

## Comparison of Self-Coherence and Impulsiveness between People with Irritable Bowel Syndrome and Healthy People

Saeideh Khaki <sup>a</sup>, Hajar Torkan <sup>\*\*</sup>, Vahid Sebghatollahi <sup>b</sup>

<sup>a</sup> Islamic Azad University, Isfahan Branch (Khorasgan), Isfahan, Iran.

<sup>b</sup> Department of Adult Gastroenterology, Faculty Member of Isfahan Medical University, Isfahan, Iran.

### ARTICLE INFO

#### ORIGINAL ARTICLE

#### Article History:

Received: 27 Nov 2018

Revised: 1 May 2019

Accepted: 20 May 2019

#### \*Corresponding Author:

Hajar Torkan

#### Email:

h.torkan@khuisf.ac.ir

Tel: +98 9133707614

#### Citation:

Khaki S, Torkan H, Sebghatollahi V. Comparison of Self-Coherence and Impulsiveness between People with Irritable Bowel Syndrome and Healthy People. *Social Behavior Research & Health (SBRH)*. 2019; 3(1): 340-348.

### ABSTRACT

**Background:** Irritable Bowel Syndrome (IBS) is a serious syndrome, which damages people's psychological, communicative, social, and emotional lives. Therefore, the present study was conducted to compare integrative self-knowledge and impulsivity in patients with Irritable IBS and healthy individuals.

**Methods:** This case-control study was conducted on patients with IBS referring to gastroenterologists and healthy individuals in the city of Isfahan in 2018. The sample size included 150 patients with IBS and 150 healthy people in Isfahan selected using non-random convenient sampling method. The integrative self-knowledge and impulsivity questionnaires were applied to collect the information. After collecting the questionnaires and extracting the raw data, SPSS<sub>23</sub> software was used and t-test was run to analyze the data.

**Results:** A significant difference was observed between patients with IBS and healthy participants with regard to integrative self-knowledge and impulsivity ( $P$ -value  $< 0.001$ ), so that people with IBS had lower integrative self-knowledge and higher impulsivity in comparison with the healthy individuals.

**Conclusion:** According to the findings, people with IBS had lower integrative self-knowledge and higher impulsivity due to their therapeutic and psychological involvement in the disease. So, third-wave psychological treatments such as mindfulness treatment and positivist psychotherapy are required in this area.

**Keywords:** Integrative Self-Knowledge, Impulsivity, Irritable Bowel Syndrome (IBS)



## Introduction

Psychosomatic diseases refer to a group of diseases in which the patient has physical and bodily symptoms that are created by psychological factors or are exacerbated by psychological factors and stressors.<sup>1</sup>

One of the body systems that is affected by psychological and social factors is the gastrointestinal tract, and one of the chronic functional gastrointestinal disorders is Irritable Bowel Syndrome (IBS).<sup>2</sup>

IBS is diagnosed by symptoms such as chronic pain in the abdomen and the absence of any organic structural disorder.<sup>3-4</sup> Besides that, IBS patients, in addition to abdominal discomfort and chronic abdominal pain, experience changes in the frequency of bowel movements, constipation, watery stool, and symptoms such as abdominal bloating, and the presence of mucus in stool.<sup>5-6</sup>

The etiology of this syndrome is complex and the involvement of certain factors such as abnormal gastrointestinal movements, visceral hypersensitivity and psychological factors has been confirmed in various studies.<sup>7</sup> In addition, previous studies have shown that among the causative factors of this disease, psychosocial stress and emotional factors also play a role in the incidence and continuation of the symptoms of this disease.

The over 54% incidence rate of psychological problems, such as depression, anxiety and personality disorders, in people with this condition highlights this argument.<sup>8</sup> It should be noted that IBS is one of the chronic diseases that affect social health, lifestyle and occupation.<sup>9-10</sup>

Abdominal pain or discomfort associated with impaired defecation and bowel habits are symptoms of this disease.<sup>11</sup> The main complaint of patients is abdominal pain or discomfort.<sup>12</sup> This pain is chronic and has a negative impact on the quality of life of patients.<sup>13</sup>

People with chronic physiologic diseases, in addition to painful physiological symptoms, also show psychological symptoms. As evidenced by scientific evidence, individuals with chronic illness have a lower level of self-awareness than healthy

people.<sup>14</sup> Self-knowledge is a variable coherence that plays a coordinating role at the in-person level and, by processing various information related to one's own person, leads to cohesion at the level of the psychological system.<sup>15</sup> Coherence self-awareness is capable of predicting individuals' vitality during stressful situations, and predicts the self-esteem of adult-style solidarity coherence.<sup>16</sup> In addition, the capacity to understand processes and internal experiences in a timely and organized manner is called self-awareness for self-regulation in order to regulate itself.<sup>17-18</sup>

Self-consciousness has two main dimensions. Experiential self-consciousness focuses on the playing of moment-to-moment attention to the changes that occur in us, with mindfulness being one of the aspects of experiential self-consciousness, and reflective self-consciousness, which refers to the analysis of one's experience through more complex and more systematic cognitive functions.<sup>17-19</sup>

And focuses on the comparison of the moment with the internal standards of performance, based on their past experience and the desirable future, integrating these two dimensions of self-awareness into self-understanding of cohesion and one of the important components of mental health.<sup>18</sup>

Another component that people with chronic illness are more likely to exhibit than normal people is impulsiveness.<sup>20-21</sup> Impulsiveness is defined as the preparation for rapid and unplanned responses to internal or external stimuli, regardless of their negative consequences for themselves or others.<sup>22</sup>

Impulsiveness, according to Patten, refers to taking action, lack of focusing on ongoing activity, lack of planning and thinking, as well as pre-preparation and part of a behavioral pattern, rather than a single action.<sup>23</sup>

Three main characteristics of impulsiveness are hasty, unplanned and unthought behavior, which can be the turning point of many social and psychological disorders.<sup>24</sup>

According to the theory of Heinz, Bui, Thomas & Blonigen<sup>25</sup>, four personality dimensions related

to the different dimensions of impulsive behavior are as follows:

Emergency: the problem of resistance to strong impulses and tendency to act out of consideration when experiencing negative or positive emotions; lack of planning: the tendency to engage in immediate actions rather than action with thorough thinking and planning; lack of persistence: difficulty in keeping the attention on the task and failure in tolerating exhaustion; and excitement seeking: the tendency to search for excitement and adventure.

Regarding the necessity of the present study, it can be argued that, most studies on the etiology of the disease have focused on biological and physiological aspects alone, which could not detect the exact cause of the disease;

in addition to this gap, the involvement of other factors in the development of IBS has attracted researchers' attention to effective psychological factors in predicting this syndrome.<sup>26</sup>

Therefore, due to the relatively high prevalence of IBS, stupendous medical costs, and the lack of an achievement of complete treatment, paying attention to psychological processes in these patients can lead to psychological solutions to relieve or reduce pain, and to improve the psychological outcomes and impacts.

Considering previous researches and their limitations, it is necessary to investigate other psychological factors potentially involved in this disease, in addition to the fact that no study has yet been conducted on self-coherence and impulsiveness in IBS patients in Iran.

So the question about this research is whether there is a difference between self-knowledge of coherence and impulsiveness in patients with irritable bowel syndrome with normal people?

## Methods

The method of this study was case-control, and because of lack of involvement of the researcher in the studied variables, causal-comparative. The study population of this study consisted of men and women with IBS referring to gastroenterologists and normal people in Isfahan from 21 March 2018 to 21

June 2018.

In this study, non-random sampling method was used to select participants. A total of 150 patients with IBS were selected from among those who referred to the gastroenterology clinics and 150 healthy people were selected by convenience sampling.

This sample size was selected according to the relevant scientific resources. For example, Delaware<sup>27</sup> argues that in the comparative research method, 100 individuals can be selected for each group so that the research findings can be generalized.

The members of the two groups were matched by demographic characteristics such as gender, age, marital status, and education level.

In this research, the following questionnaires were used:

The inclusion criteria included IBS diagnosis based on a gastroenterologist, being 18-65 years, having an education level of at least high school diploma and providing informed consent to participate in the study; and the exclusion criteria included suffering from cognitive impairment such as dementia, Intellectual developmental disorder, major psychiatric disorder such as schizophrenia, bipolar I disorder, major depressive disorder, digestive comorbidities, and lack of consent to participate in the study or withdrawal from it during the completion of questionnaires.

### Self-coherence Scale

Self-coherence scale is the result of revision of the theory of two-dimensional self-awareness, experiential and reflective, that measures both dimensions in a coherent and integrated manner within a single form consisting of 12 items,<sup>18</sup> rated on a 5-point Likert scale from mainly incorrect (0) to mainly correct.<sup>4</sup>

On this scale, all factors related to self-awareness, such as awareness and effort to understand emotions, behaviors, rational functions, moods, personality, and physical states have been taken into account. This questionnaire has three subscales, namely, reflective self-awareness, experiential self-awareness and self-coherence.



Obtaining a high score in this questionnaire reflects a low degree of self-coherence, and vice versa. Intercultural studies in Iran (723 individuals) and the USA (900 individuals) in three separate groups have shown that this scale is of good internal consistency, Measurement countermeasure and incremental, differential, criterion and convergent validity.<sup>18</sup>

In Iranian samples, the alpha coefficient of self-coherence was calculated at 0.82 and those of reflective self-awareness and experiential self-awareness at 0.82 and 0.87, respectively. Besides, the correlation coefficient of self-coherence with reflective self-awareness and experiential self-awareness was obtained 0.62 and 0.87, respectively, with a mindfulness of 0.55.

Similarly, with American samples, the alpha coefficient of self-coherence was calculated at 0.82 and those of reflective self-awareness and experiential self-awareness at 0.80 and 0.82, respectively.<sup>18</sup>

The reliability of this questionnaire was obtained 0.84, 0.82 and 0.84 for the subscales reflective self-awareness, experiential self-awareness, and self-coherence, respectively by calculating the Cronbach's alpha coefficient.

### Impulsiveness questionnaire

The impulsiveness questionnaire was developed by Patton, Stanford and Barratt in 1995 and has 30 items. Items are four-choice (Rarely: score 1 to Always: score 4). The lowest and highest possible scores are 30 and 120, respectively. A higher score means more impulsiveness in the respondent. Studies have shown that Barratt et al. impulsiveness questionnaire has a high correlation with Eysenck's Impulsivity Inventory, in that the constructs of the questions of both instruments reflects the dimensions of the hasty decision-making and lack of foresight.<sup>28</sup> The reliability of this questionnaire was acceptable for a sample including healthy and addicted individuals was appropriately correlated.<sup>29</sup>

In the study of Jalali Dehkordi, Aghababayi,<sup>30</sup> the reliability of this questionnaire using Cronbach's alpha coefficient on a sample of 35 individuals was

obtained 0.73 and its validity was reported to be desirable. Naderi, Haghshenas<sup>31</sup> in a research for the first time in Iran, validated the Barratt Impulsiveness Scale by calculating its correlation with Zuckerman Sensation Seeking Scale in the student community. Its Correlation coefficient (P-value < 0.005 and  $r = 0.28$ ) and its reliability coefficient were 0.72 and 0.75, respectively. The reliability of this questionnaire was calculated at 0.80 using Cronbach's alpha coefficient.

In this study, 150 people were selected among people with IBS referring to gastroenterology clinics by convenience sampling method.

Subsequently, 150 normal people who were matched by demographic variables such as gender, age, marital status and education level were selected.

Then, the questionnaires were administered to these people and they were asked to respond voluntarily and carefully to the questions related to demographic data, self-coherence and impulsiveness. The questionnaires were then collected and the data drawn from them analyzed. It should be noted that no dropout was observed in this study.

In order to observe the research ethics, the consent to participate in the study was obtained from participants and all stages of the research were explained to them. They were all assured that their information would remain confidential and they would not be required to write identifying information.

In this research, two levels of statistics, descriptive and inferential, were used to analyze the data. At descriptive level, the mean and standard deviation, and at inferential level, Shapiro-Wilk test to examine the normal distribution of variables, Levene's test to examine the equality of variances and also *t*-test to study the research hypothesis were used. Statistical analysis was performed using SPSS<sup>23</sup>.

### Results

The demographic data of our participants showed that their age range was 18-65 years old, while the

age range of 27 to 31 years was the most frequent (96 individuals: 32%).

In addition, the education level of participants was from high school diploma to master's degree, with bachelor's degree being the most frequent (80 individuals: 26.66%). Most of them were also married (197 individuals: 65.66%). Now, the descriptive findings of the study will be discussed.

The results of Table 1 indicate that the mean scores of self-coherence and impulsiveness in the group of people with IBS are different from those in the normal group.

But the significance of this difference will be later examined by inferential statistics.

Before providing the results of analysis of variance test, the assumptions of parametric tests were investigated.

Accordingly, the results of the Shapiro-Wilk test indicated that the assumption of the normal distribution of data in both self-coherence and impulsiveness variables was established in both patients with IBS and normal individuals (P-value = 0.21), which indicates the homogeneity of variances. Now, the results of inferential tables will be presented.

As the results of Table 2 show, there is a significant difference between two groups of people with IBS and normal people with respect to self-coherence and impulsiveness (P-value < 0.001). Descriptive results, however, also showed that the level of self-coherence was lower and the average impulsiveness was higher in the group with IBS than in the people without IBS.

**Table 1.** Mean and standard deviation of self-coherence and impulsiveness in normal individuals and patients with irritable bowel syndrome

Components	Normal individuals		Irritable bowel syndrome patients	
	Mean	SD		
Self-Coherence	17.48	3.17	25.20	4.50
Impulsiveness	77.73	14.17	47.13	7.87

**Table 2.** t-test results to compare the self-coherence and impulsiveness in people with irritable bowel syndrome and normal people

Variables	t value	df	Difference in standard error	Significance level	Upper and lower limits (95% confidence interval for mean difference)	
					Lower limit	Upper limit
Self-Coherence	-23.27	298	7.72	0.0001	-8.36	-7.07
Impulsiveness	11.23	198	30.60	0.0001	27.9	33.20

### Discussion

The purpose of this study was to compare the self-coherence and impulsiveness in people with IBS and normal people. The results of our data analysis showed that there was a significant difference in the self-coherence and impulsiveness between people with IBS and normal people in Isfahan (P-value < 0.001). Thus, people with IBS have lower levels of self-coherence and greater impulsiveness than normal people.

The result of this study is consistent with the findings of Banerjee et al.<sup>32</sup> and Meerveld et al.<sup>33</sup>. As Banerjee et al.<sup>32</sup> concluded in their research on anxiety and depression in IBS, the high prevalence of psychiatric disorders such as anxiety and depression in IBS patients causes other psychological components of these individuals to change.

In addition, Meerveld et al.<sup>33</sup> in a study on stress-related visceral pain mechanism concluded



that chronic physical and emotional stress can lead to sudden pain in advanced ages such as IBS. In addition, these researchers have shown that pain anxiety and consequently impulsiveness symptoms are higher in people with IBS than in the normal population.

The first finding of the study shows that people with IBS have lower self-coherence than normal people. According to the findings of Mazaheri<sup>34</sup> and Knowles et al.<sup>35</sup>, the processes related to cognition, self-perception, self-efficacy and anxiety are different between people with IBS and normal people.

Additionally, the results of this study are consistent with the findings of Fedorak et al.<sup>36</sup> regarding the significant difference in the psychological components such as self-coherence between people with IBS and normal people. As researchers have shown that patients with IBS have higher levels of anxiety and depression than healthy people.

In addition, Ghasemi<sup>37</sup> in a study to compare the anxiety and happiness between IBS patients with healthy people concluded that there was a significant difference in the overall anxiety sensitivity and overall happiness between the two groups.

To explain this, it should be noted that the painful and annoying process of the disease causes these patients to experience a higher perception of the disease and a higher sensitivity and thus experience more anxiety-triggering symptoms, behaviors, and cognitive and emotional processing.

This process makes people with IBS less mindful. Lack of mindfulness impairs the experience now and here in the affected people and causes their psychological and cognitive integration of the individual with their illness.

In this way, the patient gives low attention to oneself and cannot value and follow his own personal actions selectively and based on his/her intrinsic interest, and exhibits less attention and acceptance to his/her own current personal experiences, leading to decrease in his/her self-coherence.

In addition, the results of our study indicated that people with IBS had a higher impulsiveness than normal people.

The results of this study are consistent with the findings of Mohammadi, AliPour, Dehghzadeh, Farzad<sup>38</sup> on the differences between the components of difficulties facing emotional regulation, the difficulties doing purposeful behaviors and controlling impulses and lack of emotional awareness in patients with IBS. They argued that people with IBS are comparatively more vulnerable in controlling impulses and impulsive behaviors.

The potential causes of this phenomenon include the anxiety caused by the disease and the difficulties these individuals experience in cognitively regulating emotions. In addition, Porcelli et al.<sup>39</sup>, according to the results of their research, have argued that people with IBS have higher levels of Alexitimia and anxiety than normal people.

They also stated that Emotional awareness disorder may reflect the clinical symptoms of IBS.

### Conclusion

Based on the findings of this study, it can be concluded that the lack of utilization of emotional processes such as managing emotions and the inability to properly express feelings can affect the behavioral and emotional management in patients and, accordingly, more impulsive and unplanned behaviors are exhibited by them.

In addition, it should be noted that impulsiveness is influenced by the cognitive and emotional processes of individuals.

Therefore, when people with IBS, according to previous research findings, cannot manage their cognitive, metacognitive and emotional processes, they are expected to exhibit more impulsiveness.

The limitations of the current study include enrolling only people with IBS in Isfahan and the failure to control for certain variables such as social and intelligence status of participants and families' economic status, lack of using random sampling methods and methodological limitations

(using the causal-comparative research method and lack of causal inference from the findings) were the limitations of this research;

therefore, to increase the generalizability of the results, it is recommended, at the research level, this study be duplicated in other cities, regions and communities with various cultures, on patients with other diseases, with controlling for the above-mentioned variables, and with random sampling method and experimental methodology.

At the practice level, it is recommended that appropriate psychological treatments such as mindfulness therapy and acceptance and commitment-based therapy be conducted for patients with IBS to increase their self-coherence and decrease their impulsiveness.

#### Conflict of Interests

The authors declare no conflicts of interest.

#### Acknowledgements

The present article was derived from a master's thesis (no.: 23820705952059). Hereby, all the participants in the research, their families, and the authorities in the health centers of Isfahan, who fully cooperated with the research are acknowledged.

#### Authors' Contribution

Conceptualization, S.Kh. and H.T.; Methodology, H.T.; Formal Analysis, H.T., Investigation, S.Kh.; Data Curation, H.T.; Writing – Original Draft, V.S. and S.Kh.; Writing – Review and Editing, V.S.; Resources, S.H.; Supervision, H.T.

All authors read and approved the final manuscript and are responsible about any question related to article.

#### References

1. Aruna P, Puviarasan N, Palaniappan B. An investigation of neuro-fuzzy systems in psychosomatic disorders. *Expert Systems with Applications*. 2005;28(4):673-679.
2. Defrees DN, Bailey J. Irritable bowel syndrome: Epidemiology, pathophysiology, diagnosis, and treatment. *Primary Care*. 2017;44(4):655-671.
3. Vicario M, Alonso C, Guilarte M, et al. Chronic psychosocial stress induces reversible mitochondrial damage and corticotropin-releasing factor receptor type-1 upregulation in the rat intestine and IBS-like gut dysfunction. *Psychoneuroendocrinology*. 2012;37(1):65-77.
4. Defrees DN, Bailey J. Irritable bowel syndrome: epidemiology, pathophysiology, diagnosis, and treatment. *Primary Care*. 2017;44(4):655-671.
5. Laskaratos FM, Goodkin O, Thoua NM, Murray CD. Irritable bowel syndrome. *Medicine*. 2015;43(5):266-270.
6. Alammar N, Stein E. Irritable bowel syndrome: What treatments really work. *Medical Clinics*. 2019;103(1):137-152.
7. Singh R, Salem A, Nanavati J, Mullin GE. The role of diet in the treatment of irritable bowel syndrome: A systematic review. *Gastroenterology Clinics*. 2018;47(1):107-137.
8. Tosic Golubovic S, Miljkovic S, Nagorni A, Lazarevic D, Nikolic G. Irritable bowel syndrome, anxiety, depression and personality characteristics. *Psychiatria Danubina*. 2010; 22(3): 418-424.
9. Drossman DA, Chang L, Schneck S, Blackman C, Norton WF, Norton NJ. A focus group assessment of patient perspectives on irritable bowel syndrome and illness severity. *Digestive Diseases and Sciences*. 2009;54(7):1532-1541.
10. Spiller R, Aziz Q, Creed F, et al. Guidelines on the irritable bowel syndrome: Mechanisms and practical management. *Gut*. 2007;56(12):1770-1798.
11. Longstreth GF, Thompson WG, Chey WD, Houghton LA, Mearin F, Spiller RC. Functional bowel disorders. *Gastroenterology*. 2006;130(5): 1480-1491.
12. Hillilä MT, Färkkilä MA. Prevalence of irritable bowel syndrome according to different diagnostic criteria in a non-selected adult population. *Alimentary Pharmacology & Therapeutics*. 2004;20(3):339-345.
13. Breivik H, Collett B, Ventafridda V, Cohen R, Gallacher D. Survey of chronic pain in Europe:



- Prevalence, impact on daily life, and treatment. *European Journal of Pain*. 2006;10(4):287-333.
14. Hood MM, Jedel S. Mindfulness-based interventions in inflammatory bowel disease. *Gastroenterology Clinics of North America*, 2017; 46(4):859-874.
  15. Tahbaz Hosseinzadeh S, Ghorbani N, Nabavi SM. Comparison of self-destructive tendencies and integrative self-knowledge among multiple sclerosis and healthy people. *Contemporary Psychology*. 2011;6(2):35-44. [Persian]
  16. Shahmoohamadi K, Ghorbani N, Besharat MA, Nosrat Abadi M. The prospective effect of integrative self-knowledge, mindfulness and defensive styles on health. *Journal of Psychology and Education*. 2009;39(3):99-119. [Persian]
  17. Ghorbani N, Bing MN, Watson PJ, Davison HK, LeBreton DL. Individualist and collectivist values: Evidence of compatibility in Iran and the United States. *Personality and Individual Differences*. 2003;35(2):431-447.
  18. Ghorbani N, Watson PJ, Hargis MB. Integrative self-knowledge scale: Correlations and incremental validity of a cross-cultural measure developed in Iran and the United States. *The Journal of Psychology*. 2008;142(4):395-412.
  19. Sarafraz MR, Bahrami E, Zarandi AR. Self-Awareness process and BioPsychoSocioSpritual Health. *Journal of Research in Psychological Health*. 2011;4 (2):33-42. [Persian]
  20. Arianakia E, Hasani J. Impulsivity and cognitive emotion regulation strategies in patient with bipolar and major depressive disorder. *Advances in Cognitive Science*. 2014;16(2):1-10.
  21. Parker CH, Naliboff BD, Shih W, et al. Negative events during adulthood are associated with symptom severity and altered stress response in patients with irritable bowel syndrome. *Clinical Gastroenterology and Hepatology*. 2019. [In Press]
  22. Verdejo-García A, Lawrence AJ, Clark L. Impulsivity as a vulnerability marker for substance-use disorders: Review of findings from high-risk research, problem gamblers and genetic association studies. *Neuroscience & Biobehavioral Reviews*. 2008;32(4):777-810.
  23. Moeller FG, Barratt ES, Dougherty DM, Schmitz JM, Swann AC. Psychiatric aspects of impulsivity. *American Journal of Psychiatry*. 2001;158(11):1783-1793.
  24. Thorberg FA, Lyvers M. Attachment in relation to affect regulation and interpersonal functioning among substance use disorder in patients. *Addiction Research & Theory*. 2010;18(4):464-478.
  25. Heinz AJ, Bui L, Thomas KM, Blonigen DM. Distinct facets of impulsivity exhibit differential associations with substance use disorder treatment processes: A cross-sectional and prospective investigation among military veterans. *Journal of Substance Abuse Treatment*. 2015;55:21-28.
  26. Thabane M, Kottachchi DT, Marshall JK. Systematic review and meta-analysis: The incidence and prognosis of post-infectious irritable bowel syndrome. *Alimentary Pharmacology & Therapeutics*. 2007;26(4):535-544.
  27. Delavar A. Theoretical and practical foundations of research in humanities and social sciences. Tehran: Roshd publication; 2009. [Persian]
  28. Baer RA, Smith GT, Allen KB. Assessment of mindfulness by self-report: The Kentucky inventory of mindfulness skills. *Assessment*. 2004;11(3):191-206.
  29. Ekhtiari H, Safaei H, Esmaeeli Djavid G, Atefvahid MK, Edalati H, Mokri A. Reliability and validity of Persian versions of Eysenck, Barratt, Dickman and Zuckerman Questionnaires in assessing risky and impulsive behaviors. *Iranian Journal of Psychiatry and Clinical Psychology*. 2008;14(3):326-336. [Persian]
  30. Jalali DD, Aghababaei A. Comparing the effect of drug substance abuse prevention method on impulsiveness and coping strategies in male students. *Knowledge & Research in Applied Psychology*. 2013;13(4):5-17. [Persian]
  31. Naderi F, Haghshenas F. The relationship



- between impulsivity, loneliness and the mobile phone usage rate in male and female students of Ahvaz Islamic Azad University. *Journal of Social Psychology*. 2009;4(12):111-121. [Persian]
32. Banerjee A, Sarkhel S, Sarkar R, Dhali GK. Anxiety and depression in irritable bowel syndrome. *Indian Journal of Psychological Medicine*. 2017;39(6):741-745.
33. Greenwood Van Meerveld B, Johnson AC. Mechanisms of stress-induced visceral pain. *Journal of Neurogastroenterology and Motility*. 2018;24(1):7-18.
34. Mazaheri M. Prediction of Pain Intensity and Acceptance and Quality of Life in Patients with Irritable Bowel Syndrome Based on Feature of Interpersonal Forgiveness. *Qom University of Medical Sciences Journal*. 2015;9(9):26-34. [Persian]
35. Knowles SR, Austin DW, Sivanesan S, et al. Relations between symptom severity, illness perceptions, visceral sensitivity, coping strategies and well-being in irritable bowel syndrome guided by the common sense model of illness. *Psychology, Health & Medicine*. 2017;22(5): 524-534.
36. Fedorak RN, Vanner SJ, Paterson WG, Bridges RJ. Canadian digestive health foundation public impact series 3: Irritable bowel syndrome in Canada. Incidence, prevalence, and direct and indirect economic impact. *Canadian Journal of Gastroenterology and Hepatology*. 2012;26(5): 252-256.
37. Ghasemi N. The comparison of anxiety sensitivity and happiness in irritable bowel syndrome patients with normal matched group in Shiraz. *Fasa University of Medical Sciences*. 2012;2(2):101-112. [Persian]
38. Mohammadi N, Alipour A, , Daghighzadeh H, Farzad V. Comparing the difficulties of emotion regulation in patients with irritable bowel syndrome based on handedness. *Journal of Research in Behavioral Sciences*, 2015;12(4): 569-558. [Persian]
39. Porcelli P, De Carne M, Leandro G. Alexithymia and gastrointestinal-specific anxiety in moderate to severe irritable bowel syndrome. *Comprehensive Psychiatry*. 2014;55(7):1647-1653.