Original Article

The spectra of selected functional gastrointestinal disorders in Sudanese university students according to the Rome III criteria

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ABSTRACT

Background: The prevalence of functional gastrointestinal disorders (FGIDs) including functional dyspepsia (FD), irritable bowel syndrome (IBS) and functional constipation (FC) was not studied in Sudan.

Objectives: The aim of this study is to estimate prevalence of these disorders in Sudanese university students using Rome III criteria.

Materials and Methods: A cross-sectional descriptive study was conducted among medical students in Omdurman Islamic University during the period from January to June 2012. The selected volunteers responded to a self-reported questionnaire based on Rome III criteria.

Results: A total of 348 subjects were studied. Male: Female ratio was 0.6: 1. Prevalence of FD, IBS and FC were 21.6%, 12.9% and 10.3% respectively. IBS was more prevalent in females (16.4%) compared to males (7%). The most prevalent symptoms were postprandial fullness (74.1%), straining during ≥25% of defecation (43.9%) and lumpy or hard stools in ≥25% of defecations (37%).

Conclusion: Functional gastrointestinal disorders are common in university students. Further studies are needed to characterize the epidemiology of FGIDs in Sudan.

Key words: Functional gastrointestinal disorders, dyspepsia, irritable bowel syndrome, constipation, Sudan.

Functional gastrointestinal disorders (FGID) are variable combinations of chronic or recurrent gastrointestinal symptoms not explained by structural or biochemical abnormalities[1]. They include functional esophageal disorders (e.g. functional heartburn and functional dysphagia), functional gastro-duodenal disorders (e.g. functional dyspepsia (FD)), and functional bowel disorders (e.g. functional bloating (FB), irritable Bowel syndrome (IBS), functional constipation (FC), functional diarrhea (FD), and unspecified functional bowel disorders (U-FBD). These disorders are very common worldwide[2] affecting patients' quality of life and causing significant reduction in work productivity and increased economic burden[3-5].

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It is recommended that certain "red flag" symptoms can be used to distinguish FGIDs from structural intestinal diseases[6]. These include drastic weight loss, a history of organic bowel disease, a history of digestive surgery, blood in stool, awakening due to abdominal pain during night, anemia, fever or arthralgia.

According to the Rome III criteria, the latest symptom-based classification system for FGIDs, onset of functional gastrointestinal symptoms should start at least 6 months before clinical presentation and the diagnostic criteria must be fulfilled for the last 3 months[6,7].

There are no definitive clinical findings or specific biomarkers that characterize FGIDs. Symptoms are the main causes that bring patients to clinicians. Some of the disorders are very common whereas others are very rare; however, prevalence varies from one country to another. Functional dyspepsia is the most common

gastro-duodenal disorder[8], with dyspeptic patients frequently seen in out-patient clinics. Patients frequently complain of upper abdominal discomfort, postprandial fullness or early satiation. According to Rome III criteria, FD is further divided into two subgroups: epigastric pain syndrome (EPS) and postprandial distress syndrome (PDS). On the other hand, abdominal bloating, with or without distension, is a common symptom especially in patients with IBS and constipation. In IBS, patients complain of excessive gas (flatulence), frequent burping (eructation), and abdominal rumbling (borborygmi). Irritable bowel syndrome is one of the commonest gastrointestinal conditions encountered in primary or secondary care. The disorder is more common in young people, especially women. Although symptoms (e.g. diarrhea, constipation, bloating, and pain) may overlap across FGID, IBS is more specifically defined as pain associated with change in bowel habit. The change in bowel habit can be constipation-predominant or diarrhea-predominant; however, some patients present with mixture between the two. The diagnosis should be reached using symptom based clinical criteria rather than excluding underlying organic disease by exhaustive investigation[9]. Constipation is a common, often chronic, disorder of gastrointestinal motility with a high prevalence. In functional constipation, patients often experience constipation in association with other symptoms like infrequent bowel movements, hard or lumpy stools, straining, bloating, a feeling of incomplete evacuation after a bowel movement and abdominal discomfort[1]. These symptoms are also shared by patients with constipation- predominant irritable bowel syndrome (IBS-C).

There is paucity of data regarding prevalence of FGIDs in Sudan. On the other hand, familiarity of physicians with the term is unknown. In a survey within the Asia-Pacific region, only 40% of practitioners were familiar with the term FD and even less had heard about Rome criteria[10]. This study aimed to determine the pattern of selected functional gastrointestinal disorders (FD, IBS and FC) in Sudanese university students using Rome III criteria.

MATERIALS AND METHODS:

The study was conducted in Omdurman Islamic University during the period from January to June to 2012. All students in the Faculty of Medicine were approached. All candidates enrolled in the study were subjected to full medical history and thorough clinical examination. Those with a structural problem in the gastrointestinal tract, pregnancy, fever, weight loss or gastrointestinal bleeding were excluded. A total of 348 medical students were selected to participate in the study. Each student responded to a questionnaire based on Rome III criteria to identify functional dyspepsia (FD), irritable bowel syndrome (IBS) and functional constipation (FC). Other types of FGIDs were not included in our study. Symptoms tested in the questionnaire included postprandial bloating, early satiety, abdominal pain relieved with defecation , abdominal pain associated with stool frequency or form, straining during at least 25% of defecation, feeling of incomplete evacuation, using manual maneuver to aid defecation, lumpy or hard stools in at least 25% of defecations and less than 3 motions per week. Criteria were fulfilled for the last 3 months with symptom onset at least 6 months prior to time of study.

RESULTS:

A total of 348 subjects were included in the study, 129 (37%) were males and 219(63%) were females. Their ages ranged from 22 to 27 years old with a mean age of 23.5. Table 1 shows distribution of gastrointestinal symptoms among males and females in the study group. The most prevalent symptoms were post prandial fullness in 258(74.1%), straining during ≥25% of defecation in 153(43.9%), lumpy or hard stools in 129(37%) and

abdominal pain associated with stool frequency in 108(31%). Table 2 presents percentages of the studied FGIDs among the medical students. A total of 75(21.5%) had functional dyspepsia, 45(12.9%) had irritable bowel syndrome and 36(10.3%) had functional constipation. IBS was more prevalent among females 36(16.4%) compared to males 9(7%).

Table (1): Distribution of symptoms among the medical students

Symptoms	Male n (%)	Female n (%)	Total n (%)
Postprandial fullness	111(31.9)	147(42.2)	258
Early satiety	42(12.1)	27(7)	69(19.1)
Abdominal pain associated with stool frequency	39(11.2)	69(19.8)	108(31)
Abdominal pain associated with changes in stool form	30(8.6)	66(18.9)	96(27.5)
Abdominal pain relieved with defecation	18(5.2)	60(17.2)	78(22.4)
Straining during ≥25% of defecation	69(19.8)	84(24.1)	153(43.9)
Feeling of incomplete evacuation after bowel movement	33(9.5)	45(12.9)	78(22.4)
Sensation that stools cannot be passed at bowel movement	0.0(0.0)	3(0.8)	3(0.8)
Hard stools in ≥25% of defecations	48(13.8)	81(23.2)	129(37)
Manual maneuver used during defecation	15(4.3)	36(10.3)	51(14.6)
Motions < 3 per week	18(5.1)	30(8.6)	48(13.7)

DISCUSSION:

The diagnosis of a functional gastrointestinal disorder is based on utilization of Rome criteria through administration of self-reported questionnaire. The Rome criteria have been evolving since 1990 (Rome classification system for FGIDs) until 2006 (Rome III criteria)[6,7]. Since that time, they have been applied for diagnosis of FGIDs in many countries worldwide; however, there is paucity of data regarding their use in Sudan.

Functional dyspepsia is the commonest cause of dyspeptic symptoms in upper abdomen[8]. About one fifth (21.6%) of our study group had functional dyspepsia. Difference between males and females was insignificant. Previous studies showed prevalence of 8-23%[11-13]. The classification of functional dyspepsia into epigastric pain syndrome (EPS) and postprandial distress syndrome (PDS) was not investigated. On the other hand, the pathophysiology of functional dyspepsia is still under investigation.

Prevalence of irritable bowel syndrome varies considerably between countries. It ranges from as low as 5% in Asia[14] to higher rates in Western countries; however the global map of IBS is far from complete since community-based prevalence data is not available from many areas[15]. The percentage in our study was 12.9%. Percentage of females affected was more than twice that of

Table (2): Prevalence of selected gastrointestinal disorders in the study group

Gastrointestinal disorder	Male n (%)	Female n (%)	Total n (%)
Functional dyspepsia	27 (20.9)	48 (21.9)	75 (21.6)
Irritable bowel syndrome	9 (7.0)	36 (16.4)	45 (12.9)
Functional constipation	12 (9.3)	24 (11.0)	36 (10.3)
Healthy	81 (62.8)	111 (50.7)	192 (55.2)
Total	129 (100)	219 (100)	348 (100)

males. Similarly, many previous studies reported higher percentages of IBS in females[16,17]. It has been suggested that the gender difference might be due to difference between males and females in their responses to stress or in effects of their sex hormones on the gastrointestinal tract[18]. In addition, a number of risk factors including anxiety and depression were found to be associated with IBS[19]. Since medical students are exposed to repeated anxiety and stressful conditions during their course of study, they are expected to have higher prevalence of IBS than the general population. In a previous study conducted in Mexico, prevalence of IBS among university students was higher than professors and other employees in the same universities[20]. Further studies are needed to investigate association of IBS with these risk factors in the future. It is worth noting that the impact of IBS on health related quality of life is very high. It may be higher than the impact of many chronic diseases including asthma[4].

Constipation is a major public health problem. It is shared between functional constipation and constipation-predominant IBS. Other symptoms like incomplete evacuation, hard stools, straining and relieve of abdominal pain with defecation help to differentiate between the two. About 10% of our medical students suffer from functional constipation. A higher prevalence was reported among university students in other countries[20]. In our study, the most dominant symptoms of FC were straining and hard stools. These were the same dominant symptoms reported in other studies[21]. Although the clinical presentation is somewhat different between functional constipation and constipation-predominant IBS, their burden on health and quality of life were found to be similar[21]. It is worth noting that, in the absence of a physician exclusion of organic disease, Rome III criteria may potentially include some patients with pathologic disorders in addition to those with true functional disorders[22].

One of the major limitations in this study is the translation of Rome III questionnaire from English to Arabic. In addition, the questionnaire was not previously validated for diagnosis of FGIDs in Sudan. However, researchers were available during the process of data collection to explain questionnaire items and to answer students' questions about the symptoms. Another limitation is the selection bias in the study population. However, this study shows that FGIDs are common among university students. Further studies are needed to measure prevalence of FGIDs in the general population and to investigate their associations with risk factors like diet, exercise, anxiety, stress and depression.

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