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Effectiveness of Mindfulness in Decreasing the Anxiety and Depression of Patients Suffering from Irritable Bowel Syndrome

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ABSTRACT

Background: Irritable bowel syndrome (IBS) is a functional disorder of the lower gastrointestinal (GI) tract caused by stress and is also is associated with anxiety and depression which may benefit from a treatment such as mindfulness.
Objectives: to determine the effectiveness of the mindfulness in decreasing the anxiety and depression in the patients suffering from IBS.
Methods: The research design was based on single-subject. Three IBS patients diagnosed by Rome-II criteria participated in this treatment project in Tabriz in 2015 voluntarily and with their personal consent. Eight sessions of Mindfulness-Based Stress Reduction (MBSR) were held for them individually. Beck Anxiety Inventory (BAI) and Beck Depression Inventory-II (BDI-II) were used before starting the treatment and at the end of the second, fourth, sixth and eighth sessions regarding to their intensity of anxiety and depression.
Results: The anxiety and the depression scores of each subject were decreased in post-test comparing with pre-test. The percentage of the three patients' remission regarding to the anxiety by BAI were 86.67, 56.52 and 70.59 percent and the remission percentage average was 65.25. The percentage of remission regarding to the depression by BDI-II were 35.29, 65.12, 95.24 respectively, and the average percentage of the remission was 57.14.
Conclusion: Based on the research findings, the treatment education and MBSR had the positive impact on decreasing the anxiety and e depression of the patients suffering from IBS.

Keywords: Mindfulness; Anxiety; Depression; Irritable Bowel Syndrome

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Introduction

Irritable Bowel Syndrome (IBS) is one of the most common functional gastrointestinal disorders that 10-20% of the people in the world suffer from it [1]. Although most patients refer to receive medical aid, this disease has considerable costs for the patient and health-treatment system, and is remarkably effective on the life quality of the patient. Irritable Bowel Syndrome (IBS) is a gastrointestinal disorder

with the symptom of abdominal pain or discomfort. Bloating or abdominal distension are the visible symptoms in these patients. Dejection disorder can be seen in the form of diarrhea, constipation, or diarrhea and constipation, alternately. Currently, Rome-II criteria are used to diagnose the IBS disease [2].

The reports have indicated that there is a relationship between stress and IBS. The results of another research showed that the highest stress score belongs to death of spouse among 65 stressful situations of IBS patients' lives and the lowest stress score is related to mild physical disorders. In addition, the highest stress frequency in this group was related to increasing the living costs that 50% of the patients report this issue as the most common stresses of their lives; while, this extent is 42% in the control group [3]. Due to emotional problems of these patients and as a result of prolongation of this disorder, the patients make different decisions. Because of lack of remission in spite of numerous referring to physicians, some of them become disappointed and are deterred from further treatment[4]. Anxiety and depression have always been accompanied with physical illness and have had effect on the severity and proceeding of that disorder [5]. Psychological problems are common among IBS patients, and approximately 50% of these patients have anxiety or depression disorders. Symptoms of anxiety and depression in these patients due to high rate, have great impact on quality of life, interpersonal relationships, life satisfaction and affect the disease process therefore it is necessary to be considered the intervention on symptoms in these patients [6].

Considering that the provision of professional services of mental health to offer effective treatment strategies in order to confront with challenges related to anxiety is essential, so during the past years different treatment approaches have been developed to solve mental problems. One of these treatment approaches is cognitive-behavioral mindfulness. The mindfulness based treatment arising from extended researches in the field of identifying the factors and cognitive procedures are predictors of mental problems especially mood and anxiety that have been developed by Segal *et al.* [7]. The main hypothesis of mindfulness is that the human has two mind modes (doing mode and being mode) that processes the experiences through them. In mindfulness there are three main purposes; a) attention regulation, b) development of metacognitive awareness, c) decentralization and developing the acceptance with regard to mental modes and contents. Developing the awareness to this method enables the patients to observe the excitation of cognitive reactions more obviously and can decentralize such thought patterns and consider them as mental events that are not fact representations or self-characteristics [8].

Reviewing the previous researches indicates that the mindfulness causes remission of depression symptoms in treatment-resistant depressed patients [9], prevents depression, and reduces stress among school teachers [10]. It has been also reported that participating in mindfulness program has correlation with increasing the scores in mindfulness and decreasing the scores of psychological unrest and medical symptoms, in a way that it decreases 50% of anxiety and 28% of physical symptoms [11]. In all studies, it has been reported that mindfulness decreases the psychological

symptoms and increases welfare and public health [12,13].

Despite high prevalence of IBS and also various problems that are created for the patients, psychological interventions that are easily enforceable and more effective have been less investigated, Although previous research have proven effectiveness of group treatments such as cognitive behavioral therapy, mindfulness-based therapy acceptance and commitment, even in patients with irritable bowel syndrome, but present research that carried out by using a single-subject is useful because of the researchers controlled conditions and evidence of person-to-person subjects in a way that differs from previous ways, in confirming the effectiveness of mindfulness note. Accordingly, the present research was done to answer the question that if mindfulness education is effective in reducing the anxiety and depression in IBS patients?

Materials and Methods

The research design of this study is single-subject. The main purpose of these designs is to investigate the effectiveness of the independent variable (treatment or test) on one or more dependent variables [14] the independent variable of the present research is the treatment intervention in the form of mindfulness. The dependent variables of the research include depression and anxiety.

The study was done by the cooperation of two gastroenterologists, and three patients suffering from IBS. The mentioned patients were examined with regard to suffering from other digestive and infectious diseases. The information of the patients was confidential and they can refuse to participate in the research whenever they want.

Three IBS patients diagnosed by Rome-II criteria participated voluntarily in this treatment project in Tabriz in 2015 and with their personal consent. Participants' inclusion criteria were the consent of the participants, diagnosis of IBS by the physician, and being older than 20 years. Also, exclusion criteria were suffering from other severe psychological disorders, simultaneous receiving other treatment interventions, addiction, arbitrary consumption of drugs or other events related to self-treatment, and suffering from other serious disease except IBS.

Instruments

The Beck Depression Inventory-II (BDI-II, Beck *et al.*, 1996) is a self-report inventory including 21 items that has been designed by Beck to measure the depression intensity. Each item of this inventory includes 4 to 5 phrases. The phrases are arranged based on depression symptoms and signs and their intensity. For each question a score 0 to 3 is given. Cohner *et al*. have confirmed the validity of Beck Depression Inventory with the criteria of DSM-IV symptoms, and the reliability with the method of Cronbach's Alpha has been reported 0.84 in non-clinical sample and 0.75 in retest [15]. In the study by Kung *et al.* the positive correlation of 0.77 between Beck Depression Inventory and Patients Health Query (PHQ) has been reported [16]. The Persian version of BDI-II has reported the simultaneous validity of Persian copy of Beck Depression Inventory 0.45 with Obsessive-Compulsive Padua Scale [17].

The Beck Anxiety Inventory (BAI, Beck *et al.* 1990) is a self-report instrumental anxiety questionnaire including 21 items that is enforceable individually or for the group. The

scoring of Beck Anxiety Inventory is in the form of 4 degree scale of 0 to 3. From the total items, the total score of the Beck Anxiety Inventory is calculated. Minimum and maximum scores of each person equal 0 and 63 in this Inventory. The study of Muntingh *et al.* shows that the patients with various anxiety disorders acquire higher scores in comparison with normal people in Bach Anxiety Inventory [18]. Beck *et al.* have reported the reliability 0.92 with Cronbach's Alpha and the reliability of the retest 0.75 with the time interval of more than one week [19].The Persian version of BDI-II has reported that the validity between the evaluation of anxiety extent and the scores obtained from Beck Anxiety Inventory was 0.72. The reliability of Beck Anxiety Inventory retest has been 0.83 and the reliability has been measured 0.92 by the Cronbach's Alpha [20].

The content of mindfulness intervention program

Mindfulness based cognitive treatment has been designed by Segal *et al.* and based on stress reduction program for eight sessions (for group or individual and one session a week). The purpose of mindfulness based cognitive treatment is creation of an attitude or different relationship with the thoughts, feelings, and emotions that includes paying close and continuous attention and also having an attitude along with acceptance and free of judgment [7].

Educating Mindfulness Based Stress Reduction was done in 8 sessions and each session lasted for one hour and a half.

First session: includes giving pre-test, establish communication and concept building, essentially using mindfulness education and getting familiar with relaxation method

Second session: includes relaxation training for 14 groups of muscles such as forearm, arm, calf muscle, shank, thighs, abdomen, shoulders, neck, lip, eyes, jaw, lower and upper part of the forehead

Third session: includes relaxation training for 6 groups of muscles such as hands, arms, legs, thighs, abdomen, chest, neck, shoulders, jaw, forehead, lips, eyes, and relaxation homework

Fourth session: includes breathing mindfulness, a short review of the previous session, familiarity with breathing mindfulness method, training respiration technique along with relaxation and without thinking about other things, training breathing watching, and breathing mindfulness homework before sleeping for 20 minutes

Fifth session: includes training body monitoring technique, training the technique of paying attention to body movement while breathing, concentration on body parts and their movements, searching for physical sensations (such as hearing, tasting, etc.), and eating mindfulness homework (eating with calmness and by paying attention to the food taste).

Sixth session: includes training thoughts mindfulness, training paying attention to the mind, positive and negative thoughts, and their being pleasant or unpleasant, allowing the entrance of negative and positive thoughts to the mind and easily extruding them from the mind without judgment and paying close attention to them, and homework of writing positive and negative experiences without making judgments about them

Seventh session: includes full mindfulness, repeating the training of sessions 4, 5, and 6 each for 20 to 30 minutes

Eighth session: includes summarizing training sessions.

Data analysis

To investigate the four research hypotheses, graphic and chart analysis method as well as estimating the remission percentage were used. It should be noted that in single-subject research design, the data related to each subject are analyzed separately and using the mentioned methods, remission percentage was calculated using the following method:

$$MPI=[(\text{Baseline Mean}-\text{Treatment Phase Mean})/\text{Treatment phase Mean}]\times 100$$

Results

The first patient is a 33-year-old married man he has master degree and is self–employed.

The second patient: The patient is a 29–year–old woman. She has Diploma she is married and house wife.

The Third patient is a 32–year–old married woman. She has diploma and she is a house wife.

The changes of the patients' scores, in two inventories of BAI and BDI-II are reported as follow in table 1.

Table 1. The patients' scores of BAI and BDI at baseline and at treatment stages and remission percentage by Mindfulness Based Stress Reduction technique.

Inventory	Subject	Baseline	2nd session	4th session	6th session	8th session	Remission percentage
BAI*	Patient 1	15	13	7	7	2	86.67
	Patient 2	46	37	37	39	20	56.52
	Patient 3	34	21	13	11	10	70.59
	Average	31.66	23.66	19	19	10.66	66.32
BDI**-II	Patient 1	17	15	12	8	11	35.29
	Patient 2	43	42	32	32	15	65.12
	Patient 3	21	24	14	10	1	95.24
	Average	27	27	19.33	16.66	9	66.66

*BAI: Beck Anxiety Inventory; **BDI: Beck Depression Inventory

Considering the data related to Table 1 and Figure 1 that indicate the descending process of the subjects' scores in Beck Anxiety Inventory (BAI) and in Figure 2 indicating the descending process of the subjects' scores in Beck Depression Inventory II during treatment intervention, it can be mentioned that treatment by Mindfulness Based Stress Reduction has relative effectiveness on decreasing anxiety and depression symptoms; in a way that based on the results of remission percentages of the patients' anxiety were 86.67, 56.52, and 70.59 respectively and the average remission percentage was 66.32. In addition, remission percentages of the patients' depression were 35.29, 65.12, and 95.24 respectively and the average remission percentage was 66.66.

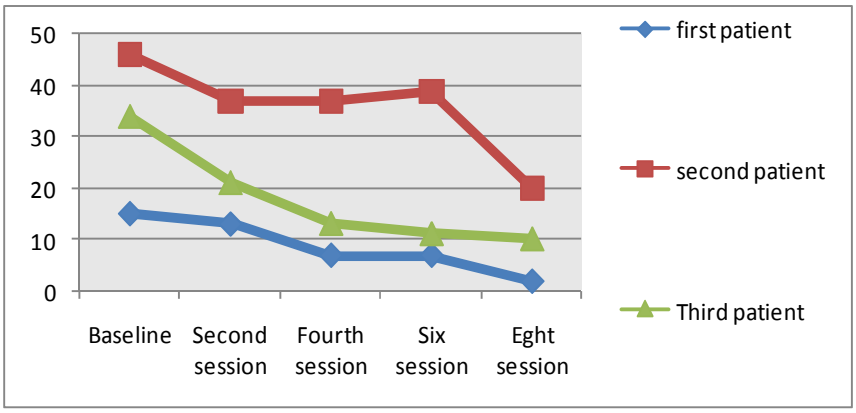

Fig 1. The changes of patients' scores of Beck Anxiety Inventory (BAI)

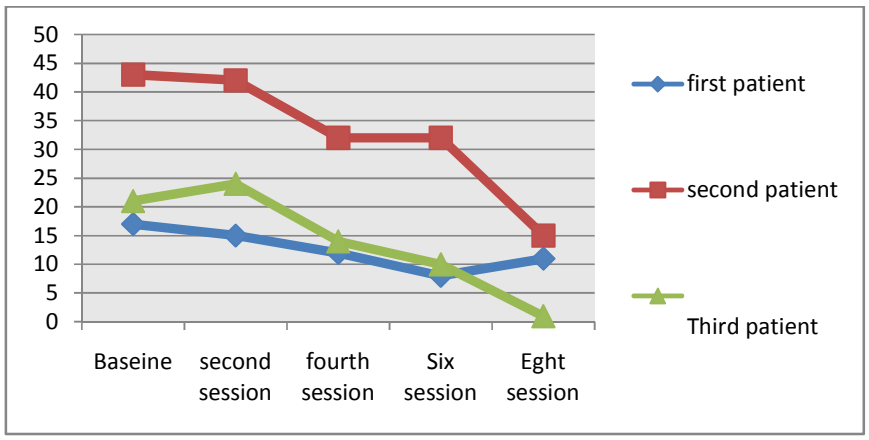

Fig 2. The changes of patients' scores of Beck Depression Inventory-II(BDI-II)

Discussion

The present research was done in the form of case study in three samples of IBS patients with the purpose of determining the effectiveness of mindfulness in decreasing anxiety and depression. The findings of the research indicated that mindfulness decreases the anxiety of IBS patients. This finding of the research is in line with the research by Kafi *et al.* [21] who indicated that mindfulness training in IBS patients, results in decreasing the anxiety and depression and physical symptoms of the patients. Furthermore, other researchers have shown that mindfulness in other social groups can decrease the people's anxiety [22,23].

With regard to probable reasons of the effect of mindfulness on anxiety, it seems that in mindfulness exercises (such as body checkout, mindful breathing meditation and being aware of thoughts, and three-stage pause and acceptance technique, etc.) the participants learn to accept their thoughts and feelings as they are at the moment, without judgment or trying to run away from them or changing them and learn how to relax beside them. There is no doubt that Mindfulness

Based Stress Reduction enables the person to accept the negative experiences of the life as the facts that exist and as part of himself/herself and cope with them. Besides, the program of Mindfulness Based Stress Reduction through decreasing the extent of relapsing cognitive distortions, negative thoughts, rumination and decreasing ineffective and passive confronting skill result in anxiety reduction [24,25]. In this regard, by studying mindfulness skills and intrapersonal behavior, Dekiser *et al.* [26] indicated that four mindfulness components (including observing, description, acting by awareness, and acceptance without judgment) have positive and high correlation with mindfulness skills; in addition, these components are along with better description and diagnosis of body feelings and lower anxiety and embarrassment.

Another finding of the research indicated that mindfulness results in depression reduction in IBS patients. This finding of the study is in line with the previous research that indicated mindfulness has positive effect on decreasing the depression of IBS patients [21-26].

Research findings about the positive effect of mindfulness on decreasing the depression intensity are in line with other reports that have confirmed the effectiveness of mindfulness in depression reduction in other social samples [9-12,20].

In explaining this finding of the research it can be inferred that mindfulness skills such as acceptance without judgment probably decrease the problems in excitation regulation because enables the people to face and cope with disturbing thoughts and feelings instead of avoiding them. Through facing with excitations the people learn that even the strong excitations cannot be threatening because they are temporary events that any person can tolerate them. In this regard, Narimani *et al.* [27] has shown that mindfulness trainings have been effective on mental health by affecting on excitation regulation. Basically, in mindfulness exercises, thoughts and feelings are not denied or suppressed, but they are paid attention and observed moment by moment as they occur without any judgment so that they enter the awareness domain [28]. In other words, mindfulness creates the feeling of "stable relief" beside our current experiences [29].

The findings of any research are exploitable considering its limitations. According to the findings of the present research, due to using self-report instrument in order to measure the anxiety and depression, and lack of follow up test, and also lack of comparison with medicine treatment this research has some limitations; and this implies the significance of complementary studies.

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Conflict of Interest

The authors have no conflict of interest.

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