Original Article

Stress of the COVID-19 and its Consequences on Irritable Bowel Syndrome Patients in A Selected Tertiary Level Hospital in Bangladesh

Ghosh DK[1], Sarker DK[2], Ullah P[3], Nath M[4], Chowdhury SAM[5], Bashar KA[6], Rahut A[7], Mahmuduzzaman M[8]

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Abstract

Background: *The COVID-19 pandemic represents a multiple stress. Stress can worsen the symptoms of (IBS) patients.*

Aims & Objective: *The aim of the study was to assess the stress of COVID-19 and its impact on IBS patients during the pandemic situation among the Bangladeshi population.*

Methods: *Thiscross-sectionalstudywas conducted among the self-reported previously diagnosed IBS patients aged 18 years and above, irrespective of sex, in the Gastroenterology department of Shaheed Suhrawardy Medical College Hospital. Data was collected by a structured questionnaire which included the patient's socio-demographic,clinical symptoms of IBS, personal habits, co morbidities, self-reported stress due to COVID-19, and its effect on the symptoms of IBS.*

Results: *The study respondents consisted of 210 IBS patients, among them 71.90% were male and 28.10% were female. The majority of the study population(43.0%) belonged to age group of 31-40 years and mean age 35.12 ± 11.55years. Most of the respondents (91.9%) reported stress due to the COVID-19 pandemic.The most commonly reported causes of stress were fear of a family member being infected with the virus (94.8%), followed by fear of self-infection (90.5%), and death due to COVID-19 infection (68.1%). Most of the stressed respondents (72.9%) reported that stress usually exagge rates IBS symptoms. Almost 25.7% of the subjects consulted a physician for stress aggravation of the symptoms, 21.0% used sedatives due to stress,and 21.0% modified IBS medications due to stress. Moreover,36.2% of the participants reported hampered daily activities dueto IBS symptoms exacerbation.*

Conclusion: *The study revealed that most of the IBS patients had been suffering fromstressduring the COVID-19 pandemic situation. IBS patients should be advised to participate in mental health education programs to adjust to the current pandemic COVID-19 situation.*

Key Words:
Coronavirus (COVID-19),Pandemic, IBS, Stress, Bangladesh

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1. Dr. Dilip Kumar Ghosh , Associate Professor, Department of Gastroenterology , Shaheed Suhrawardy Medical College Hospital, Sher-e-Bangla Nagar, Dhaka-1207.
2. Dr. Debashis Kumar Sarker, Assistant Professor, Department of Gastroenterology, ShaheedShurawardy Medical College Hospital, Sher-e-Bangla Nagar, Dhaka-1207.
3. Dr. Parash Ullah, Medical Officer, Department of Gastroenterology, Shaheed Suhrawardy Medical College Hospital, Sher-e-Bangla Nagar, Dhaka-1207.
4. Dr. Mukta Nath, Lecturer (Anatomy) , Sir Salimullah Medical College, Dhaka.
5. Dr. Shamsuddin Al Masud Chowdhury, Assistant Registrar, Department of Gastroenterology, Shaheed Shurawardy Medical College hospital, Sher-e-Bangla Nagar, Dhaka-1207
6. Dr. Khondaker Abul Bashar, Medical Officer, Department of Gastroenterology, ShaheedSuhrawardy Medical College Hospital, Sher-e-Bangla Nagar, Dhaka-1207.
7. Dr. Antora Rahut, Medical Officer, Department of Gastroenterology, Shaheed Suhrawardy Medical College Hospital, Sher-e-Bangla Nagar, Dhaka-1207.
8. Prof. Dr. Mohammad Mahmuduzzaman , Professor and Head, Department of Gastroenterology, Shaheed Suhrawardy Medical College & Hospital, Sher-e-Bangla Nagar, Dhaka-1207.

Correspondence to: Dr. Dilip Kumar Ghosh, Associate Professor, Department of Gastroenterology, Shaheed Suhrawardy Medical College Hospital, Sher-e-Bangla Nagar, Dhaka-1207, Mobile: +880 1712529029; +880 18412358005, Email: dkghoshmukta@gmail.com

Introduction:

Coronavirus disease (COVID-19) pandemic represents a various spectrum of stress and had a negative effect on mental health. However, till date, prospective studies are few. This pandemic situation causes major life-threatening stress due to fear of serious illness or death for oneself and for family members.[1] In addition, it is necessary to determine what factors will mediate the stress response to the pandemic. It is observed that epidemics pose a threat to mental health.[2] Therefore, two recent literature reviews revealed that COVID-19 had a persistent negative impact on mental health, with 16-18% of participants showing symptoms of anxiety and depression in a study which was conducted in a German-speaking sample.[3-4] Preliminary evidence suggests that women, young people and people with poor sleep quality are at increased risk of mental health problems.[5-6] Another issue is that the depression and anxiety could potentially induce Irritable Bowel Syndrome (IBS).[7]

IBS is a familiar bowel disorder that has a significant medical burden and negative effects on the quality of life of patients. It is a gastrointestinal condition with variable signs and symptoms. The common symptoms are abdominal pain, cramps or bloating, diarrhea or constipation, and mucus in the stool.[8-9]Irritable bowel syndrome (IBS) affects 7% to 21% of the general population. The prevalence of IBS was 24.4% in the first community-based survey applying Rome-II criteria in rural Bangladesh and 7.7% in first urban community study in Bangladesh.[10-11] This is a chronic disease that will greatly reduce quality of life and work efficiency. IBS is not a single disease, but a group of symptoms caused by multiple pathologies. Factors that are important for the development of IBS are changes in the gut microbiome, gut permeability, gut immune function, motility, visceral sensation, brain-gut interaction, and psychosocial status.The disease may be caused by intestinal infection or life stress events.[12-14]

Studies reveals that the fear and anxiety during any pandemic era, enhance the symptoms of pre-existing psychological problems.[15]As psychological status has a great impact on the symptoms of IBS and Covid-19 pandemic increases the stress, assessing the effects IBS during and after of covid-19 is essential. But there is scarcity of literature regarding the issue. In fact, there was no published data about the covid-19 pandemic stress and its effect on IBS symptoms in our country. So this study was conducted toassess theCOVID 19 pandemic stress and its consequences on irritable bowel syndrome patientsin Bangladesh.

Methodology:

It was a cross-sectional observational study, carried out in the Department of Gastroenterology, Shaheed Suhrawardy Medical College Hospital Dhaka, from January 2021 to December 2021. Previously diagnosed self-reporting IBS patent's aged 18 years or above irrespective of sex and who gave consent were enrolled in this study. Purposive sampling was used for data collection. Sample size was 210 for this study. A structured questionnaire was used as data collection instrument. The English version of the questionnaire was translated into native language Bangla. It was subsequently translated back to English for review to resolve any discrepancies in language.

The data were collected by doctors and trained personnel, who received appropriate training before data collection. During the COVID-19 pandemic, appropriate personal protection measures were taken for data collectors and interviewees. After introducing themselves and informing the purpose of the interview, the data were collected from the self-reported IBS patients.

All the relevant collected data was compiled on a master table first and then statistical analysis of the results was obtained by using window-based computer software devised with Statistical Packages for Social Sciences (SPSS-22) (SPSS Inc, Chicago, IL, USA). The result was presented in tables, figures, diagrams. Qualitative data was expressed as frequency and percentage and quantitative data was expressed as mean and standard deviation.p value less than 0.05 was regarded as statically significant and 95% confidence intervals were computed using a logistic regression model.

Prior to the commencement of this study, the research protocol was approved by the Ethical review committee of Ministry of Science and Technology. Verbal consent was taken from all respondents before conducting the interview.

Results

In this study, the study population consisted of 210 respondents, among them, 71.90% male and 28.10% female. The majority (43.0%) of the study population belonged to age group of 31-40 years and the mean age of them 35.12 ± 11.55 years. The male to female ratio in percentage was 2.56:1. Nearly 81.9% of the sample population was married, among them 80.1% was male and 86.4% was female. In regards to the occupation of the respondent's majority was from non-government employee (22.9%) followed by 22.4% from Business and15.7% from Housewife, 13.8% from Government employee and the rest constituted others occupations like students, driver, agri-laborers, industrial worker, others etc. With respect to the educational background 17.6% graduate and above, 14.3% primary education completed, 31.9% Secondary education completed, 16.7% Higher Secondary education completed, and 19.5% are illiterate. Most of the study population are Muslims (94.2%), Hindu (4.8%) and the rest are Christian (1.0%). More than 35% of the respondents reported to earn a monthly income of above Tk. 20,000. The above discussions reflected that the objective on socio-demographic background was adequately addressed in this study (Table-I).

Table-I

Demographic details of the respondents (n=210)

	Male n (%)	Female n (%)	Total n (%)
Age			
21 - 30	66 (43.7)	20 (33.9)	14 (11.6)
31 - 40	59 (39.1)	23 (39.0)	52 (43.0)
41 - 50	12 (7.9)	10 (16.9)	26 (21.5)
>50	14 (9.3)	6 (10.2)	18 (14.9)
Mean ± SD	33.91 ± 10.55	38.23 ± 13.37	35.12 ± 11.55
Marital status			
Married	121 (80.1)	51 (86.4)	172 (81.9)
Unmarried	30 (19.9)	8 (13.6)	38 (18.1)
Education			
No formal education	21 (13.9)	20 (33.9)	41 (19.5)
Primary school	17 (11.3)	13 (22.0)	30 (14.3)
Secondary school	53 (35.1)	14 (23.7)	67 (31.9)
Pre-University	30 (19.9)	5 (8.5)	35 (16.7)
Tertiary-Undergraduate/Postgraduate degree	30 (19.9)	7 (11.9)	37 (17.6)
Occupation			
Government employee	23 (15.2)	6 (10.2)	29 (13.8)
Non-government employee	46 (30.5)	2 (3.4)	48 (22.9)
Student	18 (11.9)	3 (5.1)	21 (10.0)
Business	44 (29.1)	3 (5.1)	47 (22.4)
Agriculture worker	7 (4.6)	0 (0.0)	7 (3.3)
Industrial worker	7 (4.6)	5 (8.5)	12 (5.7)
Driver	5 (3.3)	0 (0.0)	5 (2.4)
Homemaker/housewife	0 (0.0)	33 (55.9)	33 (15.7)
Others	1 (0.7)	7 (11.9)	8 (3.8)
Religion			
Islam	143 (94.7)	55 (93.2)	198 (94.2)
Hindu	6 (4.0)	4 (6.8)	10 (4.8)
Christian	2 (1.3)	0 (0.0)	2 (1.0)
Monthly family income			
<10,000	46 (30.5)	33 (55.9)	79 (37.6)
10,000-20,000	42 (27.8)	15 (25.4)	57 (27.1)
20,000>	63 (41.7)	11 (18.6)	74 (35.2)

The most common IBS symptoms reported by respondent were abdominal pain (69.5%), Gas with abdominal distension (56.7%), diarrhea (54.3%) Constipation (21.0%) and Alternate constipation with Diarrhea (35.7%) (Table-2).

Table-II

Clinical presentation of IBS Patient ***(n=210)***

Clinical presentation	Male n (%)	Female n (%)	Total n (%)
Constipation	23 (15.2)	21 (35.6)	44 (21.0)
Diarrhea	79 (52.3)	35 (59.3)	114 (54.3)
Alternate constipation with Diarrhea	66 (43.7)	9 (15.3)	75 (35.7)
Undifferentiated type	15 (9.9)	3 (5.1)	18 (8.6)
Abdominal pain	107 (70.9)	39 (66.1)	146 (69.5)
Vomiting	16 (10.6)	9 (15.3)	25 (11.9)
Gas with abdominal distension	86 (57.0)	33 (55.9)	119 (56.7)

Regarding awareness and perceptions about symptoms of covid-19, it was revealed thata total of 199 (94.8%) respondents were aware of the COVID-19 pandemic. The most commonly identiûed clinical symptoms of COVID-19 infection were fever (92.4%), cough (89.0%), Dyspnea (74.8%), Diarrhea (33.3%), and Sore throat (38.6%). 118 (56.2%) knew someone infected with a COVID-19. Among the respondents 54 (25.7%) were aware that COVID- 19 might have GIT symptoms, of which loss of appetite was the most reported (52.4%) followed by sore throat (38.6%) and diarrhea (33.3%). About 35 (16.7%) of the respondents had reported that they could differentiate COVID-19 GIT symptoms from those of IBS (Table-III).

In this study, about 91.9% of the respondents stressed dueto the pandemic situation. The most commonly reported causes of stresswere fear of a family member being infected with virus (94.8%),followedbyfearofself-infection(90.5%),anddeathduetoCOVID-19 infection (68.1%). Most of the stressed respondents (72.9%) reported that stress usually exaggerates IBS symptoms. Almost 25.7% of the subjects consulted physician for stress aggravation of the symptoms, 21.0% used sedatives due to stress, and 21.0% modiûed IBS medications due to the stress. Moreover, 36.2% of the participants reported impaired daily activities due to symptoms exacerbation (Table-IV).

Table-III

Respondents' Perception about COVID-19 Symptoms (n=210)

	Male n (%)	Female n (%)	Total n (%)
Know about COVID-19 pandemic	140 (92.7)	59 (100.0)	199 (94.8)
Aware of COVID-19 symptoms			
- Fever	140 (92.7)	54 (91.5)	194 (92.4)
- Cough	133 (88.1)	54 (91.5)	187 (89.0)
- Dyspnea	118 (78.1)	39 (66.1)	157 (74.8)
- Diarrhea	50 (33.1)	20 (33.9)	70 (33.3)
- Nausea	30(19.9)	17(28.8)	47(22.4)
- Vomitting	30(19.9)	11(18.6)	41(19.5)
- Sore throat	54 (35.8)	27 (45.8)	81 (38.6)
- Loss of appetite	83 (55.0)	27 (45.8)	110 (52.4)
- Previously infected with COVID-19	35 (23.2)	15 (25.4)	50 23.8)
- Know any COVID-19 case	77 (51.0)	41 (69.5)	118 (56.2)
- COVID-19 infection had GIT symptoms	43 (28.5)	11(18.6)	54(25.7)
- Can differentiate COVID-19 symptoms with IBS	28 (18.5)	7(11.9)	35(16.7)

Table-IV

Stress related to COVID-19 pandemic and its effects on IBS(n=210).

	Male n (%)	Female n (%)	Total n (%)
Stress due to COVID -19 pandemic and related procedures	134 (88.7)	59 (100.0)	193 (91.9)
Causes of Stress			
- Afraid of infection in family member	140 (92.7)	59 (100.0)	199 (94.8)
- Afraid of being infected	131 (86.8)	59 (100.0)	190 (90.5)
- Afraid of loss of income source	108 (71.5)	38 (64.4)	146 (69.5)
- Afraid of dying due to the virus	95 (62.9)	48 (81.4)	143 (68.1)
- Stress exaggerated IBS symptoms	114 (75.5)	39 (66.1)	153 (72.9)
Consulted doctor due to stress	44 (29.1)	10 (16.9)	54 (25.7)
Used sedatives due to stress	34 (22.5)	10 (16.9)	44 (21.0)
Exaggerated symptoms after daily activities	52 (34.4)	24 (40.7)	76 (36.2)
Modified IBS medication due to stress	34 (22.5)	10 (16.9)	44 (21.0)

Regarding the factors related to stress of covid-19, it was found that, most of the factors were notsigniûcantly related to stress (p>.05). However; smoking with IBS symptoms were significantly associated with stress (p<0.001) (Table-V).

Table-V

Elements related to stress of COVID-19 pandemic in IBS patients (n=210)

	Stressed due to COVID-19 pandemic		p-value
	Yes n (%)	No n (%)	
Age			
≤30	71 (41.3)	15 (39.5)	0.838
>30	101 (58.7)	23 (60.5)	
Mean ± SD	34.98 ± 11.36	35.78 ± 12.51	0.698
Gender			
Male	120 (69.8)	31 (81.6)	0.143
Female	52 (30.2)	7 (18.4)	
Marital status			
Married	140 (81.4)	32 (84.2)	0.683
Unmarried	32 (18.6)	6 (15.8)	
Education			
No formal education	32 (18.6)	9 (23.7)	0.157
Primary school	29 (16.9)	1 (2.6)	
Secondary school	56 (32.6)	11 (28.9)	
Pre-University	26 (15.1)	9 (23.7)	
Tertiary-Undergraduate/Postgraduate degree	29 (16.9)	8 (21.1)	
Monthly family income			
<10,000	68 (39.5)	11 (28.9)	0.472
10,000-20,000	45 (26.2)	12 (31.6)	
20,000>	59 (34.3)	15 (39.5)	
Duration of IBS			
<1 year	45 (26.2)	8 (21.1)	0.322
1-2 year	14 (8.1)	6 (15.8)	
> 2 year	113 (65.7)	24 (63.2)	
Smoking			
Smoker	24 (14.0)	16 (42.1)	<0.001
Ex-smoker	16 (9.3)	3 (7.9)	
Non-smoker	132 (76.7)	19 (50.0)	
Can differentiate COVID 19 symptoms from IBS	30 (17.4)	5 (13.2)	0.521
Having COVID-19	163 (94.8)	34 (89.5)	0.259

Discussion

This global health threat is associated with adverse effects on mental health. In Bangladesh, the First COVID-19 case was declared in Dhaka City on 8 March, 2020[16]which created mental stress in the population. This study was conducted to assess the COVID-19 pandemic stress and stress related consequences on patients with IBS among Bangladeshi population.

In this study, 71.90% were male and 28.10% were female. The majority (43%) of the study population belonged to the age group of 31-40 years. The male to female ratio was 2.56:1. The striking result of the study showed that almost all the respondents (91.9%) were stressed due to the COVID-19 pandemic. During global outbreak, the burden of mental health issues is greater than the percentage of people affected by COVID-19 infection.[17,18]

The study revealed that afraid of infection in family member (94.8%) and fear of being infected by self (90.5%) were the most commonly reported sources of stress. Also, about 56.2% of participants knew a case of COVID-19 and 23.8% of respondents contracted the infection. Studies revealed that fear from COVID-19 infection can create stress and deteriorate mental health problem.[19,20] Fear of contact of COVID-19 resulting sickness, suffering economic losses, helplessness, isolation from relatives, and stigma are the most commonly reported sources of negative mental health issues in the literature review.[3, 21]

Our study demonstrated signiûcant impacts of COVID-19 pandemic related stress on IBS patients. More than 72% of the stressed respondents had usual or sometimes aggravation of IBS symptoms, especially abdominal pain (69.5%) and Gas with abdominal distension (56.7%), stated that the aggravation of symptoms affected their daily life activities. Other participants (21%) reported taking sedatives to minimize the stress. The impact of stress on IBS patients is an important issue that should be considered by both physicians and patients. One review about the psychosocial determinants of IBS published in 2013,[22] reports a significant increase in stressor scores just before progression from IBS non-patient to IBS patient.

IBS symptoms could worsen with daily stress,[23,24] and patients having IBS report more stressful events in their lifetime compared to healthy controls.[25] There is strong evidence about the role of usual stressors of life besides the COVID-19 pandemic in patients of IBS. A significant correlation can also be observed between the severity of IBS and its comorbid psychiatric disorders, especially depression and anxiety[26,27]. More and more clinical and experimental evidence revealed that IBS is a combination of irritable bowel and irritable brain. Clinical and experimental studies revealed that mental stresses have significant impact on intestinal sensitivity, motility, secretion and permeability, and the implicit mechanism has a close correlation with mucosal immune activation, alterations in central nervous system, peripheral neurons and gastrointestinal microbiota.

It is obvious that, sub-optimal mental health disorders are frequently occurring during the Coronavirus pandemic.[3]The direct association between the reported COVID-19 stress and exacerbation of symptoms among IBS patient in the present study may be high owing to the lack of complete information regarding the nature of the disease, its full clinical presentation, and consequences. Despite the strong effect of COVID-19 related stress on the respondents' IBS symptoms, only 25.7% consulted their doctors, which might be the cause of fear of being infected by contact with others in the clinic.[28]Also, difûculty access to their physicians due to curfews and restriction of movements could be a reason for this low consultation rate.[29] In the present study, the inability to differentiate between IBS symptoms and COVID-19 symptoms was a signiûcant factor for COVID-19 pandemic stress. People Confused between chronic disease symptoms, including IBS, and suspected COVID-19 symptoms are at a greater risk of mental health problems.[30]

Other important factor associated with COVID-19 stress in IBS patients, revealed by our study, is the preexistence of other chronic diseases and personal habit. IBS Patients with smoking habit is significantly vulnerable to stress in the study ($p<0.001$). People with preexisting chronic morbidity may be associated with the risk of progression to severe disease.[31,32] During public health emergencies, clinicians and healthcare provider should be given emphasis beside IBS care on the mental health of patients.[33]

Conclusion

In conclusion, our study revealed that the most of IBS patients had been suffering from stress during the COVID-19 pandemic situation, which aggravated their clinical symptoms and affected their daily life activities. The impact of COVID-19 and its pandemic stress on IBS patients is an important issue that should be taken into consideration by both physicians and patients. IBS patients should be registered in supportive mental health education programs to adjust with stressors, including the current pandemic COVID-19 situation.

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