
Never	193	41.50
<b>Mushy bowel movement</b>		
Commonly	80	17.20
Occasionally	195	41.93
Never	190	40.86
<b>Small and broken bowel movements</b>		
Commonly	100	21.50
Occasionally	198	42.58
Never	168	36.12
<b>Very thin bowel movements</b>		



Commonly	87	18.70
Occasionally	202	43.44
Never	174	37.41
<b>Hard/difficult passing stool</b>		
Commonly	95	20.43
Occasionally	241	51.82
Never	128	27.52
<b>Typically, normal bowel movements</b>		
Commonly	248	53.33
Occasionally	169	36.34
Never	49	10.53

Table 4: Bowel movements in medical Students and healthcare providers in India

Burnout syndrome	No IBS		Mild IBS		Moderate IBS		Severe IBS		p-value
	n=180	%	n=119	%	n=111	%	n=55	%	
<b>Personal accomplishment</b>									
Low	126	70	88	73.94	86	77.47	40	72.7	0.442
Moderate	34	18.8	21	17.64	16	14.41	10	18.1	
High	20	11.1	20	16.80	9	8.10	5	9.09	
<b>Depolarization</b>									
Low	35	19.4	16	13.4	14	12.61	6	10.90	<b>0.001</b>
Moderate	64	35.5	44	36.97	28	25.22	13	23.63	
High	81	45	59	49.57	69	62.16	36	65.45	
<b>Occupational exhaustion</b>									
Low	40	22.2	15	12.60	11	9.09	2	3.63	<b>0.001</b>
Moderate	81	45	59	49.57	40	36.03	12	21.81	
High	59	32.7	45	37.81	60	54.05	41	64.54	

Table 5: Relationship of irritable bowel syndrome to burnout syndrome in the study subjects