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## Irritable Bowel Syndrome in Iranian Young Adults: A Survey among Medical Students

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A cross-sectional study on medical students at the Golestan University of Medical Sciences in Iran was conducted to determine the prevalence of IBS and to assess the symptom subgroups based on the predominant bowel habit. A valid self report questionnaires based on ROM II criteria was administered to all the medical students. Comparison between groups was assessed using the Chi-square and Fishers Exact analytical tests. Of 708 questionnaires, 513 complete responses were received (response rate of 87.4%). Fifty (10.6%) subjects reported symptoms consistent with the diagnosis of IBS, predominantly in women. Forty (77.4%) and three (7.1%) were of the constipation-predominant and diarrhea-predominant subgroups, respectively. Six (12.2%) subjects fell into the non-specific IBS subgroup. The mean age of the IBS group was 22.6±2 years. IBS rate was higher in married students (15.2%) than singles (9.7%). There were no significant differences regarding sex, age, marital status and place of residence in the IBS and non-IBS groups. 57.1% (n = 28) of the medical students had consulted their healthcare practitioner for their symptoms. Hospitalization and endoscopic procedures were reported in 3 (6.1%) of cases. Self-medication was reported in 55.1% (n = 27) of subjects. Based on this study, the prevalence of IBS in young Iranian population are higher than previously expected that deserves greater care and further investigation.

**Key words:** IBS, prevalence, medical students, Iran

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## INTRODUCTION

Irritable bowel syndrome is characterized by abdominal pain and disturbance of bowel habits in the absence of demonstrable structural pathology (Everhart and Renault, 1991). It is the most common source referral to gastroenterologists and is very costly to the community (Longstreth, 1995).

The pathophysiology of the disease is unclear, but previous gastroenteritis, gastrointestinal irritants, psychological stress, some mechanisms due to abnormal physical activity and visceral hypersensitivity are among the responsible factors (Saito *et al.*, 2002).

Although not life threatening, it is a major gastroenterological condition. Community-based studies have reported prevalence rate for IBS ranging from 9 to 22% (Drossman *et al.*, 1993; Jones and Lydiard, 1991).

It is generally recognized that IBS occurs more frequently in women than men (Heaton *et al.*, 1992; Drossman *et al.*, 1982) and its prevalence is similar in young, middle aged and elderly adults (Heaton *et al.*, 1992; Thompson and Heaton, 1980) although some clinical studies have noted a predominance of IBS in those under the age of 25 years (Fielding, 1977). Despite of its prevalence and importance in many western communities, there is a perception that IBS is less of problem and its epidemiology is different from Asian communities (Thompson *et al.*, 1999; Longstreth and Wolele-Tsadik, 1998).

An early study from Thailand and Singapore reported the prevalence to be less than 6% (Danivat *et al.*, 1988; Ho *et al.*, 1998) but more recent studies from some other Asian countries have reported a greater prevalence rate of IBS. For example in a recent study from Singapore (1998-2000) a face to face interview of a 3000 random sample household was conducted and the prevalence of IBS was 8.6 up to 11% with different criteria (Ann Gwee *et al.*, 2004). In similar studies from China, Japan and south eastern Antolia, the prevalence of IBS was reported to be 6.6, 6 and 10.2%, respectively (Kwan *et al.*, 2002; Kumano *et al.*, 2004; Yilmaz *et al.*, 2005).

There is limited epidemiological data on IBS in Iran; only in the population-based study of Shahre-kord (The west Region of Iran) the prevalence of IBS has been reported to be approximately 5.6% (Hoseini-Asl *et al.*, 2003).

We carried out this study to determine the prevalence rate, socio demographic and symptom characteristics of IBS in Iranian apparently healthy young individuals (medical students) in order to compare them with studies from western countries.

## MATERIALS AND METHODS

**Study subjects:** This study was conducted in 2005-2006 in Golestan province, Iran. The protocol for the present study was approved by the local ethics committee of GOUMS (Golestan University of Medical Sciences).

The medical students of Golestan University of Medical Sciences were informed about the importance and aims of the study and Volunteers were included.

After coordination with educational unit in Golestan University of Medical Sciences, a valid self report questionnaire was administered to all medical students. The questionnaire was validated by expert gastroenterologist and included two sections; the first part consisted of the socio demographic characteristics of the cases such as age, sex, race, place of residence and etc. In the second part, the symptoms were evaluated and further subclassified as constipation-predominant or diarrhea- predominant IBS subtypes.

**Assessment of IBS symptoms:** Based on the Rome II criteria, the diagnosis of IBS was defined as at least 12 weeks, without the need to be consecutive in the past 12 months, of abdominal pain or discomfort that had two out of the three features below: (i) relief with defecation; and/or (ii) onset of pain or discomfort associated with a change in frequency of stool and/or (iii) onset of pain or discomfort associated with a change in the form (appearance) of stool.

Accordingly, subjects were classified as constipation-predominant if they had two of the following presentations at least in 25% of the time for more than 3 months: straining, hard stools, incomplete evacuation and/or fewer than three bowel movements in a week without the presence of loose/watery stool. Diarrhea-predominant IBS was defined by the presence of loose/watery stools more than 75% of the time, three or more bowel movements a day in more than 25% of the time and the absence of hard stool. Non-specific IBS was identified in subjects who fulfilled the criteria for IBS, but who did not meet the criteria used to subclassify subjects with predominant constipation or diarrhea as defined above.

**Statistical analysis:** The questionnaires were coded for analysis by SPSS 12.0. Comparison between groups was assessed using the Chi-square test and Fishers Exatct tests. Statistical significance was specified at  $p \leq 0.05$  level.

**Table 1: Demographic characteristics of IBS and non IBS groups**

		IBS present n (%)	IBS absent n (%)	Total n (%)	p-value
Sex	Male	18 (6.5)	115 (93.5)	123 (100)	0.08
	Female	42 (12.0)	308 (88)	350 (100)	
Marital status	Single	38 (9.7)	355 (90.3)	393 (100)	0.9
	Married	12 (15.2)	67 (84.8)	79 (100)	
Place of residence	Golestan	11 (12.9)	74 (87.1)	85 (100)	0.7
	Other	39 (10.3)	338 (89.7)	377 (100)	

**Table 2: Distribution of symptoms in medical students with IBS**

Symptom	Male (%)	Female (%)	Total (%)	p-value
Abdominal pain relieved with defecation	8 (100.0)	34 (90)	42 (85.4)	0.2
Abdominal pain associated with change in the consistency of stool	8 (100.0)	36 (90)	44 (91.0)	0.2
Rectal urgency	5 (62.5)	24 (66.7)	29 (65.5)	0.05
Straining	8 (100.0)	34 (82.1)	42 (85.7)	0.2
Hard stool	5 (62.5)	20 (48.5)	25 (51.0)	0.4
Watery stool	1 (12.5)	5 (12.2)	6 (12.2)	
Mucus	4 (57.1)	9 (27.3)	13 (32.5)	0.1
Incomplete evacuation	8 (100.0)	34 (80.5)	41 (85.4)	0.2
Bloating	6 (75.0)	37 (90.2)	43 (87.8)	0.2

**Table 3: Comparison of bowel symptoms**

	IBS consulters	IBS non-consulters	IBS (total)	OR (95% CI)
No. subjects	2228	50	-	-
Mean age (±SD)	22.4±2.6	22.6±2.05	22.6±2.3	-
Urgency	17 (65.4%)	12 (66.7%)	29 (65.9)	0.9 (0.26-3.36)
Straining	5 (23.8%)	2 (7.1%)	7 (14.3%)	0.2 (0.04-1.4)
Incomplete defecation	5 (23.8%)	2 (7.4%)	7 (14.6%)	0.2 (0.04-1.4)
Mucus	7 (41.2%)	6 (26.1%)	13 (32.5%)	0.5 (0.1-1.9)
Abdominal distension	18 (85.7%)	25 (89.3%)	43 (87.8%)	1.3 (0.2-7.6)

**RESULTS**

Of the 708 questionnaires distributed, 513 (response rate of 87.4%) were completed and analyzed. 40 questionnaires were excluded; because of insufficient data. Of the participants included in the study, 123 were males (26%) and 350 were females (84%). Mean age was 23.6±5.4 years for males and 21.5±3.2 years for females. Among participants 348 individuals (74.2%) were Fars, 60 cases (12.8%) were Turkmans and 62 (13.1%) cases were from other ethnicities. The demographic characteristics of the respondents are shown in Table 1.

Overall, fifty subjects fulfilled the Rome II criteria for diagnosis of IBS. When analysis was performed respected to sex, the rate was 6.5% in males and 12% in females. There were more females in the IBS group with a female to male ratio of 5.2/1; but this ratio was 2.67/1 in the normal controls ( $p = 0.08$ ,  $\chi^2 = 2.9$ ,  $df = 1$ ). The mean age of the IBS group was 22.6±2 years that was similar to that of the non IBS group(22±4 years) and IBS rate was higher in married students (15.2%) than singles (9.7%); however this difference was not statistically significant.

Of the individuals with IBS, 40 (81.6%) and 3 (6.1%) fulfilled the subclassification of constipation-predominant and diarrhea-predominant IBS, respectively. Six (12.2%) subjects fell into the non-specific IBS subgroup. There

were no significant differences regarding sex, age, marital status and place of residence in the IBS and non-IBS groups. The prevalence of bowel symptoms like urgency, straining, feeling of incomplete defecation, mucus in stool and 57.1% (n = 28) of the medical students consulted their healthcare practitioner for their symptoms. Abdominal distension in the community was 65.5, 85.7, 85.4, 32.5 and 87.8%, respectively (Table 2). Hospitalization and endoscopic procedures were reported in 3 (6.1%) of cases. Self-medication was reported in 55.1% (n = 27) of subjects. To evaluate the predictors of health-care seeking, various social, demographic and clinical features were compared between IBS consulters and non-consulters. There was no significant difference between these groups (Table 3).

**DISCUSSION**

Irritable bowel syndrome is a common disorder and has been shown to affect almost a quarter of western communities. As we know, this is the first comprehensive report of IBS epidemiology in Iran. only in the report from the western region of Iran (Shahrekord) the prevalence of IBS was detected 5.7% (Hoseini-Asl and Amra, 2003). Results from this study, indicate that the overall prevalence of IBS by the use of Rome II criteria is 10.6% .

Data from the present study suggests that symptoms compatible with IBS are not rare in Iran (at least among apparently healthy young adults). The prevalence rate of 10.6% in our study was much higher and far from expectation (10.6%).

The outcome was similar to the data obtained from the studies of western countries like Canada (Thompson *et al.*, 2002), Sweden (Osterberg *et al.*, 2000), Germany (Holtmann *et al.*, 1994) and Spain (Muller-Lissner *et al.*, 2001), which also employ Rome criteria; however, it was 2-3 times higher than the figures of some countries such as Australia, Singapore and China (Talley *et al.*, 2001; Ho *et al.*, 1998; Lau *et al.*, 2002) and 2-3 times lower than data obtained in another study from Canada and United States (Thompson *et al.*, 2000; Locke *et al.*, 2000).

The reason for this discrepancy may be the fact that studied population in present study was consisted of medical students. These individuals represent a group of people who are generally more affluent, highly intelligent and highly stressed and may be more aware of somatic symptoms. The frequency of IBS in this population does not necessarily reflect that of the general population. According to a similar study done in Korea on college students and Nigerian and Malaysian medical students, the prevalence of IBD was reported 5.7, 26.1 and 15.8%, respectively (Joung Kim and Ban, 2005; Tan *et al.*, 2003).

In this study IBS prevalence in females was higher than males (5.25/1). Some studies demonstrated that there had been no significant difference considering the development of IBS, between men and women (Ho *et al.*, 1998; Lau *et al.*, 2005). However, as many other studies, we observed a female predominance in our study (Drossman *et al.*, 1982; Osterberg *et al.*, 2000; Donker *et al.*, 1999). Whether the female predominance is due to a greater susceptibility of bowel dysfunction in women or/ women are just more likely recognize, remember and report their bowel symptoms than men, is uncertain. It was also reported that IBS symptoms during the menstrual cycle, increased and this might lead to the higher number of women experiencing symptoms more frequently and seeking medical help due to IBS.

Among the studies we reviewed, studies that investigated the marital status as a risk factor were very restricted. Reports of some studies revealed that IBS was not associated with that factor; while in a study from Turkey differences between prevalence of IBS in married and single people were significant (Talley *et al.*, 1995; Sloth and Jorgensen, 1989; Yilmaz *et al.*, 2005).

Symptom subgroups based on the predominant bowel habit, showed that the majority of individuals with IBS had the constipation-predominant subtype

(81.6%), more frequent in men (100%) than women (78%). The diarrhea-predominance and non-specific subgroups were observed in 6.1 and 12.2%, respectively.

There are few publications available that clearly subclassify symptom subgroups based on the predominant bowel habit. The present findings are different from those reported by Mearin *et al.* (2003) that reported constipation-predominant IBS was more common in women than men.

Approximately 50% of subjects with IBS sought medical advice from their health-care practitioner. A plausible reason for this, is that the study population consisted of individuals with medical knowledge. Presumably, these individuals had a higher threshold when it came to the decision of consulting a doctor and resorted to self-medication when symptoms were severe.

In conclusion, present study shows that symptoms of IBS are common in healthy young adults and the prevalence of IBS in these individuals approximately as high as western populations. There is a need for further studies, including more than one criteria involving a large population, for definite exact prevalence of this clinical entity in Iran.

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