

The Prevalence of Irritable Bowel Syndrome among King Saud University Undergraduate Male Students

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Abstract: The aim of our study was to determine the prevalence of irritable bowel syndrome (IBS) according to the Rome III criteria and its subtypes among King Saud University (KSU) undergraduate male students and to describe correlation of symptoms with multiple variables such as exercise, body mass index, family history and others.

Material and methods: A hard copy questionnaire was constructed by our team in February-march 2013 and 600 questionnaires were handled to undergraduate students of the different colleges at KSU (5 humanitarian colleges, 6 science colleges and 5 health colleges. IBS was estimated by the Rome III criteria.

Results: A total of 509 responders were obtained with mean age 21.4 years (19–25 years range).169 of them (33.2%) fulfilled the Rome III criteria for IBS and had no organic diagnosis to explain their symptoms and 340 (66.8%) did not fulfill the criteria. Subtypes were: mixed IBS 68%, IBS with diarrhea 17%, IBS with constipation 7%, and unsubtyped IBS 8%. The prevalence of IBS among the different colleges was variable, the highest being in faculty of medicine (48%) and the lowest prevalence was in the faculty of business and administration (10.7%).The full description of results in all colleges will be presented.

The prevalence of IBS was higher in those who are more than 22 years old, in slim subjects than in obese ones, people with chronic diseases, those with family history of IBS and those who eat more frequent fast food. Those who exercised regularly were less affected, however, there were some variables with no significant association like smoking.

Conclusion: The prevalence of IBS according to Rome III in undergraduate students at KSU was 33.2% and was higher in medical students compared to other colleges. Multiple factors may contribute to these findings.

Keywords: Irritable Bowel Syndrome (IBS), Undergraduate Male Students.

1. INTRODUCTION AND RATIONALE

Irritable bowel syndrome (IBS) - known also as irritable or spastic colon - is a heterogeneous disorder and a chronic condition affecting the lower part of the gastrointestinal tract and it is a symptom-based diagnosis [1]. The syndrome may present with different symptoms, however abdominal pain or discomfort is a hallmark of this condition and the pain might be associated with diarrhea, constipation, or both. IBS is a functional bowel disorder with no well defined organic cause. According to changes in bowel habits, IBS is classified into several subtypes: associated with diarrhea (IBS-D), with constipation (IBS-C), with mixed diarrhea and constipation (IBS-M), and (IBS-U) for the unsubtyped IBS group. Change may not be in habits only but may frequency of the bowl movements. Affected patients may also have a feeling of incomplete evacuation, bloating or abdominal distension. [2][3][4]

Although there is no cure for IBS, there are treatments that attempt to relieve symptoms, including dietary adjustments, medication and psychological interventions. Patient education and a good doctor-patient relationship are also important. [5]

IBS has no direct effect on life expectancy. It is, however, a source of chronic pain, fatigue, and other symptoms and contributes to work absenteeism.[6][7] The high prevalence of IBS[8][9][10] and significant effects on quality of life make IBS a disease with a high social cost.[11][12] It has also been suggested that a proportion of IBS patients may develop depression and are thus more likely to commit suicide.[13] Proposed factors for increased suicide rate in IBS patients include perceived hopelessness and poor quality of services.[14][15]

Irritable bowel syndrome is a worldwide syndrome that has a varying prevalence estimates depending on geographical locations and the diagnostic criteria used. Studies that were done showed a high number of population diagnosed with IBS affecting 12% of the world population.[5] In addition, this condition is compromising 50%-70% of the gastroenterology clinic load in the west. [7]

In our country a study was done in Riyadh to study the prevalence of IBS in adult Saudis according to Rome II Criteria. The prevalence was 11.40% with a significant difference between female and male subjects, (females 14.28%, and males 8.51%). [16]

To the best of our knowledge there was no single study addressing the prevalence of IBS among an undergraduate Saudi universities students. Therefore, we conducted this study to determine the prevalence of this syndrome among King Saud University (KSU) undergraduate male students in 2012-2013. We also looked to the influence of some variables which may be related to the occurrence of this syndrome. This study is designed for the first time during the CMED 305 curriculum time from September 2012.

In our study we used the Rome III Disorders and Criteria to create scientific data to help in the diagnosis of IBS which is a system developed to classify the functional gastrointestinal disorders (FGIDs) in which symptoms cannot be explained by the presence of structural or tissue abnormality based on clinical symptoms. Some examples of FGIDs include irritable bowel syndrome, functional dyspepsia, functional constipation, and functional heartburn. The most recent revision of the criteria, the Rome III criteria, was published in 2006 in book form, and in a shorter journal supplement in Gastroenterology. [17]

Hypothesis:

We expect the prevalence of IBS to be higher in our population than the reported among general the population (>12%) and we also expected the prevalence to be higher among medical students.

Objectives:

The aim of our study was to determine the prevalence of irritable bowel syndrome (IBS) according to the Rome III criteria and its subtypes among King Saud University (KSU) undergraduate male students and to describe correlation of symptoms with multiple variables such as exercise, body mass index, family history and others.

2. METHODOLOGY

Study design:

This was a cross sectional study was conducted from February-March 2013, involving a self-administered questionnaire (translated in Arabic- addendum 1) based on Rome III criteria for diagnosis of IBS [17] that was distributed to male undergraduate students at KSU in the following colleges (by convenience sampling):

| College | Students | Sample |
|-----------------------------------|--------------|------------|
| Business Administration | 2344 | 56 |
| Arts | 2545 | 60 |
| Education | 2219 | 53 |
| Nursing | 285 | 7 |
| Law and Political Science | 1706 | 41 |
| Tourism & Archaeology | 561 | 14 |
| Pharmacy | 583 | 14 |
| Medicine | 1041 | 25 |
| Science | 1784 | 42 |
| Applied Medical Sciences | 1053 | 25 |
| Architecture and Planning | 771 | 19 |
| Languages | 1013 | 24 |
| Engineering | 2736 | 65 |
| Dentistry | 388 | 10 |
| Food and Agricultural Sciences | 844 | 20 |
| Computer and Information Sciences | 1416 | 34 |
| Total | 21289 | 509 |

General medical history was also included in the questionnaire together with an objective evaluation of obesity (asking about height and weight). Age and income level were studied as demographic factors.

Health related conditions were investigated: smoking (dichotomized as “smoker” and “non-smoker”), physical activity (dichotomized as “Physically active” and “Physically inactive”) and daily sleeping hours.

Body mass index (BMI) was also calculated and subjects were grouped into four categories: underweight (<18.5 kg/m²), normal weight (18.5-24.9 kg/m²), overweight (25.0-29.9 kg/m²), and obese (≥30.0 kg/m²). We also asked about fast food consumption, whether the subject consumes fast food in addition to the times per week of consumption were all questioned.

Population:

The study included a sample of 600 subjects (19-25 years old) from a population of 21,289 male undergraduate students, 546 out of 600 completed the questionnaires, 37 questionnaires were excluded because responders reported having organic bowel diseases leaving 509 participants with proper questionnaires representing final sample size. The sample size was estimated to be representative for the understudy population using the formula of a single proportion.

Statistical analysis:

Descriptive statistics were performed with SPSS 19.0. Spearman’s correlation and cross-tabulation analysis (Chi-square test) was used to compare between IBS and non-IBS with different parameters.

We assumed there was a statistical of significant difference is P-value is less than 0.05

Finally, graphs were made by using Microsoft excel.

Ethical consideration and clearance:

The study was approved by the Ethics Committee of College of Medicine in King Saud University. A verbal consent was taken from all participants prior to questionnaire filling. All participants' information have been treated confidentially and they're classified as they haven't been shared with any other parties.

3. RESULTS

I. Overall prevalence:

169 participants (33.2 %) of the study sample complied Rome III criteria of IBS (figure 1). 114 of them 68% had mixed type (IBS-M), 29 (17%) had diarrhea type (IBS-D), 12 (7%) had constipation type (IBS-C), while 14 (8%) had unsubtyped IBS (IBS-U) (figure 2)

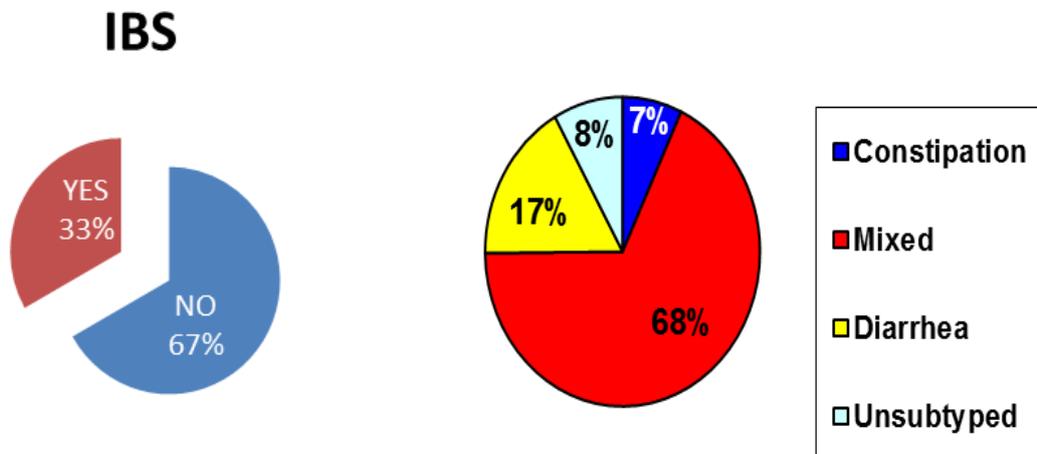


Fig. 1 prevalence of IBS among KSU undergraduate male students

Fig.2 types of IBS

II. Analysis of different variables and its effect on the prevalence of IBS showed that:

a. Age: When considering the participant age, it is ranged 19-25 and the mean age was 21.4. Participants were divided to two groups according to their age: the first group: 19-21 years old (266 participants) while the second group: 22 years and above (243 participants).

Results showed that those who are from 19 to 21-years-old are affected less than those who are more than 22-years-old. (Table 1)

Table 1

| | | | IBS | | Total |
|-----------|----------------|--------------------|-------|-------|--------|
| | | | Yes | No | |
| Age_group | 19 - 21 y | Count | 75 | 191 | 266 |
| | | % within Age_group | 28.2% | 71.8% | 100.0% |
| | 22 y and above | Count | 94 | 149 | 243 |
| | | % within Age_group | 38.7% | 61.3% | 100.0% |
| Total | | Count | 169 | 340 | 509 |
| | | % within Age_group | 33.2% | 66.8% | 100.0% |

b. Body mass index (BMI): the results of the study showed that there is association between BMI and IBS. The prevalence tends to be higher among underweight and obese BMI groups (Table 2).

Table 2

| | | | IBS | | Total |
|-----------|---------------|--------------------|-------|-------|--------|
| | | | Yes | No | |
| BMI Group | Underweight | Count | 9 | 8 | 17 |
| | BMI <18.5 | % within BMI_Group | 52.9% | 47.1% | 100.0% |
| | Normal | Count | 65 | 143 | 208 |
| | BMI 18.5–24.9 | % within BMI_Group | 31.3% | 68.7% | 100.0% |
| | Overweight | Count | 52 | 136 | 188 |
| | BMI 25–29.9 | % within BMI_Group | 27.7% | 72.3% | 100.0% |
| | Obese | Count | 43 | 53 | 96 |
| | BMI > 30 | % within BMI_Group | 44.8% | 55.2% | 100.0% |
| Total | | Count | 169 | 340 | 509 |
| | | % within BMI_Group | 33.2% | 66.8% | 100.0% |

There is Significant statistical association with a p value= 0.006

c. Exercise:

As shown in table 3, exercise decrease the risk of IBS, 29.2% of those who exercise regularly have IBS, on the other hand 42.9% of those who doesn't. Moreover, individuals who don't exercise regularly are 1.46 times more likely to have IBS.

Table 3

| | | | IBS | | Total |
|------------------|-----|-------|-------|-------|--------|
| | | | Yes | No | |
| Regular exercise | Yes | Count | 100 | 246 | 346 |
| | | % | 28.9% | 71.1% | 100.0% |
| | No | Count | 69 | 94 | 163 |
| | | % | 42.3% | 57.7% | 100.0% |
| Total | | Count | 169 | 340 | 509 |
| | | % | 33.2% | 66.8% | 100.0% |

d. Smoking:

Study results showed that there were no statistical significance association between smoking and IBS (P value = 0.336) (table 4)

Table 4

| | | | IBS | | Total |
|---------|-----|-------|-------|-------|--------|
| | | | Yes | No | |
| smoking | Yes | Count | 64 | 112 | 176 |
| | | % | 36.4% | 63.6% | 100.0% |
| | No | Count | 105 | 228 | 333 |
| | | % | 31.5% | 68.5% | 100.0% |
| Total | | Count | 169 | 340 | 509 |
| | | % | 33.2% | 66.8% | 100.0% |

e. Chronic diseases:

47 participants (9.2 % of studying sample) have been diagnosed with chronic diseases like bronchial asthma, hypertension, diabetes mellitus and others.

The comparison between participants with chronic diseases and normal was statistically significant with p value of 0.003. The prevalence of IBS among participants with chronic diseases is higher than normal participants. However, Individuals with chronic diseases are 1.68 times more likely to have IBS. (table 5)

Table 5

| | | | IBS | | Total |
|-----------------|-----|-------|-------|-------|--------|
| | | | Yes | No | |
| chronic disease | Yes | Count | 25 | 22 | 47 |
| | | % | 53.2% | 46.8% | 100.0% |
| | No | Count | 144 | 318 | 462 |
| | | % | 31.2% | 68.8% | 100.0% |
| Total | | Count | 169 | 340 | 509 |
| | | % | 33.2% | 66.8% | 100.0% |

f. Family history of IBS:

It's known that family history of IBS considered as a risk factor.

In this study, there was a statistical significant association between IBS and the presence of family history of IBS according to the p value of 0.005.

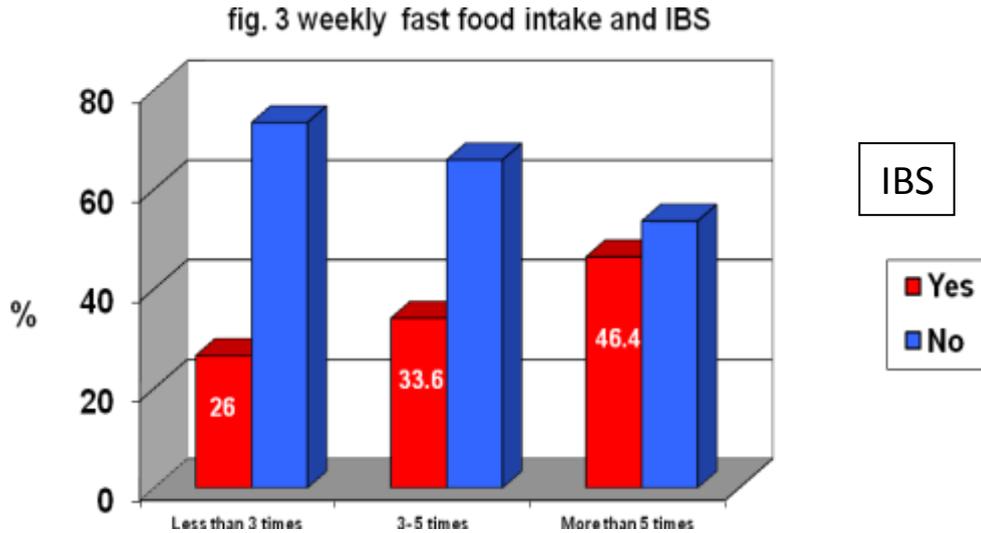
Individuals with positive family history of IBS are 1.54 times more likely to have IBS. (Table 6)

Table 6

| | | | IBS | | Total |
|-----------------------|-----|-------|-------|-------|--------|
| | | | Yes | No | |
| Family history of IBS | Yes | Count | 33 | 35 | 68 |
| | | % | 48.5% | 51.5% | 100.0% |
| | No | Count | 136 | 305 | 441 |
| | | % | 30.8% | 69.2% | 100.0% |
| Total | | Count | 169 | 340 | 509 |
| | | % | 33.2% | 66.8% | 100.0% |

g. Fast food:

Study results showed that there is no significant statistical association between the intake of fast food and IBS (p value = 0.938). However, the more frequent the intake of fast food was significantly associated with higher prevalence of IBS (p value = 0.007) as shown in (figure 3).



h. Colleges:

Students of 16 KSU colleges were involved in the study. The following chart represents the prevalence of IBS in those colleges.

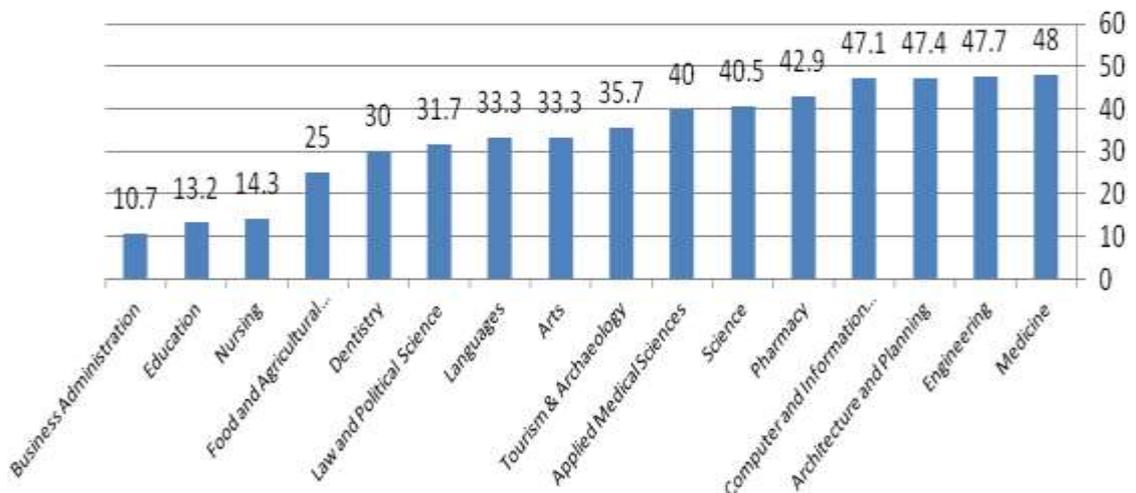


Fig. 4 Proportion of IBS

Finally, the results didn't reveal any statistical significant association between IBS and: economic status, sleeping hours and accommodation (p value > 0.05).

4. DISCUSSION

IBS is a functional gastrointestinal disorder with different clinical presentations mainly affecting the bowel habits ranging from constipation, diarrhea or both in addition to other variable signs and symptoms.

Irritable bowel syndrome is a worldwide syndrome that has a varying prevalence estimates depending on geographical locations and the diagnostic criteria used. Studies that were done showed a high number of population diagnosed with IBS affecting 12% of the world population. [5] In addition, this condition is compromising 50%-70% of the gastroenterology clinic load in the west. [7]

In our country a study was done in Riyadh to study the prevalence of IBS in adult Saudis according to Rome II Criteria. The prevalence was 11.40% with a significant difference between female and male subjects, (females 14.28%, and males 8.51%). [16]

To the best of our knowledge there was no single study addressing the prevalence of IBS among an undergraduate Saudi universities students. Therefore, we conducted this study is to determine the prevalence of this syndrome among King Saud University (KSU) undergraduate male students in 2012-2013. We also looked to the influence of some variables which may be related to the occurrence of this syndrome. The study relies on a validated questionnaire based on Rome III criteria [17]. This study is designed for the first time during the CMED 305 curriculum time from September 2012.

Our main hypothesis was that the prevalence will be higher than the reported among general population (>12% of KSU undergraduate male students) [5] and that was confirmed by our results which showed a prevalence of 33.2%.

Our findings showed a higher prevalence than reported in other local studies of 8.5% of Saudi male adults as per Rome II criteria of IBS [16]. In another local study done among secondary school male students in AlJouf Province, Saudi Arabia revealed that the prevalence is approximately 9% according to Manning and Rome II criteria for diagnosis of IBS [18]. The reasons for these discrepancies may be due to the difference in studying population and the use of different diagnostic criteria. The prevalence rates of IBS in our sample were similar to those reported from the eastern countries [19][20]. These similarities in the results may be due to similar studying population (university students) and using same IBS diagnostic criteria (Rome III).

It is well documented by many studies that physical exercise improves the well being as well as general health, it also has a role on relieving IBS symptoms[18] [21] [22] [23]. In our study, regular physical exercise has significant impact on amelioration of symptoms compatible with IBS among students who exercise regularly (p=0.002).

Fast food remains extremely popular despite their unhealthiness. However, some studies revealed its significant correlation with IBS [24]. In our study more intake of fast food was associated with higher prevalence of IBS (p=0.007).

One important finding is the higher prevalence of the syndrome in medical students compared to students in other colleges who participated in the study and that probably reflects the higher tension and responsibilities involved in the medical college compared to others.

5. CONCLUSION AND RECOMMENDATION

The prevalence of IBS according to Rome III in undergraduate students at KSU was 33.2% and was higher in medical students compared to other colleges. Multiple factors may contribute to these findings.

Moreover, results revealed some variables that have significant correlations with IBS like: regular exercise, family history of IBS, fast food intake and body mass index. Unlike smoking which has no significant association with this syndrome.

Based on these study results, the higher the frequency of fast food intake, the higher the risk of developing IBS. Therefore, decreasing the intake of fast food is recommended. Moreover, a regular physical exercise has shown to be decreasing the risk of IBS so it's highly advised.

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