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RESEARCH ARTICLE

PSYCHIATRIC ASPECTS OF IRRITABLE BOWEL SYNDROME

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ABSTRACT

Background: Irritable bowel syndrome (IBS) is a common functional gastrointestinal disorder and its epidemiological aspects and psychiatric comorbidities have not been properly investigated in Al Ahsa city in the Kingdom of Saudi Arabia (KSA). **The aim** of the study was to explore the epidemiological features, personality traits and psychiatric comorbidity of IBS, among Saudi adult patients. **Methods**: This is a cross-sectional study of 127 Saudi adult patients diagnosed as IBS and 127 age and sex matched normal individuals living in the eastern province (Al Ahsa city) of the Kingdom of Saudi Arabia (KSA). Demographic data had been gathered including socioeconomic status (El-Gilany socioeconomic status scale). Personality characteristics were assessed using Minnesota II Multiphasic Personality Inventory (MMPI-2) and the common associated psychiatric disorders (depression and anxiety) were evaluated using Beck Depression Inventory-Second Edition (BDI-II) and Hamilton Anxiety Rating Scale (HAM-A)respectively. **Results**: IBS is more common in females (57%), in the age group ≤ 30 years (42%), in divorced people (34%), low socioeconomic class (46%) and low educated people (32%). Scores of MMPI-II of IBS patients on hypochondriasis, depression, psychoasthenia and social introversion (93±4, 94±3, 83±5 and 94±3 respectively) were higher than the control group (87±3, 85±4, 77±3 and 89±3 respectively). Depression and anxiety were more common in IBS patients (57.48% and 45.67% respectively) than the control group (36.22% and 30.71 respectively). **Conclusion:** It is common to find hypochondical complaints, psychoasthenia symptoms and social introversion as abnormal personality characteristics in patients with IBS. High prevalence of psychiatric comorbidities especially depression and anxiety among IBS patients necessitate the simultaneous addressing of both somatic and psychological needs in those patients.

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INTRODUCTION

Gastrointestinal (GI) disorders rank high in medical illnesses associated with psychiatric consultation. This ranking reflects the high prevalence of GI disorders and the link between psychiatric disorders and GI somatic symptoms (Smith *et al*., 2003). Psychological and psychiatric factors commonly influence onset, severity, and outcome in the functional GI disorders (Uday, 2017). The physiology of the gastrointestinal (GI) tract appeared to correlate with specific emotional states. Hyperfunction was associated with hostility, and hypofunction with sadness. Such reactions are nonspecific, and the patient's reaction is determined by the general life situation and perceptual appraisal of the stressful event (Yates, 2008). Irritable bowel syndrome (IBS) has been recognized as one of the most common disorders among the group of functional gastrointestinal disorders (Padhy, 2015). IBS is a common disorder however, its exact incidence is hard to assess, but it appears that those attending gastroenterology clinics represent only the tip of the iceberg (Ammar Hassanzadeh Keshtelia, 2015). IBS is a chronic and debilitating functional gastrointestinal disorder. The percentage of patients seeking health care related to IBS approaches is 12% in primary care practices (Lekha Saha, 2014). Prevalence estimates of IBS usually range from 12–30% with rate varies significantly between countries and depends on the diagnostic criteria used. (Wilson, 2004). Although IBS has received less attention in non-Western countries, the prevalence of IBS in some developing countries is in the 35–43% range (Schmulson, 2006 and Quigley, 2006).

IBS is widespread in all societies and socio-economic groups. (Faresjo, 2006).

IBS is more prevalent in women than men, and is more commonly diagnosed in patients younger than 50 years of age (El-Salhy, 2012).

The biopsychosocial model applied to the understanding of IBS pathophysiology assumes that psychosocial factors,

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interacting with peripheral/central neuroendocrine and immune changes, may induce symptoms of IBS, modulate symptom severity, influence illness experience and quality of life, and affect outcome. Personality traits like negative affects and anger have its role on pathogenesis and clinical expression of IBS (Maria Rosaria A Muscatello, 2014). Many IBS patients have psychological symptoms including depression, anxiety, tension, insomnia and frustration (Nagisa Sugaya and Shinobu Nomura, 2008).

Aim of the work: Was to explore the epidemiological features, personality traits and psychiatric comorbidity of IBS, among Saudi adult patients.

PATIENTS AND METHODS

This cross-sectional study was conducted on Saudi adult patients at the outpatient psychiatric clinic in collaboration with gastrointestinal clinic in Al Ahsa hospital-Al Ahsa city (Eastern province of Kingdom of Saudi Arabia [KSA]). The study was conducted from July 1 to December 31, 2016. The study has been included 127 patients diagnosed as irritable bowel syndrome. Age and sex matched 127 adults without any psychiatric disorders or medical problem who came for influenza vaccination were collected as a control group. The study was approved by Al Ahsa Hospital Ethics Committee and Review Board. Privacy and confidentiality were ensured and all participants signed an informed consent form. All services were provided according to hospital protocol. It was made clear on the consent form that refusal to participate would not affect patients' right to service. Patients were recruited if they fulfilled the ROME-IV (Douglas *et al*., 2015), criteria: Recurrent abdominal pain on average at least 1 day a week in the last 3 months associated with two or more of the following: 1- Related to defecation 2- Associated with a change in a frequency of stool 3- Associated with a change in form (consistency) of stool , Patient must has symptoms started at least 6 months ago, no evidence of organic disease that could produce the symptoms, no past history of psychiatric disorder and no current psychiatric disorder that could interfere with the patient cooperation in giving history, clinical examination and undergoing the required investigations. The Rome criteria are the international standard used to diagnose functional gastrointestinal disorders such as irritable bowel syndrome (IBS) and are widely considered by experts to be 98% accurate in diagnosing IBS based on symptoms without the need for extensive testing for most people.

Investigations (to exclude other factors of gastrointestinal symptoms) that have been done are:

- Comple blood count (CBC) to exclude anemia.
- Stool analysis to exclude occult blood and infections.
- Colonoscopy.

Demographic characteristics including socioeconomic status were studied using El-Gilany socioeconomic status scale. This is a new socioeconomic status scale aimed to update and re-validate the scoring system of Fahmy and El-Sherbini for measurement of socioeconomic status in health research. The new socioeconomic status scale has 7 domains with a total score of 84. Intra-and inter-observer variability and the internal consistency of the scale were assessed. We conclude that the scale is valid and reliable (El-Gilany, 2012). Personality traits were assessed using Minnesota Multiphasic Personality Inventory Short Form. The Minnesota II Multiphasic Personality Inventory (MMPI-2) is currently the most commonly employed standardized psychometric test for emotional adjustment and personality status. The instrument has the following 10 clinical scales: hypochondriasis (H), depression (D), hysteria (Hy), psychopathic-deviate (Pd), masculinity/feminity (MF), paranoia (Pa), psychoasthenia (Pt), schizophrenia (SF), hypomania (Ma) and social introversion (Si) scales. The validity and reliability of the questionnaire were confirmed (Mousavinasab, 2007).

Common comorbid psychiatric disorders had been evaluated through the application of:

Beck Depression Inventory-Second Edition (BDI-II): The gold standard of self-report depression rating scales, the BDI-II is a 21-item measure designed to assess symptoms of depression. The instrument assesses the patient mood and behavior over the previous two weeks. Given its brevity, ease of administration and relatively sound psychometric properties, the BDI-II remains one of the most popular self-repot instruments for depression. Items are scored on a 0-3 scale, yielding a score range of 0-63 where higher scores indicate greater depression severity. Scores in the range of 14-19 indicate mild depression, 20-28 moderate depression and 29-63 severe depression (Beck, 1996).

Hamilton Anxiety Rating Scale (HAM-A): The HAM-A was one of the first rating scales developed to measure the severity of anxiety symptoms, and is still widely used today in both clinical and research settings. The scale consists of 14 items, each defined by a series of symptoms, and measures both psychic anxiety (mental agitation and psychological distress) and somatic anxiety (physical complaints related to anxiety). Each item is scored on a scale of 0 (not present) to 4 (severe), with a total score of 0-56, where <17 indicates mild severity, 18-24 mild to moderate severity and 25-30 moderate to severe (Borkovec, 1993).

RESULTS

Table (1) shows the sociodemographic characteristics of IBS patients. IBS is more common in the younger than older age groups. IBS is more common in females divorced and single patients. IBS is more frequent in patients with low socioeconomic status. The rate of IBS was higher in illiterate and below high school patients. Table (2) shows Personality traits of IBS patients according to Minnesota Multiphase Personality Inventory (MMPI 2): Scores in hypochondriasis, depression, psychoasthenia and social introversion in group 1, IBS patients (93±4, 94±3, 83±5 and 94±3 respectively) are significantly higher than group 2, control group (87±3, 85±4, 77±3 and 89±3 respectively) and the difference has high statistical significance. No statistically significant difference between the scores of hysteria, psychopathic deviation, masculinity/femininity, paranoia, schizophrenia and hypomania in the two groups. Table (3) shows depressive disorder as a Psychiatric comorbidity of IBS patients according to Beck Depression Inventory-Second Edition (BDI-II). Depression had been shown high statistically significant association with IBS which is more obvious in the severe stage. Table (4): Shows anxiety disorder as a Psychiatric comorbidity of IBS according to Hamilton Anxiety Rating Scale (HAM-A): There is a high statistically significant association between anxiety and IBS which is seen more in moderate to severe stage.

Table 1. The sociodemographic characteristics of IBS patients

	Group 1(n=127)		Group 2 (n=127)		P value
	No.	%	No.	%	
Age (ys); ≤ 30 ys.	53	42%	47	37%	
31-40 ys.	37	29%	36	28%	
41-50 ys.	23	18%	26	21%	
≥ 50 ys.	14	11%	18	14%	0.7
Gender: Male	54	43%	61	48%	0.37
Female	73	57%	66	52%	
Marital status: Married	15	12%	59	47%	0.000
Single	38	30%	27	21%	
Divorced	43	34%	23	18%	
Widowed	31	24%	18	14%	
Socioeconomic status					
Low class	59	46%	32	25%	0.000
Middle class	42	33%	44	35%	
High class	26	21%	51	40%	
Educational level					
Illiterate	39	31%	25	20%	0.01
Less than high school	41	32%	31	24%	
High school	28	22%	36	28%	
college	19	15%	35	28%	

P-value is calculated by x2 test

Table 2. Personality traits of IBS patients according to Minnesota Multiphase Personality Inventory (MMPI 2)

Personality traits	Group 1 (n=127) mean ±SD	Group 2 (n=127) mean ±SD	P value
Hypochondriasis (Hs)	93±4	87±3	0.000
Depression (D)	94±3	85±4	0.000
Hysteria (Hy)	86±5	83±3	0.08NS
Psychopathic deviation (Pd)	81±3	80±4	0.06NS
Masculinity/Femininity (MF)	77±4	78±4	0.08NS
Paranoia (Pa)	73±4	75±3	0.09NS
Psychoasthenia (Pt)	83±5	77±3	0.000
Schizophrenia (Sc)	71±3	72±3	0.06NS
Hypomania (Ma).	72±4	71±4	0.08NS
Social introversion (Si)	94±3	89±3	0.000

NS (Not Significant)

Table 3. Shows depressive disorder as a Psychiatric comorbidity of IBS according to Beck Depression Inventory-Second Edition (BDI-II)

Depressive disorder	Group 1 (n=127) Depression [n=73(57.48%)]		Group 2 (n=127) Depression [n=46(36.22%)]		P value
	No.	%	No.	%	
Mild	16	21.92%	27	58.69%	
Moderate	23	31.51%	15	32.61%	
Severe	34	46.57%	4	8.70%	0.000

X2 test

Table 4. Shows anxiety disorder as a Psychiatric comorbidity of IBS according to Hamilton Anxiety Rating Scale (HAM-A)

Anxiety disorder	Group 1 (n=127) Anxiety disorder [n=58(45.67%)]		Group 2 (n=127) Anxiety disorder [n=39(30.71%)]		P value
	No.	%	No.	%	
Mild	16	27.59%	19	48.72%	
Mild to Moderate	11	18.96%	13	33.33%	0.000
Moderate to Severe	31	53.45%	7	17.95%	

X2 test

DISCUSSION

Functional gastrointestinal disease is believed to be very common and Irritable Bowel Syndrome is frequent in the general population. The present study revealed that IBS is more common in the age group 30 years and below (42%) with a trend to be decreased with increasing the participant age which goes hand on hand with the study of Cañón M *et al* (Cañón, 2017), who mentioned that IBS is a prevalent disorder in the people aged 18-30 years but Saito YA, and Schoenfeld P (20) stated that IBS is more common in age group between 30 to 59 years however Zhang L; *et al* (21) said that the prevalence of IBS varies minimally with age which might be explained by considerable heterogeneity that exists between studies. Some of this is explained through the differences in study methodology and sampling and the others explained by the use of different diagnostic criteria to define IBS. Our results shows female predominance (57%) in the prevalence of IBS which is consistent with the results of Wang Y; *et al*. (Wang, 2016), who reported that the prevalence of IBS in female was significantly higher than that in male (31.3% vs. 24.8%, p < .001) and the results of Kim YJ and Ban DJ. (Kim, 2015), who stated that more women (70.7%) suffered from IBS than men (29.3%). Factors influencing gender difference are biobehavioral stress response, gender role, menstrual cycle and affective symptoms (Chang, 2002). Our explanation for the higher rates of IBS in females is frequent life stressors, the females could face like work, pregnancy, childbearing, household activities and child raising responsibilities. On the other hand Long Y *et al* (25) reported that similar numbers of men and women had IBS (51.3% male vs. 48.7% female, P=.796). In a population based study Akiro TOR and Gotaro TODA (26) found that female patients with IBS do seek care more than male patients with IBS (2 vs. 1) which may explain the higher prevalence of IBS in females.

Parallel to the findings of Asieh Mansouri (Asieh Mansouri, 2017), the present work shows higher prevalence of IBS among divorced (34%) and single (30%) patients than married (12%) and widowed (24%) patients which may be related to high level of stress in the divorced and single patients. Our findings about high prevalence of IBS in patients with low socioeconomic class (46%) is in agreement with the results of Reya and Talleya (Reya, 2009), who cited that low socioeconomic status may carry an increased risk of suffering with irritable bowel syndrome which may be related to the distress of the low socioeconomic status. However, Caroline Canavan, *et al* (Caroline Canavan, 2014), found no association with socioeconomic status and IBS furthermore Costanian; *et al*. (2015), reported that over 50% of IBS positive cases had middle to high family income. A possible explanation for this association lies in the "hygiene hypothesis" proposed by Gwee (Gwee, 2005) who said that children from a high social class are less likely to live in highly crowded environments and as a result, are less exposed to enteric pathogens at an early stage of life. These pathogens result in the development of immune tolerance by protecting against the development of post-infectious IBS through increased exposure to intestinal organisms leading to lower risk of adult IBS (Gwee, 2005). In the present work , IBS is more common in less educated patients [illiterate (31%) and less than high school (32%)] than more educated patients [high school (22%) and college (15%)] which is consistent with the findings of Madrid-Silva (32) who said that people with higher educational level reported a lower percentage of IBS but contrary results was obtained by Mansouri A (Mansouri, 2017), who found that percentage of IBS was high among highly educated individuals because of the increased anxiety. In regard to the personality characteristics, our results show higher scores on hypochondriasis, depression, psychoasthenia and social introversion in IBS patients (93±4, 94±3, 83±5 and 94±3 respectively) compared to the control group (87±3, 85 ±4,

77±3 and 89±3 respectively), similar findings had been reached by Althaus A; *et al* (2016), who found higher somatic symptom burden and increased level of hypochondriasis in IBS patients. Furthermore, Mousavinasab SM; *et al* (2007) recorded in his study that IBS patients got the highest scores on the hypochondriasis, psychoasthenia and social introversion scales. This work revealed that depressive disorder was more frequent in IBS group (57.48%) than control group (36.22%). Also the rate of severe type of depression in the IBS group (46.57%) was higher compared to the control group (8.7%) which is similar to the findings of Lee YT; *et al* (Lee, 2015) who said that the risk of depressive disorder was higher in the IBS cohort than in the comparison cohort, also Ibrahim NK; *et al*. (2016), stated that depression and anxiety scale scores were significantly high in association with IBS. On the other hand Shen L; *et al*, (2009), cited that the self-reported psychological and psychosomatic symptoms of depression were encountered more frequently in participants with IBS but they added that depression and anxiety could potentially induce IBS (No cause effect relationship). In the present work, the prevalence of anxiety disorders was high in patients with IBS (45.67%) in relation to control group (30.71%) and also the prevalence of severe type of anxiety in IBS patients was high (53.45%) coincident with the results of Mikocka-Walus *et al* (2008), who found that 50% of IBS participants were anxious and Grzesiak M; *et al* (40) who mentioned that anxiety disorders were diagnosed in (47%) of IBS patients, also the findings of Son YJ; *et al* (41) denoted that higher rates of anxiety disorders were independently associated with increased IBS occurrence. However, Mikocka-Walus A; *et al* (39) said that the prevalence of psychological disorders is high in patients with irritable bowel syndrome (IBS) but their role in symptom reporting is uncertain.

Conclusion

IBS is a common gastrointestinal disorder especially in females young aged, divorced, with low education and low socioeconomic status. Hypochondriasis, psychoasthenia and social introversion are common personality traits in IBS patients. Depression and anxiety as a psychiatric comorbidity are widely present in IBS patients.

Strengths

- To the best of our knowledge, this is the first study which clarifies psychiatric aspects of IBS in the eastern area of the Kingdom of Saudi Arabia.
- The use of updated ROME IV criteria to diagnose IBS added a big value for the accuracy of the diagnosis for the research purposes.

Limitations

- Low number of patients included in the study.
- No cause effect relationship could be detected between IBS and psychiatric disorders.
- Not all people in the area served by our hospital can reach the hospital.

Recommendation

Clinicians should pay particular attention to psychiatric comorbidities in IBS patients. A high prevalence of anxiety, depression symptoms and distress in IBS subjects emphasize the importance of the psychological evaluation of the patients with IBS, in order to give better management of the patients and may also help to reduce the burden of health care costs. Future studies with expanded sample size may verify and explain the results of this study. Furthermore, we believe that future studies should focus on regional and cross-cultural differences that are more likely to shed light on pathophysiology.

Footnotes: The authors have no conflicts of interest to declare for this study.

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