Original article

The Efficacy of Acceptance and Commitment Therapy (ACT) Matrix on Anxiety and Quality Of Life of Patients with Irritable Bowel Syndrome

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Abstract

Introduction: Given the high prevalence of psychological disorders and the low quality of life in patients with irritable bowel syndrome (IBS), this study was conducted to evaluate the efficacy of acceptance and commitment therapy (ACT) matrix on anxiety and quality of life in patients with irritable bowel syndrome (IBS).

Method: This is a quasi-experimental study in which pre-test and post-test design with control group was used. The research population included all people with IBS referring to three hospitals in Tehran in 2017. Among them, 30 patients with IBS were selected by using convenience sampling method and based on inclusion criteria. Then, they were randomly assigned into two groups of experiment (n=15) and control (n=15). Data were collected using Beck Anxiety Inventory (BAI) and the Health Related Quality of Life Questionnaire (SF-36). The experiment group received ACT matrix for 6 sessions of 90 minutes, but the control group did not receive any treatment. Both groups received and completed questionnaires before the treatment (pre-test) and after the end of treatment (post-test).

Findings: Data analysis revealed a significant difference between experiment and control groups in terms of quality of life and anxiety scores in the pre-test and post-test stages ($P < 0.05$), so that the patients in the experiment group at the post-test stage had a lower anxiety score and a higher quality of life score than the control group.

Conclusion: ACT matrix is an effective, simple, and practical method for reducing anxiety and improving the quality of life of patients with IBS.

Keywords: Acceptance and commitment therapy; Anxiety; Quality of life; Irritable bowel syndrome

Introduction:

Irritable bowel syndrome (IBS) is one of the most common bowel functional disorders (1). It is associated with abdominal pain or discomfort caused by defecation (2). Symptoms of this disorder include bloating, annoying gas excrement, abdominal distension, dyspepsia, and early satiety. Non-gastrointestinal symptoms of this disorder include chronic headaches and migraine, menstrual pains, chronic fatigue, low back pain, anxiety and depression, genital symptoms (3). The prevalence of IBS is reported between 3% to 25% in the world and 20% in Iran (5-4). Several hypotheses have been proposed on pathophysiology of this disorder, but there is no hypothesis in this regard accepted by all. In addition, the therapeutic approaches proposed and used for this disorder, including drug therapy, diet and psychological treatments, have been neither

completely effective in controlling or treating this disease, nor completely ineffective [6]. Uncertainties on the diagnosis and treatment of IBS on the one hand, and the expansion of heath psychology on the other hand have drawn the attention of researchers with a psychological approach to this disorder. It has resulted as set of studies evaluated the role of psychological factors in this disorder. Studies have indicated that psychological disorders do not cause IBS, but they are effective in pain perception, duration and severity of this disorder (7).

According to various studies, the prevalence of psychological disorders such as anxiety and major depressive disorder, panic disorder, generalized anxiety disorder, social anxiety disorder, and obsessive-compulsive disorder are high in IBS patients (8). Various studies have shown that psychosocial disorders have been associated with IBS symptoms. Anxiety is one of the most prevalent psychological disorders in these patients (9, 15). Anxiety disorders can reduce the quality of life and impose additional costs on patients with IBS (10). Anxiety is one of the most common psychological disorders and an uncomfortable feeling associated with an uncertain and unclear risk. It has physical symptoms (such as trembling of hands and feet, palpitation, nausea, diarrhea and dry mouth), cognitive symptoms (reduced concentration, alertness, feeling confusion, fear of mania), perceptual symptoms (depersonalization and de-realization) and behavioral symptoms (irritability and immobility). In general, stress and anxiety are common in patients with IBS and they have a significant relationship with the onset and severity of disease symptoms (13-14). In addition, given the increasing growth and lack of definitive treatment of chronic diseases such as heart failure, cancers, stroke, diabetes and functional gastrointestinal disorders as well as significant increase in health care costs and people's concern about the efficacy of therapeutic interventions, a concept called as quality of life has been considered recently by scientists and health professionals (16). Many studies have shown that the quality of life of IBS patients is lower than that of general population (17, 23 and 24). This disease has a great effect on the quality of life of patients, which is similar to the effects of depression on the quality of life of people (18-19). Thus, assessing the health related quality of life of IBS people is considered as the most important goal in the treatment of this disease (20).

Based on the World Health Organization definition, the quality of life is the peoples' perception of their life position in terms of culture, value system in which they live, their goals, expectations, standards and priorities (21). Thus, it is a completely subjective issue and invisible to others. It is based on people’s perception of different aspects of life (22). It is believed that reduction in quality of life in patients with IBS is highly associated with psychological factors such as hypochondriasis, chronic stress, and anxiety (25). The relatively high prevalence of anxiety disorders in patients with IBS and their role in reducing the quality of life of these patients have made researchers investigate the efficacy of various psychological treatments in this disease. Acceptance and commitment therapy (ACT) matrix is one of the emerging psychological treatments in Iran, which has been used

widely in Iran in recent years. This disease focuses on making a valuable and meaningful life rather than reducing and eliminating symptoms such as annoying thoughts and emotions. Almost a decade ago, Hayes (28) introduced a third generation of behavioral therapies as representative of the treatments developed over the past twenty years and he emphasized on the role of acceptance and mindfulness in creating a change (29). Acceptance refers to an active desire to experience emotions, physical senses, and thoughts without trying to control or manipulate them (30). In acceptance and commitment therapy matrix, the main motivation is creating the psychological flexibility or creating the ability to make practical choices among the different options that are more appropriate. The flexibility created by the acceptance and mindfulness helps the patient to react less to their physical feelings. The final goal of acceptance and commitment therapy is to help a person gain feeling meaningful life which includes his life values and act in line with those values (31).

Various studies have evaluated the effect of acceptance and commitment therapy on different variables. The study conducted by Wetherell et al. has indicated that pain, depression and pain-induced anxiety were significantly improved in patients with chronic pain treated with ACT (32). The results of another study conducted to compare the efficacy of ACT and cognitive therapy in patients with moderate to severe levels of anxiety and depression showed that both methods improved functional problems, life satisfaction, depression and anxiety in patients, while the mechanism of action of them was different (33). Moreover, it was found that ACT has a positive effect on the quality of life and the development of cancer patients (34).

Thus, given high level of IBS with psychological problems, such as depression and anxiety and their adverse effects on the quality of life of patients with IBS, and the possible role of ACT in this group of patients and the lack of evaluation of the efficacy of this treatment in patients with IBS in Iran, this study was conducted to determine the effect of ACT matrix on anxiety and quality of life in patients with IBS.

Methods:

This study was conducted using quasi-experimental method with pre-test and posttest design with control group. The research population included all women and men with IBS referred to three medical centers in Tehran since May 2017 to March 2017 through a gastroenterologist. Out of 57 patients who selected using convenience sampling, 30 patients met the research inclusion criteria. These patients (n=30) were randomly assigned into two groups of experiment and control (15 subjects in each group). The inclusion criteria were the definitive diagnosis of IBS by a gastroenterologist, having at least reading and writing skills, completing the questionnaires, and willingness to participate in the study. The exclusion criteria were the history of participation in ACT classes as well as lack of presenting in more than of sessions in classes. The intervention group, underwent the ACT matrix, in addition to the common pharmacotherapy; but the control group did not receive this therapy and only

underwent the common pharmacotherapies. The ACT matrix package consists of 6 principles (cognitive defusion, acceptance, being present, observing self, values clarification and committed action) which were presented to the IBS patients during six 90 minutes' sessions. Data were collected using Beck Anxiety Inventory (BAI) and the Health Related Life Quality Questionnaire (SF-36). Both groups received questionnaires before (pre-test) and after the completion of treatment (post-test).

Beck Anxiety Inventory (BAI): BAI is a self-report questionnaire designed to measure the severity of anxiety in adolescents and adults (35). This tool has already translated into Persian language (36). It is a 21-item questionnaire in which the subject in each item chooses one of four options indicating the severity of anxiety. The four options of each question are scored in a four-point scale from 0 to 3. Each test item describes one of the common symptoms of anxiety (mental, physical, and panic symptoms). Thus, the total score of this questionnaire is placed in the range from 0 to 63. The conducted investigations suggest that this questionnaire has a high reliability, its internal consistency coefficient is 0.92, its reliability using test-retest with one-week interval is 0.75 and the correlation of its questions varies from 0.3 to 0.76 (36-37).

Health related quality of life questionnaire (SF-36): This questionnaire was developed by the International Organization to evaluate quality of life. It contains 36 questions in two main domains of physical and mental health with eight subscales related to health (physical function, physical function limitation, physical pain, general health, vitality, social function, emotional role limitation and mental health). In a study conducted by Braize et al. (27) to determine the credibility and reliability of this questionnaire, its reliability coefficient in all dimensions was higher than 75%, except for social function. Physical dimension includes (10 items), physical role (4 items), physical pain (2 items), general health (5 items), vitality (4 items), social function (2 items), emotional role (3 items), and mental health (5 items), assessing the quality of life of people. The minimum score in this questionnaire is zero and the maximum score is 100.

The acceptance and commitment package consists of six principles provided to patients with IBS in six 90-minute sessions. The first session started with introduction of a psychological flexibility view by drawing the matrix. This matrix includes two vertical and horizontal cross-sectional lines forming four cells. Realities are at the top of the vertical line perceivable with five senses. Mental experiences are at the bottom of the vertical line. These mental experiences can be the negative experiences and individual concerns written at bottom left of the matrix. Individual values (important people or objects) are at bottom right of the matrix.

In the first stage, one should recognize the difference between mental experience and reality and separate them from each other (defusion). The second difference which should be considered by the person is paying attention to his behaviors determining whether his behavior is in the direction of moving away from concerns or approaching the values. Paying attention to these two differences provides the conditions for gaining knowledge on the context. The

second session involves gaining knowledge on the efficacy of thoughts and behaviors. Accordingly, this session determined that to what extent one's concerns were reduced and the behavior was valuable. Usually, people are in a vicious circle along with wandering concern and ultimately will not be unable to move towards values. In the third session, subjects learned to abandon the continuation of mind-disturbing thoughts. In the fourth session, the verbal aikido was working. Aikido is an eastern combat sports using the force of the other party to overthrow himself without causing a special blow to hurt. This technique is in fact a kind of peace and friendship without causing any harm. This technique is used to cope with concern. In the fifth session, self- compassionate was taught for the aim of self-loving or self-respecting. The sixth session involved training the inhibition of prospect-selecting force that prevented future mental conflicts. At the end of each session, some homework was given, and patients were evaluated and investigated at the beginning of the next session

Findings:

In this study, the sample group included 30 patients with IBS, of which 19 were female (63.3%) and 11 were male (36.7%) (Table 1). The age range of the subjects was from 19 to 60 years, with a mean of 31.93 years. Out of all subjects studied, 17 were single, 10 were married and 3 were spouse-died or divorced. The pre-test and post-test scores of anxiety and quality of life of patients in the two groups are presented in Table 2 and Table 3.

A multivariate covariance analysis was used examine the obtained data. Its results are shown in Table 4. The Kolmogorov-Smirnov and Shapiro–Wilk tests were used to examine the normal distribution of dependent variables. The results revealed that Kolmogorov-Smirnov and Shapiro–Wilk test were more than 0.05 ($p < 0.05$) in all variables, indicating the normal distribution of the data. In examining the data, the results of multivariate covariance analysis as well as univariate covariance analysis in the context of multivariate covariance analysis showed that there is a significant difference between the adjusted mean scores of quality of life and anxiety in the control and experiment groups in the post-test stage. It means that acceptance and commitment therapy is effective in quality of life and anxiety of people with irritable bowel syndrome (Tables 4 and 5).

Data analysis using post hoc test showed that acceptance and commitment therapy had a significant positive effect on anxiety and quality of life in patients with IBS, as it reduced the anxiety and improved the quality of life of patients (Tables 6 and 7).

Discussion:

According to results of this study, it can be concluded that ACT matrix is effective in improving the quality of life and reducing anxiety in patients with IBS. The results of this study are in line with those of studies conducted by Lindfors et al. (38), Gillanders et al. (39) and Ferreira et al. (40). Stress and anxiety are common in people with IBS and have a significant relationship with the onset and intensity of the symptoms, so that stress has a major role in the occurrence or recurrence of symptoms in patients with IBS (41). In this regard, it has been showed that anxiety was significantly higher in the

patients with IBS than that in the control group (42). The results of a study conducted to evaluate the efficacy of mindfulness therapy on the anxiety of patients with IBS showed that mindfulness therapy was an effective therapy in improving anxiety symptoms in these patients (43). In explaining the results of this study, it could be stated that ACT, given to its non-subjective approach to internal experiences (emotions and cognition), allows individuals to reduce stressful experiences by reducing their automatic responses (44). With increasing the knowledge and acceptance of life events over time, the activation of stress response systems and physical symptoms decreases (45).

ACT can affect the gastrointestinal function of patients with IBS by decreasing the function of the central nervous system. In addition, ACT techniques train the patients the skills required to cope with anxiety and reduce the complications of IBS (44), so that an emphasis on mindfulness in the present time exposure to pleasant thoughts and feelings and avoiding unpleasant feelings can cause cognitive changes, and consequently, reduce and improve the physical and mental symptoms of patients with IBS. Moreover, in patients with IBS, various domains of life such as job performance, travel, interpersonal relationships, and enjoyment are defected (46). High levels of stress, concern, and anxiety in these patients decrease their quality of life (47). It has been shown that patients with IBS have a poor quality of life compared to control group. IBS patients also have work absenteeism three times more than normal group (48). Thus, health related quality of life as a multidimensional concept can be considered as a criterion for reducing symptoms and improving the health status and psychosocial functions as the most important goal in treatment of these patients. In explaining the hypothesis of the effect of ACT matrix on quality of life in patients with IBS, it can be stated that one of the factors threatening the quality of life is life changes, such as disease. Explaining the life models and the focus on here and now lead to reduced depression, followed by increased satisfaction and quality of life (7).

Treatment of a disease is a practical-situational intervention, which is based on the theory of the system of communication. It considers the human suffering as a psychological inflexibility, developed by cognitive fusion with experimental avoidance (49). In the context of therapeutic relationships, acceptance and commitment therapy uses direct actions and indirect verbal processes in order to achieve better psychological flexibility through acceptance, cognitive defusion, creating sense of self-transcendence, being at the moment, values and creating a pattern of committed actions with regard to those values (50). The values are defined as the selected quality of purposeful actions in this treatment (28). This method trains the clients to distinguish between choice and reasoned judgments and choose the values. The clients are asked to examine what they want in life and consider it in different domains of life such as: job life, intimate relationships, friendship, personal growth, health, and spirituality. They are considered as components of quality of life. Examining the values in this treatment can improve the quality of life of these patients (51). In the ACT, the clients are challenged

to pay attention to what is important in various domains of their life, including job, family, intimate relationships, friendships, personal growth, health, spirituality, and so on. Working on values increases the clients' motivation to be involved in treatment (52). The processes of defusion, acceptance, values, and committed behaviors help clients accept the responsibility of behavioral changes (50). Hence, they create a balance between strategies focusing on changeable domains (visible behaviors) and acceptance and mindfulness strategies in domains where change is not possible or not useful. As this disease influences many aspects of patients' physical and psychological dimensions, the use of this technique in treatment sessions can lead to better adaptation and improvement in the patients' quality of life.

Conclusion:

According to the results of this study it seems that acceptance and commitment therapy matrix is an effective, simple, and practical method for reducing anxiety and improving the quality of life of patients with IBS.

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Tables:

Table 1: Gender of the groups

Gender		Group		Total
		Experiment	Control	
Female	F	10	9	19
	%	33.3%	30%	63.3%
Male	F	5	6	11
	%	16.7%	20%	37.7%
Total	F	15	15	30
	%	50%	50%	100%

Table 2: Describing the raw scores of anxiety separately by group

Stage	Experiment			Control		
	Mean	SD	Sample size	Mean	SD	Sample size
Pre-Test Anxiety	867.73	180.5	15	800.69	185.60	15
Post-Test Anxiety	800.26	190.6	15	933.71	181.8	15

Table 3: Description of raw scores of quality of life separately by group

Stage	Experiment			Control		
	Mean	SD	Sample size	Mean	SD	Sample size
Pre-test quality of life	867.73	230.5	15	800.69	185.6	15
Post-test quality of life	800.26	190.6	15	933.71	181.8	15

Table 4: Multivariate covariance analysis

Component	Source of Variations	Sum of squares	df	Mean of squares	F value	p-value	η2
Anxiety	Group	13415.57	1	13415.57	270.59	<0.0001	0.919
	Error	1189.88	24	49.57			
Quality Of Life	Group	10395.54	1	10395.54	440.16	<0.0001	0.948
	Error	566.88	24	23.62			

Table 5: Results of univariate covariance analysis in the context of multivariate analysis

Source of variations	variables	Sum of squares	df	Mean of squares	F value	p-value	η2
Group	Quality of life	10395.54	1	10395.54	440.11	<0.0001	0.948
	Anxiety	13415.6	1	13415.6	270.59		
Error	Quality of life	566.9	24	23.62		<0.0001	0.919
	Anxiety	1198.9	24	49.58			

Table 6: Adjusted means and pairwise comparison of means (Tukey's test)

Experiment group	Control group	Mean difference	SD	P-Value
25.24	73.49	48.25	2.93	<0.0001

Table 7: Adjusted means and pairwise comparison of means (Tukey's test)

Experiment group	Control group	Mean difference	SD	P-Value
57.28	14.8	42.47	2.02	<0.0001