

# Psychiatric symptoms and relationship of disease with stress and traumatic experiences in patients with irritable bowel syndrome

## *Sintomi psichiatrici e relazione tra malattia, stress ed esperienze traumatiche in pazienti affetti da sindrome dell'intestino irritabile*

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**SUMMARY. Aim.** The aim of this study is to evaluate psychiatric symptoms in patients with irritable bowel syndrome (IBS) and investigate the relationship of traumatic life events with the disease. **Methods.** Fifty-four patients and fifty healthy controls were included in this study. Psychiatric symptoms were measured with the Symptom Checklist-90-R (SCL-90R), State-Trait Anxiety Inventory (STAI) and sociodemographic information form were used. All scales were applied to both IBS cases and healthy control groups. **Results.** Somatization, obsessive-compulsive disorder, anger hostility, additional items and total scores of SCL-90-R were higher in the IBS group compared to the control group. Trait anxiety was significantly higher in the IBS group and state anxiety, significantly higher in the control group. In those with a personal history of traumatic events, all subscales and total scores of SCL-90-R were increased significantly. Scores of psychiatric scales, which indicate stressful life events, were significantly higher before the onset of abdominal pain. **Conclusions.** Environmental factors that cause considerable emotional distress, such as chronic stress, trauma, and abuse, have been linked to IBS and the severity of symptoms. Therefore, it is important to consider the psychiatric symptoms in the management of IBS.

**KEY WORDS:** irritable bowel syndrome, anxiety, depression, trauma.

**RIASSUNTO. Scopo.** Lo scopo di questo lavoro è di valutare i sintomi psichiatrici in pazienti con sindrome da intestino irritabile (irritable bowel syndrome - IBS) e indagare la relazione degli eventi traumatici di vita con la malattia. **Metodi.** In questo studio sono stati inclusi 54 pazienti e 50 controlli sani. I sintomi psichiatrici sono stati misurati con Symptom Checklist-90-R (SCL-90R), State-Trait Anxiety Inventory (STAI) ed è stato utilizzato il modulo di informazioni socio-demografiche. Tutte le scale sono state applicate sia ai casi di IBS sia ai gruppi di controllo sani. **Risultati.** La somatizzazione, il disturbo ossessivo-compulsivo, l'ostilità della rabbia, gli elementi aggiuntivi e i punteggi totali di SCL-90-R erano più alti nel gruppo IBS rispetto al gruppo di controllo. L'ansia di tratto era significativamente più alta nel gruppo IBS mentre l'ansia di stato significativamente più alta nel gruppo di controllo. Nei soggetti con una storia personale di eventi traumatici, tutte le sottoscale e i punteggi totali di SCL-90-R sono aumentati in modo significativo. I punteggi delle scale psichiatriche, che indicano eventi di vita stressanti, erano significativamente più alti prima dell'inizio del dolore addominale. **Conclusioni.** I fattori ambientali che causano un notevole disagio emotivo, come stress cronico, traumi e abusi, sono stati collegati all'IBS e alla gravità dei sintomi. Pertanto, è importante considerare i sintomi psichiatrici nella gestione dell'IBS.

**PAROLE CHIAVE:** sindrome da intestino, ansia, depressione, trauma.

## INTRODUCTION

Irritable bowel syndrome (IBS), a functional disorder of the gastrointestinal system, is one of the most common functional somatic diseases affecting 5-30% of population worldwide<sup>1</sup>. It is characterized by abdominal pain and alteration in bowel habits<sup>2,3</sup>.

The diagnosis of IBS relies on clinical findings with no definitive methods or biomarkers for diagnosis. It is an exclusion diagnosis based on anamnesis. Today, the Rome III criteria have established more objective parameters in the diagnosis of IBS. According to the Rome III criteria, there

must be at least 3 episodes of abdominal pain or discomfort within 3 months and presence of two of following findings: change in defecation frequency, stool consistency and relief with defecation<sup>4</sup>.

Although its etiology hasn't been fully elucidated, it is suggested that multi-factorial, heterogeneous mechanisms are involved in the etiology and pathogenesis of IBS<sup>5,6</sup>.

It has been long known that patients seeking medical attention for IBS are under some kind of psychological distress. Mood, anxiety and somatoform disorders have been shown to be associated with various degrees of mental distress in IBS patients<sup>7-12</sup>.

## *Psychiatric symptoms and relationship of disease with stress and traumatic experiences*

Although no causal relationship between IBS and psychopathology has been established so far, it is suggested that previous experiences of psychological distress and disorders aggravate the severity of IBS symptoms<sup>13</sup>. It is also shown that there is an increase in incidence of hypochondriasis, somatization disorder and dissociation<sup>14-16</sup>.

In addition, it has been reported that chronic stress, trauma or abuse increase incidence or symptom severity in IBS<sup>17-19</sup>. Physical and sexual abuse at adolescence and adult life are frequently reported in IBS patients. Psychological distress are observed to predispose development of gastrointestinal system symptoms and physical or sexual abuse at early life together with acute or chronic stimuli cause symptom onset and persistence<sup>20</sup>.

In this study, we aimed to compare psychiatric symptoms and levels of anxiety and depression with healthy controls to demonstrate effects of previous physical or psychological trauma and history of psychiatric disorders in first degree relatives in patients with IBS.

### **METHODS**

#### **Study population**

This study included 54 patients who presented with abdominal pain and change in bowel habits and were diagnosed as IBS according to the Rome III criteria at internal medicine outpatient clinic of Istanbul Umraniye Training and Research Hospital between June-October 2014. The inclusion criteria were as follows: age between 18 and 65 years, no previously diagnosed psychiatric disorders or comorbid physical conditions, literacy sufficient to complete self-reported scales and informed consent. Fifty age and gender-matched volunteers who presented to same hospital for medical reports for several reasons were included as controls. All subjects gave informed consent before participation. The study was approved by the Umraniye Training and Research Hospital Ethic Committee on Clinical Research (approval#2014/48).

#### **Data collection**

A data sheet, structured by authors, and two psychiatric scales were used to collect information. The data sheet was used to collect sociodemographic data about subjects in addition to information about previous history of psychological or physical trauma, experience of stress before onset of abdominal pain and family history of psychiatric disorders. For traumatic experiences, it included a question regarding whether a trauma (such as major disaster, a very serious accidents, life threatening situations such as fire, being sexually assaulted or raped) was experienced or not. Options of that question were "No, I don't have any trauma"; "I had a trauma".

*Symptom Checklist SCL-90-R*: it is a self-assessment psychiatric screening tool with 90 items questioning psychiatric symptoms. It is structured to assess in 9 distinct symptom domains. The scale was developed by Derogatis et al. and Turkish reliability and validity study was performed by Dag et al.<sup>21,22</sup>. The scale is a valid and reliable tool which is widely used in psychosomatic disorders.

*State-Trait Anxiety Inventory* (STAI-I, STAI-II): the State-Trait Anxiety Inventory, first developed by Spielberg et al., consists of 2 subscales with 20 items (State Anxiety Inventory and Trait Anxiety Inventory). All items are rated on 4-point scale. Higher scores indicate higher anxiety levels. The Turkish reliability study was performed by Oner and Le Compte<sup>23,24</sup>.

### **Data analysis**

All statistical analyses were performed with IBM SPSS version 22.0 (IBM SPSS, Turkey). Normal distribution was tested with the Shapiro Wilk test. Descriptive statistics were used to assess data, including mean, standard deviation and frequency. In addition, one-way ANOVA, Kruskal Wallis test, Student's t test and Mann-Whitney U test were utilized to compare quantitative parameters based on data distribution. A p value<0.05 was considered statistically significant.

### **Patient characteristics**

The study included 54 patients with IBS and 50 age and gender-matched healthy controls. Mean age (SD) was 38.78 (11.1) years, ranging from 18 to 65 years in the IBS group, and 38.18 (11) years in the control group. There was no significant difference between IBS group and controls with regards to age (p=0.783) gender, education, marital status and employment status (p>0.05 for all) (Table 1).

### **Comparison of IBS and control groups regarding psychiatric scales**

When compared to controls, SCL-90-R somatization, obsessive-compulsive, hostility, additional item scores and total score were significantly higher in the IBS group (Table 2).

In STAI-I and STAI-II, mean trait anxiety scores were 51.47±7 and 46.38±4.22 in the IBS and control groups, respectively, indicating a significant difference (p<0.01). Mean state anxiety scores were 43.24±5.55 and 46.09±4.23 IBS and control groups, respectively, which were also significantly different (p<0.04) (Table 2).

### **Comparison of scores in psychiatric scales with regards to history of physical and psychological trauma**

When patients with or without history of physical or psychological trauma were compared, it was found that all SCL-90-R indexes and total score were significantly higher in patients with a history of trauma (p<0.05) (Table 3).

### **Comparison of scores in psychiatric scales according to presence of a psychiatric disorder in first degree relatives**

When compared to those without a history of a psychiatric disorder in first degree relatives, a significant increase was observed in scores in all subscales of SCL-90-R other than somatization in patients with history of psychiatric disorder in first degree relatives. In addition, a significant increase was detected in state anxiety score in the group of without a history of psychiatric diseases (Table 4).

Table 1. General characteristics of the IBS and control groups.

		Group	p	
		IBS	Control	
		n(%)	n(%)	
Gender	Male	18 (33,3%)	17 (34%)	<b>1,000</b>
	Female	36 (66,7%)	33 (66%)	
Age group	≤25	8 (14,8%)	8 (16%)	<b>0,986</b>
	25-≤40	22 (40,7%)	20 (40%)	
	40-≤50	13 (24,1%)	13 (26%)	
	50+	11 (20,4%)	9 (18%)	
Education	Literate	3 (5,6%)	3 (6%)	<b>1,000</b>
	Primary	33 (61,1%)	30 (60%)	
	Secondary	10 (18,5%)	9 (18%)	
	College or higher	8 (14,8%)	8 (16%)	
Marital status	Single	14 (25,9%)	12 (24%)	<b>1,000</b>
	Married	40 (74,1%)	38 (76%)	
Employment	Employed	32 (59,3%)	29 (58%)	<b>0,896</b>
	Unemployed	22 (40,7%)	21 (42%)	

Table 3. Assessment of SCL-90, STAI-I and STAI-II scores according to trauma history.

Scales	Subscales	Trauma history		p
		Negative (n=35)	Positive (n=19)	
		Mean±SD	Mean±SD	
SCL-90-R	Somatization	1,24±0,59	2,03±0,78	<b>0,001*</b>
	Obsessive-compulsive	1,05±0,62	1,91±0,88	<b>0,001*</b>
	Interpersonal sensitivity	1,2±0,67	2,34±0,9	<b>0,001*</b>
	Depression	1,1±0,76	2,15±0,6	<b>0,001*</b>
	Anxiety	0,94±0,59	1,96±0,55	<b>0,001*</b>
	Anger- Hostility	0,87±0,66	1,75±0,74	<b>0,001*</b>
	Fobic anxiety	0,6±0,52	1,43±0,71	<b>0,001*</b>
	Paranoid ideation	0,99±0,87	1,8±0,82	<b>0,001*</b>
	Psychoticism	0,71±0,55	1,43±0,83	<b>0,002*</b>
	Additional items	1,07±0,66	2,23±0,8	<b>0,001*</b>
	Mean symptom score	0,11±0,06	0,21±0,07	<b>0,001*</b>
STAI	State anxiety	44,82±5,48	43,63±3,08	<b>0,203</b>
	Trait anxiety	48,49± 6	51,58±7,41	<b>0,055</b>

Student t Test  
\*p<0.05

Table 2. Assessment of SCL-90 and STAI-I, STAI-II scores in IBS and control groups.

Scales	Subscales	Groups		p
		IBS (n=54)	Control (n=50)	
		Mean±SD	Mean±SD	
SCL-90-R	Somatization	1,76±0,72	0,97±0,35	<b>0,001*</b>
	Obsessive-compulsive	1,49±0,87	0,9±0,41	<b>0,001*</b>
	Interpersonal sensitivity	1,51±1,02	1,29±0,58	<b>0,181</b>
	Depression	1,34±0,89	1,24±0,77	<b>0,511</b>
	Anxiety	1,2±0,86	1,06±0,49	<b>0,298</b>
	Anger- Hostility	1,19±0,86	0,86±0,57	<b>0,026*</b>
	Fobic anxiety	0,84±0,72	0,66±0,53	<b>0,161</b>
	Paranoid ideation	1,24±1,03	1,03±0,76	<b>0,223</b>
	Psychoticism	0,88±0,72	0,8±0,6	<b>0,546</b>
	Additional items	1,52±0,91	1,03±0,61	<b>0,001*</b>
	Mean symptom score	0,14±0,08	0,11±0,05	<b>0,009*</b>
STAI	State anxiety	43,24±5,55	46,08±4,23	<b>0,004*</b>
	Trait anxiety	51,54±7	46,38±4,22	<b>0,001*</b>

Legend: SCL-90-R= Symptom Check List 90-Revised, STAI= State-Trait Anxiety Inventory  
Student t Test.  
\*p<0.05

Table 4. Assessment of SCL-90, STAI-I and STAI-II scores according to history of psychiatric disorders in first degree relatives.

Scales	Subscales	History of psychiatric disorder in first degree relatives		p
		Negative (n=29)	Positive (n=25)	
		Mean±SD	Mean±SD	
SCL-90-R	Somatization	1,3±0,61	1,62±0,88	<b>0,099</b>
	Obsessive-compulsive	1,08±0,68	1,61±0,8	<b>0,002*</b>
	Interpersonal sensitivity	1,29±0,79	1,76±0,91	<b>0,015*</b>
	Depression	1,13±0,79	1,82±0,76	<b>0,001*</b>
	Anxiety	1,01±0,65	1,52±0,74	<b>0,001*</b>
	Anger- Hostility	0,93±0,71	1,35±0,81	<b>0,015*</b>
	Fobic anxiety	0,67±0,62	0,99±0,67	<b>0,030*</b>
	Paranoid ideation	0,97±0,8	1,67±1,05	<b>0,001*</b>
	Psychoticism	0,76±0,63	1,12±0,7	<b>0,017*</b>
	Additional items	1,18±0,76	1,62±0,91	<b>0,019*</b>
	Mean symptom score	0,11±0,06	0,17±0,08	<b>0,001*</b>
STAI	State anxiety	45,49±4,71	41,8±5,49	<b>0,001*</b>
	Trait anxiety	48,9±6,71	49,56±5,16	<b>0,652</b>

Student t Test  
\*p<0.05

### Comparison of scores in psychiatric scales according to increased stress before the onset of abdominal pain

Assessment of psychiatric scales according to presence of increased stress before onset of abdominal pain revealed that there was a significant difference in all SCL-90-R indexes except psychoticism, STAI-I and STAI-II scores in patients reporting increased stress before onset of abdominal pain (Table 5).

### DISCUSSION

In our study, anxiety levels in IBS patients and controls were assessed by using STAI-I and STAI-II. Trait and state anxiety were significantly higher in the IBS and control groups, respectively. In previous studies, anxiety, depression, and somatization frequencies were higher in patients with IBS (9, 10, 25). In a population-based study, IBS patients without known anxiety and depression at diagnosis developed anxiety and depression in long-term follow-up up to 12 years<sup>26</sup>.

In the literature, anxiety disorders are reportedly the most common psychiatric disorders seen in association with functional gastrointestinal diseases (30-50%). It is proposed that anxiety disorders play a role in the onset or persistence of gastric or intestinal symptoms by enhancing autonomic stimulation<sup>27</sup>. The higher state anxiety of controls was thought to stem from being in the hospital, which is a stressful condition. Higher trait anxiety scores in the IBS group are expected and known as one of the mechanism of IBS. Our findings are consistent with the literature.

In the IBS group, mean somatization, obsessive-compulsive, hostility and global severity scores were significantly higher, all of which are in agreement with previous test results and literature<sup>9,10</sup>. It has been suggested that presence of somatization increases use of healthcare services and decreases treatment response and compliance, resulting in increased adverse effects<sup>27</sup>.

In our study, we questioned previous history of physical and psychological traumas. All SCL-90-R indexes were significantly higher in patients with a previous history of trauma, than those without. Previous trauma may have decreased anxiety threshold, but individuals experienced fewer depressive symptoms due to several compensation mechanisms. It has been suggested that IBS patients experience more daily or lifetime stressful life events when compared to patients with organic disorders and healthy individuals and that gastrointestinal functions are more sensitive to stress in IBS patients<sup>28</sup>. Sexual, emotional, and physical abuse are more commonly seen in IBS patients than controls<sup>21,29,30</sup>. In a study, it was reported that IBS patients experienced adverse life events, physical punishment and emotional and sexual abuse more commonly than healthy controls<sup>31</sup>.

In our study, all SCL-90-R indexes were significantly higher in patients reporting increased stress before onset of abdominal pain. Evaluation of STAI revealed that trait anxiety was significantly higher in these patients. State anxiety was significantly higher in the group of who had not experienced an increase in stress before the onset of abdominal pain.

In prospective studies on adult IBS patients, stressful life events were shown to cause further exacerbation in symptoms and result in more common use of healthcare services<sup>32,33</sup>. A previous study reported that chronic life stress play a major role in severity of IBS symptoms beyond 16 months after adjusting for all confounding factors<sup>34</sup>.

In our study, scores from scales used were significantly increased in IBS patients with a history of psychiatric disease in first degree relatives. In the literature, there is a limited number of studies on the presence of psychiatric disorders in first degree relatives of IBS patients. The incidence of psychiatric disorders was higher in relatives of IBS patients when compared to those of patients who underwent cholecystectomy<sup>35</sup>. In another study comparing relatives of patients with depression and IBS patients with healthy controls, it was found that psychiatric disorders were more commonly seen in the relatives of IBS patients and those with depression<sup>36</sup>. Another research reported that frequency of psychiatric disorders and alcohol abuse was increased in relatives of IBS patients<sup>37</sup>.

It is well-known that psychological distress is an important risk factor for development, persistence and exacerbation of functional bowel disorders. It is also suggested that psychological distress experienced by the patients negatively influence outcomes by adversely affecting the relationship between the clinician and the patient<sup>38</sup>.

Potential effects of psychological factors should be evaluated in patients presenting with prolonged IBS symptoms. In this study, we attempted to reveal psychological aspects in IBS by comparing a group of patients suffering IBS with a homogenous control group. Our study established the need for holistic assessment of patients and consultation and liaison among clinics. A multidisciplinary approach could possibly increase quality of life in patients while decreasing treatment costs and waste of time.

In our study, the main limitation is that psychiatric diseases in first degree relatives were asked to patients, and no inter-

Table 5. Assessment of SCL-90, STAI-I and STAI-II scores according to experience of increased stress before onset of abdominal pain.

Scales	Subscales	Experience of increased stress before onset of abdominal pain		p
		Negative (n=16)	Positive (n=38)	
		Mean±SD	Mean±SD	
SCL-90-R	Somatization	1,08±0,5	1,9±0,69	<b>0,001*</b>
	Obsessive-compulsive	0,97±0,45	1,61±0,96	<b>0,001*</b>
	Interpersonal sensitivity	1,26±0,68	1,66±1,02	<b>0,032*</b>
	Depression	1,16±0,79	1,52±0,87	<b>0,034*</b>
	Anxiety	0,97±0,61	1,4±0,78	<b>0,005*</b>
	Anger- Hostility	0,86±0,63	1,33±0,85	<b>0,002*</b>
	Fobic anxiety	0,66±0,6	0,92±0,69	<b>0,046*</b>
	Paranoid ideation	0,98±0,82	1,41±1,02	<b>0,022*</b>
	Psychoticism	0,77±0,59	0,98±0,77	<b>0,134</b>
	Additional items	1,01±0,64	1,76±0,88	<b>0,001*</b>
	Mean symptom score	0,11±0,06	0,16±0,08	<b>0,001*</b>
STAI	State anxiety	45,71±4,81	42,68±5,18	<b>0,003*</b>
	Trait anxiety	47,56±5,89	51,66±6,36	<b>0,001*</b>

Student t Test  
\*p<0.05



views were conducted with the relatives. It would be possible to identify distribution of psychiatric disorders in first degree relatives with such interviews. Another limitation is lack of detailed questioning regarding type of previous trauma and stressful life events. In the light of our study, more comprehensive data will be obtained in future studies with larger sample sizes.

*Conflict of interests:* the authors have no conflict of interests to declare.

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