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Emotional Schemas of Patients with Irritable Bowel Syndrome and their Relationship to Psychological Symptoms

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Quantitative Study

Abstract

Background: Irritable bowel syndrome (IBS) is a prevalent functional gastrointestinal disorder (FGID). Most individuals with this disease have problems in expressing their feelings. Negative emotions and specific cognitive attitudes toward life can contribute to the development of depression and worsening of symptoms. This research aimed to compare the emotional schemas of patients with IBS with that of a control group and to investigate the relationship between psychological symptoms and emotional schemas.

Methods: The present causal-comparative research was performed on 98 patients with IBS referred to a gastroenterologist in Isfahan, Iran, in the winter of 2016. In addition, the 97 participants in the control group were selected from among caregivers and university staff through convenience sampling method. The data collection tools consisted of the ROME-III scale, structured clinical interview for DSM-IV (SCID-I), Persian version of the Emotional Schemas Questionnaire (ESS-P), and the 21-item Depression, Anxiety, and Stress Scales (DASS-21). The data were analyzed in SPSS software.

Results: The results showed that there was a statistically significant difference between the patients with IBS and control groups in terms of all schemas ($P \leq 0.05$), except emotional schemas of trying to be rational and being comprehensible ($P > 0.05$). Moreover, the results indicated that some emotional schemas were related to psychological symptoms ($P \leq 0.05$).

Conclusion: According to the findings, it seems that it is necessary to instruct individuals with IBS regarding emotional schemas. Increased awareness of emotional schemas will result in the acceptance of undesirable emotions as a part of the complex human nature, and thus, less experience of anxiety, depression, and stress.

Keywords: Irritable bowel syndrome, Emotional schemas, Stress, Depression, Anxiety

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Introduction

Irritable bowel syndrome (IBS) is a prevalent, painful, and disabling functional gastrointestinal disorder (FGID) and its major feature is changes in bowel habits and abdominal pain (Lackner, Quigley, & Blanchard, 2004). In IBS, no known somatic disorder is found through clinical examination and diagnostic investigations

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(Phillips, Wright, & Kent, 2013). IBS does not lead to dangerous situations in most patients, but can increase patients' medical costs due to its side effects, such as chronic pain and fatigue, and is the cause of patients' absenteeism from work. Researchers have reported that the high prevalence of IBS can cause an increase in social costs (Phillips et al., 2013). The exact etiology of IBS is unknown (Burgell, Asthana, & Gibson, 2015). Clinical and experimental evidence has showed that IBS is a combination of an irritable bowel and irritable brain (Qin, Cheng, Tang, & Bian, 2014). Psychological factors have a deep impact on the beginning, duration, expression, and especially, severity of disease (Lackner et al., 2004). Many studies have investigated the role of psychological factors in IBS. The findings of previous researches indicate that the prevalence of stress, depression, and anxiety is very high in patients with IBS (Jarrett et al., 1998; Lydiard, 2001; Kabra & Nadkarni, 2013; Dibajnia, Moghadasin, & Keikhayfarzaneh, 2013; Welch, Stace, & Pomare, 1984).

Researchers have associated stress with IBS (Blanchard et al., 2008; Chang, 2011; Lee et al., 2015). Psychological tension is an important factor in the development of IBS. Today, stress or mental pressure is one of the most important psychological topics and concepts and has great importance in psychopathology and health psychology (Alipour & Noorbala, 2004). The findings of previous researches have suggested that scores of stress, dysfunctional attitudes, depression, and anxiety are higher in patients with IBS than healthy individuals (Pinto, Lele, Joglekar, Panwar, and Dhavale, 2000; Lackner , et al., 2005; van der Veek, van Rood, & Masclee, 2008; Kovacs & Kovacs, 2007). There is a significant relationship between the tendency to psychological explanation of physical symptoms and the severity of abdominal pain in patients with IBS (Bray, Nicol, Penman, & Ford, 2006). Depression is also related to IBS (Lackner et al., 2004; Lee et al., 2015). Emotion is a basic phenomenon of human functioning that, generally, has adaptive value which increases our effectiveness in the pursuit of goals (McKay, Wood, & Brntly, 2011). All human beings experience emotions such as sadness, anxiety, or anger, but they do not result in major depressive disorder (MDD), generalized anxiety disorder (GAD), and/or panic disorder in every individual. Leahy (2015) believes that the continuation of emotions and creation of psychological disorders is the result of emotions and strategies that are applied in order to cope with or regulate emotions. Leahy (2015) considered beliefs about one's emotions and that of others and how to regulate them as emotional schemas. Leahy's emotional schema theory is a social-cognitive model of emotion and emotion regulation. The emotional schema model indicates that individuals differ in terms of the evaluation of legitimacy and shame regarding emotion, interpretation of causes of emotion, need to control emotions, expectation about duration of emotion, and the rate of emotion risk schema. Emotional risk schema is the individuals' intellectual framework or attitude toward life that is demonstrated through individuals' various experiences over time (Leahy, 2015). The emotional schemas make an individual vulnerable to physical and mental diseases such as chronic fatigue syndrome (CFS), IBS, somatization disorder, eating disorder, social phobia, depression, and borderline personality disorder (BPD) (Rimes & Chalder, 2010).Research showed that negative emotional schemas are related to anxiety, depression, posttraumatic stress disorder (PTSD), metacognitive aspects of worry, alcohol abuse, marital discord, and personality disorder (Leahy, 2007; Tirch, Leahy, Silberstein, & Melwani, 2012; Bayazi, Gohari, Hojjat, & Behrad, 2014; Orue, Calvete, & Padilla, 2014). It is thought that the activation of negative schemas causes cognitive bias or tendency to information processing through negative ways (Kring, Johnson, Davison, & Neale, 2009). Drawing

the cognitive model of emotion in patients with IBS illustrates a natural tendency to negative thought (Lackner et al., 2005). Studies have shown differences between the emotional schemas of patients and healthy individuals (Batmaz, Ulusoy, Kocbiyik, & Turkcapar, 2014; Hosheyar, Mahvishirazi, 2015). The comparison of emotional schemas and coping strategies in patients with IBS and healthy individuals has indicated the existence of a significant difference between these groups in terms of confirmation seeking, feeling of guilt, lack of understanding, emotional naivety, lack of control, compromise, rumination, expression, and blame schemas (Moradi, Goudarzi, & Moradniani, 2015). The results of another study demonstrated that there are many differences in psychosocial variables between patients with IBS and healthy individuals (Phillips et al., 2013). According to the results of this research, alexithymia (inability in description and awareness of emotions) and defectiveness/shame schema are significant predictors of IBS and the severity of its symptoms. Gender, mental pressure variables, and entitlement schema are predictors of the severity of IBS symptoms (Phillips et al., 2013). Moreover, physical pain or diseases influence individuals' emotions (McKay et al., 2011). Because IBS accompanies a high rate of negative emotions, the recognition of emotional schemas in patients with IBS is important. Thus, the present study answered the following questions:

Is there a significant difference between emotional schemas of patients with IBS and that of healthy individuals?

Is there a significant difference between patients with IBS and healthy individuals in terms of anxiety, depression, and stress?

Is there a significant relationship between emotional schemas and anxiety, depression, and stress?

Methods

In the present causal-comparative research, dimensions of emotional schemas were independent variables and psychological symptoms (anxiety, depression, and stress) were dependent variables. The research population consisted of all patients with IBS who referred to one of the gastroenterologists of Isfahan, Iran, in the winter of 2016 and their caregivers.

SPSS SamplePower software (IBM Corporation, Armonk, NY, USA) was used to estimate the size of the sample. Considering the research hypotheses (hypotheses based on the comparison of mean of variable or variables between two groups of people) and 0.05 error percentage, power of higher than 0.85, and effect size of 0.60, the sample size was estimated as 180 individuals. Error percent of 0.05, power of higher than 0.85, and effect size of 0.60 are the most desirable values for the statistical analytical methods based on the comparison of mean. The sample consisted of 90 patients with IBS and 90 healthy individuals in the control group. Subjects were selected through convenience sampling method and were divided into two groups. The subjects of the control group consisted of caregivers and university staff. The control group was matched with the patient group in terms of age, gender, education, and income level using frequency matching method to prevent bias in research findings. First, the patient group participants were differentiated from patients with other digestive diseases by a gastroenterologist based on Rome-III Diagnostic Criteria and referred to a clinical psychologist after diagnosis of IBS. After a brief explanation for patients and emphasis on data confidentiality, they were asked to study the research testimonial. Individuals who were willing to participate in the study and had the inclusion criteria were entered into the study. The inclusion criteria consisted of at least middle school education, age of between 18 and 50 years, and diagnosis of IBS (based on the ROME-III Diagnostic Criteria by a gastroenterologist). The

exclusion criteria consisted of age of over 50 years and less than 18 years, severe psychiatric disorders, attendance of psychological treatment sessions during the recent 6 months, and substance abuse.

Structured clinical interview for DSM-IV (SCID-I), ROME-III scale, short form of Emotional Schemas Questionnaire (ESS-P), and the 21-item Depression, Anxiety, and Stress Scale (DASS-21) were used to collect data. To this purpose, the questionnaires were distributed among patients. They were asked to complete the questionnaires simultaneously, and in the case of any problems, the examiner presented them with the necessary explanations.

ROME-III: This tool is related to FGIDs and has been normalized by Safaei et al. (2013) in Iran. The reliability of this questionnaire has been determined through Cronbach's alpha and reported as more than 0.7 in all principal symptoms (Safaee et al., 2013). In the present research, this tool was used by a gastrointestinal specialist to differentiate between IBS and FGIDs.

Structured clinical interview for DSM-IV: SCID-I is a semi-structured interview that provides diagnostics based on the DSM-IV. The tool has been devised by Spitzer et al. (1992). Furthermore, it has been normalized by Sharifi et al. (2004) in Iran. In the current study, the SCID-I was used for the investigation of lack of sever psychiatric diseases (inclusion criteria) such as psychosis and chronic bipolar disorder.

Persian version of Emotional Schemas Questionnaire: The ESS has been prepared by Leahy (LESS) on the basis of his emotional schemas model as a self-report scale. The Persian version of the scale was provided by Khanzadeh, Edrisi, Muhammadkhani, and Saidian (2013). The results of exploratory factor analysis showed that of the 16 derived factors of the scale, 12 factors were in accordance with Leahy emotional schemas, 3 factors were eliminated because they loaded only one item and a new factor called emotion self-awareness was added. The reliability of the scales has been reported as 0.56-0.71 (Khanzadeh et al., 2013). Furthermore, the internal consistency of the total scale and its subscales was obtained using Cronbach's alpha (0.82 and 0.59-0.72, respectively). Generally, the findings of the two methods indicate acceptable reliability of the scale (Khanzadeh et al., 2013). Note that of these 13 schemas, 6 schemas (emotion self-awareness, emotion expression, being understandable, higher values, emotion acceptance, and agreement) are adaptive schemas and 7 schemas (rumination, being uncontrollable, guilt, seeking confirmation, censure, the endeavor to be logical, and simplistic views of emotions) are maladaptive.

21-item Depression, Anxiety, and Stress Scales: The DASS-21 is a self-report scale that evaluates depression, anxiety, and stress. The items are scores based on a 4-point Likert scale ranging from 0 to 3 (never to very much). Henry and Crawford (2005) calculated the reliability of this scale using Cronbach's alpha and 1794 individuals as sample and reported 0.93 for the total scale and 0.88, 0.82, and 0.90 for the depression, anxiety, and stress scales, respectively. Asghari Moghaddam, Saed, Dibajnia, & Zangeneh (2008) reported the internal consistency coefficients of 0.93, 0.90, and 0.93, and retest coefficients of 084, 0.89, and 0.90 for depression, anxiety, and stress scales, respectively. In addition, they reported retest reliability as 0.78, 0.87, and 0.80 for depression, anxiety, and stress scales, respectively (Asghari Moghaddam et al., 2008).

Statistical analysis: Findings were analyzed using chi-square test, independent sample t-test, multivariate analysis of variance (MANOVA), and Pearson correlation in SPSS software, version 23. The differences in the level of 0.05 were considered significant.

Results

In this research, 98 patients with IBS were

investigated, of whom, 46 individuals (46.9%) were men and 52 (53.1%) woman, 22 individuals (22.4%) were married and 74 (75.5%) were single. Mean age of the participants was 34.11 ± 8.21 years with an age range of 18-50 years. In the control group (n = 97), 38 individuals (39.2%) were men and 59 (60.8%) woman, 29 (29.9%) were single and 66 (68%) married. In the two groups, 2 individuals were divorced. Mean age of the control group participants was 32.21 ± 5.09 years with an age range of 18-50 years.

No significant difference was observed between the control and patient groups in terms of age, gender, and marital status; however, they differed in terms of education level.

According to the results presented in table 1, there were statistically significant differences in all schemas between the control and IBS groups ($P \leq 0.05$), except the emotional schemas of trying to be rational and being comprehensible ($P > 0.05$).

According to the results presented in table 2, there were statistically significant differences among scores of depression, anxiety, and stress of subjects in the control and IBS groups ($P \leq 0.05$).

The results of table 3 indicate that depression was negatively and significantly related to all schemas ($P \leq 0.05$), except the emotional schema of trying to be rational ($P > 0.05$). Stress was negatively and significantly associated with all schemas ($P \leq 0.05$). Moreover, anxiety was negatively and significantly related to all schemas ($P \leq 0.05$), except the emotional schemas of trying to be rational, simplistic views of emotions, and expression of feelings ($P > 0.05$).

Table 1. Summary of results of multivariate analysis of variance of emotional schemas in the control and irritable bowel syndrome groups

Variable	Group	Mean ± SD	F	P-value
Uncontrollability	Control	4.32 ± 2.99	8.24	0.0050
	IBS	5.78 ± 3.36		
Trying to be rational	Control	12.24 ± 2.38	0.308	0.5800
	IBS	12.47 ± 2.66		
Emotional self-awareness	Control	6.86 ± 2.98	6.47	0.0120
	IBS	5.75 ± 3.46		
Comprehensible emotions	Control	5.96 ± 2.10	0.642	0.4240
	IBS	5.67 ± 3.12		
Rumination	Control	6.84 ± 3.13	29.32	0.0005
	IBS	9.37 ± 3.27		
Compromise	Control	5.92 ± 2.50	8.98	0.0030
	IBS	4.82 ± 2.40		
Acceptance	Control	7.29 ± 2.20	13.14	0.0005
	IBS	5.98 ± 2.71		
Seeking confirmation	Control	4.47 ± 2.25	4.28	0.0400
	IBS	3.73 ± 2.36		
Higher values	Control	9.67 ± 1.97	11.98	0.0010
	IBS	8.57 ± 2.17		
Simplistic views of emotions	Control	5.43 ± 1.64	9.80	0.0020
	IBS	6.16 ± 1.94		
Guilt	Control	5.29 ± 2.50	3.95	0.0480
	IBS	6.35 ± 3.29		
Expression of feelings	Control	5.55 ± 1.42	13.52	0.0005
	IBS	4.61 ± 2.06		
Blame	Control	4.78 ± 2.00	12.50	0.0010
	IBS	5.82 ± 1.97		

IBS: Irritable bowel syndrome

Table 2. Summary of the results of multivariate analysis of variance of depression, anxiety, and stress in the control and IBS groups

Variable	Group	Mean ± SD	F	P-value
Depression	Control	8.82 ± 7.58	28.61	0.0005
	IBS	16.16 ± 10.09		
Anxiety	Control	7.14 ± 5.20	66.06	0.0005
	IBS	15.43 ± 8.37		
Stress	Control	12.73 ± 7.17	63.76	0.0005
	IBS	22.29 ± 8.15		

IBS: Irritable bowel syndrome

Discussion

The results of the current research showed that emotional schemas of patients with IBS differ from healthy individuals and are the context for more intense symptoms in patients with IBS. Anxiety, depression, and stress are high in patients with IBS. Some emotional schemas have positive effects on the level of anxiety, depression, and stress and some of them have negative effects. The findings of the present research showed that there was no significant difference between patients with IBS and healthy individuals in terms of scores of trying to be rational and being comprehensible. However, there were significant differences between patients with IBS and healthy individuals in scores of being uncontrollable, emotional self-awareness, rumination, compromise, acceptance, seeking confirmation, higher values, simplistic views of emotions, feeling of guilt, expression of feelings, and blame. In other words, the results of the current study represented the greater use of negative schemas of being uncontrollable, rumination, simplistic views of emotions, and feelings of guilt and blame by patients with IBS than healthy individuals (Table 1). These findings are consistent with the results of previous studies. Moradi et al. (2015) conducted a study with the aim of the comparison of emotional schemas and coping strategies between patients with IBS and healthy individuals. Their findings indicated a significant difference among emotional schemas of seeking confirmation, feeling of guilt, simplistic view of emotions, being uncontrollable, compromise, rumination, expression of feelings, and blame in patients with IBS and healthy individuals (Moradi et al., 2015). The results of the study by Phillips et al. (2013) showed that the guilt/shame schema significantly predicts IBS and the severity of its symptoms.

Table 3. Pearson correlation test between dimensions of emotional schema and the rate of depression, stress, and anxiety

Variable	Depression	Anxiety	Stress
Uncontrollability	0.498**	0.534**	0.555**
Trying to be rational	0.088	0.138	0.187**
Emotional self-awareness	-0.465**	-0.405**	-0.495**
Comprehensible emotions	-0.404**	-0.302**	-0.317
Rumination	0.586**	0.415**	0.588**
Compromise	-0.179*	-0.202**	-0.246**
Acceptance	-0.468**	-0.366**	-0.530**
Seeking confirmation	-0.504**	-0.352**	-0.393**
Higher values	-0.423**	-0.298**	-0.391**
Simplistic views of emotions	0.192**	0.025	0.179*
Guilt	0.490**	0.376**	0.504**
Expression of feelings	-0.192**	0.052	-0.152*
Blame	0.339**	0.342	0.447**

*P < 0.05, ** P < 0.01

Patients with IBS have a wide range of negative beliefs or schemas about emotions. Their emotions are uncontrollable. They insist on the fact that they have unpleasant feelings and cannot get rid of these thoughts and emotions, have an all or nothing attitude about their experiences, feel shame and guilt about their emotions, and hide their emotions from others. The common response of individuals with IBS to negative emotions is blaming others. It seems that negative schemas act as a mechanism against emotions due to the stressful situations of change in bowel habits and abdominal pain in patients with IBS. Therefore, they experience higher levels of negative emotional schemas compared with healthy individuals.

The results of the current research indicated the presence of significant differences among scores of anxiety, depression, and stress of individuals with IBS and healthy individuals. The results showed that the scores of anxiety, depression, and stress of individuals with IBS were higher than healthy individuals (Table 2). These findings are in agreement with the results of previous studies (Pinto et al., 2000; van der Veek et al., 2008; Kovacs & Kovacs, 2007). The biopsychosocial model or mind/body model can explain these results. In the biopsychosocial model of IBS, it is assumed that there is close interaction between cognitive and emotional centers of the central nervous system and the enteric nervous system (Naliboff, Frese, & Rapgay, 2008). Another explanation may be that intestinal walls are covered with layers of muscle which the contraction or relaxation of which is coordinate with each other as food moves from the stomach to the intestinal tract and rectum. When IBS occurs, the contractions become stronger, last for a longer duration than normal, and cause the production of excess gas in the intestines, bloating, and diarrhea. With weaker contractions, movement of food becomes slow, and as a result, stool becomes dry and hard. These states lead to sadness and anxiety of individuals with IBS in different situations, because distressing thoughts focus on the future and often announce a disaster. The thoughts often begin with if or what a disaster may occurs. The anxiety that patients with IBS experience due to visceral emotions leads to behavioral avoidance. That is, patients with IBS avoid different situations due to fear of the onset of symptoms. Evidence suggests that a reduction initially occurs in anxiety when difficult situations are avoided. Nevertheless, it is interesting that continuous avoidance of these situations results in greater anxiety when they are encountered in the future (Greenberger & Padesky, 2013). It seems that the avoidance response causes a reaction in anxiety in patients with IBS.

The cognitive model for patients with IBS shows a natural tendency to negative thought (Lackner et al., 2005). On the other hand, it is believed that depression is caused because of pervasive negative thoughts about oneself and the surrounding world. Perhaps this is why a higher rate of depression is observed among patients with IBS compared to healthy individuals.

The results of the present research showed that anxiety, stress, and depression are positively and significantly associated with the emotional schemas of being uncontrollable, rumination, and feeling of guilt and blame. In addition, they are negatively and significantly associated with the emotional schemas of emotional self-awareness, being comprehensible, compromise, acceptance of emotions, seeking confirmation, and higher values (Table 3). These results are consistent with that of previous studies. Dashtban Jami, Bayazi, Zaeimi, & Hojjat (2014) conducted a research with the aim of the investigation of the relationship of meta-cognitive beliefs and emotional schemas with depression. Their findings illustrated that emotional schemas of blame, compromise, being comprehensible, and feeling of guilt predict depression (Dashtban Jami, et al., 2014). The findings of

the study by Leahy, Tirch, and Napolitano (2015) indicated that emotional schemas of rumination, feeling of guilt, lack of confirmation, lack of higher values, control, not being comprehensible, expression of feelings (higher), and low compromise predict depression. Research results display that the best predictors of anxiety are beliefs about emotion control, the belief that emotions are not comprehensible, and belief of lack of confirmation of emotions (Leahy, 2015). For explanation of these results on the basis of cognitive theory, it can be said that individuals who think they do not have control over their environment experience more stress, anxiety, and depression (Kring et al., 2009). Individuals engaged in rumination often believe that they cannot get rid of the thoughts and emotions. The feeling of inability to change negative emotions predicts depression. Individuals who feel shame or guilt begin to criticize themselves, hide their emotions from others and experience anxiety and sorrow regarding their emotions. In contrast, individuals, who have the ability to be aware of and understand their own feelings, believe their emotions are comprehensible, and thus, do not attempt to control their feelings. They believe others accept their emotions and empathize with them, emphasize on values, and experience less anxiety, depression, and stress.

It should be noted that a significant relationship was observed between the emotional schema of trying to be rational and stress (Table 3); individuals who insists on being rational more than emotional believe that being rational is the preferable method of performance. They believe that emotions should be eliminated or controlled in order to find the rational solution of the problem. The outcome of this belief is increased stress experience on the basis of the findings of the current study.

The results of the present research showed the emotional schema of simplistic views of emotions has a positive and significant relation with depression and stress (Table 3). To justify this relationship, it can be noted that simplistic views of emotions is an indicator of the all or nothing attitude of experiences (Leahy, 2015). Argument through all or nothing method is to think in one of the extreme poles, for example, they all leave me or no one likes me. All or nothing thought is related to depression (Hawton, Salkovskis, Kirk, & Clark, 2013). Therefore, it seems natural that an individual who has the emotional schema of simplistic view of emotions, that is, all or nothing attitude of experiences, feel more depressed. The present research results also illustrated that the emotional schema of expression of feelings was not significantly related to anxiety (Table 3). However, the results of a prior study suggested that low emotional expression predicts anxiety (Leahy, 2015). It seems that the inconsistency between results is due to the use of different tools. Regarding the significant relation of the emotional schema of expression of feelings with depression and stress (Table 3), it can be argued that individuals who believe they can express their emotions allow themselves to tell their emotions to others. The expression of feelings is a clear principle of social relations. The expression of feelings helps humans feel that they have relations with others and are a part of society or certain groups. This helps individuals experience less depression because depression is an interpersonal component of the lack of communication.

Conclusion

The results of this research indicated a difference between individuals with IBS and healthy individuals in terms of emotional schemas, anxiety, depression, and stress. The findings show that anxiety, depression, and stress are related to some emotional schemas. Hence, it is necessary to instruct individuals with IBS in the field of emotional schemas. Increased awareness regarding emotional schemas will result in the acceptance of undesirable emotions as a part of the complex human nature, and as a result, less

experience of anxiety, depression, and stress.

Conflict of Interests

Authors have no conflict of interests.

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