Original Article

The Effectiveness of Emotional Schema Therapy on the Emotional Schemas and Emotional Regulation in Irritable Bowel Syndrome: Single Subject Design

Arefeh Erfan, Ahmad Ali Noorbala[1], Saeed Karbasi Amel [2], Abolfazl Mohammadi, Peyman Adibi[3]

From the Department of Psychiatry, Tehran University of Medical Sciences, [1]Psychosomatic Medicine Research Center, Imam Khomeini Hospital, Tehran University of Medical Sciences, Tehran, [2]Department of Education and Psychology, Khorasgan Branch, Islamic Azad University, [3]Integrative Functional Gastroenterology Research Center, Isfahan University of Medical Sciences, Isfahan, Iran

Abstract

Background: Positive and negative emotional states are the most important factors in treatment and prevention process of psychosomatic diseases. This research aimed to investigate the effectiveness of emotional schemas' therapy on emotional schemas' modification and difficulties of emotion regulation in women with irritable bowel syndrome (IBS). **Materials and Methods:** This research was implemented in the framework of single-subject experimental design using step-wise multiple baselines plan. Five patients with IBS were selected as convenience sampling on the base of their willingness to participate and then they received emotional schema therapy (EST). Research tools included ROME III scale, SCID interview, emotional schemas questionnaire, and difficulties of emotional regulation. The analysis of data was done using visual analysis charts, recovery percentage, and reliable change index. **Results:** The results showed a decrease of scores in some maladaptive schemas and increase of some adaptive schemas than baseline in patients who received EST ($P \leq 0.05$). Furthermore, this treatment decreased scores of some emotion regulation difficulty components ($P \leq 0.05$). **Conclusion:** It seems that EST is an appropriate option for treatment of these patients because it is effective in improvement of emotional schemas and difficulties of emotional regulation.

Keywords: *Emotion regulation difficulties, emotional schema therapy, emotional schemas, irritable bowel syndrome*

Introduction

Irritable bowel syndrome (IBS) is a chronic functional gastrointestinal disorder with specific bowel problems including abdominal pain, diarrhea, constipation, emphysema, and swelling.[1] This disease has influenced 11% of the world people.[2] The anxiety that IBS patients' experience is influenced by visceral sensations resulted to behavioral avoidance, hypervigilance, and preservation of their symptoms.[3] There is no known cause for IBS.[4] The recent research evidence considers functional gastrointestinal disorders due to intricate interaction of biological, psychological, and social factors.[5] The studies show that IBS accompanies other functional gastrointestinal[6] and affective disorders.[7,8]

Treatment strategies of IBS include pharmacologic and nonpharmacologic approaches.[9] Reassurance, education, lifestyle, and dietary changes are sufficient for patients with mild symptoms, while patients with moderate-to-severe symptoms require drug and psychological treatments to change symptoms.[2] Psychological treatments such as different forms of cognitive behavioral therapy (CBT), brief form of insight-oriented psychotherapy, and gut-directed form of hypnotherapy are greatly interested for IBS.[6] Numerous researches have supported effectiveness of gut-directed form of hypnotherapy and CBT on IBS. These investigations showed that gut-directed form of hypnotherapy improves severity of IBS symptoms.[10-12] Moreover, CBT decreases severity of gut symptoms,[13-18] gastrointestinal symptoms-related anxiety, and social and economic costs of patients with IBS and improves their social adjustment.[14,15,19]

In a single-case experimental study, the effect of CBT was tested on 13 patients with IBS. Changing process was recorded during baseline, 5th, and 12th sessions of treatment and 6-month follow-up, and the

How to cite this article: Erfan A, Noorbala AA, Karbasi Amel S, Mohammadi A, Adibi P. The Effectiveness of Emotional Schema Therapy on the Emotional Schemas and Emotional Regulation in Irritable Bowel Syndrome: Single Subject Design. Adv Biomed Res 2018;7:72.

Received: May, 2016. **Accepted:** February, 2018.

Address for correspondence:
Dr. Abolfazl Mohammadi, Department of Psychiatry, Tehran University of Medical Sciences (TUMS), Tehran, Iran. E-mail: a-mohammadi@tums.ac.ir

Access this article online

Website: www.advbiores.net

DOI: 10.4103/abr.abr_113_16

Quick Response Code:

results showed that gastrointestinal symptoms, catastrophic thoughts about the pain, and the quality of life improved in >70% of patients.[20]

Previous research indicated that patients with IBS have problem in emotion regulation.[21,22] Research results of 240 patients with gastrointestinal disorders showed that difficulty in emotion regulation has indirect effect on the severity of gastrointestinal symptoms.[23]

Difficulty in emotion regulation may detect as intensification or excessive deactivation of emotion.[24] Emotional schema therapy (EST) is one of the most effective methods to improve of difficulty in emotion regulation. EST provides comprehensive and integrated model of emotion regulation combined with different skills such as emotional accreditation, identification, and elimination of misconceptions about emotions (modification of emotional schema), mindfulness, acceptance and willingness, kindness, empathy, self-improvement, emotional processing, cognitive restructuring, and stress reduction. The treatment helps people to express and process the emotions and also decreases difficulty in their regulation.[25]

Leahy codifies that EST derived from some aspects of traditional cognitive therapy and metacognitive and acceptance-based models. The treatment has less emphasized how thought produces emotion and more focused on thought content about emotions and its resultant inefficient opposition approaches. Emotional schema therapist uses some cognitive, tentative, and behavioral interventions to regulate and modify dysfunctional emotional schemas and emotion control strategies.[26]

Conceptual framework schema and people attitude to life are established for individual due to numerous experiences over the time and emotional schemas are the beliefs about emotions of themselves and others and how to regulate them.[24] In Leahy model, the schemas are validation (others understand how I feel), comprehensibility (my emotions do not mean for me), guilt and shame (I should not have these emotions), simple thoughts (I should not have mixed emotions), high values (my emotions reflect my high values), control (I am afraid my emotions will become out of control), rationality (I should be rational and no emotional person), duration (my emotions will continue for a long time), consensus (others' emotions are similar to mine), acceptance (I can accept emotions that I have), rumination (I sit in the corner and think I feel terrible), expression (I can allow myself to cry), and blame (others cause creation of these emotions in myself).[27]

Findings of numerous studies confirmed the effectiveness of EST on negative emotional schemas reduction in the individuals with depression,[28] difficulty in emotion regulation,[29] and treatment of patients with personality disorders.[30] So far, it seems that there is no research about the effectiveness of EST on the patients with IBS. Therefore, according to the above discussions, the present study was done about the effectiveness of EST on emotional schemas' modification and emotion regulation difficulty (emotion dysregulation) in patients with IBS.

Materials and Methods

Study design and participants

The method of research is of single-subject design type that used A-B schema with RCT code of IRCT201622826807N1. Statistical population included all women with IBS referring to a specialist in Isfahan in summer 2016. Sampling was done with simple method, and for this purpose, we informed the patients about the education course, aims, and the conditions of participation. Inclusion criteria were (ROME III diagnostic criteria confirmed by gastroenterologist for differentiation IBS from other functional gastrointestinal disorders, no consumption of psychiatry drugs during 3 months ago, no participation in psychological interventions during 6 months ago, having high school education or higher, dominance on Persian language, and being satisfied for participation) and exclusion from the study (no participation in three consecutive sessions). Among the patients 20 cases declared that after the briefing, five of them announced their definitive presence and received written consent form.

To control the demographic effects, subjects were matched on the base of age, education, disease history, lack of other physical diseases, and mental disorders. One patient has been excluded because of more than two sessions' absence. The study design consisted of three phases of baseline, intervention, and follow-up, which in the baseline stage, subjects were tested with Difficulties in Emotion Regulation Scale (DERS) and Emotional Schemas Scale (ESS-P). Then, at sessions 3, 6, 9, and 12, patients were asked to answer the questionnaire again. The follow-up sessions were in 1, 2, and 3 months later in the same place, and after knowing the physical and mental health of the patients, they were reevaluated using the same scales to estimate the scores of patients in incompatible and consistent emotional schemas and the difficulty emotion regulation and the effectiveness of EST. It should be noted that, after completion of the questionnaires (at each stage), each of them was examined by the researcher so that no questions were remained unanswered. In case of incomplete answer, with further explanation, the participants were asked to answer the remaining questions. The basis of the sessions was conducted according to a general sampling of Leahy emotional schema scale (LESS) (2002) in 12 sessions; patients performed baseline stage tests at the beginning as well as in the 3rd, 6th, 9th, and 12th sessions. Furthermore, in the last session, each patient was asked to monthly referring for 3 months to do follow-up tests.

The first position (A) was generally the basic line, and in the second position (B), therapeutic intervention was

performed, and then dependent variable was evaluated. In the study, independent variable was EST and dependent variables were therapeutic variations due to the use of treatment method on modification of emotional schemas and emotion regulation difficulty. A content summary of EST sessions has been presented in Table 1.

According to the observed treatment sessions' content, therapist used skill for patients and clarified it with examples of themselves.

Persian version of emotional schemas scale

Emotional schemas' scale has been prepared by Leahy (LESS) on the base of himself emotional schemas' model as a self-report scale. Persian version of the scale is provided by Khanzadeh *et al*. (2012) The results of exploratory factor analysis showed that, from 16 derived factors of the scale, 12 factors are coordinate with Leahy emotional schemas, 3 factors were eliminated because they loaded only one items and a new factor called emotional self-awareness is added. Obtained results from investigation of the scales' reliability are between 0.56 and 0.71. Furthermore, the internal consistency coefficient for total scale and subscales was obtained by Cronbach's alpha method as 0.82 and 0.59–0.72, respectively. Generally, findings of the two methods indicate acceptable reliability of scale.[31] Note that among 13 schemas, 6 schemas (emotional self-awareness, emotional expression, being comprehensible, higher values, emotional acceptance, and agreement) are adaptive schemas and 7 schemas (rumination, being uncontrollable, guilt, seeking confirmation, blame, endeavor for being logic, and simplistic views of emotions) are maladaptive.

Difficulty in emotion regulation scale

DERS[32] is a self-report scale that has 36 terms. It has been designed for evaluation of emotion irregularity in format of six subscales including nonacceptance of negative emotional responses, difficulties for engaging in goal-directed behavior when distressed, difficulties for controlling impulsive behaviors when distressed, lack of emotional awareness, limited access to effective emotion regulation strategies, and lack of emotional clarity in the Likert 5-point scale from almost never (1) to almost ever (5). The reliability of external form of the questionnaire has been reported using Cronbach's alpha of 0.93 and 0.8–0.89 for total scale and subscales, respectively. Furthermore, reliability of total scale and subscales has been calculated by test–retest method as 0.88 and 0.8–0.89, respectively. In Iran, Khanzadeh *et al*. have translated the scale to Persian and normalized it. Its subscales' validity was reported as 0.7–0.91 and 0.66–0.88 by retesting and Cronbach's alpha methods, respectively.[33]

Like more single-subject schemas, the first strategy of results' analysis was a visual method. In addition to visual and chart analysis, recovery percentage[34] and also reliable change index (RCI) that have initially been presented by Jacobson and Truax were used to analyze resultant data

Table 1: A summary of content of sessions of emotional schema therapy

Sessions	Content of sessions
First session	Formation of therapeutic relation, planning of case formulation, presentation of treatment logic and treatment aims, presentation of etiologic model, and treatment from emotional schema therapy approach
Second session	Normal and problematic emotions, consideration of painful emotions of patients and their normalization, emotional self-awareness, instruction and introduction of emotion, identification and labeling of emotion, differentiation between different emotions, identification of emotion in physical and psychological state
Third session	Self-evaluation with the aim of recognizing their own emotional experiences, self-evaluation with the aim to identify the amount of individuals emotion vulnerability, self-evaluation aimed to identify the strategies of emotion regulation, cognitive issues of emotion responses, physiologic issues of emotional responses, behavioral outcomes of emotional responses and relation between them, introduction of anger emotion, and the ways for anger management
Fourth session	Proceeding identified emotional schemas in patient, verbal challenges, and Socratic dialog
Fifth session	Proceeding other identified emotional schemas in patient and verbal challenges and Socratic dialog, instruction of the techniques to write negative memorabilia with the aim of facilitated emotion processing
Sixth session	Prevention of social seclusion and avoidance, instruction of problem-solving strategy, interpersonal skills training (talking, self-expression and conflict resolution), preliminary introduction of the conception of acceptance, and emotion validation
Seventh session	Helping people for acceptance of their own emotion, proceeding intervening emotional schemas in acceptance and experience of painful emotion, presentation of detached mindfulness technique
Eighth session	Introduction of different negative beliefs about emotions and challenge with them, identification of false evaluation, and their effects on the emotion states
Ninth session	Identification of the amount and the way of using inhibition strategy and investigation of its emotion outcomes, instruction of emotion expression, encounter, training of abreaction, relaxation
Tenth session	Discussion about severity of schemas before and after the confrontation, proceeding reminder avoidance of patient
Eleventh session	Review of sessions and practice of learned skills
Twelfth session	Work on therapy program (prevention of recurrence), schematization for support sessions, homework, commitment to continuous usage of treatment practices

of single-subject experimental schemas.[35] In the RCI formula, if variations' rate or difference between before and after treatment is more than 1.96, by regarding 0.5 error probability, it can be concluded that obtained change and improvement are due to therapy intervention and resultant change are not by accident.

Results

Of five participants, one case withdrawn the treatment from the third session because of his parent death. Of four patients, three people had BA degree and one had MA. An individual was single and three of them were married. Mean age of the patients was 34 years. Results of emotional schemas tests and emotion regulation difficulties of patients during pretest, posttest, 3-month follow-up, and recovery percentage and RCI were reported in Table 2 [Figures 1-3].

According to Table 1, total recovery percentage of adaptive emotional schemas was 57.26 in posttest. However, the value of RCI of adaptive emotional schemas score was not significant in all patients; however, an increase of scores was observed in the charts. In follow-up test, recovery percentage was 83.09 and RCI of each patient was higher than 1.96 and clinically significant ($P \leq 0.05$).

About adaptive emotional schemas, the amount of RCI of emotional self-awareness schemas score, the acceptance of emotions, and consensus of the first, second, and fourth patient (at posttreatment and follow-up stage) and third patient (at follow-up stage) was higher than 1.96. The amount of RCI and the emotion expression schemas' score of the first, third, and fourth patient (at follow-up stage) and the second patient (at posttreatment and follow-up stage) was higher than 1.96 that can be concluded that obtained change or improvement was due to interventional effect ($P \leq 0.05$) (confidence interval of 95%).

The amount of RCI of the score of being comprehensible schema at posttreatment stage was not statistically significant in all four patients. Furthermore, the amount of RCI of the score of higher values at posttreatment and

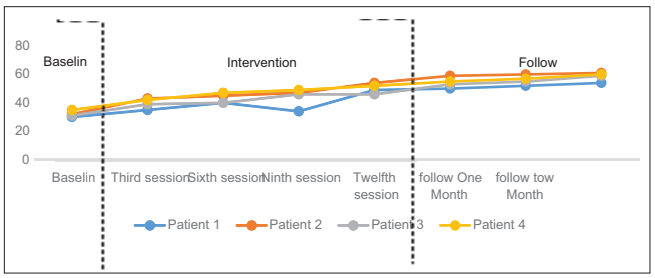

Figure 1: Changes of patients' scores in adaptive emotional schemas

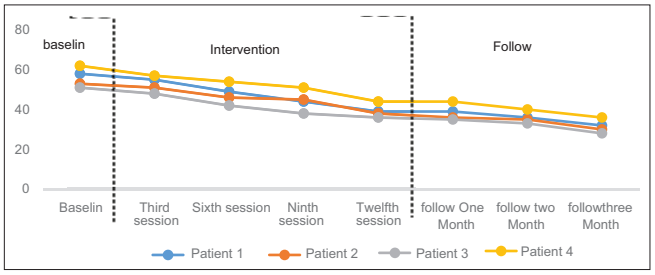

Figure 2: Changes of patients' scores in maladaptive schemas

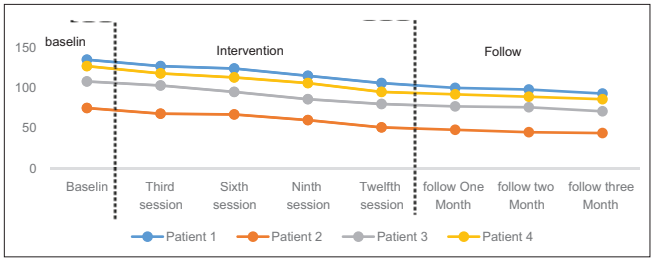

Figure 3: Changes of patients' scores in emotion regulation difficulty

Table 2: Subjects' scores in emotional schemas and emotion regulation difficulties scale

Steps of intervention	Adaptive schemas				Maladaptive schemas				Emotion regulation difficulty			
	First patient	Second patient	Third patient	Fourth patient	First patient	Second patient	Third patient	Forth patient	First patient	Second patient	Third patient	Forth patient
Before intervention	30	32	31	35	58	53	51	62	135	75	107	123
After intervention	49	54	46	52	39	38	36	44	106	51	80	93
Recovery percentage	63.33	68.75	48.39	48.57	−32.76*	−28.30	−29.41	−29.30	−21.48	−32	−25.23	−24.39
Total recovery percent	57.26				−29.88				−25.78			
reliable change index	1.64	1.91	1.30	1.48	−1.48	−1.17	−1.17	−1.41	−1.53	−1.26	−1.42	−1.58
3 months follow up	54	61	59	60	32	30	28	36	93	44	70	58
Recovery percentage	80	90.63	90.32	71.42	−44.83	−43.40	−45.10	−41.94	−31.11	−41.33	−34.58	−30.89
Total recovery percentage	83.09				−43.81				−34.48			
Reliable change index	2.08	2.52	2.43	2.17	−2.26	−1.99	−1.99	−2.26	−2.21	−1.33	−1.95	−2

*Negative symbol reduction of scores

follow-up stage was not statistically significant in all four patients ($P > 0.05$).

Total recovery percentage in maladaptive schemas was −29.88 in posttest. However, posttest amount of RCI of the score of maladaptive emotional schemas was not significant in all patients. In follow-up test, recovery percentage was −43.81 and RCI of the first and forth patients was higher than 1.96 and clinically significant ($P \leq 0.05$). However, in accordance with the reduction of scores and recovery percentage than posttest, RCI of the second and third patients was not significant ($P > 0.05$). It can be told that treatment also influences maladaptive schemas of both patients because their baseline scores were low.

The amount of RCI of the score of guilt schemas at posttreatment and follow-up stage was not statistically significant in all four patients. The amount of RCI of the score of being uncontrollable and seeking confirmation schemas of the first patient (at posttreatment stage) and the second, third, and fourth patient (at posttreatment and follow-up stage) was not statistically significant. Moreover, the amount of RCI of blame schema score for the first, second, and third patients (at posttreatment and follow-up stage) and fourth patient (at posttreatment stage) was not statistically significant ($P > 0.05$).

Total recovery percentage of emotion regulation difficulty was −25.78 in posttest. The amount of RCI was not significant in all patients. In follow-up, total recovery percentage was −34.48. Furthermore, RCI of the first and fourth patients was significant. Due to low scores, it can be mentioned that therapy influences emotion regulation difficulty of both patients.

Discussion

The results showed that EST affects modification of adaptive emotional schemas in patients with IBS. In this research, changing process of patients' adaptive emotional schemas was investigated during 3-month follow-up sessions. The result showed that obtained changes by EST were considerable in patients with IBS.

To explain the changes, it is argued that EST uses different kinds of techniques so that patient can apply more adaptive sets of interpretations, evaluations, and strategies to increase psychological flexibility. Studies suggest that there is a significant relationship between psychological flexibility and more adaptive emotional schemas as the higher grade of psychological flexibility, the more adaptive emotional schemas.[36] Current results were in agreement with these findings.

Changing process of maladaptive emotional schemas was done through 3-month follow up sessions for the first and fourth patients and the changes were clinically significant. However, changing process of the second and third patients was not significant because their maladaptive emotional schemas score was basically lower. Therefore, it can be said that EST was successful to modify maladaptive emotional schemas in patients with IBS.

One of the major aims of EST is modification of emotional schemas.[25] Emotional schema therapist uses some cognitive, experimental, and behavior interventions to improve emotional schemas.[26] Some techniques and skills of EST therapeutic protocol are referred to explanation of the findings. The treatment helps patients to express and process emotions by increase of acceptance, mindfulness, and cognitive restructuring.[25]

Leahy believes that emotional schemas of patients cause emotion avoidance.[27] Often, avoidance of painful emotion or getting from it is immediate problematic behavior and the most powerful retentive factor.[37] Avoidance is an active attempt to control or eliminate immediate experience of a negative internal event such as negative thought, emotion, memory, and/or physical sense. When patient has false beliefs about encountering with unpleasant internal events (thoughts, emotions, memories, and physical senses) it causes to be worried about change of behavior pattern. Thus, patient can be encountered the false belief by therapist through acceptance-related interventions.[38] Acceptance is awareness of internal experiences (thoughts, emotions, and physical senses) and their acceptance without attempt for avoiding them.[39] There is growing experimental support that acceptance-based interventions than direct interventions for stop emotion responses lead to more endurance of annoying emotion responses and more encounter tendency to annoying stimulants. On the contrary, acceptance of annoying emotion responses may indeed be better strategy for decrease them.[40]

EST helps patient with IBS understand his emotion, correctly express or experience his emotion, experience different emotions without high energy expenditure for avoidance of them, and accept complex and inconsistent emotions by acceptance technique.

Mindfulness is another technique of EST. Mindfulness plays a fundamental role to generate and maintain adaptive and flexible orientation against emotional experiences.[35] Mindfulness is used as a tool for increase of safe awareness about emotional processing.[41] Mindfulness means the presence of mind and being objective and free from judgment at now.[42] It allows person to thoughtfully not offhand and involuntarily response to events. Mindfulness clears experiences and makes individuals to live every moment their life. This leads to reduction of negative psychological symptoms.[43] Most important purpose of mindfulness is the ability to attention control. Inability to attention control causes various problems that include the inability to stop thinking about past, future, or present problems and the inability to focus on important duties. Mindfulness skills can help decrease pain symptoms[44] and rumination.[42]

Moreover, cognitive restructuring as a EST technique allows the patient to learn that change of events' interpretation can modify emotional responses and induce higher efficiency sensation when experiences undesirable emotion.[33] During treatment, EST instructs patient with IBS using cognitive restructuring technique that others feel emotions similar to his ones, too.

In this research, in addition to investigation of EST effectiveness on emotional schemas' modification in patients with IBS, the impact of the interventional method on the emotion regulation difficulty (emotion dysfunction) was studied. The results of the present study indicated high score of emotion regulation difficulty in baseline. The findings are consistent with the results of previous investigations that suggest patients with IBS have difficulty in their emotion regulation.[21,22] In the current research, changing process of emotion regulation difficulty of the first and fourth patients was performed through 3-month follow-up sessions. This change was statistically significant. However, there was no such relation for the second and third patients because of lower emotion regulation difficulty in baseline than the other patients. Therefore, it can be concluded that EST is successful about changing of emotion regulation difficulty in patients with IBS. EST is the most effective methods to improve emotions regulation difficulty and provides integrated model of emotion regulation with a combination of several skills.[25]

Emotion regulation difficulty means inability to clarifying and labeling of emotions, negative beliefs about emotions, and unsuitable solutions for the management of emotional experiences.[41] EST helps the patient identify and label different emotions and normalize emotional experiences and recognize problematic strategies and beliefs.[26] During treatment period, EST instructs patient with IBS to perform more effective emotion regulation when he is confused and to use more adaptive strategies for the management of emotional experiences. EST helps patient with IBS cope difficulty of focusing, ending duties, and control of behavior when he feels negative emotions.

Conclusion

Totally, the results show that EST affects modification of emotional schemas and emotion regulation difficulty of patients with IBS and it can be used to modify emotional schemas and emotion regulation of patients with IBS. However, there were some limitations including small sampling and being single-sex to generalize the findings. Thus, more studies with larger samples are necessary to remove the limitations and confirm efficiency and utility of EST intervention in IBS patients.

Acknowledgment

This article is the result of an approved MSc thesis in Tehran University of Medical Sciences (TUMS). The authors wish to thank the vice chancellor on research in Tehran University of Medical Sciences who supported this study and also wish to thank all participants, Medical Education Board members for their excellent cooperation, and other experts for their great help in conducting this research.

Financial support and sponsorship

This study was financially supported by Tehran University of Medical Sciences.

Conflicts of interest

There are no conflicts of interest.

References

1. Phillips K, Wright BJ, Kent S. Psychosocial predictors of irritable bowel syndrome diagnosis and symptom severity. J Psychosom Res 2013;75:467-74.
2. Almquist E, Törnblom H, Simrén M. Practical management of irritable bowel syndrome: A clinical review. Minerva Gastroenterol Dietol 2016;62:30-48.
3. Wolitzky-Taylor K, Craske MG, Labus JS, Mayer EA, Naliboff BD. Visceral sensitivity as a mediator of outcome in the treatment of irritable bowel syndrome. Behav Res Ther 2012;50:647-50.
4. Burgell RE, Asthana AK, Gibson PR. Irritable bowel syndrome in quiescent inflammatory bowel disease: A review. Minerva Gastroenterol Dietol 2015;61:201-13.
5. Levy RL, Olden KW, Naliboff BD, Bradley LA, Francisconi C, Drossman DA, *et al.* Psychosocial aspects of the functional gastrointestinal disorders. Gastroenterology 2006;130:1447-58.
6. Naliboff BD, Fresé MP, Rapgay L. Mind/Body psychological treatments for irritable bowel syndrome. Evid Based Complement Alternat Med 2008;5:41-50.
7. Fond G, Loundou A, Hamdani N, Boukouaci W, Dargel A, Oliveira J, *et al.* Anxiety and depression comorbidities in irritable bowel syndrome (IBS): A systematic review and meta-analysis. Eur Arch Psychiatry Clin Neurosci 2014;264:651-60.
8. Lee SP, Sung IK, Kim JH, Lee SY, Park HS, Shim CS, *et al.* The effect of emotional stress and depression on the prevalence of digestive diseases. J Neurogastroenterol Motil 2015;21:273-82.
9. Lacy BE, Chey WD, Lembo AJ. New and emerging treatment options for irritable bowel syndrome. Gastroenterol Hepatol (N Y) 2015;11:1-9.
10. Lindfors P, Ljótsson B, Bjornsson E, Abrahamsson H, Simrén M. Patient satisfaction after gut-directed hypnotherapy in irritable bowel syndrome. Neurogastroenterol Motil 2013;25:169-e86.
11. Lövdahl J, Ringström G, Agerforz P, Törnblom H, Simrén M. Nurse-administered, gut-directed hypnotherapy in IBS: Efficacy and factors predicting a positive response. Am J Clin Hypn 2015;58:100-14.
12. Peters SL, Muir JG, Gibson PR. Review article: Gut-directed hypnotherapy in the management of irritable bowel syndrome and inflammatory bowel disease. Aliment Pharmacol Ther 2015;41:1104-15.
13. Lackner JM, Gudleski GD, Keefer L, Krasner SS, Powell C, Katz LA, *et al.* Rapid response to cognitive behavior therapy predicts treatment outcome in patients with irritable bowel syndrome. Clin Gastroenterol Hepatol 2010;8:426-32.
14. Ljótsson B, Hedman E, Lindfors P, Hursti T, Lindefors N, Andersson G, *et al.* Long-term follow-up of internet-delivered exposure and mindfulness based treatment for irritable bowel syndrome. Behav Res Ther 2011;49:58-61.

15. Chilcot J, Moss-Morris R. Changes in illness-related cognitions rather than distress mediate improvements in irritable bowel syndrome (IBS) symptoms and disability following a brief cognitive behavioural therapy intervention. Behav Res Ther 2013;51:690-5.
16. Tang QL, Lin GY, Zhang MQ. Cognitive-behavioral therapy for the management of irritable bowel syndrome. World J Gastroenterol 2013;19:8605-10.
17. Jang AL, Hwang SK, Kim DU. The effects of cognitive behavioral therapy in female nursing students with irritable bowel syndrome: A randomized trial. Eur J Gastroenterol Hepatol 2014;26:918-26.
18. Li L, Xiong L, Zhang S, Yu Q, Chen M. Cognitive-behavioral therapy for irritable bowel syndrome: A meta-analysis. J Psychosom Res 2014;77:1-2.
19. Lackner JM, Keefer L, Jaccard J, Firth R, Brenner D, Bratten J, *et al.* The irritable bowel syndrome outcome study (IBSOS): Rationale and design of a randomized, placebo-controlled trial with 12 month follow up of self- versus clinician-administered CBT for moderate to severe irritable bowel syndrome. Contemp Clin Trials 2012;33:1293-310.
20. Boersma K, Ljótsson B, Edebol-Carlman H, Schrooten M, Linton SJ, Brummer RJ, *et al.* Exposure-based cognitive behavioral therapy for irritable bowel syndrome. A single-case experimental design across 13 subjects. Cogn Behav Ther 2016;45:415-30.
21. Sayar K, Solmaz M, Trablus S, Ozturk M, Acar B. Alexithymia in irritable bowel syndrome. Turk J Psychiatry 2000;11:190-7.
22. Porcelli P, De Carne M, Leandro G. Alexithymia and gastrointestinal-specific anxiety in moderate to severe irritable bowel syndrome. Compr Psychiatry 2014;55:1647-53.
23. Aliakbari-Dehkordi M, Alipoor A, Mohammadi N, Daghaghzadeh H. The structural model of difficulties in emotion regulation, psychological problems, somatization and gastrointestinal symptoms intensity in functional gastrointestinal disorders. J Isfahan Med Sch 2015;33:28-44.
24. Leahy RL. Emotional Schema Therapy. New York: Guilford Press; 2015.
25. Davoodi R. The effect of emotional schemas-based group therapy on emotion regulation in married women: A case study of Isfahan. Adv Environ Biol 2014;8;1458-65.
26. Herbert JD, Forman EM. Emotional schema therapy: A bridge over troubled waters. In: Leahy RL, editor. Acceptance and Mindfulness in Cognitive Behavior Therapy: Understanding and Applying the New Therapies. New York: Wiley;2012.
27. Leahy RL. Emotional schemas and resistance to change in anxiety disorders. Cogn Behav Pract 2007;14:36-45.
28. Rezaee M, Rezaee M. Effectiveness of emotional schema therapy on emotional schemas in major depressive patients. 1st International Conference on Psychology & Behavioral Sciences. Tehran; 2015.
29. Daneshmandi S, Izadikhah Z, Kazemi H, Mehrabi HA. The effectiveness of emotional schema therapy on emotional schemas of female victims of child abuse and neglect. J Shahid Sadoughi Univ Med Sci 2014;22:1481-94.
30. Zorn P, Roder V, Soravia L, Tschacher W. Evaluation of the "Schema-focused emotive behavioural therapy" (SET) for patients with personality disorders: Results of a randomised controlled trial. Psychother Psychosom Med Psychol 2008;58:371-8.
31. Khanzadah M, Edrisi F, Muhammadkhani S, Sa'idian M. Factor structure and psychometric properties of emotional schema scale. J Clin Psychol 2013;11:91-117.
32. Gratz KL, Roemer L. Multidimensional assessment of emotion regulation and dysregulation: Factor structure, and initial validation of the difficulties in emotion regulation scale. J Psychopathol Behav Assess 2004;26:41-54.
33. Khanzadeh M, Saidian M, Hosseinchary M, Edressi F. Factor structure and psychometric properties of difficulties in emotional regulation scale. J Behav Sci 2012;6:87-96.
34. Hamidpour H. The importance of methodology in studies of cognitive – Behavioral. Baztabe Danesh 2000;3:49-56.
35. Jacobson NS, Truax P. Clinical significance: A statistical approach to defining meaningful change in psychotherapy research. J Consult Clin Psychol 1991;59:12-9.
36. Leahy RL, Tirch D, Napolitano LA. Emotion Regulation in Psychotherapy: A Practitioner's Guide. Translated by Rad M. Tehran: Arjmand; 2014.
37. Hawton K, Salkoovskis PM, Kirk J, Clark DM. Cognitive Behaviour Therapy for Psychiatric Problems (A Practical Guide). Translated by Ghassemzadeh H. Oxford: Oxford University Press; 1989.
38. Izadi R, Abedi MR. Acceptance & Commitment Therapy. Tehran: Jungle; 2014.
39. Smout M. Psychotherapy for methamphetamine dependence treatment manual. Drug and Alcohol Services South Australia; 2008.
40. Kanter JW, Busch AM, Rusch LC. Behavioral Activation. Translated by Fereidouni M. Tehran: Arjmand; 2012.
41. Mehrabi A, Taherifar Z. Emotion regulation therapy. The Introduction of the Third Generation Cognitive-Behavioral Therapies. Tehran: Arjmand; 2015.
42. Rostami A, Shariatnia K, Khajehvand Khoshli A. The relationship between self-efficacy and mind fullness with rumination among students of Islamic Azad University, Shahrood Branch. Med Sci 2015;24:254-9.
43. Ahmadvand Z, Heydarinasab L, Shairi MR. Prediction of psychological well – Being based on the components of mindfulness. Health Psychol 2012;1:60-9.
44. Kafi SM. Diagnosis and Treatment Addiction. Mashhad: Qalamazinreza; 2014.