Prevalence of Irritable Bowel Syndrome (IBS) Among Teachers in Abha City; Saudi Arabia

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Abstract

Background: The Irritable Bowel Syndrome (IBS) is part of the larger group of functional gastrointestinal (GI) disorders that despite differences in location and symptom patterns, share common features with regard to their motor and sensory physiology, central nervous system (CNS) relationships, and the approach to patient care. This study aimed to estimate the prevalence and correlates of IBS among teachers in Abha city.

Methodology: A descriptive cross sectional survey approach was used for conducting the current research including teachers working in different schools. Data were collected from teachers using a pre-structured self-administered questionnaire by the researchers. Data collected covered teachers socio-demographic data, work related data including work years and work load, and their family history of IBS. Teachers' classification for being IBS positive or IBS negative cases was detected using ROME criteria.

Results: The research included 578 teachers, 55.9% of them were females and 75.6% were married. IBS was recorded among 35.5% of the teachers. IBS was more recorded among females than males. Logistic regression model included all teachers' demographic and work data among which gender, income, chronic health problems, and work load were found to be statistically significant predictors for IBS status.

Conclusions & recommendations: In conclusion, the study revealed that about one third of the teachers had IBS. IBS subtype M was the most frequent, especially among females with high income and high work load.

Key words: Irritable bowel syndrome, inflammatory bowel disease, GIT disturbance, Stress, Teachers, Bowel disorders.

Background

Irritable bowel syndrome (IBS) is a disease that affects both small and larger intestine. It has no clear pathology but can be presented by a group of symptoms including abdominal pain and changes in the pattern of bowel movements (1). Disease symptoms emerge over a long time period, often years (2). Symptoms usually occur as acute attacks that subside within one day, but with a tendency for recurrence (4). There may also be urgency for bowel movements, a feeling of incomplete evacuation (tenesmus), bloating, or abdominal distension (5). These urgent symptoms may be relieved by bowel movements (6). People with IBS, more commonly than others, have gastroesophageal reflux, symptoms relating to the genitourinary system, chronic fatigue syndrome, fibromyalgia, headache, backache, and psychiatric symptoms such as depression and anxiety (7, 8). About a third of men and women who have IBS also report sexual dysfunction typically in the form of a reduction in libido (9). It has been classified into four main types depending on whether diarrhea is common, constipation is common, both are common, or neither occurs very often (IBS-D, IBS-C, IBS-M, or IBS-U respectively) (1). IBS negatively affects quality of life and may result in missed school or work (10). Disorders such as anxiety, major depression and chronic fatigue syndrome are common among people with IBS (1, 9).

The causes of IBS are not clear (11). Theories include combinations of gut–brain axis problems, gut motility disorders, pain sensitivity, infections including small intestinal bacterial overgrowth, neurotransmitters, genetic factors, and food sensitivity (2). Onset may be triggered by an intestinal infection, (12) or stressful life event (13). IBS is a functional gastrointestinal disorder (1). Diagnosis is based on symptoms in the absence of worrisome features and once other potential conditions have been ruled out (3). Worrisome features include onset at greater than 50 years of age, weight loss, blood in the stool, or a family history of inflammatory bowel disease (14). Other conditions that may present similarly include celiac disease, microscopic colitis, inflammatory bowel disease, bile acid malabsorption, and colon cancer (15).

Teachers are a vital group in the community who deal with age groups of students who are dynamic and have many demands and expectations with unexpected behaviour and teachers are asked to deal with them calmly and with wisdom. This puts teachers always under stress, besides their academic affairs which all may induce irritable bowel syndrome. The current study aimed to assess the prevalence of irritable bowel syndrome among teachers with associated clinical profiles.

Methodology

A descriptive cross sectional survey approach was used for conducting the current research. A total of 578 teachers working in different schools (Public & Private including International schools) in Abha city were included. Teachers from areas outside Abha sector and those with inflammatory bowel disease were excluded. Data were collected from teachers using a pre-structured self-administered questionnaire by the researchers after intensive literature review and after experts' consultation for tool validity and clarity. Questionnaires were distributed to all accessible teachers after explaining the purpose of the research and confirming confidentiality of data and re-collected after two hours. Response rate exceeded 95% after excluding those who did not match inclusion criteria and those with incomplete questionnaire data. Data collected covered teachers' socio-demographic data, work related data including work years and work load, and their family history of IBS. Teachers' classification for being IBS positive or IBS negative cases was detected using ROME criteria (16).

Data analysis

After data was extracted, it was revised, coded and fed into statistical software IBM SPSS version 22. All statistical analysis was done using two tailed tests and alpha error of 0.05. P value less than or equal to 0.05 was considered to be statistically significant. Descriptive analysis based on frequency and percent distribution was done for all teachers' demographic and work related data with ROME criteria findings. Distribution of IBS among teachers according to their demographic characteristics and work related data was tested using Pearson chi-square test. Multiple logistic regression model was used to assess the most important predictors for having IBS among study cases.

Results

The research included 578 teachers, 55.9% of them were females and 75.6% were married. About 86% of the included teachers had monthly income exceeding 5000 SR. Smoking was recorded among 13.5% of the teachers and about 25% had a chronic health problem mainly diabetes and asthma (6% for each). Exactly 55.5% of the teachers were in governmental schools and 65% of them teach at primary and secondary school grades. As for teaching years, 43.9% of the teachers had worked for more than 10 years and about 80% of them teach 10 classes or more weekly (Table 1).

With regard to ROME criteria findings (Table 2a and b), 32.9% of teachers were previously diagnosed as IBS cases. More than 6% had abdominal pain daily or more and pain association with bowel movement with change in stool nature was recorded uniformly among teachers. Pain was recorded for 6 months or more among 50.3% of cases. Constipation was recorded among 29.6% of the cases while 27.5% had constipation and diarrhea. About 33% of the teachers had work absence due to pain and 21.1% had lost weight recently. Appetite change was recorded among 26.4% of the cases.

Totally, IBS was recorded among 35.5% of the teachers (Figure 1). Detailed types were recorded such that 36.6% of IBS cases were of subtype M followed by subtype C (29.8%), subtype D (22.4%), and subtype U (11.2%) (Figure 2).

Table 3 shows distribution of having IBS with teachers' demographic data. It was clear that IBS was more recorded among females than males (41.5% vs. 27.8%) with recorded statistical significance (P=.001). Also 22.5% of teachers with low income had IBS compared to 45.9% of those with high income (P=.002). As for smoking, 34.6% of smokers had IBS compared to 31.3% of non-smokers (P=.005). Marital status and chronic health problem showed an insignificant relation with IBS status.

As for work related data (Table 4), 41.5% of teachers at primary schools had IBS compared to 37.9% of those at high schools (P=.007). Also 23.1% of teachers with only recent teaching experience had IBS compared to 35% of those who had experience for more than 10 years (P=.026).

Finally, logistic regression model included all teachers' demographic and work data among which gender, income, chronic health problems, and work load were found to be statistically significant predictors for IBS status. As for gender, male teachers recorded doubled risk for having IBS compared to females keeping all other factors constant (OR=2.3; 95% CI: 1.66-3.18). As for monthly income, lower income was associated with 68% more risk for having IBS than high level income adjusting for all other factors (OR=1.68; 95% CI: 1.30-2.16). Smoker teachers recorded doubled probability for having IBS compared to none and ex-smokers (OR=2.03; 95% CI: 1.45-2.84). Also teachers with chronic health problems had 53% more likelihood for IBS compared to others who are free of chronic health problems (OR=1.53; 95% CI: 1.13-2.08). Finally, those with high work load had double likelihood for having IBS (OR=2.01; 95% CI: 1.32-2.59).

Table 1: Bio-demographic data of teachers in Abha City, Saudi Arabia

Bio-demographic data		No	%
Gender	Male	255	44.1%
	Female	323	55.9%
Marital status	Married	437	75.6%
	Unmarried	141	24.4%
Monthly Income	Less than 5000 SR	80	13.8%
	5000-15000 SR	363	62.8%
	More than 15000	135	23.4%
Smoking status	Non-smoker	364	63.0%
	Ex-smoker	136	23.5%
	Smoker	78	13.5%
Do you have any chronic disease?	None	434	75.1%
	Hypertension	32	5.5%
	Diabetes Mellitus	39	6.7%
	Asthma	38	6.6%
	Thyroid problems	13	2.2%
	Others	22	3.8%
What is your sector?	Government school	321	55.5%
	Private school	184	31.8%
	International school	73	12.6%
Which level do you teach?	Kindergarten	52	9.0%
	Primary school	229	39.6%
	Secondary school	152	26.3%
	High school	145	25.1%
How many years have you worked as a teacher?	< 5 years	78	13.5%
	5-10	246	42.6%
	> 10 years	254	43.9%
How many classes do you teach per week?	< 10 classes	116	20.1%
	10-15	270	46.7%
	> 15 classes	192	33.2%

Table 2a: ROME criteria of teachers in Abha City, Saudi Arabia

ROME criteria		No	%
Have you been diagnosed before with Irritable Bowel Syndrome	Yes	190	32.9%
	No	388	67.1%
Family history of IBS	Yes	265	45.8%
	No	313	54.2%
In the last 3 months, how often did you have pain anywhere in your abdomen?	Never	74	12.8%
	< 1 day/ month	74	12.8%
	1 day/ month	60	10.4%
	2-3 days/ month	84	14.5%
	Once/ week	76	13.1%
	2-3/ week	75	13.0%
	Most days	93	16.1%
	Daily	33	5.7%
	Many times/ day	9	1.6%
How often did this pain happen close in time to bowel movement	0%	89	15.4%
	10%	75	13.0%
	20%	53	9.2%
	30%	65	11.2%
	40%	65	11.2%
	50%	87	15.1%
	60%	46	8.0%
	70%	37	6.4%
	80%	30	5.2%
	90%	20	3.5%
	100%	11	1.9%
How often did your stools become either softer than usual or harder than usual when you had this pain?	0%	71	12.3%
	10%	58	10.0%
	20%	57	9.9%
	30%	63	10.9%
	40%	52	9.0%
	50%	93	16.1%
	60%	58	10.0%
	70%	45	7.8%
	80%	42	7.3%
	90%	20	3.5%
	100%	19	3.3%

Table 2b: ROME criteria of teachers in Abha City, Saudi Arabia

ROME criteria, continued		No	%
How often did your stools become either more frequent or less frequent than usual when you had this pain?	0%	85	14.7%
	10%	75	13.0%
	20%	48	8.3%
	30%	71	12.3%
	40%	53	9.2%
	50%	81	14.0%
	60%	46	8.0%
	70%	44	7.6%
	80%	34	5.9%
	90%	22	3.8%
	100%	19	3.3%
Has it been 6 months or longer since you started having this pain?	Yes	291	50.3%
	No	287	49.7%
In the last 3 months, when you had abnormal stools, what were they usually like?	Usually constipation	171	29.6%
	Usually diarrhea	95	16.4%
	Both diarrhea and constipation	159	27.5%
	Not applicable	153	26.5%
Did you absent from your work because of the Abdominal pain?	Yes	193	33.4%
	No	385	66.6%
If Yes, How often did you absent from your work because of this pain?	Never	387	67.0%
	Once a week	22	3.8%
	Once in fortnight	44	7.6%
	Once a month	66	11.4%
	Less than Once/Month	59	10.2%
Did you notice any blood in your stool?	Yes	0	0.0%
	No	578	100.0%
Have you felt you lost weight recently?	Yes	122	21.1%
	No	456	78.9%
Did you notice any change in your appetite?	No	402	69.6%
	Increase	84	14.5%
	Decrease	92	15.9%

Figure 1: Prevalence of IBS among teachers in Abha city, Saudi Arabia

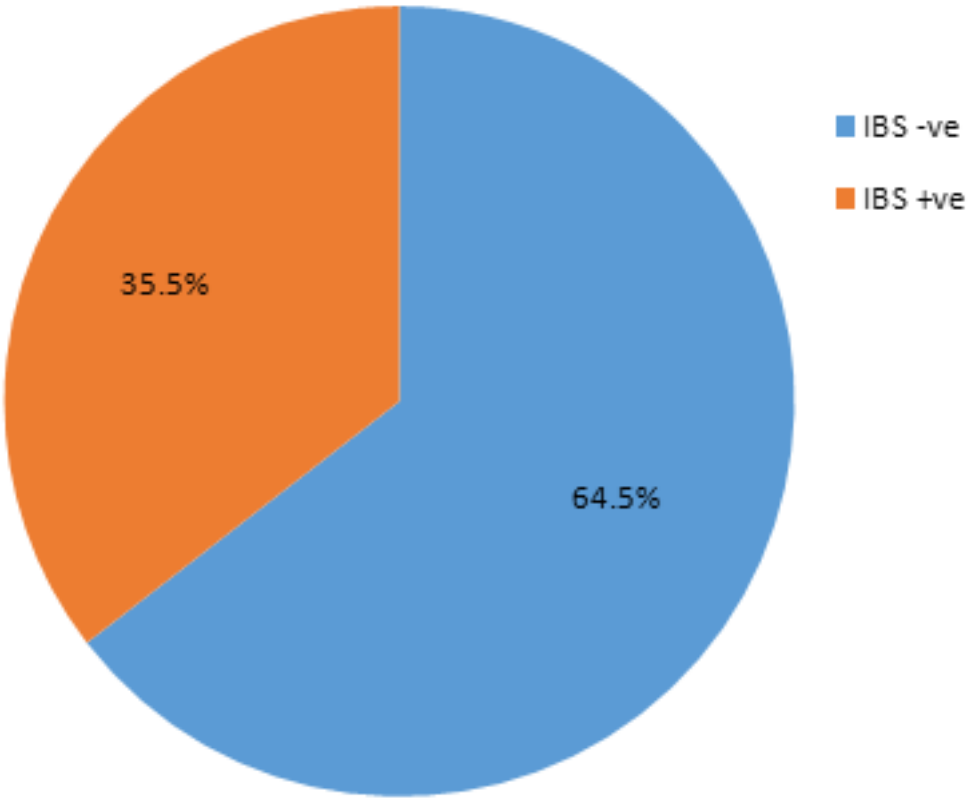

Figure 2: Subtypes of IBS among teachers in Abha city, Saudi Arabia

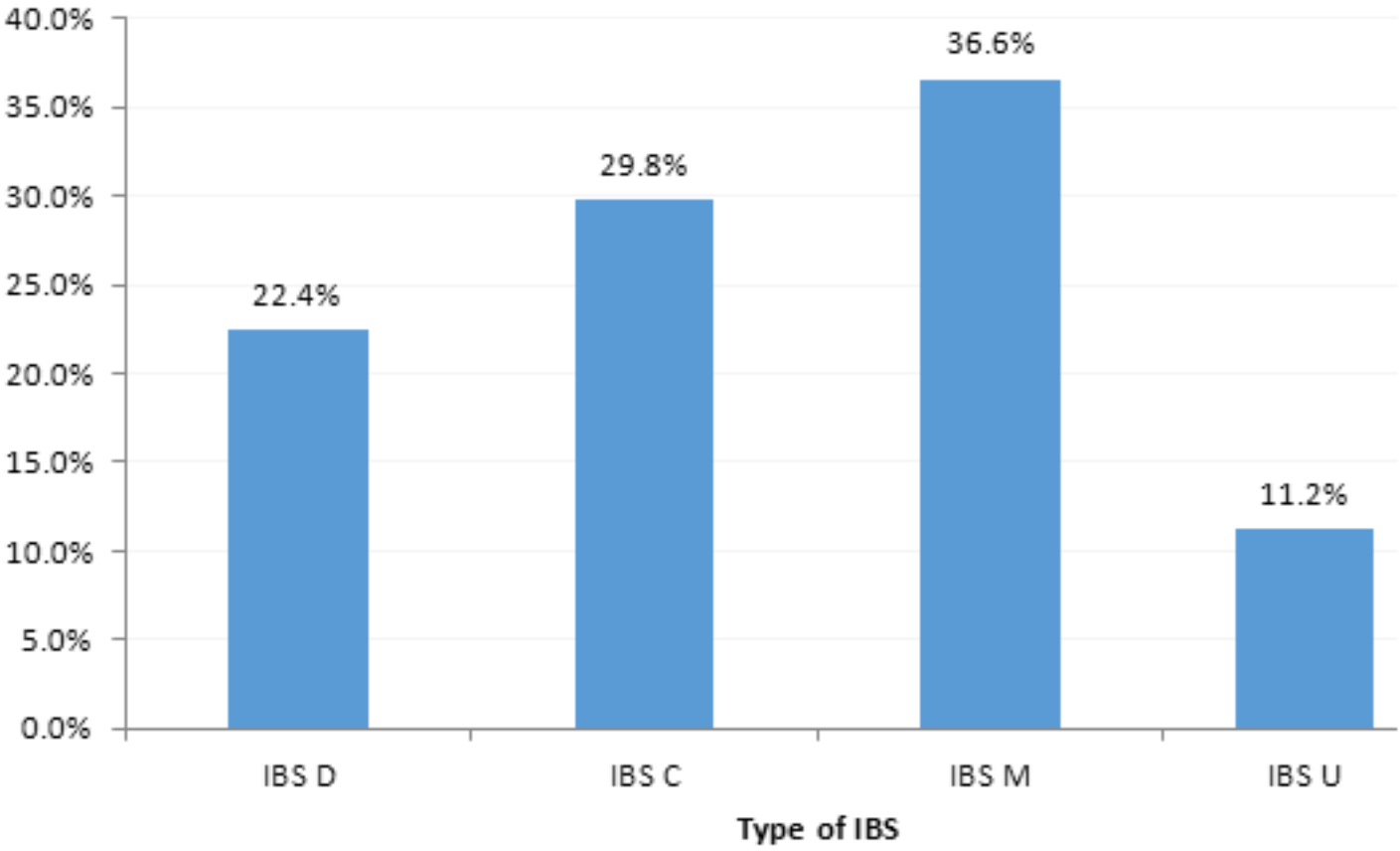

Table 3: Relation of having IBS with teachers' personal data, Abha city, Saudi Arabia

Personal data		Diagnosis				P
		IBS -ve		IBS +ve		
		No	%	No	%	
Gender	Male	184	72.2%	71	27.8%	.001*
	Female	189	58.5%	134	41.5%	
Marital status	Married	284	65.0%	153	35.0%	.687
	Unmarried	89	63.1%	52	36.9%	
Monthly Income	Less than 5000 SR	62	77.5%	18	22.5%	.002*
	5000-15000 SR	238	65.6%	125	34.4%	
	More than 15000	73	54.1%	62	45.9%	
Smoking status	Non-smoker	250	68.7%	114	31.3%	.005*
	Ex-smoker	72	52.9%	64	47.1%	
	Smoker	51	65.4%	27	34.6%	
Do you have any chronic disease?	None	284	65.4%	150	34.6%	.742
	Hypertension	21	65.6%	11	34.4%	
	Diabetes Mellitus	23	59.0%	16	41.0%	
	Asthma	22	57.9%	16	42.1%	
	Thyroid problems	7	53.8%	6	46.2%	
	Others	16	72.7%	6	27.3%	

P: Pearson X2 test * P < 0.05 (significant)

Table 4: Relation of having IBS with teachers' work data, Abha city, Saudi Arabia

Work data		Diagnosis				P
		IBS -ve		IBS +ve		
		No	%	No	%	
What is your sector?	Government school	209	65.1%	112	34.9%	.583
	Private school	114	62.0%	70	38.0%	
	International school	50	68.5%	23	31.5%	
Which level do you teaching?	Kindergarten	34	65.4%	18	34.6%	.007*
	Primary school	134	58.5%	95	41.5%	
	Secondary school	115	75.7%	37	24.3%	
	High school	90	62.1%	55	37.9%	
How many years have you worked as a teacher?	< 5 years	60	76.9%	18	23.1%	.026*
	5-10	148	60.2%	98	39.8%	
	> 10 years	165	65.0%	89	35.0%	
How many classes do you teach per week?	< 10 classes	74	63.8%	42	36.2%	.748
	10-15	171	63.3%	99	36.7%	
	> 15 classes	128	66.7%	64	33.3%	

P: Pearson X2 test * P < 0.05 (significant)

Table 5: Results of multiple logistic regression model for predictors of IBS among teachers in Abha city, Saudi Arabia

Predictor	B	S.E.	P	OR_A	95% C.I.for OR)	
					Lower	Upper
Teacher	.22	.32	.491	1.24	.67	2.31
Female	.83	.17	.001*	2.30	1.66	3.18
Unmarried	.03	.17	.857	1.03	.74	1.45
Income	.52	.13	.001*	1.68	1.30	2.16
Smoking	.71	.17	.001*	2.03	1.45	2.84
Diseases	.43	.16	..006*	1.53	1.13	2.08
Private school	.03	.11	.807	1.03	.83	1.28
Grade	.01	.08	.918	1.01	.87	1.17
Teaching years	-.04	.11	.711	.96	.77	1.20
Work load	.70	.13	.003*	2.01	1.32	2.59
Constant	-3.23	.67	.001	.04		
Model pseudo R2; Significance					0.12; .001*	
Model accuracy					71.3%	

B: Regression coefficient SE: Standard error CI: Confidence interval ORA: Adjusted odds ratio

Discussion

Irritable bowel syndrome (IBS) is a functional gastrointestinal disorder presenting with frequent abdominal pain or discomfort associated with a change in bowel habits. IBS is a common health problem and growing financial burden on patient and health care facilities, that affects health care costs directly and indirectly (17). IBS mainly occurs between the ages of 15 and 65 years, with incidence and prevalence nearly equal in both adults and adolescents. IBS is troublesome and should not be underestimated because it carries a significant negative impact on quality of life and social functioning in many patients, like decrease in concentration, energy, vitality and self-confidence, with increase in absence rates from schools and work places (18). There are no IBS-specific biological, structural or biochemical markers to aid diagnosis, but abdominal pain or discomfort is a key symptom for its diagnosis and doctors generally diagnose by excluding other GI diseases and mainly depend on symptom based criteria, after elimination of alarming features (Red Flag Signs). Accurate and timely diagnosis, together with appropriate intervention, is critical for optimal management of the condition (19).

The current study aimed to assess prevalence and correlates of IBS among teachers in Abha city including all teachers in governmental and private schools.

The study revealed that one third of the teachers had IBS, especially subtype M which means one out of each 3 teachers complain of uncomfortable IBS symptoms. On focusing on ROME criteria, it was noticed that a very small percentage of the teachers answered negatively (either never, no, or 0%) for the different annoying symptoms and signs. Also a considerable portion of teachers had appetite change and weight loss due to IBS correlates.
IBS was recorded more among female teachers which may be due to their greaterresponsibilities and family demands and this can be better explained by that IBS was more recorded among teachers with high income and many years of education. This may be due to the high stress and dependence on outdoor meals. Also smokers with high work load and chronic health problems recorded more IBS positive findings than others due to stress of work load or being worried about health problem.

Teaching is one of the most stressful jobs which causes tension due to social and academic responsibilities. Identification of health related problems which may affect teachers' work ability and their quality of life should be considered and be under focus because of direct impact of their job on the community and generations.

Conclusions and Recommendations

In conclusion, the study revealed that nearly 1 out of each 3 teachers had IBS. IBS subtype M was the most frequent especially among females with high income and high work load. Female gender with high income, presence of chronic health problems, and high work load were the most important predictors for having IBS. Teachers as cornerstone staff in building future generations and community should periodically undergo clinical and psychological evaluation to avoid such hidden disorders which affect their ordinary life and consequently their work performance.

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