

PREVALENCE OF IRRITABLE BOWEL SYNDROME AND ITS ASSOCIATION WITH STRESS AND OTHER RISK FACTORS AMONG UNIVERSITY STUDENTS OF PESHAWAR

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ABSTRACT

Objectives: To find out the prevalence of Irritable Bowel Syndrome (IBS) among university students of Peshawar. To quantify anxiety levels of the students using DASS-21 scoring system. To find the association between the DASS-21 score and Irritable Bowel Syndrome (IBS) and to find the association of Irritable Bowel Syndrome (IBS) with other risk factors.

Material and Methods: Questionnaires from students studying in different universities of Peshawar were collected during the months of March and April 2018. A total 520 students responded. The questionnaire asked for relevant bio data that included name, age, gender, address, university name and the year/semester they were studying in. There were also questions relating to any symptoms relating to Irritable Bowel Syndrome (IBS) that they had experienced in the past three months, if they had family history for Irritable Bowel Syndrome (IBS) and if they were allergic to any substance. The last portion of the questionnaire contained questions that were used in assessment of anxiety levels of the students using DASS-21 scoring system.

Results: Total number of respondents were 520. Of these, the Irritable Bowel Syndrome (IBS) cases recorded were 103 (19.8%). Of the 103 Irritable Bowel Syndrome (IBS) patients, 53 (51.5%) were female and 50 (48.5%) were male. Among the Irritable Bowel Syndrome (IBS) patients, 28 (27.2%) had extremely severe anxiety, 13 (12.6%) had severe anxiety, 28 (27.2%) had moderate anxiety, 9 (8.7%) had mild anxiety and 25 (24.3%) had normal levels of anxiety. 12 (11.7%) of the students having Irritable Bowel Syndrome (IBS) were extremely depressed, 19 (18.4%) students were severely depressed, 21 (20.4%) were moderately depressed, 17 (16.5%) were mildly depressed and 34 (33%) were normal. The levels of stress in Irritable Bowel Syndrome (IBS) patients was also assessed. Those who had extremely severe stress were 6 (5.8%); 20 (19.4%) had severe stress, 15 (14.5%) had moderate stress, 20 (19.4%) were mildly stressed and 42 (40.8%) were normal. The highest number of Irritable Bowel Syndrome (IBS) patients i.e. 35 (34%) worked for 10-20 hours; 30 Irritable Bowel Syndrome (IBS) patients (29%) had 30-40 working hours; 19 Irritable Bowel Syndrome (IBS) patients (18.4%) worked for 20-30 hours; Irritable Bowel Syndrome (IBS) patients working for more than 40 hours were 19 (18.4%). 11 (10.7%) of the Irritable Bowel Syndrome (IBS) patients were smokers. 28 (27.2%) patients had a positive family history for Irritable Bowel Syndrome (IBS).

Conclusion: Irritable Bowel Syndrome (IBS) is predominantly found in females. It is more common in people having high levels of anxiety.

Key Words: Irritable Bowel Syndrome, Stress, Depression, Anxiety, University students.

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INTRODUCTION

Irritable bowel syndrome (IBS) is a functional

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gastrointestinal disorder caused by changes in how the gastrointestinal tract works¹. The most common symptoms are diarrhoea, constipation, flatulence, bloating, and chronic abdominal pain^{1,21,22}. Irritable bowel syndrome (Irritable Bowel Syndrome (IBS) can be diagnosed if a patient experiences one or more of these symptoms at least three times a month for about three months or longer, according to the National Digestive Diseases Information Clearinghouse².

This condition is of four types. There is irritable

bowel syndrome with constipation (IBS-C) and irritable bowel syndrome with diarrhoea (IBS-D). Some people have an irregular pattern of constipation and diarrhoea. This is termed mixed irritable bowel syndrome (IBS-M). Other people who don't fit into these categories easily, are called unsubtyped irritable bowel syndrome, or (IBS-U)³.

The precise etiology of irritable bowel syndrome (IBS) is not known. There are factors that trigger irritable bowel syndrome (IBS). It occurs more often in females than in males and the onset occurs before the age of 35 in about half of the cases⁴. Irritable bowel syndrome (IBS) occurs in 5% to 20% of children⁵. Irritable bowel syndrome (IBS) also has developed after recurrent episodes of gastroenteritis. It has been suggested it is caused by dietary allergies or food sensitivities, but studies are being carried out to find the relationship. Symptoms of irritable bowel syndrome may worsen during periods of stress or during menstruation but these factors are questionable in being the cause of development of irritable bowel syndrome (IBS). In Karachi, Pakistan, a case-control study involving diagnosing irritable bowel syndrome (IBS) was conducted in three medical schools; in this study, the prevalence of irritable bowel syndrome (IBS) was found to be up to 28%, with a significant difference between students in pre-clinical years and students in clinical years⁶.

MATERIAL AND METHODS

This was a cross-sectional, descriptive study for assessing the effects of anxiety and other risk factors on the prevalence of Irritable Bowel Syndrome (IBS) among students of different universities of Peshawar, Pakistan. Duration of this study was one month after the approval of synopsis. Various universities of Peshawar were included in the study. The universities include Khyber Medical University, Peshawar University, Islamia College University. Data was collected by distributing questionnaires among university students of Peshawar. A total of 520 questionnaires were distributed from March to April 2018. 103 cases of Irritable Bowel Syndrome (IBS) were recorded. The data obtained was analysed by using SPSS software version-20 (Statistical Package for Social Sciences). Results were recorded as frequencies, percentages, pie charts and bar charts. DASS-21 scoring system was used to analyse the levels of anxiety of the participants.

RESULTS

In our study, the total respondents were 520 of which 238 (45.8%) were female and 282 (54.2%) were male. The total Irritable Bowel Syndrome (IBS) cases recorded were 103 (19.8%). Irritable Bowel Syndrome

(IBS) is more common in females. Figure-1 shows the gender wise distribution of Irritable Bowel Syndrome (IBS), according to which 53 (51.5%) females had Irritable Bowel Syndrome (IBS) and 50 (48.5%) males had Irritable Bowel Syndrome (IBS). Association between Irritable Bowel Syndrome (IBS) and certain risk factors was found. The most important risk factors that were looked into were anxiety, depression and stress.

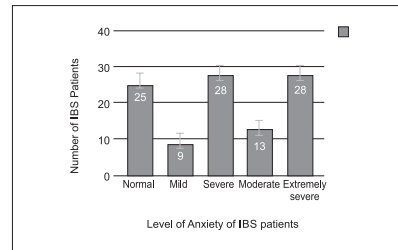
Fig-2 shows the levels of anxiety of people with Irritable Bowel Syndrome (IBS). Of respondents without Irritable Bowel Syndrome (IBS), 75 (18%) had extremely severe anxiety levels whereas the Irritable Bowel Syndrome (IBS) patients who had extremely severe anxiety levels were 28 (27.2%). In people without Irritable Bowel Syndrome (IBS), 49 (11.8%) had severe anxiety levels while in people with Irritable Bowel Syndrome (IBS) 13 (20%) had severe anxiety levels. In people without Irritable Bowel Syndrome (IBS) 77 (18.5%) had moderate anxiety levels while people with Irritable Bowel Syndrome (IBS) (27.2%) had moderate anxiety levels. In people without Irritable Bowel Syndrome (IBS), 37(8.9%) had mild anxiety levels while people with Irritable Bowel Syndrome (IBS), 9 (8.7%) had mild anxiety. In people without Irritable Bowel Syndrome (IBS), 179 (42.9%) had normal levels of anxiety while in people with Irritable Bowel Syndrome (IBS), 25 (24.3%) had normal levels of anxiety. These results show that the percentage of people having high levels of anxiety were significantly increased in people having Irritable Bowel Syndrome (IBS).

Fig-3 shows the levels of depression between people with Irritable Bowel Syndrome (IBS). In respondents without Irritable Bowel Syndrome (IBS), 30 (7.2%) had extremely severe depression while in respondents with Irritable Bowel Syndrome (IBS), 12 (11.7%) had extremely severe depression. In respondents without Irritable Bowel Syndrome (IBS), 33 (7.9%) had severe depression while in respondents with Irritable Bowel Syndrome (IBS), 19 (18.4%) had severe depression. In people without Irritable Bowel Syndrome (IBS), 80 (19.2%) had moderate depression while in respondents with Irritable Bowel Syndrome (IBS), 21 (20.4%) had moderate depression. In respondents without Irritable Bowel Syndrome (IBS), 56 (13.4%) had mild depression while in respondents with Irritable Bowel Syndrome (IBS), 17 (16.5%) were mildly depressed. In people without Irritable Bowel Syndrome (IBS), 218 (52.2%) had normal levels of depression while in respondents with Irritable Bowel Syndrome (IBS), 34 (33%) had normal levels of depression. These results show that the percentage of people having different levels of depression is significantly increased in people having Irritable Bowel Syndrome (IBS).

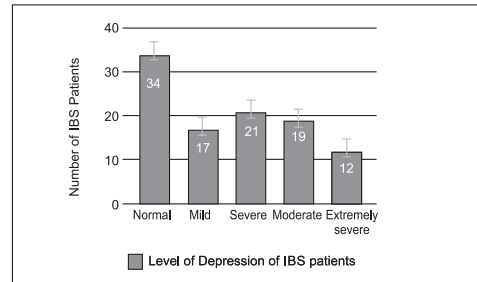
Fig-4 shows the levels of stress in people with Irritable Bowel Syndrome (IBS). In respondents without Irritable Bowel Syndrome (IBS), 8 (1.9%) had extremely severe levels of stress while in respondents with Irritable

Bowel Syndrome (IBS), 6 (5.8%) had extremely severe levels of stress. In respondents without Irritable Bowel Syndrome (IBS), 24 (58%) had severe stress while in respondents with Irritable Bowel Syndrome (IBS), 20 (19.9%) had severe stress. In respondents without Irritable Bowel Syndrome (IBS), 67 (16.1%) had moderate stress levels while in respondents with Irritable Bowel Syndrome (IBS), 15 (14.5%) had moderate stress levels. In respondents without Irritable Bowel Syndrome (IBS), 43 (10.3%) had mild stress while respondents with Irritable Bowel Syndrome (IBS), 20 (19.4%) were mildly stressed. In respondents without Irritable Bowel Syndrome (IBS), 275 (65.9%) had normal levels of stress while in respondents with Irritable Bowel Syndrome (IBS), 42 (40.8%) had normal levels of stress. So our results show that the percentage of people having different levels of stress were significantly increased in people having Irritable Bowel Syndrome (IBS). Our research shows that people without Irritable Bowel Syndrome (IBS), working for more than 40 hours was 69 (16.5%) while people with Irritable Bowel Syndrome (IBS), working for more than 40 hours was 19 (18.4%). People without Irritable Bowel Syndrome (IBS), working between 30-40 hours were 111 (26.6%) while people with Irritable Bowel Syndrome (IBS), who worked for the same number of hours were 30 (29%). People without Irritable Bowel Syndrome (IBS) working for 20-30 hours were 147 (35.3%) while people with Irritable Bowel Syndrome (IBS) who worked for the same number of hours were 35 (34%). These results show that number of working hours had a significant effect on the percentage of people having Irritable Bowel Syndrome (IBS).

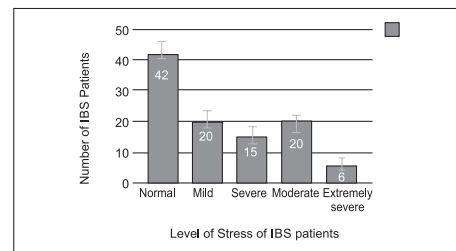
According to our data, 11 (10.7%) of the Irritable Bowel Syndrome (IBS) patients were smokers while the other 92 (89.3%) were non-smokers. So smoking is not an important risk factor in the development of Irritable Bowel Syndrome (IBS). They also show that 28 (27.2%) patients had a positive family history for Irritable Bowel Syndrome (IBS) while 75 (72.8%) had no family history for Irritable Bowel Syndrome (IBS). It was concluded that a positive family history for Irritable Bowel Syndrome (IBS) is a significant risk factor for the development of Irritable Bowel Syndrome (IBS).



Level of Anxiety of IBS Patients



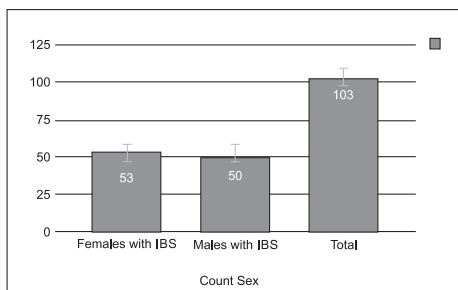
Level of Depression of IBS Patients



Level of Stress of IBS Patients

DISCUSSION

The prevalence of Irritable bowel syndrome was assessed using Rome 3 criteria and the levels of anxiety were assessed using DASS-21 scoring system. Our study showed that the prevalence of irritable bowel syndrome in the study population was 19.8% which is supported by the fact that overall prevalence of irritable bowel syndrome ranges from 10% to 20% worldwide⁷, however keeping in mind the fact that the incidence rates of irritable bowel syndrome are rarely calculated and prevalence rates vary both within and between countries. According to a study published in American journal of nursing in June 2017, which was carried out in 41 countries, the prevalence rate mentioned for Europe, Australia, New-Zealand and North America was 8.1% which is much lower than that recorded in our research, possibly owing to the better healthcare and screening system that these countries have to offer⁸. While irritable bowel syndrome does not add to the mortality rates, it puts significant burden on the patients and the society. According to the same study mentioned above irritable bowel syndrome was responsible for more than 2 million diagnoses in the U.S in 2010⁹.



Count of Sex of IBS Patients

Our results show that more females i.e. 51.5% have irritable bowel syndrome as compared to males i.e. 48.5%. This is reinforced by previous studies^{10,11,15}. A study conducted in Beijing, China in Beijing University of Chinese Medicine from February 2014 to June 2014 to find the prevalence of irritable bowel syndrome among medical students also supports this finding¹². This can be in part due to the difference in hormone levels^{17,19}. Also, females are more likely to have disturbed sleep and problems related to mental health, which can be linked to a higher incidence of irritable bowel syndrome in females, making gender a possible risk factor for irritable bowel syndrome¹⁸.

Our study suggests that a higher percentage of students with irritable bowel syndrome had extremely severe anxiety levels i.e. 27.2% as compared to students without irritable bowel syndrome which was 18.0%. Similarly in students with Irritable bowel syndrome, 11.7% had extremely severe depression while among those without irritable bowel syndrome, 7.2% had extremely severe depression. Higher percentage of students with Irritable bowel syndrome i.e. 5.8% had extremely severe stress levels as compared to those without Irritable bowel syndrome i.e. 1.9%. These findings hint to the possible role of anxiety, depression and stress in causing irritable bowel syndrome¹³. A possible explanation for this can be the fact that psychological factors affect the brain-gut axis, leading to dysfunction which affects the action of the gut through neural, neuroimmune and neuroendocrine pathways¹⁴. We also tried to find the association between increased working hours and prevalence of irritable bowel syndrome.

The role of smoking in causing irritable bowel syndrome was also looked into and we did not find any association between irritable bowel syndrome and smoking as majority of students with irritable bowel syndrome i.e. 89.3% were nonsmokers. This is supported by a recent study that was carried out in Lebanon in 2016 which was also mentioned earlier. According to the study there was not a significant difference between those who smoked and those who did not¹⁶.

Our survey also tried to find out the link between a positive family history for irritable bowel syndrome and its prevalence, but only 27.2% of students with irritable bowel syndrome reported of having a positive family history for irritable bowel syndrome²⁰. Irritable bowel syndrome affects a large number of people and it affects their quality of life. By conducting this survey

we have tried to find out the prevalence of irritable bowel syndrome and the various risk factors that contribute to it. The results will help us suggest better treatment options for irritable bowel syndrome, which will improve the symptoms and hence the quality of life of patients.

The strength of this research was that a large sample size was taken which will add to the credibility of the research. Also, the questionnaires were filled by university students which means they had a good understanding of the questions being asked thus reducing the chances of errors. The limitation of the study were that we did not classify Irritable Bowel Syndrome (IBS). The questionnaire was distributed among university students only which can affect the generalizability of study and also lead to selection bias. Since the data was collected through self-administered questionnaires, it can lead to higher proportion of incomplete data as compared to interview surveys. We also did not eliminate other gastrointestinal problems through endoscopy.

CONCLUSION

Irritable bowel syndrome is quite common in the general population. It occurs mostly in people less than 45 years of age. Mostly in women and has a strong link with stress.

RECOMMENDATIONS

There is a huge need to increase awareness about Irritable Bowel Syndrome (IBS) among people, because it significantly affects the quality of life of people suffering from it, and such people are not able to do their jobs in offices or socialize with their peers normally. Even though there is no proper cure available for the condition, its symptoms, to a certain degree can be controlled. For that, it has to be diagnosed first and patients have to modify their lifestyle accordingly. The modifications include changes in their diet, doing exercise and acquiring adequate information about how to manage their symptoms.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under:

Khan AR: Made questionnaire, data analysis, data collection.

Khan A: Data collection, results compilation, discussion writing.

Ahmad A: Data collection, results compilation, conclusion writing.

Abbas Y: Data collection, results compilation, introduction writing.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.