Irritable bowel syndrome among nurses and nursing students in Brunei Darussalam

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ABSTRACT

Introduction: Irritable bowel syndrome (IBS) is common in the West (up to 25%), particularly among female. IBS is less common in the East. There is currently no data available in our local setting. This paper reports the findings of a questionnaire study assessing the prevalence of IBS among nurses and nursing students in the Brunei Darussalam. **Materials and Methods**: Nurses and students nurses attached to RIPAS Hospitals were invited to participate in this self filled questionnaire study. Diagnosis of IBS was based on the ROME II criteria defined as at least 12 weeks, which need not be consecutive, in the preceding 12 months of abdominal discomfort or pain that has two out of the following three features; relieved by defeacation and/or, onset associated with change in bowel frequency and/or onset associated with change in stool form (appearance). **Results**: 290 completed questionnaires out of 339 distributed were returned giving a response rate of 84%. The mean age was 26.3 ± 8.7 years with a gender ratio of 235 (81%) female: 55 (19%) male. The prevalence of IBS was 10.7% (n=31). Female had higher prevalence but this was not significant (11.9% vs. 5.5%, p=0.183). There were no differences in the age, body mass index (kg/m^2), smoking status and supplement use of subjects with and without IBS. Of the psychosomatic symptoms enquired (backache, feeling of depressed, fatigue, headache, insomnia and shortness of breath), presence of IBS was significantly associated with backache (p=0.007), depression (p=0.021) and shortness of breath (p=0.003). **Conclusions**: The prevalence of IBS is comparable to what have been reported. Despite the higher prevalence among female subjects, there was no significant difference. IBS was significantly associated with psychosomatic symptoms of depression.

Keywords: Functional gastrointestinal complaints, spastic colon, bloating, ROME II criteria

INTRODUCTION

Irritable bowel syndrome (IBS) is a common functional gastrointestinal (GI) disorder that is characterised by recurrent abdominal pain/ discomfort and a disturbance of bowel habit in the absence of any demonstrable organic pathology. [1] Diagnosis of IBS is through a set of criteria consisting of certain predefined symptoms experienced over duration of period, the ROME Criteria. [1, 2] However, diagnosis may not be as easy and straight forward, especially with overlap with other functional and organic GI disorders. Several criteria have been deve-

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loped to assist in the diagnosis of IBS. The Manning's criteria was the first, developed in the 1970s. [3] This was followed by the ROME Guidelines for IBS in 1989, ROME I in 1992, ROME II in 1999 and ROME III in 2006. [2] The latter two ROME Criteria were developed through evidence based consensus.

IBS is common in the West (up to 25%), particularly among female and is believed to be less common in the East. [4, 5] Earlier studies have reported lower prevalence rates of between 3.2 to 7.0%. [5, 6] However, recent studies have reported the rates to be higher. [7-11] IBS have been reported to be associated with increased morbidity, healthcare cost (74% more than non-IBS sufferers), consultations (even for non-GI complaints) rates, and represent a big economic burden to society. [12, 13] It is also associated with increased personal loss through absenteeism, change of work or schedule and even turning down promotions. [14]

Currently, little is known about IBS in our local setting as there is currently no published data available. This paper reports the findings of a questionnaire study assessing the prevalence of IBS among nurses and nursing students in the Brunei Darussalam.

MATERIALS AND METHODS

Nurses and nursing students attached to the RIPAS Hospitals were invited to participate in this self-filled anonymous questionnaire study. This questionnaire is a validated questionnaire that had been additionally translated into the local language. [8] The translation was carried by two experts in the English and Malay languages. Forward and backward translations were carried out until there was consistency and agreement. The actual questionnaire had both the English and Malay translations placed together to allow subjects to answer in the format they prefer. The questionnaire was pretested to assess for validity.

The questionnaire enquired on demographic data (age, gender, grade, height, weight, body mass index [BMI – kg/m^2] and duration of employment). Self reported symptoms; upper GI, lower GI and psychosomatic symptoms of depressions (backache, headache, shortness of breath, insomnia, low mood or depressive feeling, and fatigue) were inquired. Past Medical history, previous endoscopy, smoking status and supplementations use.

Various Medical and Surgical wards, and outpatient clinics staff were approached and invited to participate. Nursing students attached to the wards were also invited to participate in this study. Verbal consents were obtained after a brief explanation was given regarding the study (aims of the study) before the questionnaires were given. A written explanation of the purpose of the study was also included in the questionnaire.

Definition: ROME II Criteria is defined as the presence of symptoms for at least 12 weeks, which need not be consecutive, in the preceding 12 months of abdominal discomfort or pain that has two out of the following three features; a) relieved by defeacation and/or, b) onset associated with change in bowel frequency c) and/or onset associated with change in stool form (appearance).

Statistic Analyses: Data was coded and entered in the Statistical Package for Social Sci-

Table 1: Demographic of subjects.

Variables	Mean (Standard Deviation)	Frequency (%)
Mean age (year)	26.3 (8.9)	
Gender (Male: Female)		55 (19): 235 (81)
Staff Nurse		101 (34.8)
Assistant Nurse/Others		16 (5.5)
Student Nurse		173 (59.7)
Race		
Malays		255 (87.9)
Chinese		14 (4.8)
Indigenous		11 (3.8)
Others		10 (3.4)
BMI (kg/m^2)	23.8 (5.1)	
Comorbid conditions		64 (22.1)

ences (SPSS) Programme, Version 10.0, Chicago, Il, US) for analyses. A *p* value of less than 0.05 was taken as significant.

RESULTS

There were 290 completed questionnaires out of 339 questionnaires distributed, giving a response rate of 85%. The majority of the subjects were nursing students, followed by staff nurse. The mean age was 26.3 ± 8.9 years and the majority were Malays. A fifth of the subjects had comorbid conditions. The demographic data of subjects is shown in Table 1.

Tobacco and supplement use were reported by 18.3% (n=53) and 27.6% (n=80) respectively. The types of supplement used consisted mainly of multivitamins and minerals for health and well being.

The overall prevalence of IBS was 10.7% (n=31), higher among female than male subjects, but this was not significant (*p*=0.183).

Using a less stringent time criteria (i.e. not meeting the criteria of at least 12 weeks in the preceding 12 months), 24.1% of the subjects have symptoms that are part of or consistent with IBS.

Between the two groups, subjects with IBS were slightly older and had higher

Table 2: Comparison of demographic between subjects with and without IBS.

Variables	IBS (n=31)	No IBS (n=259)	P value
Age (year) *	24.6 (SD 8.9)	26.53 (SD 8.8)	0.158
Gender (male / female)	3 (5.5) /28 (11.9)	48 (94.5) / 207 (88.1)	0.183
BMI (kg/m^2) *	22.8 (SD 4.9)	24.6 (SD 9.5)	0.288
Smoke (yes)	4 (12.9)	49 (18.9)	0.413
Comorbid conditions (yes)	11 (35.5)	53 (20.5)	0.057
Supplement use (yes)	8 (25.8)	72 (27.8)	0.815

Presented in parenthesis are percentages (%) except * (Standard Deviation).

Table 3: Psychosomatic symptoms between subjects with and without IBS.

Variables	IBS (n=31)	No IBS (n=259)	P value
Backache (yes)	26 (83.9)	153 (59.1)	0.007
Headache (yes)	30 (96.8)	225 (86.9)	0.110
Shortness of breath (yes)	16 (51.6)	61 (23.6)	0.001
Insomnia (yes)	17 (54.8)	119 (45.9)	0.348
Fatigue (yes)	25 (80.6)	168 (64.9)	0.078
Low mood (yes)	22 (71.0)	127 (49.0)	0.021

Presented in parenthesis are percentages (%)

BMI than those without IBS. There were also gender difference and a trend towards significance for the presence of comorbid conditions. However, none of these were statistically significant (Table 2).

Overall, subjects with IBS had more psychosomatic symptoms enquired, especially backache, shortness of breath and feeling of depressed (all *p* values <0.05). Comparisons between patients with and without IBS is shown in Table 3.

DISCUSSION

This study showed that IBS was not uncommon among subjects involved in the nursing professions. Generally, our findings are comparable to what have been reported in the Asia Pacific region, including those reported from the Southeast Asia regions. [5-8] Several studies have been reported from Malaysia and Singapore. [4, 6-8] Apart from these two countries, data still remains scarce among the other Southeast Asian population. Compared to the more developed nations in the East and West, our rates are slightly lower than what have been reported (Table 4). [12] Interestingly, rates reported from the African continent have been higher than the West. A possible explanation is overlap of IBS symptoms

Table 4: Prevalence of IBS in the different regions. [10, 11, 16-26]

Regions	Prevalence
Southeast Asia	Singapore (8.6%: M 7.8%, F 9.4%), Malaysia (15.6%), Vietnam (7.2%; M 4.8%, F 9.2%) **
Rest of Asia Pacific	Hong Kong (M 6.6%, F 6.5%), Hong Kong (5.4 to 5.6%), Korea (M 7.1%, F 6.0%), Korea (6.6 to 16.8%), China (M 5.0%, F 6.3%), China (4.5 to 18.5%), Taiwan (M 21.8%, F 22.8%), Japan (M 10.7%, F 15.5%) *, Taiwan (F 16.12%), Japan (1.2 to 31%)
Indian Subcontinent	Pakistan (M 13.1%, 13.4%), Pakistan (28.3%:M 23.8%, F 29.3%) *, India (M 7.6%, F 6.9%), Bangladesh (8.5%; M 5.8%, F 11%) **, Bangladesh (7.7%), Sri Lanka (2.8%),
Middle East/West Asia	Saudi Arabia (9.2%), Israel (2.9%), Turkey (6.3 to 10.2%), Iran (4.1 to 21.9%)
Africa	Egypt (34.2%), Nigeria (26.1 to 33%), Kenya (8%) ***
Europe	Spain (M 1.9%, 4.6%), United Kingdom (10.5%: M 6.6%, F 14%), Finland (5.1%), Norway 8.4%), France (4.7%), Spain (3.3%), Italy (7.1%), Greece (15.7%)
North America	Canada (M 8.7%, 15.2%), Canada (12.1%), USA (4.4 to 13.2%)
Central/South America	Mexico (16.9%), Colombia (19.9%) *
Australia/New Zealand	Australia (M 4.4%, F 9.1%), Australia (8.9%), New Zealand (21%)

* Rome III criteria, ** Rome I criteria *** Manning Criteria
M: Male, and F: Female

and infectious GI diseases. Overall, the rates reported had varied between and even within regions, generally higher rates in referral institutions or urban areas compared to the communities and rural settings. This is also likely due to criteria used and subjects selections.

Studies from the West have consistently shown female to have higher prevalence of IBS. [12] However, studies from the East have shown that IBS to be as prevalent (Hong Kong 6.6% vs. 6.5% and India, 4.3% vs. 4.4%), or more prevalent (India 7.9% vs. 6.9%, Korea 7.1% vs. 6.0%) among men. [12] Our study showed that female had a two-fold higher in the prevalence. Studies have shown that IBS symptoms to be exacerbated by hormonal changes during menstrual cycle. [18] Given that the underlying aetiology of IBS is also linked to the brain-gut axis and that there is a strong correlation with other functional GI and non-GI complaints, the correlation with female is not unexpected. Although there was a numerical difference in the prevalence between the genders, this was not statistically significant. This is most likely due to the overall small sample size of our study. The predominance among female have been shown consistently with the constipation subtype of IBS. [12] Unfortunately, our study did not assess this.

IBS is more prevalent in the young adults, typically in the 30 and 40 years age group. In our study, there were no statistical differences in the demographic of patients with and without IBS. However, those with IBS were slightly younger, had lower BMI and used less tobacco, but had more comorbid conditions. Given the narrow age range in our subjects, it is not possible to draw any conclusion from this study whether age is associated with the prevalence of IBS. Similarly, our findings can only be generalised to the population in the same age group, but not the general population.

Ethnicity have not been shown to be associated with IBS. Studies from Singapore and Malaysia, two Southeast Asia nations with multiethnic populations have shown similar findings. In Malaysia, the prevalence rates of IBS were reported to be 16% for Chinese, 15% for Indian and 16% for Malays in a study of medical students using the ROME I criteria. [6] In a community based study, the rates were 18%, 17% and 12% for Chinese, Indian and Malay respectively. [7] In Singapore, the rate was 2.1% for Chinese, 3.4% for Malays and 2.6% for Indians. [4]

Not unexpectedly, subjects with IBS also experienced more psychosomatic symptoms of depressions. [8, 11, 14] IBS is a chronic disorder and like many chronic disorders are associated with psychosomatic complaints. In our study, we found that backache, shortness of breath and feeling low mood were significantly more common among subjects with IBS. This is important to note especially for those treating patients with not just IBS but also other functional GI complaints. These psychosomatic symptoms need to be addressed at the same time. Informing patients of the associations and better understanding of their condition may improve patients' insight into their conditions, reduce anxiety, non-compliance and consultations rates. Unlike what have been reported in the West, the correlation of health seeking behaviours with the presence of psychosomatic symptoms are

not as strong in the East as in the West. These differences may well be due to cultural, social, genetic, and environmental such as food and tropical infectious diseases.

Apart from some differences in the prevalence and importance of psychosomatic symptoms in IBS, there are also differences in symptoms manifestations of IBS between the West and the East. [11] Whilst pain or discomfort is an important component in the West, bloating seems to be more prominent in the East. [15] The site of pain also differs. In the East, the pain or discomfort is located more in the upper abdomen and seem to be worst after meal and relieved with defeacation. Hence, patients can be misclassified as dyspepsia, and treated inappropriately. A study in Taiwan showed that half of the patients treated as functional dyspepsia were reclassified as having IBS after clarification defeaction exclusively relieved their upper abdominal pain/ discomfort. [27] Therefore, in any patients with complain of upper abdominal pain or discomfort, it is important to enquire whether the pain or discomfort is relieved with defeacation. There are also differences in the stool features. Altered stool or bowel pattern do not appear to be as prominent as those reported in the West. Studies on general population have shown that stool frequencies are higher in the East, even in patients without IBS. [15] Patients in the East are also more affected by incomplete evacuation.

Based on the differences reported, experts from the East have suggested that a diagnostic criteria may be needed for the East. [11, 15] However more studies are required to learn about the differences especially in such a big region with many population differ-

of the ROME criteria have resulted in changes in the findings of studies. The latest ROME III criteria is more lenient and also diagnose milder cases as compared to the older criteria. [26] Therefore, the prevalence rates are expected to be higher using the latest criteria. [28] It has been argued that this maybe beneficial as the condition can be diagnosed and addressed earlier when the symptoms are less troublesome. On the other hand, this may increase the workload of clinics. Furthermore, the categorisation of IBS into the various subtypes; constipation predominant, diarrhoea predominant or alternating type creates confusions not just between patients but also clinicians looking after IBS patients. This is also confounded by the fact that normal bowel movements differ between the East and West.

There are several limitations with our study. First, our study was based on the older ROME II criteria. When the study was planned and started, the ROME III criteria had just been introduced. Second, majority of our subjects were young and involved in the nursing profession. Hence, our findings may not be generalised to the general populations or people involved with other professions. Third, our study was based on self-reported symptoms and is subject to understanding and recall of symptoms. Despite these, our data can form the baseline data for future comparisons.

In conclusion, our study showed that IBS is not uncommon in our setting among young people in the nursing professions. Similar to what have been reported in other countries, there was strong correlation with the presence of psychosomatic symptoms.

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REFERENCES

1: Thompson WG, Longstreth GF, Drossman DA, Heaton KW, Irvine EJ, Müller-Lissner SA. Functional bowel disorders and functional abdominal pain. Gut. 1999; 45 Suppl 2:II43-7.

2: Longstreth GF, Thompson WG, Chey WD, Houghton LA, Mearin F, Spiller RC. Functional bowel disorders. Gastroenterology. 2006; 130:1480-91.

3: Manning AP, Thompson WG, Heaton KW, Morris AF. Towards positive diagnosis of the irritable bowel. Br Med J. 1978; 2(6138):653–64.

4: Ho KY, Kang JY, Seow A. Prevalence of gastrointestinal symptoms in a multiracial Asian population, with particular reference to reflux-type symptoms. Am J Gastroenterol. 1998; 93:1816-22.

5: Danivat D, Tankeyoon M, Sriratanaban A. Prevalence of irritable bowel syndrome in a non-Western population. Br Med J (Clin Res Ed). 1988; 296:1710.

6: Tan YM, Goh KL, Muhidayah R, Ooi CL, Salem O. Prevalence of irritable bowel syndrome in young adult Malaysians: a survey among medical students. J Gastroenterol Hepatol. 2003; 18:1412-6.

7: Rajendra S, Alahuddin S. Prevalence of irritable bowel syndrome in a multi-ethnic Asian population. Aliment Pharmacol Ther. 2004; 19:704-6.

8: Gwee KA, Wee S, Wong ML, Png DJ. The prevalence, symptom characteristics, and impact of irritable bowel syndrome in an asian urban community. Am J Gastroenterol. 2004; 99:924-31.

9: Chang FY, Lu CL. Irritable bowel syndrome in the 21st century: perspectives from Asia or Southeast Asia. J Gastroenterol Hepatol. 2007; 22:4-12.

10: Chang FY, Lu CL, Chen TS. The current prevalence of irritable bowel syndrome in Asia. J Neurogastroenterol Motil. 2010; 16:389-400.

11: Gwee KA, Lu CL, Ghoshal UC. Epidemiology of irritable bowel syndrome in Asia: something old, something new, something borrowed. J Gastroenterol Hepatol. 2009; 24:1601-7.

12: Drossman DA, Li Z, Andruzzi E, et al. U.S. householder survey of functional gastrointestinal disorders. Prevalence, sociodemography, and health impact. Dig Dis Sci. 1993; 38:1569-80.

13: Talley NJ, Gabriel SE, Harmsen WS, Zinsmeister AR, Evans RW. Medical costs in community subjects with irritable bowel syndrome. Gastroenterology. 1995; 109:1736-41.

14: Hahn BA, Yan S, Strassels S. Impact of irritable bowel syndrome on quality of life and resource use in the United States and United Kingdom. Digestion. 1999; 60:77-81.

15: Gwee KA, Bak YT, Ghoshal UC, et al; Asian Neurogastroenterology and Motility Association. Asian consensus on irritable bowel syndrome. J Gastroenterol Hepatol. 2010 Jul;25(7):1189-205.

16: Wilson S, Roberts L, Roalfe A, Bridge P, Singh S. Prevalence of irritable bowel syndrome: A community survey. British J Gen Pract. 2004;54:495–502.

17: Naeem SS, Siddiqui EU, Kazi AN, Memon AA, Khan ST, Ahmed B. Prevalence and factors associated with irritable bowel syndrome among medical students of Karachi, Pakistan: a cross-sectional study. BMC Res Notes. 2012; 5:255.

18: Alhazmi AH. Irritable bowel syndrome in secondary school male students in AlJouf Province, north of Saudi Arabia. J Pak Med Assoc. 2011; 61:1111-5.

19: Jane ZY, Chang CC, Lin HK, Liu YC, Chen WL. The association between the exacerbation of irritable bowel syndrome and menstrual symptoms in young Taiwanese women. Gastroenterol Nurs. 2011; 34:277-86.

20: Okeke EN, Ladep NG, Adah S, Bupwatda PW, Agaba EI, Malu AO. Prevalence of irritable bowel syndrome: a community survey in an African population. Ann Afr Med. 2009; 8:177-80.

21: Abdulmajeed A, Rabab MA, Sliem HA, Hebatallah NE. Pattern of irritable bowel syndrome and its impact on quality of life in primary health care center attendees, Suez governorate, Egypt. Pan Afr Med J. 2011;9:5.

22: Ladep NG, Okeke EN, Samaila AA, Agaba EI, Ugoya SO, Puepet FH, Malu AO. Irritable bowel syndrome among patients attending General Outpa-

patients' clinics in Jos, Nigeria. Eur J Gastroenterol Hepatol. 2007; 19:795-9.

23: Okeke EN, Agaba EI, Gwamzhi L, Achinge GI, Angbazo D, Malu AO. Prevalence of irritable bowel syndrome in a Nigerian student population. Afr J Med Med Sci. 2005; 34:33-6.

24: Lule GN, Amayo EO. Irritable bowel syndrome in Kenyans. East Afr Med J. 2002; 79:360-3.

25: Wyeth JW. Functional gastrointestinal disorders in New Zealand. J Gastroenterol Hepatol. 2011; 26 Suppl 3:15-8.

26: Zuckerman MJ, Nguyen G, Ho H, Nguyen L, Gregory GG. A survey of irritable bowel syndrome in Vietnam using the Rome criteria. Dig Dis Sci. 2006; 51:946-51.

27: Lu CL, Lang HC, Chang FY, et al. Prevalence and health/social impacts of functional dyspepsia in Taiwan: a study based on the Rome criteria questionnaire survey assisted by endoscopic exclusion among a physical check-up population. Scand J Gastroenterol. 2005; 40:402-11.

28: Gwee KA. Irritable bowel syndrome and the Rome III criteria: for better or for worse? Eur J Gastroenterol Hepatol. 2007; 19:437-9.