Prevalence of Irritable bowel syndrome among medical students in Jeddah city

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Abstract—

Background:

Irritable bowel syndrome is a gastrointestinal tract disease of unknown etiology. However, several factors were thought to be associateed with its development including stress and hypersensitivity. It is clinically diagnosed and there is no marker for its detection. The prevalence of irritable bowel syndrome varies among different nations.

Objective:

To determine the prevalence, risk factors, association and distribution of IBS among medical college students in Jeddah city.

Method:

This study is cross-sectional was conducted among 1026 medical students from 5 different universities in Jeddah city, Saudi Arabia. The study was conducted during the period from April to May 2018. The collected data included demographic data of students, lifestyle and medical history. The collected data were analyzed by SPSS program.

Results:

The prevalence of IBS among medical students was 17.9%, risk factors for IBS development were female gender (P-value=0.03), being in medicine program student (P-value=0.02), having regular non-steroidal medications (P-value=0.02). The predictors of IBS were anxiety (P-value=0.0001) and depression (P-value=0.0001).

Conclusion:

The overall prevalence of IBS was17.9%, among medical students; anxiety and depression were two predictors.

Index Terms— IBS Prevalence, Medical students, IBS risk factors, IBS predictors, Saudi Arabia.

INTRODUCTION

Gastrointestinal disorders are frequent in the daily practice of medicine and have a significant impact on quality of life [1]. Irritable bowel syndrome (IBS) is a common functional bowel disorder characterized by frequent abdominal pain associated with altered bowel habit without an explanatory organic etiology [2]. IBS can be diagnosed using Rome III criteria and subclassified according to patients' predominant stool pattern into the diarrhea-predominant, constipation-predominant, or those who have both diarrhea and constipation [2]. It is a common condition worldwide, affects up to 15% - 30 % of the population [3]. The pathogenesis is known to be multifactorial in nature. Peripheral factors such as abnormal GI motility, low-grade inflammation, increased epithelial permeability and visceral hypersensitivity are recognized as important factors. Exaggerated intestinal motility response to stimuli such as food and stress has been elucidated [4]. Some researchers suggest a role of the microbiota in modulating colonic motility [5]. In addition, studies revealed that there are many biological, and social factors that play a role such as a lifestyle, gender, stress, anxiety, sleep problems, psychiatric disorders and early adverse life events [6] [7] [8]. The severity of IBS symptoms are most likely contributing to psychosomatic factors and chronic stressors "displeasure with the job," "overload of work" and "social tension" [9] [10].

The aim of the study was to determine the prevalence, risk factors, association and distribution of IBS among medical college students from 5 universities in Jeddah city.

SUBJECTS AND METHODS:

This study is cross-sectional and it was conducted among medical students from the frist to sixth year from Ibn Sina national college (ISNC), King Abdulaziz University (KAU), Batterjee medical college (BMC), King Saud University (KSU) and Jeddah University (JU), Saudi Arabia. The study was performed during the period from April to May 2018 with the following exclusion criteria: participants with known organic gastrointestinal disorder, individuals with family history of cancer and/or individuals with alarming signs and symptoms like: weight loss, anemia, and bloody stools.

The data collected using a self-designed questionnaire which constitute the participant's information sheet including demographics of students, lifestyle medical history and Rome III criteria. All participants provided informed consent and the participant was assured of the confidentiality of the survey. The data collected through a face-to-face as well as electronic survey to attempted to increase response rates by sending short and focused invitation objectives. The study was approved by the Institutional Review Board of IbnSina National College, Medical Research Center.

STATISTICAL ANALYSIS:

Data analysis was done using the Statistical Package of Social Sciences (SPSS), Version 20 (SPSS Inc., Chicago, IL). Inferential and descriptive statistics were performed. Odds ratios (ORs) and 95% confidence intervals (CIs) were calculated. All p values 0.05 were considered statistically significant.

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RESULTS:

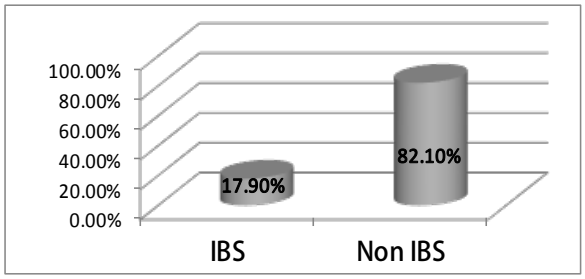
The present study included 1026 participants, 542 (52.8%) were males and 484 (47.2%).were females. Their BMI was 14.7-76.1 with a mean ± SD of 27.5± 6.3. There were 729 (71.1%) participants in the age range of 21-24 years old, followed by those 157 (15.3%) with age range of 25-30 years old and 140 (13.6%) who were in the age range of 18-20 years old. Students in the fourth year were more dominant 273 (26.6%) and those from KAU 424 (41.3%). The large majority 944 (92%) were singles. Medicine program students represent the majority of participants 874 (85.2%), whereas those from pharma program represented the least participants 48 (4.7%). There were 833 (81.2%) reported living with their families and 933 (90.9%) reported that their parents living together, table1.

Table1: Demographics of students

Demographics		N(1026)	%
Sex of patients	Female	484	47.2
	Male	542	52.8
BMI	Median(range)	26.7(14.7-76.1)	
	Mean±SD	27.5±6.3	
Age	18-20	140	13.6
	21-24	729	71.1
	25-30	157	15.3
Academic year	1st year	23	2.2
	2nd year	103	10.0
	3rd year	225	21.9
	4th year	273	26.6
	5th year	170	16.6
	6th year	232	22.6
College	Batterji Medical College	50	4.9
	Ibn Sina National College	150	14.6
	Jeddah University	95	9.3
	King Abdulaziz University	424	41.3
	King Saud University of health sciences	191	18.6
	Others	116	11.3
Marital Status	Married	82	8.0
	Single	944	92.0
Program	Dentistry	67	6.5
	Medicine	874	85.2
	Nursing	37	3.6
	Pharma	48	4.7
Living Conditions	Private house	130	13.7
	School dormitory	63	6.1
	With family	833	81.2
Parents	Divorced	93	9.1
	Living together	933	90.9

There were 184 (17.9%) had IBS, whereas 842 (82.1%) had no IBS (figure1).

Fig1: Prevalence of IBS



The correlations between demographics, medical history and other characteristics of participants with IBS prevalence were investigated and summarized in table2. Age, marital status, and living conditions weren't associated with the presence of IBS, however sex and program of study were significantly associated with IBS. Females tended to suffer from IBS more than males (P-value=0.03) and the students of non medicine programs were more prone to suffer IBS than medicine program students (P-value=0.02). BMI, sleeping hours, physical activity, smoking status, alcohol consumption, tea or coffee, junk food, having food sensitivity and chronic illness had no significant influence or association with IBS (P-value>0.05). Participants who reported having regular non steroidal medication were more prone to suffer from IBS (P-value=0.02). Both of Depression and anxiety were associated with IBS (P-value<0.001), Most of those who suffered IBS were either having mild depression or mild anxiety.

Table2: Correlation between IBS and different variables

Variables		IBS cases N(%)	Non-IBS N(%)	X^2	P value	OR	95%CI
Sex	Females	100(20.7)	384(79.3)	4.6	0.031	1.420	1.03-1.956
	Males	84(15.5)	458(84.5)				
Age	<25	149(17.1)	720(82.9)	2.39	0.122	0.721	0.475-1.093
	>=25 year old	35(22.3)	122(77.7)				
Marital status	Married	21(25.6)	61(74.1)	3.6	0.059	1.650	0.972-2.782
	Single	163(17.3)	781(82.7)				
Living conditions	Without family	40(20.7)	153(79.3)	1.259	0.262	1.252	0.846-1.851
	With family	144(17.3)	699(82.7)				
program	Medicine	147(16.8)	727(83.2)	0.628	0.026	0.628	0.417-0.948
	Non-medicine	37(24.3)	115(75.7)				
BMI	Normal	112(18.7)	487(81.3)	0.571	0.450	1. 31	0.818-1.57
	Obese & overwieght	72(16.9)	355(83.1)				
Sleeping hours	<8h	121(18.4)	538(81.6)	0.229	0.632	1.085	0.776-1.516
	>8h	63(17.2)	304(82.8)				
PHYSICAL ACTIVITY	No	86(19.1)	365(80.9)				
	Yes	98(17.0)	477(83.0)	0.704	0.401	1.147	0.833-1.57
Smoking	No	134(17.1)	851(82.9)	1.69	0.193	0.786	0.547-1.130
	Yes	50(20.7)	191(79.3)				
Alcohol	No	181(18.1)	820(81.9)	0.613	0.434	1.619	0.479-5.46
	Yes	3(12.0)	22(88)				
Tea & coffee	No	40(18.1)	181(81.9)	0.005	0.942	1.014	0.689-1.43
	Yes	144(17.9)	661(82.1)				
Junk food	No	35(21.9)	125(78.1)	2	0.157	1.34	0.89-2.04
	Yes	149(17.2)	717(82.2)				
FOOD SENSITIVITY	NO	153(17.3)	732(82.7)				
	Yes	31(22.)	110(78.0)	1.824	0.177	0.742	0.480-1.146
Chronic illness	NO	158(17.8)	730(82.2)	0.089	0.765	0.932	0.589-1.47
	Yes	26(28.8)	112(81.2)				
REGULAR medication	NO	144(16.7)	716(83.3)	5.11	0.024	0.834	0.425-0.943
	Yes	40(24.1)	126(75.9)				
Depression	Normal	72(12.5)	295(75.8)	26.6	<0.001	1	
						2.3	1.58-3.1
	Mild	91(24.2)	503(87.5)			2.7	1.6-4.8
	Significant	21(28.0)	54(72.0)				
Anxiety	Normal	66(11.7)	499(88.3)	40.5	<0.001	1	0.001
	Mild	88(23.3)	289(76.7)			2.3	1.6-3.3
	Significant	30(35.7)	54(64.3)			4.2	2.5-7.03

Logistic regression showed that the odds ratio for anxiety vs normal was 1.834 (1.404-2.396) and P-value=0.0001, whereas that of depression vs normal was 0.049 and P-value =0.0001.

Table3: questionnaire

Sociodemographic Informations	
1	Gender. If female, menstrual history, any psychological problems before menstruation such as depression, anxiety.
2	Age.
3	University/College ,Program, Academic year, GPA.
4	Marital status.
5	Living condition ,state of Parents.
Habits and health background	
6	Weight (kg), height (cm), BMI.
7	Physical activity.
8	Sleeping hours.
9	Smoking and alcohol intake.
10	Tea or coffee intake (number of cups per day), (Which drink would you prefer ?).
11	Junk food consumption (average frequency per week).
Specific questions for IBS	
12	Previous diagnosed of irritable bowel syndrome (IBS) by a physician.
13	History of absence of college due to irritable bowel syndrome (IBS).
14	History of abdominal pain or discomfort for at least 3 days per month during the past 3 months. If yes : Did you feel improvement of abdominal pain or discomfort with defecation ?
15	Did you notice a change in frequency of stool ?
16	Did you notice a change in form(appearance) of stool?
17	Have you suffered from any traveler diarrhea in the last 3 months ?
18	Have you experienced any of the following? (Red flags of IBS)- rectal bleeding, anemia, weight loss, family history of colon cancer, fever.
19	History of any chronic health problem.
20	History of regular medications.
21	History of Nonsteroidal anti-inflammatory drugs (NSAIDs), how long did you use it ?
22	History of any food hypersensitivity. If yes , mention which food you have hypersensitivity from ?
23	History of anxiety disorders.
24	History of mood changes.

DISCUSSION:

The present study included 1026 students, males were more dominant than females and students from medicine program comprised the majority of participants (85.2%). The prevalence of IBS among all students was 17.9%, and among medicine students alone was 14.3%. The prevalence of IBS was higher among pharma students in Jeddah (33.3%) and it was found that the highest prevalence was among nursing and dentistry students [11]. A study on medical students in Jeddah showed that the prevalence of IBS was 15.6% [12]. Higher prevalence was found among medical students in KAU, where the prevalence was 31.8% [13]. In China [20] and Japan [21], the prevalence among nursing and medical students was 32.1% and 35.5% respectively. A much lower prevalence (5.7%) was found in Korean study among young students [13]. A previous study from KAU hospital, the prevalence of IBS among nurses was found to be 14.4% [11]. The disparity between studies may be related to ethnic and could be attributed to genetic , environmental factors or a combination of both . In the current study, female gender, medicine students and having regular medication were associated with the presence of IBS. Several previous studies showed that the prevalence of IBS was higher significantly among females [21,14,15]. A study from Jeddah on pharma students showed that IBS was significantly associated with gender, anxiety, and depression [11]. In the Saudi study conducted on medical students, it was found that IBS was more prevalent among males, but with no significant difference [12]. A study from Saudi Arabia on nurses working in KAU hospital [22] showed that IBS was associated with high degree of anxiety and depression, the study also reported that poor sleep quality was associated with IBS prevalence, however, the sleep duration in our study had no significant effect. Several previous studies reported the previous findings [23,16,17]. In our study, we found that age, living conditions, BMI, sleeping hours, physical activity, smoking, alcohol consumption, tea, and coffee, eating junk food, food sensitivity and chronic illness had no significant influence on IBS prevalence. This was in agreement with a previous Saudi study conducted on nurses, where age, marital status, smoking, caffeine drink and physical activity showed no significant impact [22]. In contrary to our findings it was found in a study from Jeddah on pharma students that chronic medical conditions, food hypersensitivity, and poor sleep quality [11]. Similar findings to ours were reported by Okami et al [21] where it was found that there was no association between physical exercise practicing and IBS and the same was reported in a previous Saudi study[11]. Another Saudi study showed that lack of exercise was significantly associated with IBS [12]. In a systemic review of 16 studies [23] showed that some studies reported a protective effect of physical activity and the other studies didn't. In our study, both of anxiety and depression were predictors for IBS which was in agreement with a previous study reported from Jeddah [11]. Another study revealed that there were higher depression and anxiety scores among medical students with IBS [18]. A systemic review included 10 studies showed that both anxiety and depression was higher among IBS than in control [19]. Other studies confirmed these two predictors [21,13]. A study conducted in KAU among medical students revealed that female gender was the first predictor for IBS followed by morbid anxiety [13].

CONCLUSION:

There was the moderate prevalence of IBS among medical students and there were significant risk factors for developing IBS including female gender, being a medical student and having regular medications. Both of anxiety and depression play a factor for IBS.

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