

Official Name: Prevalence Of Irritable Bowel Syndrome, Its Risk Factors, And Impact On Increasing Anxiety And Depression Among Egyptian Medical Students Protocol

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Introduction

One of the most common gastrointestinal disorders is irritable bowel syndrome (IBS). It is a chronic functional bowel disease in which abnormal bowel habits, such as diarrhea, constipation, or both, are associated with abdominal pain and distension(Longstreth et al., 2006; Mearin et al., 2016). Around 11% of the general population suffers from their symptoms regardless of the geographical distribution(Card et al., 2014).

Irritable bowel syndrome is more common among females and patients younger than 50(Lovell & Ford, 2012). For medical students, IBS is common and may affect up to 25% of them.(El Sharawy et al., 2022; Zedan et al., 2024). Especially final-year students, due to the increasing workload of the final year.(Alaqeel et al., 2017)

Several risk factors increase the prevalence of irritable bowel syndrome , including environmental factors, life events, and junk food abuse(Surdea-Blaga, 2012). Also, psychological disorders as severe levels of anxiety, depression, and stress, may contribute to the occurrence of irritable bowel syndrome, and this can be explained by the pathophysiology of IBS, maybe by brain-gut interaction(Rafiq Khan Final Year MBBS et al., 2018; Surdea-Blaga, 2012).

Globally, the prevalence of anxiety and depression is higher in medical students compared to other populations(Banstola & Lamichhane, 2024), as it reaches up to 38.7% among them.(Tian-Ci Quek et al., 2019). Many factors play a role in increasing the prevalence of anxiety and depression among medical students as stressful courses in medical study, exposure to the death of patients, and others(Guthrie et al., 1995; Williams et al., 2005).

Rational

In Egypt, the prevalence of medical students suffering from stress and anxiety is high due to several problems as financial problems, work overload, traditional methods of education, and the increasing number of students, making communication with the

lecturer difficult(El-Gilany et al., 2008) and that increase incidence of IBS among Egyptian medical students.

Just as anxiety is considered a risk factor for the development of Irritable Bowel Syndrome (IBS), IBS can also lead to the occurrence of anxiety and depression, and that can be explained by brain–gut interaction(Abdelaziz et al., 2023; Zamani et al., 2019). Patients with IBS have a three-times increased risk of either anxiety or depression, compared to healthy subjects.(Zamani et al., 2019)

Although the importance of this topic is recognized, there are limited data about the exact prevalence of irritable bowel syndrome among medical students in Egypt. Previous studies(El Sharawy et al., 2022; Elhosseiny et al., 2019; Zedan et al., 2024) have discussed this topic in three medical schools in Egypt, but their sample size were too small, and they did not assess the associated anxiety and depression among these students, so we cannot rely on these studies. This is the first study in Zagazig University hospital to assess the prevalence of irritable bowel syndrome among both medical students and medical interns, and the most significant risk factors of this condition and highlight the association between IBS symptoms and anxiety and depression.

Research Question

1. What is the prevalence of irritable bowel syndrome among Egyptian medical students and medical interns?
2. What are the risk factors that increase its prevalence?
3. Can irritable bowel syndrome increase anxiety and depression among these students?

Aim:

to increase awareness about the prevalence of irritable bowel syndrome among Egyptian medical students, and its risk factors, to improve these students' quality of life.

Objectives

- To assess the prevalence of irritable bowel syndrome among Egyptian Medical students and medical interns
- To evaluate the most common risk factors that increase its prevalence
- To assess its effect on increase students' anxiety and depression.

Methodology

A. Technical design

- **Study Design:** Cross-sectional study
- **Setting:** Medical students who have access to online platforms
- **Time:** 2025-2026
- **Population:** Egyptian Medical students and medical interns.
- **Inclusion criteria**
 - Egyptian Medical students and interns
 - Their age ranges from 18 to 29 years
 - Have access to online platforms such as Facebook, WhatsApp, and Telegram.
 - Accept to participate in the questionnaire
- **Exclusion criteria**
 - Participate who refused to participate
- **Sampling**

We calculated the total sample size based on the total medical students in Egypt, according to the Central Agency for Public Mobilization and Statistics(*Capmas*, n.d.) 2023-2024, which is 115688 students. The calculation was done using Epi Info version 7.2.60 (<i>Epi InfoTM | CDC</i>, n.d.) Assuming that the prevalence is 50%, and taking a 5% error margin and 95% confidence interval, the sample size is 383. After adding a 10% non-response rate, the final sample size is about 422

- **Sample technique:** The convenient sampling will be applied in this study

B. Operational design

- **Pilot study:** We will perform a pilot study to assess the readability of the questionnaire. We will perform it on 10% of the expected population, and any changes will be made accordingly. The pilot study results will be excluded from the main analysis
- **Study field:** an online questionnaire will be shared through social media platforms such as WhatsApp, Facebook, or Telegram.
- **Data collection method:**
An online questionnaire in English designed by Google Forms will be shared through online platforms such as WhatsApp, Telegram, and X. The questionnaire asks about the following:
 - Sociodemographic data such as age, sex, residency, academic year, and BMI
 - Risk factors of IBS such as stress level, type of personality, smoking, monthly income, and junk foods
 - Diagnosis of irritable bowel syndrome based on Rome IV criteria(Mearin et al., 2016). To diagnose IBS, the students should have at least two of the three criteria in the Rome IV. The presence of two or more of the symptoms diagnoses the disease
 - Anxiety and depression levels. This section is based on the HAD criteria for diagnosing anxiety and depression(Zigmond & Snaith, 1983).

This is a 14-item questionnaire, 7 items to assess anxiety and the other 7 to diagnose depression. Each question has 4 answers coded from 0 to 3, so for each part, the patients can have a score from 0 to 21. A patient is classified to have a normal, borderline, or abnormal level of anxiety or depression if he has a cumulative score of (0-7), (8-10), or (11-21), respectively.

- **Statistical analysis:**
 - The data will first be summarized to have an idea about the baseline characteristics of the participants. Categorical data will be summarized into numbers and percentages, while continuous data will be summarized into mean and SD or median and IQR after testing their normality.
 - The Mann-Whitney U test will be used to assess the difference among the different baseline data such as sex, residency and living situation.
 - Finally, a binary logistic regression will be conducted to assess the correlation between increasing IBS symptoms and increasing anxiety and depression rates.
 - All the analyses will be held using SPSS version 29, and Microsoft Excel will be used to prepare the data and outcomes in suitable tables and figures.

C. Administrative design

- **Ethical considerations**
 - The study protocol will be approved by the Institutional Review Board of Zagazig University, Faculty of Medicine
 - Study participants will be included after informed consent.
- **Confidentiality and data retention**

Data collected will be kept confidential.

- **Risks and benefits of the participants**

There is no cost for this study

Results

Collected data will be presented in tables and suitable graphs, and analyzed according to

standard statistical methods.

Discussion

Discussion will be done on the results compared to the relevant literature and scientific Research

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