

IS THERE A RELATIONSHIP BETWEEN IRRITABLE BOWEL SYNDROME AND GENERALIZED ANXIETY DISORDER?

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ABSTRACT

Objective: To find out the relationship of irritable bowel syndrome (IBS) and generalized anxiety disorder (GAD) among students of Peshawar Medical College and Peshawar Dental College.

Methodology: This Cross sectional study was conducted in Peshawar Medical College and Peshawar Dental College from November 2015 to February 2016. ROME III criteria was used for the diagnosis of IBS and to assess GAD, a 7-item Generalized Anxiety Disorder (GAD-7) scale was used. A total of 750 questionnaires were distributed and 604 (80.5%) questionnaires were received back after completion. The data was analyzed using SPSS v.20 and a p value of <0.05 was considered significant.

Results: The mean age of the sample was 20.93 ±1.47 years. Majority of the sample comprised of female students (n=387, 64.1%). A total of 223 (36.9%) students met the criteria for IBS and 143 (23.7%) students scored above the cut off for GAD. Eighty-four (13.9%) students that had IBS also had GAD. The correlation of IBS was highly significant with GAD (r=.236, p =.000).

Conclusion: More than one third of the medical students were having IBS and a quarter of students were having GAD. More than 20% of students having IBS also had GAD and there was highly significant correlation between IBS and GAD.

Key Words: Irritable bowel syndrome, Generalized anxiety disorder, Medical students

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INTRODUCTION

Irritable bowel syndrome (IBS) is chronic, episodic functional gastrointestinal disorder characterized by recurrent abdominal pain/discomfort and altered bowel habit (constipation, diarrhea or alternating periods of both). Additional symptoms such as bloating, sensation of incomplete evacuation, straining (constipation) and urgency (diarrhea) are often experienced¹. IBS is found to be associated with a number of psychiatric illnesses including anxiety disorders and of the different types of anxiety disorders, generalized anxiety disorder (GAD) may be particularly associated with IBS². GAD is typically a chronic relapsing illness, characterized by core symptoms of pathological worry, restlessness, easy fatigue, sleep disturbance, muscle tension, difficulty concentrating and irritability³.

According to an International survey, the prevalence of IBS is 11.5%⁴. However, a study conducted in Pakistan showed that overall 34% students have IBS; with 41% of non-medical students and 26% of medical students, have IBS⁵. Another study conducted on medical

students of three medical colleges of Karachi showed 28.3% prevalence of IBS with majority (51.8%) of medical students expressing psychological symptoms of anxiety⁶. GAD has a combined lifetime prevalence of 3.7% and is significantly more prevalent and impairing in high-income countries⁷. In a study conducted on medical students in Saudi Arabia, it was reported that the overall prevalence of students who had GAD was 18.5%⁸.

Both IBS and GAD are likely to involve central and peripheral serotonergic disturbances. They also bring about anticipatory worries and avoidance behavior that impair functioning in everyday life^{9,10}. The two illnesses add to health-care cost and poor quality of life². The availability of statistics on the existence and relationship of IBS and GAD in Khyber Pakhtunkhwa province of Pakistan is practically non-existent and it is high time to conduct relevant research to add to the existing literature on the subject. This motivated us to conduct our study to find out the relationship of IBS and GAD in the students of Peshawar Medical College and Peshawar Dental College.

METHODOLOGY

A Cross-sectional study was conducted in Peshawar Medical College (PMC) and Peshawar Dental College (PDC) from November 2015 to February 2016 using purposive sampling technique. Demographic data was recorded on a semi-structured questionnaire. For the diagnosis of IBS, ROME III criteria was used and to assess GAD, a 7-item Generalized Anxiety Disorder (GAD-7) scale was used.

ROME III criteria defines IBS as abdominal discomfort for at least 3 days/month in past 3 months associated with 2 or more from improvement with defecation; onset associated with a change in frequency of stool; and onset with change in form (appearance) of stool¹¹.

GAD-7 scale measures anxiety by adding the scores of all the 7 items in the scale, where each item is scored either as 0 (not at all), 1 (several days), 2 (more than half the days), or 3 (nearly every day). Therefore, the total score ranges from 0 to 21. When screening, a recommended cut-off point is 10 or greater for probable diagnosis of GAD. However, scores of 5, 10 and 15 represent cut-off points for mild, moderate and severe anxiety, respectively. Using the threshold score of 10, the GAD-7 has sensitivity of 89% and specificity of 82% for GAD. The scale is moderately good at screening three other common anxiety disorders - panic disorder (sensitivity 74%, specificity 81%), social anxiety disorder (sensitivity 72%, specificity 80%) and post-traumatic stress disorder (sensitivity 66%, specificity 81%)¹².

The population of Peshawar Medical College and Peshawar Dental College, in which the study was carried out, included all the students from first to final year

and therefore 750 questionnaires were distributed. The completed response was received from 604 students, making a response rate of 80.5%.

All the demographic questions and those pertaining to ROME III criteria and GAD-7 scale were coded for analysis and data handling. The data was analyzed using SPSS v.20. Analysis of the basic variables was carried out using descriptive statistics. Spearman correlation was calculated between IBS and GAD. The results were considered significant at $p < 0.05$ level.

RESULTS

The sample consisted of responses from 604 students, with majority of female students ($n=387$, 64.1%). The mean age of the sample was 20.93 ± 1.47 years with the age range of 17 to 25 years. Majority of respondents were from Peshawar Medical College ($n=457$, 75.7%). The Cronbach- α Reliability for GAD-7 scale was .858. A total of 223 (36.9%) students met the criteria for IBS, and 143 (23.7%) students scored above the cutoff for GAD. Eighty-four (13.9%) students had both IBS and GAD. The complete details of the sample are given in table 1.

Although for the probable diagnosis of GAD, a cut off score of 10 is used as a standard but the pie chart in the figure 1, below, shows the frequency distribution of GAD in mild, moderate and severe cases with a cut off of 5, 10 and 15, respectively, considering a total of 358 cases.

The result of spearman correlation revealed a significant correlation between IBS with GAD and IBS with those residing in the hostels ($p = .000$ & $.000$). Further details are given in table 2.

Table 1: Variable wise distribution of the GAD and IBS cases (n =604)

Variables		Total [n (%)]	Cases of IBS [n (%)]*	Cases of GAD [n (%)]*
Gender	Male	217 (35.9)	80 (36.9%)	45 (20.7%)
	Female	387 (64.1)	143 (36.9%)	98 (25.3%)
Year of Study	First Year	131 (21.7)	34 (25.9%)	23 (17.5%)
	Second Year	158 (26.2)	56 (35.4%)	40 (25.3%)
	Third Year	149 (24.7)	64 (42.9%)	39 (26.1%)
	Fourth Year	100 (16.6)	37 (37%)	17 (17%)
	Fifth Year	66 (10.9)	32 (48.5%)	24 (36.4%)
Residence	Day Scholars	345 (57.1)	97 (28.1%)	72 (20.9%)
	Living in Hostel	259 (42.9)	126 (48.6%)	71 (27.4%)

* Percentages are calculated from total sample

Table 2: Spearman correlation among IBS, GAD, gender and residence (n =604)

S. No	Measures	I (p value)	II (p value)	III (p value)	IV (p value)
I	IBS	1			
II	GAD	.236** (.000)	1		
III	Gender	.001 (.984)	.052 (.204)	1	
IV	Residence#	.211** (.000)	.076 (0.061)	.091* (.025)	1

* < 0.05, ** < 0.01, #Residence =day scholars vs. students living in hostels.

DISCUSSION

This study is an attempt to draw a relationship between IBS and GAD in students of Peshawar Medical College and Peshawar Dental College. In our study, the frequency of IBS was 36.9%, which is in line with other studies, in which it was shown to be 33.3% in medical students of China¹³, 28.3%⁶ and 26%⁵, respectively, in medical students of Pakistan and 35.5% in nursing and medical students of Japan¹⁴. In students with non-medical background, it was reported to be 41% in Pakistan⁵ and 15.7% in China¹⁵. However, in community studies, the prevalence was reported to be much less, e.g., the prevalence was 14.1% in US¹⁶, 14% in Pakistan¹⁷, 10.2% in Turkey¹⁸, 8.6% in urban community in Singapore¹⁹, 6.6%²⁰ and 5.4%², respectively, in Hong Kong, 5.67% in South China²¹, 4% in northern India²² and unusually high rates of 21.5% in Iran²³ and 24.4% in Bangladesh²⁴. The findings suggest that higher frequency of IBS in medical students is a clear depiction of stress faced by medical students and stress is closely associated with IBS. In addition, the differences in prevalence may be due to the use of different questionnaires based on varying definitions of functional gastrointestinal disorders and differences in sampling techniques and variations in the study populations²⁵.

According to our study, the percentage of IBS was equal in female and male medical students (36.9%) which is close to the findings by Kwan et al who showed female to male ratio of 1.3:1²⁰ and Xiong et al who showed female to male ratio of 1.25:1²¹. A large number of studies, however, have shown female gender to have more IBS than males. These include studies conducted in medical students of Pakistan (29.3% vs. 23.8%)⁶, China (36.1% vs. 25%)¹³ and Japan (41.5% vs. 25.2%)¹⁴. A similar trend is seen in the community studies conducted in Singapore (6.2% vs. 4.6%)², Turkey (12.4% vs. 8%)¹⁸, India (4.8% vs. 3.2%)²², Iran (24% vs. 18.3%)²³, and Bangladesh (27.7% vs. 20.6%)²⁴. A study from Pakistan showing 56% of males having IBS¹⁷ and another Paki-

stani study showing 36% males and 32% females having IBS⁵, however, highlight the opposite side of the story. Summarizing all, a systematic review and meta-analysis concluded that prevalence of IBS was not significantly higher in women, compared with men, in South Asian, South American, or African studies, which strongly supports our findings²⁶.

In our study, the frequency of GAD was 23.7%, which is in line with other the study conducted in medical students of Taif, Saudi Arabia, in which it was shown to be 18.5%⁸. Other studies in primary care in US have shown a much lower prevalence of 3.7% and 2.8%, respectively^{27,28}. Community based studies in US²⁹ and Hong Kong² have shown a lower prevalence to be 5.1% and 4% respectively, which is endorsed by a global finding of 3.7%⁷. Studies conducted to assess overall anxiety in medical students, however, reveal higher prevalence of 47% in students of Al-Faisal University, Saudi Arabia³⁰, 44.4% in Qassim University, Saudi Arabia³¹, 35.5% in Brazil³² and 20.3% in Turkey³³.

GAD was more reported in females in our study (25.3%), which is in line with other studies, which have reported GAD to be more in females, even twice as common among women, than men^{29,32}. GAD was reported in highest percentage (36.4%) in the final year, in our study, but other studies have shown it to be highest in the students of first (23.1%) and second year (73%) of medical school^{18,31}.

The correlation of IBS and GAD was found to be highly significant in our study, which is in accordance with the study by Lee et al² that concluded that IBS is strongly associated with GAD. Similarly, in another study on college students, 21.5% students with IBS had GAD, which is lower than 37.7% in our study³⁴. In addition, Chinese patients with IBS had higher anxiety (6.3 vs. 2.9, $p < 0.001$) scores when compared with patients without IBS³⁵. Another study from Korea concluded that in students, stress is associated with IBS, which implies that stress and anxiety could affect occurrence of IBS³⁶. A re-

cent study has shown that, though IBS prevalence was higher in students with morbid levels of anxiety (17.5%) compared to those with borderline anxiety (14.7%), though there no statically significant association of IBS with anxiety³⁷.

LIMITATIONS

There are a few limitations to this study. First, the data is based only on the medical students of two colleges, so the results cannot be generalized. Second, since it was a cross-sectional study, and some of the students might have been appearing in important tests and exams, at that point of time, extra stress and anxiety on those students, may have exaggerated their gastrointestinal symptoms and psychological stressors affecting the results of the study.

CONCLUSION

IBS was common among students of Peshawar Medical College and Peshawar Dental College and more than one third of the students were having IBS. The ratio, however, was same in male and female students. As medical students are known to suffer from substantial amounts of stress and anxiety, a quarter of students were having GAD as well. It was also concluded that IBS and GAD were having strong correlation. Due to the high prevalence of IBS and its correlation with GAD, awareness needs to be raised among students about IBS and its impact on the overall performance and quality of life of the students. Non-pharmacological interventions, if in place, can play an important role in reducing the amount of stress and anxiety in medical students, providing some sort of protection from the occurrence of IBS.

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CONTRIBUTORS

HA conceived the idea and wrote the initial draft of the manuscript. RA helped in data collection and initial write up of the manuscript. MRS analyzed the data and helped in the revision of the manuscript. MI critically reviewed and revised the manuscript. Supervised the study. All authors contributed significantly to the submitted manuscript.