

Irritable bowel syndrome in secondary school male students in AlJouf Province, North of Saudi Arabia

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Abstract

Objectives: To investigate the frequency of irritable bowel syndrome (IBS), and symptoms compatible with this condition among male students studying in secondary schools for boys in AlJouf province of Saudi Arabia.

Methods: A cross sectional study was conducted in April 2009, AlJouf province of Saudi Arabia, involving a self administered questionnaire (translated in Arabic) based on Manning and Rome II criteria for diagnosis of IBS that was distributed to 2025 students at secondary school for boys, by convenience sampling. About 86.3% (1747) completed the questionnaire. Sample size was calculated using Epi. Info 6.4, seat calculator.

Results: The prevalence of IBS was 8.9 % and 9.2 % according to Manning and Rome II criteria for diagnosis of IBS respectively in the study subjects with mean age of 17.5 ± 3 years and range of 15-23 years. The most common symptom compatible with IBS was abdominal pain or discomfort in 37.9% of our sample, followed by feeling of incomplete rectal evacuation after defecation in 32.2% of the same sample. Recurrent abdominal pain or discomfort caused increase in rates of absence from schools in 28.2% of affected students ($p < 0.05$). There is a statistically significant association between family size and clusters of symptoms compatible with IBS ($p < 0.045$).

Conclusion: IBS is common health problem in apparently healthy males studying in secondary schools for boys in AlJouf province of Saudi Arabia. Symptoms suggestive of this condition leading to a negative impact on their quality of life measures, and school performance. Early diagnosis and health education of this condition are imperative.

Keywords: Irritable bowel syndrome, Prevalence, Rome criteria, Quality of life (JPMA 61: 1111; 2011).

Introduction

Irritable bowel syndrome (IBS) is a functional gastrointestinal disorder characterized by chronic abdominal pain or discomfort and altered bowel habits in the absence of any organic cause.^{1,2} IBS is a common health problem and expensive, that generates significant direct and indirect health-care costs.^{2,3} IBS is troublesome and should not be underestimated because it carries a significant negative impact on quality of life and social functioning in many patients like decrease in concentration, energy, vitality and self confidence, with increase in absence rates from schools and work stations.³⁻⁵ The condition generates a substantial workload in both primary and secondary care, but it is not known to be associated with the development of serious disease or with excess mortality.⁴⁻⁷ IBS is often unrecognized or untreated, and as few as 25% of sufferers seek professional health care.^{3,6,7} The reported prevalence of the condition varies widely throughout the world from 15% to 24% in general population and includes 10-15% of the western population with female predominance.^{3,4,6,8} IBS mainly occurs between the ages of 15 and 65 years, with incidence and prevalence nearly equal in both adults and adolescents.^{2-4,8-10} There are no IBS-specific biological,

structural or biochemical markers to aid diagnosis, but abdominal pain or discomfort is a key symptom for its diagnosis and doctors generally rely on symptom-based criteria, after elimination of alarm features.^{3,6,8-10} Accurate and timely diagnosis, together with appropriate intervention, is critical for optimal management of the condition.^{7,8,10,11}

Although many studies in different countries have evaluated IBS patients either in hospitals or in primary health care settings, there is no published data available on prevalence of IBS or its related symptoms among high school students in the kingdom of Saudi Arabia.^{4,11,12} A thorough assessment of IBS, and its related symptoms in these subjects in our study assumes an added importance.

The aim of this study was to investigate the frequency of irritable bowel syndrome (IBS) according to Manning and Rome II criteria,¹³ and to investigate the frequency of symptoms compatible with this condition among male students studying in secondary schools for boys in AlJouf province of Saudi Arabia.

Subjects and Methods

A cross sectional study was conducted in the

secondary schools for boys in alJouf province of Saudi Arabia. The study involved a standardized self-reported questionnaire based on Manning and Rome II criteria for clinical diagnosis of IBS that sent to students studying in the secondary school for boys in alJouf province (north of Saudi Arabia) during the month of April 2009. AlJouf province (total population 300,000) comprises of many towns like Domat AlJanddal, Sowair, Hodaib, Qarah, Allaqayat, and Sakaka is the largest city in this province. There are thirty five secondary schools for boys distributed within this province which contain a 5846 male students. Where 13 out of 35 were selected conveniently, and these represent about 37.1% of all secondary schools in AlJouf province. The total number of students within these schools were 2025 students (2025/5846=34.6%). A self-administered anonymous confidential questionnaires with an explanatory letter were distributed conveniently to these targeted schools. A structured questionnaire comprising of a total of 33 closed ended questions was designed. Eight questions were about the demographic characteristics of the study subjects, and 25 were pertaining to determine the prevalence of symptoms compatible with clinical diagnosis of IBS according to Manning and Rome II criteria with some necessary modifications. However, the sets of these two criteria were applicable in this age group and met the cultural characters and diagnostic needs of the study population in this part of Saudi Arabia. Data was collected either on the same day or next day from 1747 students with response rate (86.3%).

A pilot study was initially carried inside Aljazeera secondary school for boys in Sakaka with 285 students on 4th April 2009. One hundred and fifty students were asked to fill the questionnaire to test its clarity, relevance, and time needed to answer all questions. On the same day, 105 questionnaires were filled and returned back with a response rate of (70%). The questionnaire was critically evaluated and minor modifications accordingly made. The average time needed to fill the questionnaire was about 15 minutes. The results of pilot study were not included in the final analysis. Sample size was calculated using Epi. Info 6.4 stat calculator. The proposal of the study was discussed and approved by the research and ethical committee in College of Medicine, AlJouf University.

Statistical analysis: The data was processed and analyzed by using SPSS (version 11.5) program using X²-square test. The p- value of p<0.05 was considered significant.

Results

Of the 2025 distributed questionnaires a 1747 were filled and collected (response rate(86.27%); these

Table-1: Demographic characters of studied population (n=1747).

Characteristics		N (%)
a. Age:	15 -17years	940(53.8%)
	>17 ≤ 20years	704(40.3%)
	>20 <22 years	50(2.9%)
	? 22 years	1(0.1%)
	No response	52 (3%)
b. Nationality:	Saudi	1586(90.8%)
	Egyptian	83(4.8%)
	Syrian	7(0.4%)
	Yemania	2(0.1%)
	Other nationalities	14(0.8%)
	No response	55(3.1%)
c. Living with parents:	Yes	1659(95%)
	No	88(5%)
d. Origin of family:	From AlJouf area	1549(88.6%)
	Outside AlJouf area	172(9.8%)
	No response	26(1.5%)
e. Number of the family members living in the same house:	< 5 members	175(10%)
	5-10 members	1035(59.2%)
	> 10 members	443(25.4%)
	No response	95(5.4%)
f. Economic status of the family	Owns house and car	1540(88.2%)
	Owns house but doesn't have a car.	73(4.2%)
	Neither owns house nor a car	55(3.2%)
	Others	79(4.5%)
	No response	95(5.4%)
g. Sport activities	Yes	1222(69.9%)
	No	486(27.8%)
	No response	39(2.3%)
h. Subjects suffering from chronic disease	Yes	266(15.2%)
	No	1434(82.1%)
	No response	47(2.7%)

responses form the basis for analysis. The demographic characters of the study subjects are shown in Table-1. Age range of 15-23 years, mean age was 17.5±3 years responded to the questionnaire. The vast majority of the study subjects were Saudi nationals from AlJouf province and living with their parents. A (62.6%) of the subjects were living with 5-10 family members in the same house, 69.9% were practicing sports, and only 15.2% of our sample were suffering from chronic diseases like bronchial asthma, diabetes mellitus or others.

Findings from two step clustering method for analysis revealed that a (8.9%) of the study subjects were meeting Manning criteria, and (9.2%) were meeting Rome II criteria for clinical diagnosis of IBS (Table-2). Data from this study showed a statistically significant associations between family size and cluster of symptoms compatible with IBS(p< 0.001). Symptoms compatible with IBS are more prevalent among subjects living with family sizes of <5 members or > 10 members, and these symptoms were demonstrated less in subjects living with families containing 5-10 members.

Table-2: Prevalence of clinical diagnosis of IBS according to Manning and Rome II criteria in apparently healthy male students studying in secondary schools for boys.

Prevalence of IBS according to Manning criteria for diagnosis of IBS:			Prevalence of IBS according to Rome II criteria for diagnosis of IBS:		
IBS positive	IBS negative	Total	IBS positive	IBS negative	Total
155/1747×100=8.9 %	1592/1747×100=91.1 %	1747	160/1747×100=9.2 %	1586/1747×100=90.8 %	1747

Table-3: Frequency of symptoms compatible with clinical diagnosis of IBS among study subjects.

Symptoms compatible with clinical diagnosis of IBS+	Respondents	
	Yes (%)	No (%)
1. Recurrent abdominal pain or discomfort	662(37.9%)	1014(58.0%)
2. Changes in the bowel habits	322(18.4%)	1225(70.1%)
3. Abdominal distension accompanied by abdominal pain	320 (18.2%)	1236(70.7%)
4. Passage of more gas than usual over the past three months	356 (20.4%)	1196(68.5%)
5. Feeling of incomplete rectal evacuation after defecation	503(28.8%)	968(55.4%)
6. Feeling comfortable after complete rectal evacuation	565(32.3%)	406(23.2%)
7. Passage of mucous with stool	132(7.6%)	1095(62.7%)
8. Worsening of IBS symptoms after consuming certain foods	456(26.1%)	1063(60.8%)
9. Difficulty during defecation accompanied by straining or longer stays in toilet	350(20.0%)	1180(67.5%)
10. Inability to control rectal sphincter and innocent underwear soiling.	247(14.1%)	1277(73.1%)

+ The students did not respond to some items in the questions.

The frequency of symptoms compatible with clinical diagnosis IBS are tabulated in Table-3. The most common symptom was abdominal pain or discomfort among a (37.9%) of the study subjects, that was relieved by defecation in (32.3%), and feeling of incomplete evacuation of rectum after getting rid of the stool in (28.8%) of the same sample. Findings of this study demonstrate eating some foods resulted in worsening of abdominal pain and leading to alteration in stool passage and was associated with abdominal distension in (26.1%) of the respondents from our sample. A (20%) of the study subjects used to feel difficulty during elimination of stool, and (14.1%) suffered from innocent underwear faecal soiling, whereas only (7.6 %) of the sample used to pass mucus mixed with stool during defecation.

Findings from this study demonstrate (21.3%) of study subjects were not sure about the site and distribution of their abdominal pain, and (10.8%) of the sample mentioned the pain was usually located above the umbilicus, whereas, a (13.6%) of the sample used to suffer from frequent abdominal pain that includes entire abdominal wall. The majority of cases (55.1%) experiencing abdominal pain for less than one hour in its duration to ameliorate. However, the frequency of abdominal pain once a week in (23.1%) of the subjects, daily in (15.3%), and once a month in (11.8%) of the same sample. The nature of the abdominal pain was colicky among (22.2%) of the subjects, burring in (23.7%) and like pressure inside the abdomen among (13.4%) of the same sample (data not shown).

Findings from this study demonstrate (71.9%) of the study sample were practicing sports. However, during academic examinations the students who were practicing sports used to feel IBS symptoms less than those who did not practice sports $p < 0.001$. Data from this study demonstrate that the frequency of abdominal pain was less in native subjects from AlJouf province, compared to those migrated subjects (38.8%, 41.8%, respectively, $P < 0.023$).

Data from this study demonstrate the majority (62.6%) of students in our sample were living with 5-10 members in the same house. Findings from this study showed the prevalence of abdominal pain or discomfort was less observed in students living with families of 5-10 persons. Whereas, the prevalence of abdominal pain or discomfort was more among subjects living with families (<5 members, or >10 members in the same house) ($p < 0.045$). Moreover, findings from this study explored a statistically significant associations between the frequency of symptoms compatible with clinical diagnosis of IBS and living with parents or with others ($p < 0.044$). Whereas, 1/5th (20.5%) of the study subjects who were living with their parents used to complain of symptoms suggestive of IBS, compared to 1/3rd (32.1%) of subjects who were living with others .

Discussion

This is the first comprehensive school based study carried out in Saudi Arabia to obtain data on irritable bowel syndrome. The study relies on a validated questionnaire based on Manning and Rome II criteria¹³

for diagnosis of IBS to determine its prevalence among males studying in secondary schools.³⁻⁷ We believe that our sample is representative, and account for approximately (34.6%) of all males studying in the secondary schools for boys in AlJouf province of Saudi Arabia. The current study shows the frequency of symptoms compatible with IBS⁸⁻¹⁰ to be common among our apparently healthy young male students. The IBS prevalence rates of (8.9%) and (9.2%) in this study are according to Manning and Rome II criteria for clinical diagnosis of IBS respectively. The prevalence rates of this condition in our sample were similar to those reported from the western countries.¹⁰⁻¹² but in comparison to (34%) reported from Pakistan our findings are much lower,⁹ and much higher than those (1.1%) reported from Iran.¹ The reasons for these discrepancies may be due to the use of different diagnostic criteria,⁷ as well as the influence of other factors such as population selection, inclusion or exclusion of comorbid disorders (e.g., anxiety), access to health care, and cultural influences.¹⁴ Moreover, IBS is a functional disorder and our study population were students in the secondary schools who were under stress that may lead them to suffer more from functional symptoms. The frequency of IBS in studied sample does not necessarily reflect that of the general population in our community. Discomfort or pain inside the abdomen is the hallmark and key symptom for clinical diagnosis of IBS that improves after defecation and/or have its onset associated with a change in frequency or form of stool,^{15,16} that reported in (37.9%) of our subjects. Some supportive symptoms which are strongly associated with clinical diagnosis of IBS are not uncommon among patients with IBS.^{11,15,17} Findings of this study show these symptoms are common in our apparently healthy students, like straining during defecation in (20.0%), bloating in (18.2%), and passage of mucus with stool in (7.6%) of the sample. The condition is associated with no certain organic cause, though diets are widely implicated.^{8,13,15,17-20} Findings from this study show eating certain foods caused worsening of abdominal pain in (30%) of the study subjects that associated with either diarrhoea, constipation or distension. Fast foods cause abdominal pain in (41.1 %), green or red chili in (21.4 %), legumes such as haricot beans, lentils, beans in (15.4%), and vegetables such as broccoli, cabbage and cauliflower in (15.2%) of the study sample. Abdominal pain or disorder may be mild enough to be ignored or it may interfere with daily activities of the affected patients and increases the rates of absenteeism of work or schools also increases frequency of physician visits.^{21,22} Data from this study show recurrent abdominal pain increases the rates of absenteeism of schools in (28.2%) of the affected

subjects in our sample, with decrease in rates during academic examinations. The underlying etiology of condition is multifactorial in origin and yet unknown, but emotions like anxiety, and diets are widely held to be contributing factors for this condition and exacerbate its symptoms.^{17,21,22,24} Findings from our study show academic examinations were leading cause of exacerbating the symptoms compatible with IBS in our study subjects. It is well documented by many studies that sports improve well being and play a unique role to cope with emotional upsets.²⁴ The present study suggests the positive effects of sports on amelioration of symptoms compatible with IBS among students who are practicing sports, compared with others who are not practicing sports $p < 0.05$.

This study conclusively shows family size plays an unique role in inducing and precipitating symptoms suggestive of IBS. Findings from this study also show the subjects who are living with a large family size of (>10 members) or living with a small family size of (<5 members) have more IBS symptoms. Whereas those who are living with family size of (5-10 members) have less IBS symptoms. The explanation for these findings may be that if the family size is big of (>10 members), the students will be less cared for with limitation of resources even in rich families, whereas, in small family size (<5 members) loneliness (psychological) is the contributory factor for more somatic symptoms. However, if the student is living with mid family size of (5-10 members), there is equitable in distribution of resources with sharing of joys and sorrows adequately, all these will be contributory factors for less somatic symptoms.

Finally, findings from this study show that symptoms compatible with IBS are less common in subjects who are living with their parents, compared to those who are living with others, with statistically significant associations ($p < 0.045$). These findings could be explained, because living without parents or losing one of them leading to less caring, less supports in students life issues, more anxiety, and the patient may be more aware of somatic symptoms. Moreover, Living with parents help to cope with diseases and plays a unique role in decreasing anxiety and tensions, which are associated with IBS.⁴

Limitations of this study included the self administered questionnaire, keeping in view the sensitivities of adolescents in mind and so as not to embarrass them. The female gender was not included in this study keeping in mind the sensitivity and social restrictions of this part of Saudi Arabia. Recently Rome III was not included in this study because its long translation in Arabic and confusing for this age group.

Conclusion

The present study shows the frequency of IBS, and symptoms compatible with this functional condition to be common among apparently healthy males studying in secondary schools for boys in AlJouf province of Saudi Arabia. This study reports for the first time the relationship between symptoms suggestive of clinical diagnosis of IBS, and number of family members living with students in the same house. There is a statistically significant associations between the family size [if <5 members, 5-10 members, >10 members (47.6%.vs 37.1%.vs 40.3%; $p<0.045$)] and symptoms suggestive of IBS. More in depth studies are strongly recommended to explore these phenomena further.

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