# Irritable Bowel Syndrome among the Nepalese residing in Brunei Darussalam

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## ABSTRACT

**Introduction**: Irritable bowel syndrome (IBS) is common in the West and increasing in the East. Little is known regarding the prevalence among the Nepalese population. This questionnaire study assessed the prevalence of IBS among the Nepalese residing in the Brunei Darussalam. **Materials and Methods**: Subjects living in two army quarters were invited to participate in this study. Diagnosis of IBS was based on established criteria. **Results**: Overall, 304 out of 320 with completed questionnaire were available for analysis. The mean age was 40.2 ± 6.1 years with gender ratio of 208 (68.4%) female: 96 (31.6%) male. The prevalence of IBS was 10.9% (n = 33), with rate of 10.4% in men and 11.1% in women ($p$=0.867). There was no difference in age, body mass index, duration of current residence, smoking status, alcohol use, supplement use, comorbid conditions, follow up and any past endoscopic experience. IBS subjects experienced more backache, fatigue, feeling of depression, insomnia and shortness of breath (all $p$ values <0.05). IBS subjects also experienced more of other gastrointestinal symptoms. **Conclusions**: The prevalence of IBS among the Nepalese population residing in Brunei Darussalam is similar to what has been reported. There was no gender predilection. IBS was significantly associated with certain psychosomatic symptoms of depression.

**Keywords: Functional gastrointestinal disorders, irritable bowel syndrome, prevalence, epidemiology**

## INTRODUCTION

Irritable bowel syndrome (IBS) is a common functional gastrointestinal (GI) disorder and is more common in women. IBS is diagnosed based the presence of a set of symptoms defined by the ROME criteria. [1, 2] IBS is characterised by presence of recurrent abdominal pain/discomfort and a disturbance of bowel habit in the absence of any demonstrable organic pathology. [1] Despite the presence of diagnostic criteria, the diagnosis of IBS may not be as easy and straight forward due to the overlap of symptoms with other functional GI disorders. IBS is a complex condition that have been reported to be associated with increased morbidity, consultation rates,

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healthcare cost, and represent a big economic burden to society. [3, 4] It is reported to be associated with increased personal loss through absenteeism, change of work or schedule and even turning down promotions. [5] Therefore, IBS represent a significant public health issue.

IBS is common in the West with rates of up to 25% reported in the literature. It was previously thought to be uncommon in the East. [6, 7] Earlier studies from the East have reported rates of between 3.2 and 7.0%. [7, 8] Recent studies have reported the higher rates. [1] There have been several studies on IBS reported from the Indian Subcontinent but none has been done on the Nepalese population. [9-16] Previous study in our local setting reported a prevalence of IBS of 9.8% among nurses and nursing students. [17] This paper reports the findings of a questionnaire study assessing the prevalence of IBS among Nepalese residing in Brunei Darussalam, a developing Southeast Asian nation.

## MATERIALS AND METHODS

**Subjects:** Residences from two Ghurka Reserve Unit camps were invited to participate in this cross-sectional questionnaire study conducted over a six months period. The purpose of the study was explained and verbal consents were obtained prior to the face to face interview by the two resident Nepalese doctors looking after the welfare of the Nepalese residing in these two camps.

**Questionnaire:** The questionnaire used was adapted from another study [17] and was previously validated in our setting. [17, 18] The questionnaire enquired on a spectrum of GI symptoms including those defined in the Rome II criteria. Apart from inquiring on of IBS, our study also inquired on other GI symptoms experienced at least monthly. Data on past medical history, supplement, alcohol and tobacco use were also inquired. Psychosomatic symptoms of depressions were also inquired.

The doctors were given sample of the questionnaire along with the study protocol two weeks before scheduled discussions. Discussion on the study and how to conduct the interview were carried out to ensure consistency. For the study, the interviews were carried out in the Nepalese language based on the English questionnaire. The study was conducted in accordance with the Declaration of Helsinki after obtaining permission for the officer in charge of the camps. All personal or identifying detail were omitted to protect the identity of participants. Data entry was done by a research assistant who was not involved with the questionnaire.

**Statistic :** Data analyses were carried out using the SPSS programme (version 16.0). Chi-square and Fischer exact tests were used for categorical variables whereas the Mann-Whitney test was used for continuous variables where appropriate. Data were presented as absolute, percentage, median and standard deviation. A $p$ value of $<0.05$ was taken as significant.

## RESULTS

The response rate was 95% (n=304/320). The mean age of the subjects was 40.2 ± 6.1 years with a gender ratio of 68.4% female to 31.6% male. A majority of the women were housewives and all the men employed working as soldiers.

**Table 1: Demographic of subjects.**

| | Overall | No IBS | IBS | p value |
|---|---|---|---|---|
| Age (years) | 40.2 (6.1) | 40.2 (6.1) | 39.8 (6.5) | 0.819 |
| BMI (kg/m$^2$) | 26.8 (2.7) | 26.9 (2.8) | 26.1 (1.7) | 0.176 |
| Over weight (BMI>25) | 227 (75.4) | 204 (75.6) | 23 (74.2) | 0.868 |
| Duration of stay in Brunei (months) | 59.3 (57.2) | 60.3 (57.9) | 51.8 (0.2) | 0.353 |
| Tobacco use (smoke or chew) | 31 (10.2) | 28 (10.3) | 3 (9.1) | 0.824 |
| Dietary Supplement use | 17 (5.6) | 14 (5.2) | 3 (9.1) | 0.354 |
| History of Alcohol consumption | 126 (41.4) | 109 (40.2) | 17 (51.5) | 0.214 |
| Previous endoscopy (upper or lower) | 88 (28.9) | 75 (27.7) | 13 (39.4) | 0.161 |
| Comorbidities | 66 (21.7) | 55 (20.3) | 11 (33.3) | 0.086 |
| Number of subjects with regular follow up | 51 (16.8) | 45 (16.6) | 6 (18.2) | 0.819 |

The prevalence of IBS was 10.9% (n=33). There was no difference between genders (men 10.4% and female 11.1%, *p*=0.867)

Between subjects with IBS and without IBS, there were no significant differences in the demography (Table 1).

Subjects with IBS have significantly more psychosomatic symptoms of depression except for headache (Table 2).

Subjects with IBS also significantly had more other GI symptoms that were experienced at least monthly (Figure 1).

**Comparison of psychosomatic symptoms between subjects with and without IBS.**

| | Overall | No IBS | IBS | *p* value |
|---|---|---|---|---|
| Headache (yes) | 170 (55.9) | 147 (54.2) | 23 (69.7) | 0.091 |
| Backache (yes) | 142 (46.7) | 121 (44.6) | 21 (63.6) | 0.039 |
| Insomnia (yes) | 46 (15.1) | 36 (13.3) | 104 (30.3) | 0.010 |
| Fatigue (yes) | 98 (32.2) | 76 (28.0) | 22 (66.7) | <0.001 |
| Depressive symptoms (yes) | 39 (12.8) | 26 (9.6) | 13 (39.4) | <0.001 |
| Shortness of breath (yes) | 33 (10.9) | 23 (8.5) | 10 (30.3) | <0.001 |

## DISCUSSION

Our study showed that IBS is not uncommon among Nepalese residing in Southeast Asia, with one in ten adults having IBS based on the established Rome II criteria. Overall, our rates are comparable to what have been reported in the literature and also from the Indian Sub-continents. Rates reported from India based on large studies have ranged from 4 to 7.2% based on various criteria and different setting. [10, 11] A large study from Pakistan reported rates of 13.1% for men and 13.4% for women. [9] Another community study reported an overall rate of 14% and showed no significant differences in the rates in different communities. [17] Studies based on

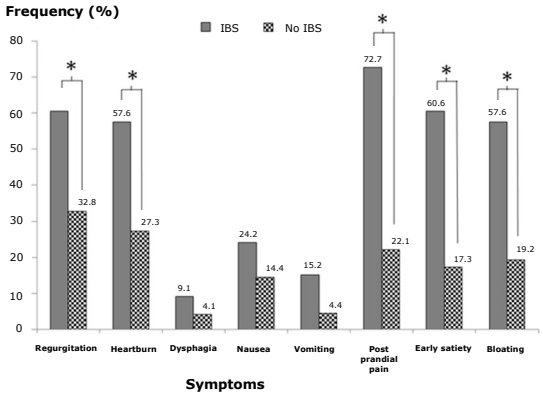


**Fig. 1: Gastrointestinal symptoms between subjects with and without IBS.**

college students have however reported higher rates of 34%, higher in non-medical (41%) compared to medical students (26%). [15] A large community based study from Bangladesh reported a rate of 8.5% (10.7% in women and 5.8% in men) strictly following the Rome Criteria, with apparent prevalence of 24.4% (20.6% in men and 27.7% in women). [13] Another large study reported a rate 7.7%, also higher incidence in women. [12] Rate reported from Sri Lanka was the lowest with rate of 2.8%. [14] Most studies have used the Rome II criteria whereas one study each from Pakistan and Bangladesh had used Rome I and Rome III criteria.

Generally, women have been reported to be affected IBS, two to three times more than men in most studies in the West. [2] However, several studies from the East have shown that rates are higher or comparable in men. [1] In our study, there was no difference in the rates between men and women. Explanations for this difference have been attributed to differences in the cultural, social and health seeking behaviours between the genders in these male dominant countries. The main difference between our male and female subjects was that the men were active in duty whereas the women were mainly housewives. Whether being active in duties have impacted the rate of IBS remains to be seen.

In our study, there were no significant differences in the demography of subjects with or without IBS; age, weight based on BMI, comorbid conditions, previous experience with endoscopy and time of residence in Brunei Darussalam. However, there was a trend towards significant for the presence of comorbid conditions. This may actually indicate the presence of functional GI or related symptoms. Use of any dietary supplements, tobacco (smoked or chewed) or alcohol also had no impact on the prevalence of any GI symptoms experienced in the previous month.

Given that IBS is a functional disorder, it is not surprising that psychosomatic symptoms of depression are common among subjects with IBS. [5] In our study we also showed that psychosomatic symptoms of depression were more common especially insomnia, fatigue, sensation of shortness of breath and depressive symptoms. A study from Mumbai, India showed that depression and anxiety were six to seven times more common in patients with IBS compared to those with non-ulcer dyspepsia. [19]

Other GI symptoms are also common among subjects with IBS, in particular regurgitation, heartburn, post-prandial pain, bloating and early satiety. Unfortunately, our questionnaire did not inquire on the presence of dyspepsia. Again, this is not unexpected and most of these symptoms are likely to be functional in nature. Overlap of IBS and upper GI symptoms in particular gastro-oesophageal reflux symptoms and dyspepsia have been documented. [20] Importantly, subjects with IBS are also known to have non-GI symptoms. They are also known to undergo more operations such as cholecystectomy and gynaecological operations for symptoms that are now believed to be part of the functional symptoms complex.

There are several limitations with our study. First, we had used the Rome II criteria instead of the latest Rome III criteria. This

was due to the fact during the planning of the study; the Rome III criteria was still new and not validated. Even though there are some differences in the criteria, most patients diagnosed with IBS based on the older criteria, the diagnosis tend to persist and remain accurate on follow up. Despite our study using an older criteria, the result will still be useful to serve as baseline comparison data. Second, our study population's demographic may not be generalised to the whole Nepalese population our subjects in particular the men, soldier in the Ghurka Army Reserve stationed in Brunei Darussalam. Therefore, out findings may not be reflective of the actually prevalence in the Nepalese population.

In conclusion, our study showed that IBS is not uncommon among Nepalese population residing in a developing Southeast Asian nation. Whether our findings can be implied to Nepalese living in Nepal or elsewhere is unknown. However, our study will serve a comparison to future studies looking at IBS among the Nepalese.

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