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Overlapping of Organic Disorders with Irritable Bowel Syndrome Among Teachers in Tabuk, Saudi Arabia Using Rome III Criteria

Abdulateef Elbadawi[1], Hyder Mirghani[2], Talal Khalid Alanazi[3, *], Abdulaziz Hamoud Alanazi[3], Meshal Faleh Alenezi[3]

[1]Community Medicine Department, Faculty of Medicine, Tabuk University, Tabuk, Saudi Arabia

[2]Medical Department, Faculty of Medicine, Tabuk University, Tabuk, Saudi Arabia

[3]Medical Interns, Faculty of Medicine, Tabuk University, Tabuk, Saudi Arabia

Email address:

Al-faqeery@hotmail.com (T. K. Alanazi), abdulateefe@yahoo.com (A. Elbadawi)

[*]Corresponding author

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Abstract: Irritable bowel syndrome (IBS) is the most commonly diagnosed gastrointestinal disorder leading to losing of work days, only 15% of patients seek medical advice. In this study, we aimed to investigate IBS among teachers in Tabuk. A cross-sectional study conducted among 362 teachers in Tabuk City during the period from January 2015 to June 2015, they were selected randomly from a total number of 25 schools, participants were invited to sign a written informed consent, then responded to a structured questionnaire based on socio-demographic data, and the Rome III criteria. The research was approved by the ethical committee of the University of Tabuk. The Statistical Package for Social Sciences was used for data analysis; the chi-square was used to compare categorical data. The result shows that IBS was evident in 14.1% of teachers, IBS patients were more likely to have travelling history, and flag signs (fever, bleeding per rectum, and loss of weight) P-value<0.05., no differences were found between teachers with IBS and those without the disease regarding age, sex, marital status, and family history of the disease P-value >0.05. In conclusion: irritable bowel syndrome is prevalent among teachers in Tabuk, Saudi Arabia, flag signs and history of travel are commoner among those who fulfill the Rome III criteria. Physicians may need more tests to rule out organic disorders; large multicenter studies are required to rule the associations of IBS with microscopic colitis and carcinoma of the colon.

Keywords: Irritable Bowel, Teachers, Saudi Arabia

1. Introduction

Irritable bowel syndrome is the most commonly diagnosed gastrointestinal disease. The syndrome is characterized by altered bowel habit and chronic abdominal pain and absence of organic disorders [1]. Although only 15% of patients with the syndrome seek medical advice, the syndrome in its various form is the most common cause of referral to the gastroenterology units and constituted a significant number of primary health care visits coming only after common cold as a cause of absenteeism from work [2, 3]

The prevalence of IBS varies considerably across the globe ranging from 10-25% with the highest rate in South America and lowest in South East Asia; this can be explained by the lack of histopathologic diagnosis, different methods of diagnosis, and lack of specific point of onset. A meta-analysis estimated the global prevalence of 11.4% [4, 5]. A study conducted among teachers in Saudi Arabia reported a prevalence of 40.7% [6].

Irritable bowel syndrome is one of the leading causes of financial burden, in the United States of America, some studies pointed to 30 billion Dollars annually from direct and indirect costs [7]. The diagnosis is made by using the Rome

III criteria and the absence of organic pathology [8]

Laboratory testing is not recommended for the diagnosis of irritable bowel syndrome in patients younger than 50 years of age without the following alarm features: family history of certain organic diseases like inflammatory bowel diseases and rectal cancers, weight loss, and iron deficiency anemia [9]

Previous studies showed that the rate of inflammatory bowel disease was 9-16 times higher in the first year after the diagnosis of irritable bowel syndrome, furthermore a shared pathophysiology was suggested for IBS and inflammatory bowel disease, so the symptoms of irritable bowel syndrome could be due to inflammatory bowel disease before the development of lesions [10].

Teachers are a particular sector of the community with potentially frustrating and emotionally taxing profession [11]. Furthermore, this stressful career may lead teachers suffering from burnout [12] this could increase the irritable bowel syndrome and hence teacher departure [13], data are scares regarding irritable bowel syndrome in Tabuk, Saudi Arabia. Thus we conducted this research to study the prevalence of the irritable bowel syndrome and its overlap with organic disorders in Tabuk area.

2. Subjects & Methods

This cross-sectional study conducted among 362 teachers in Tabuk City during the period January 2015 to June 2015, they were selected by multistage stratified random sample methodfrom a total number of 25schools. The sample size was calculated according to the formula:

$$n = \frac{z^2 xpxq}{d^2} \quad (1)$$

The Rome III Criteria were used for the diagnosis of the irritable bowel syndrome. The Rome III Criteria for the diagnosis of irritable bowel give specificity of 0.7-0.9, and sensitivity of 0.4-0.9 depending on the physician experience [14, 15].

According to the Rome III Committee, the irritable bowel syndrome is defined as the fulfillments of the following:

- Recurrent abdominal pain or discomfort for at least three days/month in the last three months ‘(discomfort' is defined as an uncomfortable sensation, not pain)
- Symptom onset, at least, 3months before diagnosis
- The symptoms are associated with two or more of the following
  A. Pain decreasing or disappearing with defecation
  B. Onset of pain related to a change in the frequency of stool
  C. Onset of pain related to a change in the form (appearance) of stool

Without any underlying systemic, organic or metabolic causes [16]. Information collected include socio-demographic data, family history of irritable bowel syndrome, history of traveling, fever, loss of weight, rectal bleeding, and the Rome III criteria.

The ethical committee of the University of Table approved the research, and the Statistical Package for Social Sciences was used for data analysis, data were presented as percentages or mean ±SD, the Chi-square test was used to compare variables and a P-value < 0.05 considered significant.

3. Results

Out of 362 teachers, their ages ranged from 20-60 years, 59.9% were females. The majority301 (84.8%) were married, 39 (11%) were single, 9 (2.5%) were divorced while 6 (1.7%) were widows. Regarding education level 81.1 had Bachelor degree, 9.4% had Diploma, 6.1% were instituted, graduates, 2.5% had a master degree, and 0.9% had PH D. One hundred and seventeen (32.6%) worked at a primary school, 29% worked at intermediate school, while 38.4% worked at secondary education. History of recent travel was obtained in 54 (15%) of participants, family history of irritable bowel syndrome was evident in 212 (60.7%), and irritable bowel syndrome was reported in 51 (14.1%). Table (1)

Table 1. *Characteristics of the study group.*

Character	No %
Age years	
20-29	62 (17.2%)
30-39	225 (62.3%)
40-49	68 (18.8%)
50-60	6 (1.7%)
Sex	
Males	145 (40.1%)
Females	217 (59.9%)
Marital status	
Married	301 (84.8%)
Single	39 (11%)
Divorced	9 (2.5%)
Widow	6 (1.7%)
Education level	
Bachelor	292 (81.1%)
Diploma	34 (9.4%)
Institution	22 (6.1%)
Master	9 (2.5%)
PH D.	3 (0.9%)
Position	
Primary	117 (32.6%)
Intermediate	104 (29%)
Secondary	138 (38.4%)
Travelling history	54 (15%)
Family history of irritable bowel syndrome	212 (60.7%)
Irritable bowel syndrome	51 (14.1%)

Table (2) illustrated The RomeIII criteria among the study group in which: Abdominal pain relieved by defecation was evident in 41.9% of subjects, Abdominal pain associated with stool frequency was observed in 38.8%, Abdominal pain with altered stool form in 34.4%, 26.6% of participants fulfilled at least 3 days per month in past 12 weeks of continuous or recurrent abdominal pain or discomfort, while23.9% had symptoms onset of s more than 6 months before diagnosis.

In this study fever was reported in 32 (8.9%) of subjects, loss of weight was observed in 57 (15.8%), another flag sign among teachers was shown in the table (3).

In the current study, a high significant statistical difference

was evident between the subject with and without irritable bowel syndrome (27.5% vs. 12.9%) no significant statistical difference was apparent between subjects with and without irritable syndrome regarding age and sex. P-value =0.204 and 0.291 respectively. Table (4) depicted the comparison between subjects with the (IBS) and those without the syndrome.

It is interesting to note that, flag signs were commoner among irritable bowel syndrome subjects: fever was found in 18% vs.7.5%, rectal bleeding in 27.5% vs.8.7%, and loss of weight in37.3%vs. 12.3% with high significant statistical difference P-value=0.000. Table (5).

Table 2. *Subjects characteristics according to RomeIIICriteria.*

Criterion	No%
Abdominal pain relieved by defecation	151 (41.9%)
Abdominal pain associated with stool frequency	140 (38.8%)
Abdominal pain with altered stool form	123 (34.4%)
At least three days per month in past 12 weeks of continuous or recurrent abdominal pain or discomfort	95 (26.6%)
Onset of symptoms more than six months before diagnosis	85 (23.9%)

Table 3. *Relation to irritable bowel syndrome to different subjects characteristics.*

Character	IBS positive	IBS negative	P-value
Age			
20-29	9.8	18.4	
30-39	74.5	60.3	0.204
40-49	15.7	19.4	
50-60	0	1.9	
Sex			
Males	33.3	41.2	0.291
Females	66.7	58.8	
Education level			
Bachelor	82	81	
Diploma	12	9	0.628
Institution	5	6.1	
Master	0	2.9	
PH D.	0	1	
Position			
Primary	29.4	28.9	0.445
Intermediate	39.2	31.5	
Secondary	31.4	39.6	
Marital status			
Married	90.2	83.9	
Single	7.8	11.5	0.61
Divorced	2	2.6	
Widow	0	2	
Travelling history	27.5	12.9	0
Family history of IBS	64.7	60.1	0.642

Table 4. *Factors that points to diagnosis other than irritable bowel.*

Factor	No%
Fever	32 (8.9%)
Loss of weight	57 (15.8%)
Rectal bleeding	41 (11.4%)
History of travel	54 (15%)

Table 5. *Flag sings in patients with the irritable bowel syndrome.*

Sign	IBS positive%	IBS negative%	P-value
Fever	18	7.5	0.000
Rectal bleeding	27.5	8.7	0.000
Loss of weight	37.3	12.3	0.000
Traveling history	27.5	12.9	0.000

4. Discussion

The current study documented a prevalence of irritable bowel syndrome [IBS] in 14.1%, similar to studies in Riyadh Saudi Arabia [17] that reported a prevalence of 11.4% among adults. In the present study, the comment age group of IBS patients was 30-50 years old similar to the above study.

The prevalence of IBS varies considerably across the globe ranging from 10-25% with the highest rate in South America and lowest in South East Asia; this can be explained by the lack of histopathologic diagnosis, different methods of diagnosis, and lack of specific point of onset. A meta-analysis estimated the global prevalence of 11.4% and similar to the present finding [4, 5].

Researchers from China concluded a prevalence of 11.4% with no detected difference between men and women these results are similar to the current result in which no significant statistical difference was found between males and females regarding the rates of IBS [18]

No statistically significant difference was observed in those with positive family history of IBS; similarly, researchers from Lebanon reported that no significance difference regarding family history [10].

The marital status was not significant in the current study in accordance with previous research [17]

The rate of an organic lesion on colonoscopy among patients with irritable bowel syndrome and no red flag signs was not higher as compared to healthy controls ranging from 10-40% [19, 20]. By contrast: during the year following the diagnosis of irritable bowel syndrome the diagnosis of inflammatory bowel diseases was 9-16 times higher [21-24]. The average duration of the diagnosis of IBS and inflammatory bowel disease of 3-5 years suggest that symptoms of irritable bowel syndrome may be early features of IBD before the lesions become visible [10].

Literature suggested possible shared pathophysiological mechanism in IBS and inflammatory bowel diseases [the interaction of gut flora with the immune system, altered bowel motility, and altered bowel permeability]. Furthermore, low-grade inflammation had been reported in patients with the irritable bowel syndrome [25]

In the present study flag signs were commoner in patients with IBS with a high significant statistical difference P <0.001, this support the above observation of increasing inflammatory bowel disease among IBS patients.

Researchers concluded that inadequate sleep increase irritable bowel symptoms the day after, also poor sleep quality increased rectal compliance leading to constipation, furthermore sleep quality as measured by the Pittsburg Sleep Quality Index increased rectal perception to distention [26]. In the current study, no significant statistical difference was evident between teachers who sleep less than six hours/night and those with regular sleeping hours.

5. Conclusion

Irritable bowel syndrome was prevalent among Saudi

teachers, flag signs were commoner among those who fulfilled the Rome III criteria and history of recent travel, larger multi-center studies are needed to assess the relation of irritable bowel syndrome diagnosis with the Rome III criteria and organic gastrointestinal disorders.

The study limitations are the relatively small size of the survey and the reliance on a self-administered questionnaire.

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