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Prevalence and Associated Factors of Irritable Bowel Syndrome among School Teachers in Al Madinah KSA 2021

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Abstract

Background: The diagnosis of IBS depends on specification of the characteristic symptoms and the exclusion of organic disorders. It requires a careful personalized methodology, an inclusive clinical history, limited but relevant investigations, and continuous follow up.

Objectives: To estimate the prevalence, identify associated factors and determine types of IBS among teachers working at governmental schools, Al Madinah (2019-2020).

Methods: A cross-sectional descriptive study was conducted at schools located in Madinah city, Saudi Arabia From 1st to 31stDecember, 2020 among Saudi teachers working at governmental schools. Self-administrative questionnaire based on reliable and valid Rome IV criteria for diagnosis of IBS was utilized.

Results: The study included 576 teachers. Their age ranged between 24 and 60 years with an arithmetic mean of 42.07 and standard deviation of 7.09 years. Most of them were males (61.1%). According to the IV Rome criteria, the prevalence of IBS among the teachers was 25%. The only factor associated with IBS among teachers in the present study was age as the age of those with IBS was significantly lower than that of those without IBS (40.72±7.29 versus 42.52±6.97), p=0.008. Other studied socio-demographic factors, habitual factors and work-related factors were not significantly associated with IBS. The commonest reported subtype of IBS among the participants was IBS-with mixed habits (IBS-M), representing 56.5% of IBS, followed by IBS-with predominant constipation (IBS-C) representing 29.7% of cases and IBS-with predominant diarrhea (IBS-D) representing only 9.7% of cases.

Conclusion: Irritable bowel syndrome is relatively common among teachers of all teaching levels in Almadinah city, Saudi Arabia. Younger teachers were more likely to be affected and the mixed type was the commonest reported.

Keywords: Irritable bowel syndrome, Rome IV criteria, Subtypes, Teachers

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INTRODUCTION

1. Background

Irritable Bowel Syndrome (IBS) is a functional bowel disease “characterized by chronic abdominal pain, discomfort, abdominal distention and bowel abnormalities in the absence of any organic causes”.[1] The histological picture of IB Slooks alike to dystrophic changes rather than inflammatory ones with emotional state of a person and eating certain diets represent the main reasons of the illness.[2] Intestinal dysfunction in IBS is attributed to a disturbance in the communication between the brain and the digestive system and leads to painful feelings with any discomfort in the gastrointestinal tract.[3]

Irritable bowel syndrome is a chronic recurrent disease, in which, the progression of symptoms is not typical with no proven reduction in life expectancy.[2]

The possible etiology of IBS development also include poor-quality diet, eating of large amounts of gas-forming foods, fatty foods, excess caffeine, alcohol abuse, lack of dietary foods with dietary fiber, eating too much.[1]In general, there are four main etiologic factors for the development of IBS: genetic predisposition, psychological reasons such as increased anxiety, stressor depression, social reasons such as inadequate sleep, poor diet, and work strain.[4, 5]

There are four types of IBS as regards its presentation; diarrhea predominant (DIBS) subtype, constipation predominant (CIBS) subtype or mixed diarrhea and constipation subtype (MIBS-M) and unsubtyped IBS (UIBS).[4]

The underlying pathogenesis as well as pathophysiology of IBS are still not well known. It is believed that IBS is a consequence of interplay of different factors including stress, bowel hypersensitivity, altered bowel motility, and inflammation.[6]

The diagnosis of IBS depends on specification of the characteristic symptoms and the exclusion of organic disorders. It requires a careful personalized methodology, an inclusive clinical history, limited but relevant investigations, and continuous follow up. Abdominal pain that may or may not be relieved by defecation is the fundamental symptom of IBS; distension and bloating are also common symptoms.[7]

2. Rationale

Despite Irritable bowel syndrome (IBS) is one of the commonest functional disorders of the gastrointestinal tract; little is known about its prevalence and associated factors among teachers, as one of the most stressful jobs in the Kingdom of Saudi Arabia. Additionally, most of factors associated with IBS are modifiable, and with simple intervention can be adjusted.

3. Objectives

3.1 General Objective:

The aim of the research is to identify the magnitude and determinants of irritable bowel syndrome problem, based on Rome IV criteria among school teachers in the region of Almadinah in Saudi Arabia.

3.2 Specific Objectives:

-To estimate the prevalence of IBS among teachers working at governmental schools, Al Madinah (2019-2020)

-To identify factors associated IBS among the participants.

-To determine the types of IBS among the participants.

4. Study significance

The study will determine the prevalence of Irritable Bowel Syndrome, its major types among school teachers and finding of the study may be applied in further study of IBS as additional data and may have importance for decision makers in reducing the burden of the problem among teachers.

LITERATURE REVIEW

Reviewing of literature for studies investigating the prevalence and determinants of IBS revealed only one study carried out among school teachers; however, several studies were carried out among general population or other subgroups. The following is summary of these studies carried out locally or internationally.

-Local studies

-International studies

In UK (2004), Wilson S et al carried out a postal survey among 386 adults to estimate the prevalence of IBS. Results revealed a prevalence of 10.5%; 6.6% among men and 14.0% among women. The symptom profiles were diarrhoea (25.4%), constipation (24.1%) and alternating symptoms (46.7%). More than half (56%) of patients had consulted their general physicians within the past six months and 16% had consulted a specialist. Regarding the frequency of consultation, a quarter of patients consulted more than twice and 16% were referred to secondary care. About half were on medical therapy. Less than half of patients currently reporting symptoms of IBS according to the Rome II criteria had received a diagnosis of IBS. Predictors of consultation included deterioration of quality of life as well as a previous diagnosis of gastric ulcer.

METHODOLOGY

Place/area

The study was conducted at schools located in Madinah city, Saudi Arabia.

Study design

Cross-sectional descriptive study design was adopted.

Time/duration

From 1st to 31stDecember, 2020

Population

The Saudi school teachers working at governmental schools in AlMadinah city, Saudi Arabia throughout the scholastic year 2020-2021 constituted the target population for the study, provided that they fulfilled the inclusion criteria.

Inclusion criteria

- Primary, intermediate and secondary school teachers.
- Male and female.
- Any age.

Exclusion criteria

- Non-Saudi teachers.
- Those not involved in teaching such as school administrators

Sample size

A total of 571teachers was estimated as a minimum sample size according to the Roasoft online sample size calculator (http://www.raosoft.com/ samplesize.html) with the following assumptions:

Margin of error= 4%

95% confidence level

Population size: 38478 teachers

Prevalence of IBS: 40.7% according to a study carried out among school teachers in

The sample was increased to 600 teachers to compensate for possible incomplete or non-response.

Sampling method

A stratified random sampling technique with equal allocation was adopted as follows:

Madinah city is divided into 4 areas based on the administrative division of education, namely the North, South, East and West regions. The sample was almost equally distributed between males and females. Four schools from each administrative division were chosen by simple random technique (2 schools for

females and 2 schools for males). Thus, a total of 16 strata were defined. Twenty five teachers were chosen from each school as a convenience sample.

Study tool

Self-administrative questionnaire based on reliable and valid Rome IV criteria for diagnosis of IBS was utilized. Permission to use the questioner was taken from Rome foundation. The questioner was translated to Arabic and back translated into English and checked for validation. In addition, demographic and social data of teachers including age, gender, education, marital status, previous diagnoses of IBS in history were collected. The second part is included 6 questions to measure prevalence of IBS

Definition:

IBS was defined in case of presence of recurrent abdominal pain, on average, at least one day/week in the last 3 months, associated with two or more of the following criteria:

-Related to defecation (at least 30% of occasions)

- Associated with a change in frequency of stool (at least 30% of occasions)

-Associated with a change in form (appearance) of stool (at least 30% of occasions.

Criteria fulfilled for the last 3 months with symptom onset at least 6 months before diagnosis.[22]

Specification of the subtype of IBS will be dome using information presented in Figure 1.

When using the Rome IV Diagnostic Questionnaire, IBS subtypes are based on patient perception of the usual consistency of abnormal stools. Question 6 uses a picture of the Bristol Stool Scale to define abnormal stools and to classify them as follows:

IBS-C if abnormal stools are usually constipation (types 1-2), IBS-D if abnormal stools are usually diarrhea (types 6-7),

IBS-M if abnormal stools aremixed with atleast1/4constipation and at least 1/4diarrhea,

IBS-U if the subject never or rarely has abnormal stools

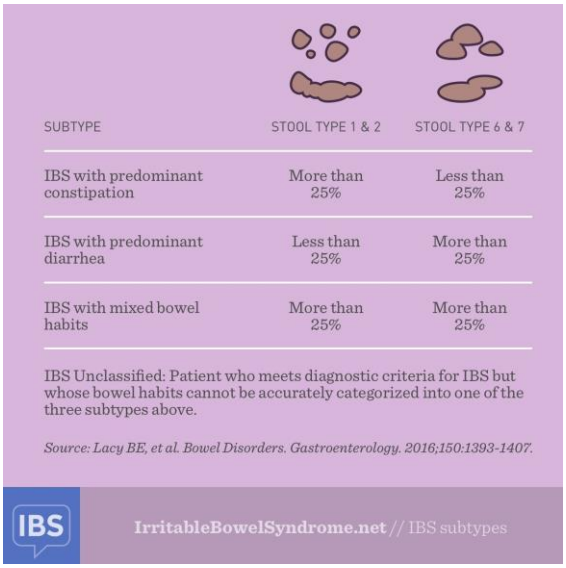

Figure 1: Specification of the type of IBS

Data entry & analysis

Data entry and statistical analysis were performed using the Statistical Package for Social Sciences (SPSS) software, version 25. Description of categorical variables were done using frequency and percentage

while for continuous variables; mean and standard deviation were applied. Chi-square test was used to investigate the association between categorical variables and p-value <0.05 was considered statistically significant.

Ethical considerations

-Proposal of the Research was approved through the local Research and Ethics committee.

-Approval of Ministry of Education was obtained to perform the field work on selected schools, in addition to approval of headmasters of the selected schools.

-This research was conducted on a voluntary basis where the selected respondents were voluntarily approved to take part in this study.

-The date was dealt with in a confidential manner and the participants were informed.

Budget:

The research was self-funded

RESULTS

The study included 576 teachers. Table 1 summarizes their socio-demographics. Their age ranged between 24 and 60 years with an arithmetic mean of 42.07 and standard deviation of 7.09 years. Most of them were males (61.1%). Majority of the participants were married and 40.6% were teaching secondary school students.

Table 1: Socio-demographic characteristics of the participants (n=576)

	Frequency	Percentage
Gender		
Male	352	61.1
Female	224	38.9
Age in years		
Range	24-60	
Mean±SD	42.07±7.09	
Teaching school level		
Primary	208	36.1
Intermediate	134	23.3
Secondary	234	40.6
Marital status		
Single	21	3.6
Married	543	94.3
Divorced/widowed	12	2.1

Habitual characteristics

Prevalence of current smoking was reported among 18.9% of the teachers as evident from Figure 1. History of practicing regular physical activity was mentioned by 22.4% of the participants as clear from Figure 2. Most of the participants (61.1%) reported history of regular drinking of coffee. Figure 3

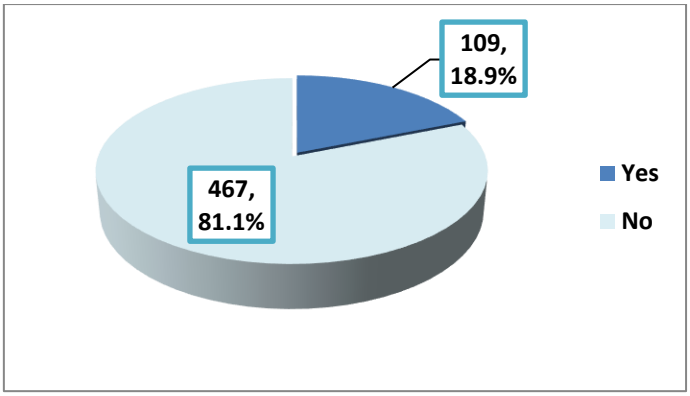

Figure 1: History of current smoking among the participants

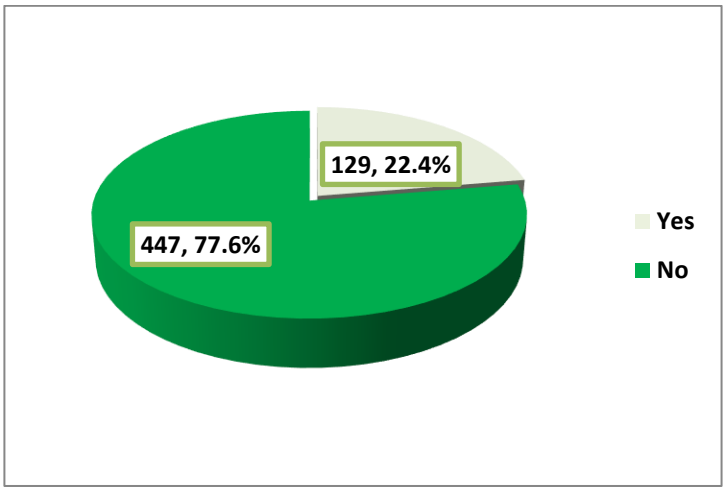

Figure 2: History of practicing regular physical activity among the participants

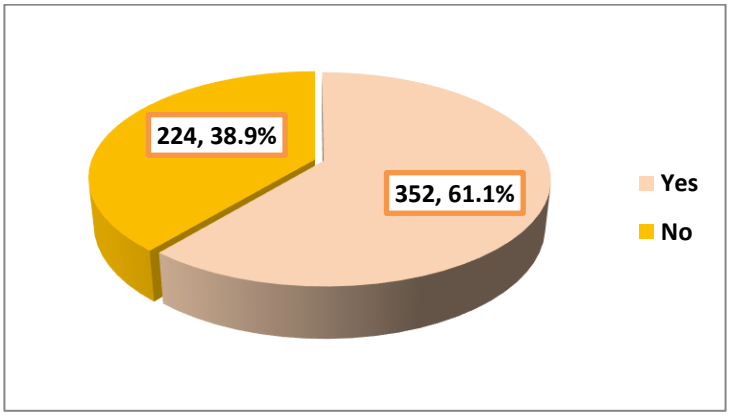

Figure 3: History of drinking coffee regularly among the participants

Work-related history

Number of classes per week ranged between 11 and 20 among almost half of the participants (50.5%), whereas it exceeded 20 classes among 26.2% of them as illustrated in Figure 4.

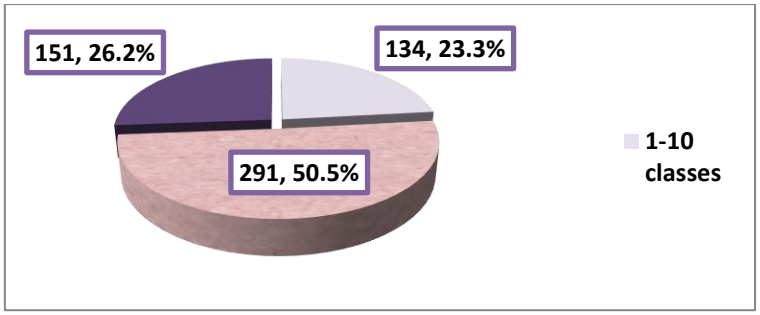

Figure 4: Number of classes per week among the participants

Prevalence of Irritable Bowel syndrome

According to the IV Rome criteria, the prevalence of IBS among the teachers was 25% as shown in Figure 5

The only factor associated with IBS among teachers in the present study was age as the age of those with IBS was significantly lower than that of those without IBS (40.72±7.29 versus 42.52±6.97), p=0.008. Other socio-demographic factors (Table 2), habitual factors (Table 3) and work-related factors (Table 4) were not significantly associated with IBS.

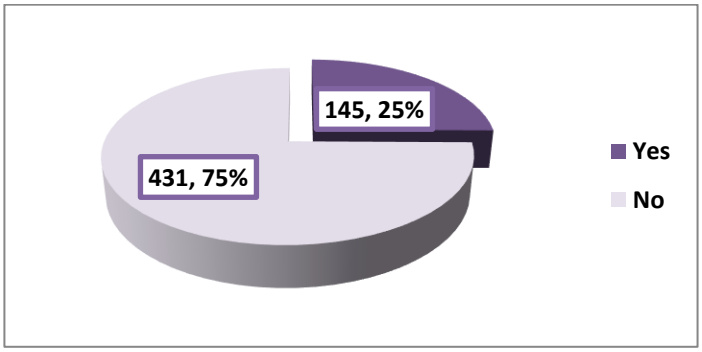

Figure 5: Prevalence of irritable bowel syndrome according to IV room criteria among the participants.

Table 2: Teachers` socio-demographic factors associated with Irritable bowel syndrome

Variables	Irritable Bowel Syndrome		p-value
	No N=431	Yes N=145	
Gender			
Male (n=352)	267 (75.9)	85 (24.1)	
Female (n=224)	164 (73.2)	60 (26.8)	0.477*
Age in years			
Mean±SD	42.52±6.97	40.72±7.29	0.008**
Teaching school level			
Primary (n=208)	157 (75.5)	51 (24.5)	
Intermediate (n=134)	93 (69.4)	41 (30.6)	
Secondary (n=234)	181 (77.4)	53 (22.6)	0.231*
Marital status			
Single (n=21)	14 (66.7)	7 (33.3)	

Married (n=543)	409 (75.3)	134 (24.7)	
Divorced/widowed (n=12)	8 (66.7)	4 (33.3)	0.539*

Table 3: Teachers` habitual characteristics associated with Irritable bowel syndrome

Variables	Irritable Bowel Syndrome		p-value*
	No N=431	Yes N=145	
History of current smoking			
No (n=467)	349 (74.7)	118 (25.3)	
Yes (n=109)	82 (75.2)	27 (24.8)	0.914
History of practicing regular physical activity			
No (n=447)			
Yes (n=129)	336 (75.2)	111 (24.8)	
	95 (73.6)	34 (26.4)	0.725
History of drinking coffee regularly			
No (n=224)	169 (75.4)	55 (24.6)	
Yes (n=352)	262 (74.4)	90 (25.6)	0.784

*Chi-square test

Table 4: Association between teachers` number of classes per week and Irritable bowel syndrome

Number of classes/week	Irritable Bowel Syndrome		p-value
	No N=431	Yes N=145	
1-10 (n=134)	102 (76.1)	32 (23.9)	
11-20 (n=291)	218 (74.9)	73 (25.1)	
>20 (n=151)	111 (73.5)	40 (26.5)	0.879*

*Chi-square test

Subtypes

From Figure 6, it is obvious that the commonest reported subtype of irritable bowel syndrome among the participants was IBS-with mixed habits (IBS-M), representing 56.5% of IBS, followed by IBS-with predominant constipation (IBS-C) representing 29.7% of cases and IBS-with predominant diarrhea (IBS-D) representing only 9.7% of cases.

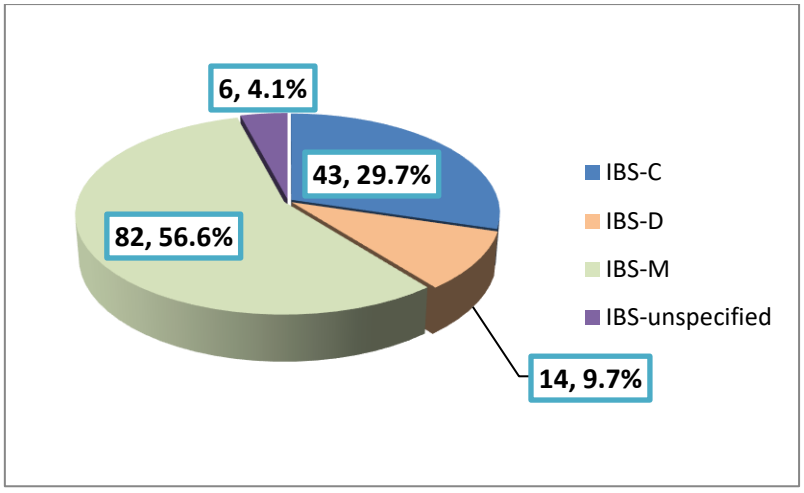

Figure 6: Subtypes of irritable bowel syndrome among the participants

DISCUSSION

IBS results in deterioration in the quality of life of the affected subjects. [23, 24] Additionally, victims of IBS are less likely to be able to work efficiently and more likely to visit their physicians than the general population.[25] As IBS is rarely investigated among teachers, as one of the most stressful jobs, on both international and national level, the present study was carried out to estimate the its prevalence using IV Rome criteria and identify its determinants and subtypes among teachers working at governmental schools, Al Madinah (2019-2020).

Prevalence of IBS

The prevalence of IBS among school teachers in the present study was 25% using the Rome IV criteria. As mentioned before, the subject was rarely investigated among teachers. Therefore comparisons in the current study were done with general population as well as other specific subgroups. Regarding studies carried out in Saudi Arabia, variable results were reported as **t**In UK, a prevalence of 10.5% was reported among adults, using Rome II criteria.[21]**Associated factors with IBS**

IBS Subtypes

Strengths and limitations of the study

the standard of diagnosis for IBS was the Rome IV criteria in this study which allow us to make a diagnosis only clinically and exclude other diseases. It did not investigate the impact of IBS, particularly on the work performance of the teachers, absenteeism rate, as well as quality of life of the affected teachers, which could be of public health importance.psychological and physical stress were not assessed in this study as they could have a significant role in inducing IBS.

CONCLUSION

Irritable bowel syndrome is relatively common among teachers of all teaching levels in Almadinah city, Saudi Arabia. The only factor associated with IBS among teachers in the present study was age as younger teachers were more likely to be affected. The commonest reported subtype of irritable bowel syndrome among the teachers was IBS-with mixed habits (IBS-M), followed by IBS-with predominant constipation (IBS-C) and IBS-with predominant diarrhea (IBS-D).

RECOMMENDATIONS

Based on the study`s findings, the following are recommended:

1. Screening of all teachers using Rome IV criteria for IBS
2. Referral of severe cases to primary healthcare centers for further follow-up and management

3. Assessment of psychological and physical stress among teachers, particularly those with IBS
4. Investigating the impact of IBS on the work performance of the teachers, absenteeism rate, as well as quality of life of the affected teachers.

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