

# Frequency of subtypes of irritable bowel syndrome in subtypes of schizophrenia

## Abstract

**Objective:** The aim of the study was to determine the frequency of subtypes of irritable bowel syndrome in predominant positive and negative subtypes of schizophrenia.

**Methods:** 143 drug naïve hospitalized and outdoor patients between 18 and 50 years with first episode of predominant positive and negative symptoms of schizophrenia based on DSM IV-TR completed this study. A semi-structured clinical interview was used to assess the patients with predominant positive and negative symptoms of schizophrenia. Clinical data were obtained; routine lab investigations and ultrasonography of abdomen were done in all subjects to exclude any related abdominal pathology. Rome III Urdu language version scale (cross validation obtained) for irritable bowel syndrome (IBS) were administered to assess the symptoms of subtypes of irritable bowel Syndrome, i.e. IBS Constipation (IBS-C), IBS Diarrhoea (IBS-D) and IBS Mix (IBS-M) in both male and female patients with type 1 and type 2 of schizophrenia.

**Results:** 134 patients (81 male and 53 female) had predominant positive and negative symptoms of schizophrenia. Out of 134 patients, 64 (48.8%) had IBS vs 70 (52.2%) of non IBS. Patients with type 1 of schizophrenia had higher rate of IBS-C 33.3% (n=14) and IBS-M 9.5% (n=4) versus type 2 of schizophrenia IBS-C 17.4% (n=16) and IBS-M 5.4% (n=5). In type 1, IBS-D was 21.7% (n=20) more frequent than IBS-D 11.9% (n=5) in type 2 of schizophrenia. Female patients 49.1% (n=26) had more frequent of IBS compared to 46.9% (n=38) male patients with schizophrenia (OR= 0.91; 95% CI: 0.46-1.84).

**Conclusion:** Irritable bowel syndrome is more frequent in patients with schizophrenia than in general population. This functional gastrointestinal disorder associated with predominant positive and negative symptoms of schizophrenia requires attention and management while managing patients with subtypes of schizophrenia.

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## Introduction

Irritable bowel syndrome (IBS) is a common functional gastrointestinal disorder which affects approximately 6-46 % of adult population in various countries and age range studied.<sup>1-5</sup> While in Pakistan IBS was estimated to affect 13.3-46 % of adult individuals.<sup>5-7</sup> IBS is characterized by abdominal pain/cramp, bloating, change in bowel habits and often relieved by passing stool. Constipation or diarrhea may predominate or may alternate as mixed in IBS and classified as IBS-C, IBS-D and IBS-M respectively.<sup>8</sup> As a functional disorder, no exact known organic causes have been reported so far except the excess of mast cell activation in pathophysiology. The brain gut axis has been postulated.<sup>9</sup> Diagnosis of this functional disorder is made excluding the organic causes, the red flag symptoms. Distress, stressful life events, anxiety and depression are more frequent in IBS than in general population.<sup>5-10</sup> The quality of life is low and economic burden is high in IBS.<sup>11</sup> Schizophrenia is a severe and serious mental disorder characterized mainly by distortion of reality. Positive symptoms (type 1) or negative symptoms (type 2) may predominate or may alternate in episodes.<sup>12</sup> The life time risk is between 7 and 13 per 1000 individuals. World Health Organization reported, schizophrenia affects more than 21 million people globally in 2011. Global Burden of Disease Study 2013 Collaborators estimated 23.6 million cases worldwide. Variation in prevalence occurs between male- female gender and countries. Patients with schizophrenia depict disability and low quality of life.<sup>13-15</sup> Associations of depression, anxiety, obsession, suicide, violence and substance misuse have been studied in schizophrenia. In contrast literature lacks the association of IBS and schizophrenia. A single study by Gupta et al carried to

assess the relationship of schizophrenia and IBS. It is reported that patients with schizophrenia often do not complain the symptoms of IBS until screened out.<sup>16</sup> To the best of our knowledge, so far, no study has been conducted to determine the subtypes of IBS in subtypes of schizophrenia. In this cross sectional study, we aimed to assess the frequency of subtypes of IBS in positive and negative types of schizophrenia.

## Subjects and methods

This cross section study was conducted at Department of Psychiatry Bolan Medical Complex Hospital Quetta from October 2014 to October 2015. The sample consisted of 134 (81 male and 53 female) drug naïve patients with first episode of schizophrenia between 18 and 50 years. Subjects were selected through non probability convenient sampling technique in inpatient and outpatient department. Demographic data and informed consent were obtained from the subjects included in present study. Two consulted psychiatrists diagnosed the patient suffering from schizophrenia applying semi-structured clinical interview based on DSM-IV TR. Routine laboratory investigations were done and a thorough history including family history, general physical and abdominal examinations and ultrasonography of abdomen were performed to exclude abdominal tuberculosis, abdominal mass, inflammatory bowel disease, thyroid disorders and other related organic disease. Patients fulfilling only Rome III criteria for IBS were included in this study. Symptoms of irritable bowel syndrome were recorded administering Rome III Modular Questionnaire.<sup>17</sup> We translated and adapted the Rome III Modular Questionnaire in to Urdu language under standardized protocol.<sup>18,19</sup>

**Table 1** Frequency of male and female patients with type 1 and type 2 schizophrenia

Schizophrenia	Sex of The Patients		Total	Percent	Total
	Female	Male			
Schizophrenia with Predominant Positive Symptoms (type 1)	31	61	92	68.7	92
Schizophrenia with predominant Negative Symptoms (type 2)	22	20	42	31.3	42
Total	53	81	134	100	134

**Table 2** Frequency of irritable bowel syndrome in type 1 and type 2 schizophrenia

Irritable Bowel Syndrome		Schizophrenia		Total
		Schizophrenia with predominant positive Symptoms (type 1)	Schizophrenia with predominant negative Symptoms (type 2)	
Non-IBS	Count	51	19	70
	% within Schizophrenia	55.40%	45.20%	52.20%
IBS-C	Count	16	14	30
	% within Schizophrenia	17.40%	33.30%	22.40%
IBS-D	Count	20	5	25
	% within Schizophrenia	21.70%	11.90%	18.70%
IBS-M	Count	5	4	9
	% within Schizophrenia	5.40%	9.50%	6.70%
Total	Count	92	42	134
	% within Schizophrenia	100.00%	100.00%	100.00%

IBS= Irritable Bowel Syndrome

**Table 3** Frequency of IBS and non IBS in male and female patients with schizophrenia

Irritable Bowel Syndrome		Sex of The Patients With Schizophrenia		Total	P Value
		Female	Male		
Non IBS	Count	27	43	70	
	% within IBS	38.60%	61.40%	100.00%	$\chi^2=0.43$ df=3
	% within Sex of the patients	50.90%	53.10%	52.20%	
IBS	Count	26	38	64	p=0.93
	% within IBS	40.60%	59.40%	100.00%	
	% within Sex of the patients	49.10%	46.90%	47.80%	
Total	Count	53	81	134	
	% within IBS	39.60%	60.40%	100.00%	
	% within Sex of the patients	100.00%	100.00%	100.00%	

IBS= Irritable Bowel Syndrome

**Table 4** Frequency of subtypes irritable bowel syndrome in male and female patients

Irritable Bowel Syndrome		Sex of The Patients With Schizophrenia		Total
		Female	Male	
Non-IBS	Count	27	43	70
	% within Sex of the patients	50.90%	53.10%	52.20%
IBS-C	Count	13	17	30
	% within Sex of the patients	24.50%	21.00%	22.40%
IBS-D	Count	9	16	25
	% within Sex of the patients	17.00%	19.80%	18.70%
IBS-M	Count	4	5	9
	% within Sex of the patients	7.50%	6.20%	6.70%
Total	Count	53	81	134
	% within Sex of the patients	100.00%	100.00%	100.00%

IBS= Irritable Bowel Syndrome

### Data analysis

Patients with positive and negative predominant symptoms of schizophrenia fulfilling Rome III criteria for IBS and subtypes of IBS

used the Urdu version Rome III IBS scale, helped by their attendants and research team. Data was analyzed using frequencies, chi square, odd ratio and cross tabulation in IBM SPSS 20.

## Results

Among 145 patients with positive and negative symptoms of schizophrenia, 3 patients had inflammatory bowel disease in family. 2 patients were diagnosed having abdominal tuberculosis. 6 patients refused to participate in the study. Out of 134 patients with schizophrenia, 64 (37.8%) patients had symptoms of IBS based on Rome III criteria. There were 92 (68.7%) 61 male and 31 female patients with predominant positive symptoms versus 42 (31.3%); 20 male and 22 female patients with predominant negative symptoms of schizophrenia (Table 1). Out of 70 (52.2%) non IBS patients, 51 (55.4%) had predominant positive symptoms of schizophrenia and 19 (45.2%) patients with predominant negative symptoms (Table 2). 16 (17.4%), had IBS-C, 20 (21.7%) had IBS-D and 5 (5.4%) had IBS-M in individuals with predominant positive symptoms while 14 (33.3%), had IBS-C, 5 (11.9%) had IBS-D and 4 (9.5%) had IBS-M in individuals with predominant negative symptoms. Interestingly, IBS-C 14 (33.3%) and IBS-M 4 (9.5%) were more prevalent in patients with predominant negative symptoms compared with IBS-C 16 (17.4%) and IBS-M 5 (5.4%) in predominant positive symptoms of schizophrenia. IBS-D 20 (21.7%) was more prevalent in positive symptoms versus IBS-D 5 (11.9%) in negative symptoms of schizophrenia (Table 2). Female patients with schizophrenia had more frequency of IBS than male patients with schizophrenia. 49.1% (26/53) female patients with schizophrenia had IBS compared to 46.9% (38/81) male patients, (OR= 0.91; 95% CI: 0.46-1.84). In female, IBS-C 24.5% (13/26) and IBS-M 7.5% (4/26) were more frequent compared to IBS-C 21.0% (17/38) and IBS-M 6.2% (5/38) in male patients with schizophrenia (Table 3,4).

## Discussion

This is the first study worldwide which assessed the prevalence of subtypes of IBS based on Rome III in subtypes of schizophrenia. About 6-46% people reports the symptoms of irritable bowel syndrome in western populations.<sup>20</sup> In Pakistan, symptoms of IBS have been reported 13.4% to 34% in general population and particularly in college students.<sup>5,6</sup> A recent systematic review showed that up to 94% of IBS patients had psychiatric disorders.<sup>21</sup> In psychiatric disorders, the prevalence of IBS was 29% in major depression, 44% in panic disorder 32% in generalized anxiety disorder and 36% in post-traumatic stress disorder.<sup>10-22</sup> The prevalence of IBS in present study was 47.8% of Rome III criteria in predominant positive and negative types of schizophrenia which is higher than 19% of a previous case control study.<sup>16</sup> In this study, interestingly, constipation predominant IBS and constipation alternating diarrhea IBS-M were more frequent with predominant negative symptoms than positive symptoms of schizophrenia. While diarrhoea predominant IBS was more frequent in positive symptoms than predominant negative symptoms. A large number of respondents of Rome III Urdu version were male patients with positive and negative symptoms of schizophrenia as compared to female patients. This is due to excess of male patients with schizophrenia at outpatients and inpatient settings. This may be due to male predominant care and treatment seeking behavior in our society. IBS has been reported to be 2-3times more frequent in female population than in male in previous studies.<sup>8,23</sup> Female patients with schizophrenia reported more frequent of IBS than male patients; however, in contrast, this comparison was not statistically significant in this study. The limitation of equal gender distribution can bias the result non-significant. This may also be attributed to under-report of IBS symptoms by female patients with schizophrenia than male patients in our socio-culture settings. A larger sample with schizophrenia of equal

gender distribution needs to confirm the present results. Patients with schizophrenia of both genders rarely report symptoms of IBS until screened out by mental health professionals.<sup>16</sup> Quality of life (QOL) is relatively low overall in patients with subtypes of IBS and subtypes of schizophrenia. Patients with IBS like schizophrenia also show food avoidance, problems in social relationship and interferences in daily activities.<sup>24</sup>

## Conclusion

We analyzed that frequency of irritable bowel syndrome (IBS) is high in patients with positive and negative symptoms of schizophrenia than in general population. Quality of life is decreased in patients with subtypes of IBS and schizophrenia. Mental health professionals need to ask for symptoms of IBS in patients with predominant positive and negative symptoms of schizophrenia to treat IBS too, along with the management of schizophrenia.

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## Conflicts of interest

Author declares there are no conflicts of interest.

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