

Irritable Bowel Syndrome Among University Students in Jordan

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Abstract

Background Irritable bowel syndrome (IBS) is one of the commonest diagnosed gastrointestinal disorders (GI) in primary care and gastroenterology practices. This study aimed to explore the prevalence of IBS, and identify associated factors, among university students in Jordan. Methods A cross-sectional study was conducted among students at the Hashemite University in Jordan. A validated, confidential, self-administered data collection questionnaire was used for the collection of personal and sociodemographic data, and the Rome III criteria were used to define IBS. Logistic regression analysis was done to identify factors associated with IBS. Results A total of 198 students participated in the study, of whom 163 had complete data and could be assessed by the Rome III criteria. The age range of the students was 18 to 35 years, and 91 (55.8%) were women. Overall, 26 (16.0%) of the respondents were diagnosed with IBS. Poor sleep (Adjusted Odds Ratio [AOR] 3.9; 95% confidence interval [CI] 1.5-10.4; $p < 0.01$), being married (AOR 7.6; 95% CI 2.0-28.8; $p < 0.01$) and a family history of IBS (AOR 2.9; 95% CI 1.1-7.7; $p = 0.03$) were independently associated with IBS in multivariable analysis. Conclusion IBS was common among otherwise healthy university student in Jordan. Lifestyle factors such as poor sleep appeared to be associated with IBS symptoms.

Introduction

Irritable bowel syndrome (IBS) is considered a functional gastrointestinal disorder. It is characterized by abdominal pain or discomfort, associated with altered bowel habits, in the absence of specific and unique organic pathology (1). It is a common disease entity and therefore associated with a high health and economic burden (2). The aetiology of IBS is still unknown, although multiple risk factors have been identified such as anxiety and depressive disorders (3,4). There are no biomarkers or specific investigations to confirm its presence; hence, the diagnosis is based on the symptoms and the exclusion of other disorders (5). Also, there is no definitive cure, and the focus is mainly symptom control by nutritional advice, lifestyle interventions, and – rarely – pharmacological therapy (6,7).

IBS has a range of manifestations, from a mild disease with few symptoms, to disabling symptoms which can seriously reduce a person's quality of life and work productivity. It is one of the most common diseases encountered in primary health care and the most common disorder diagnosed by gastroenterologists (7). Previous studies have reported a high prevalence of IBS among medical students from Saudi Arabia, Pakistan, South America, with 31.8%, 28.3%, and 21.4% diagnosed according to standard criteria, respectively (8-10). Certain risk factors have been suggested among university students, including stress, anxiety, depression, infections, dietary habits and sleep disorders (11-13).

In the present study we aimed to study the prevalence of IBS in Jordan and to identify factors associated with its presence. Since food habits and psychosocial stressors differ largely around the world, studies of IBS in various countries can shed light on nutritional and social factors that might impact the presence and severity of this common gastrointestinal disorder.

Methods

Study setting and participants

The present study was a cross-sectional survey carried out in March 2017 at the Hashemite University in Zarqa, Jordan. Study subjects were recruited by convenience sampling among university students from all colleges. Students were approached and recruited at canteens, lecture halls and tutorial rooms, and were enrolled in the study after giving their written informed consent. The study was conducted in accordance with the standards of the Helsinki Declaration, and was approved by the institutional review board committee of the Hashemite University.

Data collection

An anonymous, validated, self-administered and confidential data collection sheet was used. Participants filled in the questionnaire with the help of trained data collecting teams.

Body mass index (BMI) was calculated as weight divided by height squared for all participants, and was categorized as underweight/normal (BMI <25 kg/m²) and overweight/obese (BMI ≥25.0 kg/m²) in accordance with the World Health Organization definitions (14). Poor/intermittent sleep in our study was defined as involuntary waking up during sleep.

Study subjects who reported any of the following symptoms and conditions were excluded from the final analysis: previous GI surgery, severe weight loss, blood in stools, waking up at night due to abdominal pain or discomfort, or a history of fever, arthralgia, or anemia. The remaining participants were classified according to the Rome III criteria (Table 1).

Table 1: The Rome III criteria used to define irritable bowel syndrome

Statistical analysis

Descriptive data were expressed as frequency and percentage. Comparison between groups was assessed using chi-squared tests and a p-value below 0.05 was considered statistically significant. Odds ratios (OR) for IBS were estimated using logistic regression models, using a stepwise forward method. Multicollinearity was excluded using Spearman's correlation coefficient with a cutoff at 0.7. Data were analysed using SPSS for Windows version 24.0 (SPSS Inc, Chicago, IL, USA), except confidence interval for proportions which was calculated using OpenEpi (15).

Results

RESULTS

A total of 198 students filled in the questionnaire, of whom 35 were excluded as they had missing data and could not be classified according to the Rome III Criteria.

Among the remaining 163 individuals who were included in the study, the median age was 20 years (range 18-35), and 91 (55.8%) were women. The vast majority were Jordanian (n=150; 92.0%) and single (n=151; 92.6%).

Overall, 26 students (16.0%; 95% confidence interval [CI] 11.1-22.4) had IBS according to the Rome III criteria, 10 of whom reported being diagnosed with IBS previously.

There were no significant age or sex differences between students with and without IBS. However, students with IBS were more likely to have a family history of IBS and to be married (Table 2).

Table 2: Characteristics of study participants with and without irritable bowel syndrome (IBS)

Of note, the prevalence of overweight and obesity was alarmingly high at 38.0%; however, no association with IBS was found. Similarly, physical activity, smoking, and consumption of caffeine and energy drinks were not associated with IBS. Interestingly, a significant association between sleep quality and IBS was found, as 69.2% of the respondent with IBS reported intermittent sleep compared to 36.5% of those without IBS ($p < 0.01$).

Of note, a large proportion of students with IBS reported aggravations of symptoms on exam days (73.1%) and with spending more time studying (42.3%).

Table 3: Factors associated with irritable bowel disease among Jordanian students

Discussion

This study was done to assess the prevalence and risk factors of IBS among Jordanian university students. We found that approximately one of six students at the Hashemite University fulfilled the Rome III criteria for IBS. To the best of our knowledge, this is the first study to assess the prevalence of IBS among university students in Jordan.

Our results are consistent with previous studies from the region. Indeed, a study conducted among students at the Suez Canal University, Egypt, revealed IBS among 22.1% of study participants (16). Another study conducted among medical students in Saudi Arabia found an even higher prevalence of IBS at 31.8% (8). In the present study roughly two thirds of the students who fulfilled the diagnostic criteria for IBS had not been diagnosed previously.

Previous studies from Saudi Arabia (8), Iran (17) and Bangladesh (18) have shown similar results, indicating that there is a large potential for health education and awareness raising of this common health problem.

Surprisingly, marital status was significantly associated with the presence of IBS, with a much higher prevalence of IBS reported among married students. However, the absolute numbers were small, and our findings should be investigated in future studies.

In our study, we found an association between intermittent sleep and higher risk for IBS, which agrees with previous studies done in Saudi Arabia (8,19). Poor sleep is linked to stress reactions that may influence gastrointestinal motility, cognition and emotional reactions. Also, it may disrupt the biological rhythm and hence change GI motility (20). Whether better sleep can improve IBS symptoms remains to be seen.

Physical activity did not seem to protect against IBS in our study, which is in agreement with a Korean study among college students (21) and a Saudi Arabian study conducted among medical students (8). However, studies have been conflicting on this matter, since some studies have found a protective effect of physical activity on IBS symptoms (22,23).

We also explored the effect of various stimulants frequently used by students, such as caffeine, energy drinks and smoking; however, no association with IBS was found. This is in agreement with a previous study by Chirila et al. (24) who found no association between smoking and IBS.

Nearly half of the students diagnosed with IBS had a family history of IBS, which was significantly higher than among students without IBS. This is in line with the findings of Saito et al. from the United States (25), and also concords with previous twin studies and genetics studies (6).

Our study had certain limitations. Firstly, the sample size was relatively small, yielding a large confidence interval for the estimated prevalence of IBS. Second, as this was a cross-sectional study we cannot identify risk factors for IBS, but merely report associations. Thus, the causality may go both ways. Third, being based on self-reported data it is susceptible to potential bias including telescoping bias.

In conclusion, we found that the prevalence of IBS among students of the Hashemite University in Jordan was 16.0%. Poor sleep, being married and a family history of IBS were found to be independently associated with IBS in multivariable analysis. The role of these factors is still ambiguous, so larger studies are needed to clarify the link between them and IBS.

Declarations

Ethics approval and consent to participate:

The institutional review board committee of the Hashemite University.

Availability of data and material “Not applicable”

Competing interests:

All authors declare that there is no conflict of interest in relation to this paper.

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Authors' contributions:

All authors contribute in data analysis and writing of the manuscript.

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Tables

Due to technical limitations, Tables 1-3 are only available as downloads in the supplemental file section.

Supplementary Files

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- [Tables13.pdf](#)