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PREVALENCE AND RISK FACTORS ASSOCIATED WITH IRRITABLE BOWEL SYNDROME AMONG MEDICAL AND NON MEDICAL FEMALE STUDENTS IN TAIBAH UNIVERSITY

Lamia khalif alharbi*, Areej Mohammed Al-Amri, Doaa Yousif Alamri, Esraa Qabl Alsaedi, Shahad Saad Alhujaili and Magda HM Youssef

Medical Students, College of Medicine, Taibah University Al Madinah, kingdom of Saudi.

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***Corresponding Author**
Lamia Khalif Alharbi
Medical students, College of Medicine, Taibah University Al Madinah, kingdom of Saudi.

ABSTRACT

Objective Our Aims: To determine the prevalence of Irritable bowel syndrome among medical and non-medical female students in Taibah University. Also, to evaluate the symptoms, risk factors and the association between BMI and IBS. **Methods and subjects:** A cross-sectional study conducted in Taibah University at Al Madinah. A convenient sample conducted randomly from 200 female medical students and 216 female non-medical students. A Research tool is a questionnaire which contains 38 questions. **Results:** The incidence of Irritable bowel Syndrome was 21.9%. It is more among community College students than medical students. The overall prevalence of IBS was higher in students aged 19 years compared to older students. 39% with low income among community collage compare with medicine collage (20%) with moderate income. 92% of the medical students and 98%of community students with IBS they suffer from stress. There is a relationship between the incidence of IBS and the diagnosis of a family member IBS. In this study, there was no significant relation between BMI and the occurrence of IBS among the students who diagnosed with IBS in both Medicine and community Colleges. **Conclusion:** The prevalence in our study in Taibah University reported that IBS is high in Community students than Medical students. Students more frequently suffer with mental stress and anxiety are more associated with IBS. Students who drink mints relieve their symptoms more than other food.

KEYWORDS: Irritable Bowel Syndrome, IBS, medical students, functional gastrointestinal disorder.

INTRODUCTION

Irritable bowel syndrome (IBS) is a functional gastrointestinal disorder affects the large intestine which presents a major public health concern worldwide due to its negative impact on health related quality of life and high health care expenditure. It is characterized by abdominal pain, discomfort and alteration of bowel habits, in the absence of organic disease,[1] and it is a chronic situation that will need to manage long term.

The prevalence of IBS is high worldwide from 5.7% to 34%[2], although it varies according to the country and diagnostic criteria which have been used.[3] Various diagnostic tools have been employed for the detection of IBS, but the most common method is the Rome III criteria, so based on it the prevalence of IBS has been estimated to range from 10% to 15% in Western countries, whereas that reported in Asian countries ranged from 1% to 10 %.[4,5] Little is known about IBS prevalence in Saudi Arabia among university students. Medical students are among the most challenging and the most stressful education, and this may predispose to high rates of IBS.

IBS is highly affected by sex and age. IBS can affect people of all ages, but it's more likely between late teens to twenties decreasing with age.[6,7] It is more common in females than in males.[6,7] The exact cause of IBS is not known, but there are a lot of factors that increase risk of IBS like dietary habits and psychological factors such as stress and anxiety.[5,6] Also there is evidence suggests that a genetic role in the etiology of IBS, with 33% of patients with IBS reporting a positive family history.[6] Although IBS is not a serious condition, it does however considerably reduce the quality of life by interferes with their education, working and their social life.[8] IBS does not cause permanent damage to the intestine and it does not lead to a serious disease, such as cancer.[9] In many cases, just simple changes in diet and lifestyle can provide relief from irritable bowel syndrome.[10]

Although the association between obesity and gastrointestinal diseases, such as gastroesophageal reflux disease, is well established, the data examining the association between obesity and IBS have not been well characterized.[11]

SUBJECTS AND METHODS

A cross-sectional study will be conducted in Taibah University at Al Madinah from December 2016 till January 2017. A convenient sample will be conducted randomly from University female students aged 19 years old or more. (200 female medical students and 200

female non-medical students). Participation in the study is voluntary, and did not involve financial or any other compensation.

A Research tool is a questionnaire prepared in accordance to relevant literatures which contains (Rome III diagnostic criteria), **Validity** of the questionnaire will be tested through the opinions of three experts for language clarity, content, relevancy, ability to understand questions, and the time needed to answer. The questionnaire is in Arabic language. **The reliability** test will be conducted for the internal consistency of the items by using the reliability coefficients (Cronbach's alpha= 0.8) which is suitable for the questionnaire. And the informed consent of the participants is obtained.

The questionnaire included 38 questions in 3 sections, the first section included questions about socio-demographics. The second section questions directed to those who diagnosed as IBS. The third section included questions related to the risk factors. Those who didn't diagnosed as IBS will be asked to answer the first, third and the fourth sections only. The fourth section included questions about the knowledge of awareness of the warning signs and symptoms of IBS.

Group of medical students, belonging to medical and non medical colleges will use self-administered structured questionnaire to get the responses from participants. The semi-structured questionnaires pre-tested on 150 of the subjects to explore if there is any ambiguity or items leading to misunderstanding in the questionnaire in order to reach to its current final form. These 150 subjects will not be included in the main survey.

Ethical considerations: Official permissions will be obtained from the scientific ethical committee of the college. Informed consent will be obtained from all the participants after describing the aim of the study. Privacy and confidentiality will be assured.

Statistical Analysis

Statistical Analysis will be used. Data will be coded, entered and analyzed using the Statistical Package for Social Science (SPSS) version 20.0 (SPSS, Chicago, IL, USA). Descriptive analysis followed by inferential statistics will be done. Percentages, means, and standard deviations will be calculated for qualitative and quantitative data respectively. Chi-square test (X^2) and Fisher's exact test will be used to statistically analyze qualitative data.

Student t- test and ANOVA will be used to compare means for quantitative data when needed. A P-value of 0.05 will be considered as a cut off point for the level of significance.

RESULTS

The study was conducted on 416 female students, 200 were enrolled at the College of Medicine and 216 from the Community College at Taibah University. The incidence of Irritable bowel Syndrome was 21.9%. It is more among female students at College of community than female students at College of Medicine (P=0.000). 65 (30%) and 26 (13%) of the students in the Community College and the college of Medicine had irritable bowel syndrome respectively and they represent 71.4 % and 28.6% from the total students who have irritable bowel syndrome respectively.

Table (1): The prevalence of Irritable Bowel Syndrome among students of the College of Medicine and the College of Community.

Colleges	Students had IBS		Students haven't IBS		P
	N	%	N	%	
College of Medicine	26	13.1	173	87	0.000
Community College	65	30	152	70	0.000
	91	21.9%	325	78.1%	

The overall prevalence of irritable bowel syndrome was higher in students aged 19 years compared to older students and the majority of students were single (23%) compared to married students were (18%) in both colleges. the prevalence of irritable bowel syndrome was higher in second level of academic years (50%) among community student compare with medical student was in higher academic level with p value 0.05. (39%) with low income among community college compare with medicine collage (20%) with moderate income with (p value =0.008). There was no relationship between the parents education and irritable bowel syndrome.

Table (2): The relationship between irritable bowel syndrome and sociodemographic factors.

Sociodemographic variables	Students in Community College			Students in College of Medicine		P
	N	%		N	%	
Age						
19 Years old	26	50%		3	27%	0.086
20 Years old	20	38%		3	9%	
21 Years old	9	33%		5	12%	
22 Years old	3	9%		3	8%	
23 Years old	3	9%		8	17%	
24 Years old	2	3%		3	8%	
25 Years old	1	2%		1	4%	
26 Years old	1	2%		0	0%	
Marital status						
Single	61	31.3%		23	13%	0.28
Married	4	20.0%		3	15%	
Divorced	0	0.0%		0	0%	
Education Level						
First	7	16%		4	10%	0.05
Second	41	50%		2	7%	
Third	10	26%		2	4%	
Fourth	6	12%		9	16%	
Fifth	0	0%		7	16%	
Sixth	1	3%		2	12%	
Father's education Level						
Primary or less	34	40%		1	8%	0.864
Elementary	9	29%		4	12%	
High school	11	23%		6	14%	
College degree	8	18%		10	18%	
Postgraduate	3	5%		5	14%	
Mother's education Level						
Primary or less	28	28%		3	16%	0.457
Elementary	14	40%		4	18%	
High school	13	30%		5	10%	
College degree	9	24%		13	14%	
Postgraduate	1	33%		1	6%	
Income of the family						
<3000	28	39%	75 22	4	12%	0.008
3001-5000	17	34%		4	10%	
5001-10000	10	23%	52 38	8	18%	
10001-15000	3	13%		10	20%	
>15000	7	16%		0	0%	

Table (3): The relationship between irritable bowel syndrome and the common risk factors.

Risk factors	Medical Students have IBS		Community College Students have IBS		P
	N	%	N	%	
Drink water on empty stomach	16	62%	57	88%	0.000
Drink a large amount of soft drinks	6	23%	36	55%	0.530
Eat lots of junk food	14	54%	35	54%	0.530
Eat Spicy Food	13	50%	44	68%	0.210
Suffer from stress	24	92%	64	98%	0.000
18.5 to 24.9	15	62.5	38	71.7%	0.54
25 to 29.9	4	16.7	9	17%	
more 30	5	20.8	6	11.3%	
Family history	26	92%	63	97%	0.000

This table show A Relationship between irritable bowel syndrome and common risk factor.

54% of the medical and community students with irritable bowel syndrome they eat a lots of junk food and soft drinks, while 46 % of the students they doesn't eat a lots of junk food and drink a large amount of soft drinks. The prevalence of IBS was significantly much higher in student whose drink water on an empty stomach (62%) of the medical students (88%) of community student with P= 0.000 which was considered as statistical significant. 63% of the students with irritable bowel syndrome they eat a lot of spicy foods, while 37 % of student doesn't eat a lot of spicy foods.

92% of the medical students and 98%of community students with irritable bowel syndrome they suffer from stress, and 3% of the students they doesn't suffer from stress with P= 0.000 as statistical significant. Compared to the study of irritable bowel syndrome among Medical and Non-Medical Northern Border University Students, Kingdom of Saudi Arabia witch show the similar result.

The most common factor that associated with IBS are stressful life (that presented by 92-98%) and drink water on an empty stomach (that presented by 62-88%). The third common risk is a spicy food that presented by 63%. There are equal present between junk food and soft drink (46% - 54%).

21% of students have irritable bowel syndrome and their family members have irritable bowel syndrome and 49% of students doesn't have irritable bowel syndrome also their family members they do not have irritable bowel syndrome, 29% of students doesn't have irritable bowel syndrome and present in their family members with irritable bowel syndrome, 1% of students have irritable bowel syndrome and none in their family members has irritable bowel syndrome. We found that there is a relationship between the incidence of irritable bowel syndrome and the diagnosis of a family member irritable bowel syndrome with 95% confidence level and the p-value=0.000.

In our study of 416 students participants from the medicine and community college weight and height were measured and their information were converted to BMI. Body mass index (BMI) is a simple index of weight-for-height that is commonly used to classify overweight and obesity in adults. It is defined as a person's weight in kilograms divided by the square of his height in meters (kg/m2).[12] BMI of participants were divided into three groups, 18.5 to 24.9% being normal weight, 25 to 29.9% being overweight and more than 30% being obese participants who weren't falling in these three divisions were excluded being underweight less than 18%. The prevalence of IBS in obese were 20.8% in medical college students and 11.3% in community college students, in overweight were 16.7% in medical college students and 17% in community college and normal healthy weight were found 62.5% in medical college and 71.7% in community college respectively.

DISCUSSION

This study showed that the prevalence rate of irritable bowel syndrome among female students in Taibah University was 21.9 %, this rate was relatively high and it is similar to that estimate in worldwide from 5.7% to 34%.[2]

The prevalence of irritable bowel syndrome (IBS) was higher in Community College than the Medical College. And this might refer that having IBS isn’t only related to stress, but also to the wrong eating habits that non-medical students may not be aware of.

IBS among medical students was 13.1% which is higher than other study done in same university among medical students and the prevalence was (10.5%).[13] However, it is lower than other study in King Abdulaziz University in Jeddah, Saudi Arabia, examined 597 medical students and interns using the Rome III criteria, revealed an IBS prevalence of about 31.8% in all participants.[14] The discrepancy between our study and study from King

Abdulaziz University in Jeddah suggests that there might be a true difference between the two city. Other causes may be attributed to sample size, age group, and diagnostic criteria used.

The prevalence rate of IBS in this study is similar to that reported by other countries in the region, in Lebanon and Suez Canal University in Egypt (20%; 22.9% respectively.[15;16] However, the prevalence rate of IBS in this study in Saudi Arabia is relatively higher than that found in Western countries which was 10% -15%[4], and with the findings of Northern Border University students was 32.5%.[17]

Regarding the sociodemographic factors, IBS was higher in younger students in both colleges but lower academic level among community students compare with medical students in higher academic level and this result could be due to new environment and less experience to deal with stress. However, another study from Jeddah in Saudi Arabia found that IBS was more in older students and those from higher education level.[14] Other study done in Northern Border University in Saudi Arabia found no significant relationship between sociodemographic factors and irritable bowel syndrome.[17] The prevalence of irritable bowel syndrome was higher in non-married students (92%) compared to married students (8%) and this result is against what we expected as single students are only concern about their life not thinking about children and less responsibility but other study was done in same university in Taibah University[13] found the prevalence of irritable bowel syndrome was more in married students and this difference may be due the size and type of simple. IBS was higher among community student who are of low socioeconomic status (< 3000 S.R) (P= 0.008) compare with medical student in moderate income. There is theory support our result that low income associated with stressful life.[18]

In this study, stress is high among students of both colleges, however, it is higher among Community college. Stress among the students was proved to be a major risk factor associated with the development of irritable bowel syndrome.[17] The students expose to a lot of lifestyle stress. A study did among medical students of Pakistan found that 56% of the total individuals who were IBS were positive for anxiety.[19]

Many studies have reported that IBS is associated with elevated levels of emotional and psychological stress, yet the exact mechanism of how psychological stress induces abdominal symptoms has not been elucidated. It has been postulated that stress stimulates colonic

spasms according to the study of factors associated with irritable bowel syndrome among medical students of Karachi, Pakistan. Many studies reporting a bidirectional relationship between the central nervous system and the digestive tract.[20] Another study revealed that the prevalence of IBS was higher among students due to increased study and work stress during clinical years and internship among medical students and interns in King Abdulaziz University, Jeddah.[14]

Drinking water on an empty stomach, which is defined as an important precipitating factor, had 2-fold increased risk of developing IBS compared to other students not drink a water The type of water used in this study is not determent (either cold or warm). there is a study on the Department of Gastroenterology, Qilu Hospital, Shandong University, Jinan 250012, China, and Department of Gastroenterology, St. Vincent's Hospital, Fitzroy, Australia that show the relation between Visceral hypersensitivity following cold water intake in subjects with irritable bowel syndrome which is After drinking cold water, the perception thresholds in IBS patients and the defecation thresholds in diarrhea-predominant IBS patients were further decreased. However, warm water intake did not change the perception thresholds.

The risk of having IBS was significantly greater among students with high consumption of spicy foods compared with students do not consuming any spicy foods.[21] This was consistent with findings from a cross-sectional study across a large sample of Iranian adults which found that students with high consumption of spicy foods had a 2-fold increased risk of developing IBS compared with other who reported not consuming any spicy foods.

A positive family history of IBS showed that it has a similar effect on students (50% for each) compared to other study among medical students and interns in King Abdulaziz University, Jeddah showed that students with positive family history of IBS have two times more prone to it compared to other students. This is agree with results of a family-based case–control research conducted in the United States, which confirmed IBS familial clustering and highlighted that family history is a known predictor of IBS.[14]

Regarding symptoms of irritable bowel syndrome in our currents study, more of students suffer from constipation (44%), abdominal pain (43%), bulging from abdomen (76%), and diarrhea (14%).

Compared to a large population-based Internet survey in JAPAN diagnosed with IBS suggests that abdominal bloating most bothersome symptom (27.5%), which was more likely to occur after a meal (52.2%), Abdominal bloating was the most at work/school (29.2%) and during times of stress (26.8%). Only 4.5 % of IBS-C subjects reported abdominal pain as the 'most bothersome' symptom.[22]

In this study, there was no significant relation between BMI and the occurrence of IBS among the students who diagnosed with IBS in both Medicine and community Colleges. This finding is consistent with Liu et al.[23] who showed that the BMI had no significant effect on IBS prevalence. Also with Farzaneh, et al.[19] who had mixed results that found no association between BMI and IBS in males, but a significant relation was seen among BMI < 25 and females. According to Katsuhisa, et al. study[24] who found that their participants had lower BMI values. On the hand, El-Fetoh et al.[25] study found a significant effect of BMI on the prevalence of IBS among their respondents.

We also used ROME lll criteria based self administered questionnaire translated to Arabic language to diagnose the 325 out of 416 students who had never been diagnosed before and to find the prevalence of IBS among healthy female students at Taibah University. ROME lll criteria is commonly used nowadays to diagnose IBS it takes consideration of the GI symptoms and it frequency and duration. IBS is defined by ROME lll criteria as recurrent abdominal pain or discomfort for at least 3 days/month during last 3 months associated with two or more of the following: Improvement with defecation, onset associated with a change in frequency of stool and onset associated with a change in form (appearance) of stool.

By using ROME lll criteria to screen for IBS, it is found that 76 of students are positive, thus giving a prevalence of 23%. The sensitivity of the ROME lll criteria combined with the absence of red flag symptoms is 65%, specificity is 100%, the positive predictive value is 100% and the negative predictive value is 76%.

CONCLUSION

The prevalence in our study of Taibah University students reported that Community College high in irritable bowel syndrome than Medical students. Students more frequently suffer with mental stress and anxiety are more associated with IBS. Students who drink mints relieve their symptoms more than other food.

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