

# Prevalence of irritable bowel syndrome in Shahrekord, Iran

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**Background:** As part of a public health program, we studied the prevalence of irritable bowel syndrome (IBS) as per the Rome II criteria, in Shahrekord community in Iran. **Methods:** The study was conducted between August 2002 and March 2003. Of 5492 randomly selected subjects aged 20 years and above (from a total population of approximately 100,000), 4762 (86.7%) successfully completed interviews to fill in a questionnaire that looked into demographic data and various symptoms during the last one year. **Results:** The 12-month prevalence of IBS was 5.8%. The female-to-male ratio among subjects with IBS was 1.17:1 and was similar to that among those without IBS. Pain relieved by defecation was reported by 427 (9%) subjects, pain associated with change in bowel habit by 340 (7.1%), and pain associated with change in the form of stool by 337 (7.1%) subjects. **Conclusion:** The prevalence of IBS in Shahrekord is lower than that reported from Western developed countries and is closer to that in Asian populations. [*Indian J Gastroenterol* 2003;22:215-216]

**Key words:** Functional bowel disorders, Rome II criteria

Chronic bowel symptoms are common in the Western world. Based on the Rome I criteria, the 12-month prevalence of irritable syndrome (IBS) in random population samples in the USA, Australia and Germany was reported to be approximately 12%.<sup>1,2,3</sup> In Asia, the reported prevalence rates of IBS based on the Rome II criteria are lower, being 0.82% in China<sup>4</sup> and 2.3% in Singapore;<sup>5</sup> a recent study from Hong Kong<sup>6</sup> reported a rate of 6.6%. Longstreth and Wolde-Tsadik<sup>7</sup> suggested that Asian race is an independent negative predictive factor for IBS.

There are no published data on the prevalence of IBS in Iran. We studied the prevalence of IBS and related symptoms in Shahrekord, a small town located on the eastern edge of the Zagrossian highlands in the western part of Iran, with a predominantly agricultural economy.

## Methods

A cross-sectional study was carried out between August 2002 and March 2003 on a randomly selected sample of adults aged 20 years and over. The review board for medical ethics of the Shahrekord Medical School approved the study.

Assuming a 5% prevalence rate of IBS in the community (with a total population of approximately 100,000), a sample of 1,824 subjects was originally considered to be satisfactory for the purpose. Since the cases had to be selected by proportional random cluster sampling, we decided to enroll at least twice as many persons in the study. We used a two-step approach for the survey.

In the first step, the Shahrekord urban area was divided into 100 areas. We randomly selected one lane from each area by draw of lots; doors of all the residential units in the selected lanes were knocked and all inhabitants 20 years or older were invited to participate in an interview and answer a questionnaire. In the second step, those subjects who had symptoms suggestive of IBS were invited to Hajar Medical Center for further investigations including stool examination and proctosigmoidoscopy, if indicated. An equal number of age- and sex-matched asymptomatic subjects were also drawn from the population as controls.

## Questionnaire

The survey instrument was a standardized questionnaire in Persian designed by a working group in Shahrekord, based on the Rome II criteria.<sup>8</sup> The questionnaire contained items about demographic information, occupation, education level, various bowel symptoms, and the usual frequency of bowel movements in the past 12 months. Questions on bowel symptoms were directly translated from the Rome II criteria. Subjects who fulfilled the Rome II criteria for IBS were excluded from the study if any organic bowel disease was discovered in the second step of the survey.

Four volunteer medical students who had been trained by the authors to work as field investigators interviewed each subject. The students completed interviews of 25 subjects with IBS and 25 subjects with other gastrointestinal disorders in the validation phase. They achieved a mean sensitivity of 91% (87%-100%) and specificity of 83% (71%-92%). The overall reproducibility of the diagnosis of IBS conducted by these four investigators showed a correlation coefficient of 0.75.

## Statistical analysis

The data were analyzed using SPSS II software (SPSS Inc, Chicago, IL, USA). IBS and control groups were compared using the  $\chi^2$  test or Student's *t* test, as appropriate. All *p* values were two-tailed with the level of significance specified at 0.05.

## Results

The total adult population of the selected 100 lanes was 5492; of these, 4762 subjects (86.7%) agreed to participate in the study. The participants included 2650 women (56.1%); their age ranged from 20 to 79 years (mean [SD] 37.9 [14.3] years); their age distribution did not follow a normal curve but was similar to age distribution of the relatively young population in Shahrekord (skewness 0.885 and kurtosis 0.193). More men than women refused to participate (471 men, women 259); the main reason for refusal was lack of time. The data from 21 subjects were discarded because of abnormal stool examination and/or rectosigmoidoscopy.

Two hundred and seventy-six subjects (5.8%) fulfilled the Rome II criteria for the diagnosis of IBS; 252 subjects (5.3%) fulfilled all three major criteria and 24 subjects satisfied two criteria. The age of IBS subjects was similar to that of the controls (38.5 [13.2] y versus 37.9 [14.4] y). There were more women in the IBS group (54%), with a female-to-male ratio of 1.17:1; this distribution was not different from that in the total surveyed population (56.1% women).

The responses to questions about economic status were frequently inaccurate; hence these were not analyzed. More than 24% of the subjects were illiterate or had less than 6th grade of education; completion of primary school, junior high school and senior high school was reported by 26%, 27% and 14%, respectively; 9% of subjects had received higher education. Most frequent occupations were: housewifery (40%), officer (15.1%), self-employed (8.3%), student (7.7%), teacher (7%), unemployed (4.3%) and driver (2.7%). Education level and occupation had no relationship with the prevalence of IBS.

Among the 276 subjects with IBS, the predominant symptom was pain (99.5%), followed by abdominal distension (45%), diarrhea (39%) and urgency (11%). Other abdominal symptoms included recurring epigastric pain with unspecified etiology (1023 subjects; 21.5%) and symptoms of gastro-esophageal reflux (1220; 25.7%).

## Discussion

The one-year IBS prevalence of 5.8% as per the Rome II criteria observed in the present study is higher than that reported in many Asian countries;<sup>5</sup> however, it is lower than that reported from most Western countries. For example, the prevalence of IBS in Canada<sup>9</sup> based on the Rome II criteria is 12.1%. A recent study from Australia<sup>10</sup> reported the prevalence of IBS as defined by the Manning, Rome I and Rome II criteria to be 13.6%, 4.4% and 6.9%, respectively. The design of our study did not permit us to determine the prevalence rates as per the Rome I criteria.

Age had no relationship with IBS in the current study. The female-to-male ratio in the IBS group in the present study was 1.17. This finding has been reported previously in some Asian countries; for example, no sex difference was reported in Singapore and Hong Kong.<sup>5,6</sup> In contrast, studies in Caucasian subjects show an increase in prevalence of IBS among women.<sup>10</sup>

The reasons for a lower prevalence of IBS and of lack of female preponderance among Asians are uncertain. In Shahrekord, men are frequently the major breadwinners in the family; this may impose a greater stress on them, leading to a higher predisposition to IBS.

In conclusion, the prevalence of symptoms of IBS in Shahrekord, Iran is lower than that reported from Western countries, with similar rates being observed among men and women.

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