Original Article

The Effectiveness of Acceptance- and Commitment-Based Therapy on Perception of Disease in Patients with Irritable Bowel Syndrome

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Abstract

Aims: The purpose of this study was to investigate the effectiveness of acceptance and commitment therapy on perception of disease in patients with irritable bowel syndrome (IBS). **Materials and Methods:** The quasi-experimental research method was pretest and posttest with control group. The statistical population of this study included patients with irritable bowel syndrome (IBS) in Semirom city which were selected 30 of whom through purposive sampling and randomly assigned to two groups (Acceptance and commitment Therapy (ACT) and control group). Before and after the intervention, the individuals in all two groups were evaluated with the Disease Perception Scale. Then, there was a weekly session acceptance and commitment therapy based on treatment protocols for IBS for the experimental group, and the control group received no intervention. **Results:** The findings showed that acceptance and commitment therapy had significant effects on the components of illness sequences ($P < 0.001$), personal control ($P < 0.001$), nature of illness ($P < 0.001$), control through treatment ($P < 0.001$), worrying about illness ($P = 0.002$), and affectional respond to illness ($P < 0.001$). **Conclusion:** In according to findings, it can be concluded that the acceptance and commitment therapy as an effective treatment can be used in acute disease situations for people to promote positive perception of their illness.

Keywords: Acceptance- and commitment-based therapy, irritable bowel syndrome, perception of disease

Introduction

Irritable bowel syndrome (IBS) which is a type of gastrointestinal (GI) disorder consists of characteristics of chronic abdominal discomfort, bloating, and altered bowel habits, which have a negative effect on patients' quality of life.[1] Accordingly, these patients can be divided into three groups, including patients suffering from predominant constipation, patients suffering from predominant diarrhea, and patients suffering from diarrhea and constipation (mixed type).[2] IBS is one of the most prevalent GI functional disorders in the world,[3] with an estimated outbreak of 5%–11% in the public population.[4] IBS has a remarkable economic effect on the system of health care and drastically reduces the patients' life quality.[5] Women suffering from IBS are more than men, and this disorder has a chronic nature.

One of the common challenges among patients suffering from IBS, especially those faced with treatment and medical issues, is copying with it and a way of understanding it. The importance of this variable is such that the role of disease perception on the quality of life of patients with chronic diseases has recently been considered. Accordingly, patients' perception from their disease

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as a threatening factor can result in undesirable consequences; furthermore, it can determine a lower level of their life.[6]

Disease perception has been conceptualized based on the self-regulated semantic common model. The semantic common model explains about how the cognitive representation and emotional reaction of patients to their disease can occur through the information integration of external and internal stimuli with the preexisting theory. Leventhal *et al*.[7] propose a self-regulated model that explains disease at the time of diagnosis and during illness. This model considers healthy behaviors as a result of multifaceted and sophisticated perceptions of the disease. Based on this model, the individual plays an important role in the perception of the disease. The disease perception includes information in five aspects: the nature, i.e. the label and symptoms of the disease (such as fatigue and faint), the reason or belief about the causes of the onset of the disease, the duration or perception of the individual of the time length of the disease in terms of being acute, being periodic, or chronic, expected consequences or outcomes of the disease based on economic, social, psychological, and physical effects as well as the effectiveness of control, treatment, and improvement.[8-10]

The results of various studies have demonstrated that perception of illness is one of the most important predictors of low-level adaptation including social dysfunction, fatigue, anxiety, depression, and self-esteem.[11] Studies have demonstrated that patients' perception of their disease in the form of a threatening factor can represent a lower level of their life and a higher rate of functional disability.[12,13] Research findings of Kalantari *et al*.[14] indicate that generally, there is a relationship between negative perceptions of the disease and lower quality of life in individuals suffering from IBS. When a patient believes in the prolongation of disease period and lack of its treatment, he/she feels helpless, refuses to accept the treatment, and fails to be cured. Hence, Moss-Morris *et al*.[11] have proposed that interventions should be made on perceptual representations in chronic patients so that outcome of the disease as well as consistency with it can be improved.

Due to the fact that this disorder cannot be cured by any medicine, treating IBS symptoms can be challenging. Therefore, to treat this disorder, its symptoms should be managed, and efforts should be made to improve the life quality of such patients.[5,15] Physicians recommend several treatments. Lifestyle, diet management, medication treatments, and psychological interventions are the most commonly used and recommended. Psychological treatments have been proposed as viable alternatives or compliments to existing care models. Most forms of psychological therapies have been shown to be helpful in reducing symptoms and in improving the psychological component of anxiety/depression and health-related quality of life. Based on the present instructions of NICE/NHS, physicians should consider psychological therapies for patients who do not respond to pharmacological treatments after 12 months and consider a continuing symptom profile (known as resistant IBS). "IBS" and "cognitive-behavioral therapy" (CBT) which are considered as the best evidence-based therapy[16] have the most application, and it has been reported that it is effective on reducing anxiety, depression, using coping skills and reducing catastrophic pain, signs, and symptoms of the disease.[17] However, some studies have challenged the effectiveness of this therapy method in the IBS, although the CBT is effective in reducing symptoms and curing patients in different studies.[18] Moreover, it has been proved that cognitive change (a main component of CBT) does not influence the results of IBS by any significant changes.[19] Therefore, a review of mind/body approaches to IBS has suggested that alternate strategies targeting mechanisms other than thought content change might be helpful, specifically mindfulness, acceptance-based approaches,[15,20] and application programs and concepts addressing ACT to care digestive system.

ACT as a psychological approach is different from most of the conventional approaches as it is intended not to use negative physical and psychological experiences and to increase psychology, flexibility, and valuable behavior of life.[3] The goal of this therapy is to help clients to achieve a more valuable and satisfactory life which leads to increase of psychological flexibility, and six main processes which lead to psychological flexibility and mental trauma include cognitive fault, acceptance, relevance to present time, self as context, values, and committed action.[21] The results of the studies carried out by Jo and Son[22] demonstrate that ACT has positive effects on perceived stress change, life quality as well as acceptance and action of patients suffering from IBS. Ferreira *et al*.[3] also proved that acceptance-based therapy as well as commitment to disease acceptance had positive effects on treatment results of individuals suffering from IBS. In a randomized controlled trial of patients suffering from IBS, an 8-week course of ACT treatment led to the improvement of stress and other psychological health indicators.[23]

A review of research background indicates that due to the fact that acceptance and commitment therapy approach has been extensively accepted in the country, few studies have investigated the effect of this therapy on persons suffering from IBS, especially in the country. Investigation of the acceptance and commitment therapy in the cultural context of Iran can depict new horizons for researchers and specialists of this disease. Accordingly, the present study has been carried out in order to investigate the effectiveness of this therapy on disease perception of patients suffering from IBS.

Materials and Methods

The quasi-experimental research method was pretest and posttest with control group. The statistical population of this study included patients with IBS referring to the private offices of physicians in Semirom city (from 2018 February to 2018 August); thirty patients among them were selected through purposive sampling and randomly assigned to two groups:

control and experimental groups. The inclusion criteria include diagnosis of IBS by a specialist in gastroenterology based on the Rome III diagnostic criteria, passing of at least 1 year after the onset of symptoms, having diploma, lack of psychological treatment for the past 3 months, having age ranging from 18 to 60 years as well as not suffering from a mental disorder or GI or non-GI chronic disease. The exclusion criteria include not participating more than two treatment sessions and failure in the questionnaire completion. Both the groups were evaluated through research tool as pretest, and the experimental group was under intervention based on acceptance and commitment therapy, but the control group received no intervention. After the intervention therapy completed, both the groups were evaluated once more through the research tool.

Brief illness perception questionnaire

It is a nine-item questionnaire designed in order to assess the emotional and cognitive embodiment of the disease (Birdbent, Petrie, Maine, and Weinman, 2006). The questions, respectively, measure outcomes, time duration, personal control, therapy control, nature, worry, disease awareness, emotional response as well as disease reason. The range of scores of the first eight questions is 1–10. The 9th item of the scale is open-ended and queries about three main reasons of the catching disease. Cronbach's alpha for this questionnaire was 0.80, and retest reliability coefficient of 6 weeks for various questions ranged from 0.42 to 0.75.[24]

In order to ethics in the present study, the goal of the research was explained to the participants. Moreover, they were assured that their information would be completely confidential. They were informed that the research results as well as general results would be published statistically rather than individually, and they were completely free not to take part in the research. Moreover, the participants were informed that after the research fulfilled, if they liked, they could take part in the free consultation session for explaining the results of therapy intervention and the individual results of the questionnaires before and after the treatment and expression of complementary suggestions in the ground of therapy process improvement. The results gained from the data collection were analyzed through the method of multivariate analysis of covariance (confidence interval = 95%, significant level < 0.05). The summary of the treatment sessions for the experimental group is given below.

Acceptance and commitment therapy package

This treatment package has been arranged based on the Zatel treatment protocol (adapted from Pashang and Khosh Lahjeh[25]) for eight 90-min sessions weekly. Each session had special goals, techniques, and practices. In addition, at the end of each therapy session, the therapist wanted the patients to do required assignments for practicing at home, and their results were checked at the beginning of the next session (see Table 1).

Results

The age mean of the experimental group was 44.80, with a standard deviation of 4.72, and the age mean of the control group was 33.43, with a standard deviation of 7.66. Table 2 shows the descriptive indicators related to disease perception in terms of group membership and assessment stages.

Based on the results of table 2, there is a difference between the mean scores of the post-test of the disease perception components in the experimental and the control groups. Before the data were analyzed, the hypotheses of using parametric tests were examined and confirmed. For example, the assignment of tests to the research groups was randomly done. Moreover, due to the use of standard tools

Table 1: Content of acceptance- and commitment-based therapy sessions in persons with irritable bowel syndrome (Pashang and Khosh Lahje)

Content	Session
1	Introducing therapy method, investigating inefficient strategies for dealing with difficulties using various metaphors and doing supportive exercises related to emotional control strategies and separation from values
2	Presenting experimental exercises for creating challenges with the effectiveness of control strategies trained to clients using various metaphors, which is problem control rather than solution; investigating the relationship between moods and behavior
3	The continuation of the matter is related to the control and logic of depression and anxiety experience instead of control. Supportive exercises include extent of apparent success in controlling feeling deliberately, coding internal events, rate of willingness as an alternate for control, presenting various metaphors in order to increase clients' predominance
4	Introducing the concept of fault from depressing thoughts and sensations, providing strategies for fault and verbal change for increasing tendency and presenting techniques in order to deal with unpleasant thoughts
5	Measuring therapist's ability to fault depressing and stressful thoughts and sensations and showing other practical ways to foster fault and mindfulness practice, and reanalyzing thoughts
6	Introducing self-conceptualized distinction versus self-observer, practicing mental polarity, chessboard analogy, observer practice, identifying simple behavioral goal that requires fault and tendency
7	Investigating values and the way of their effectiveness on tendency/acceptance, emphasizing on tendency of activating behavior, supportive assignments including an introduction to values, value as a behavior versus a value as an emotion, sock practice, selecting values, selections versus judgments/decisions, identifying values, practicing funeral ceremony and practicing tombstone
8	Investigating obstacles to responsible action such as difficult excitements, memories and thoughts and environmental obstacles such as lack of social skills, lack of support and supportive resources, supportive exercises, including the relationship between goals and values, the relationship between process and results using multiple metaphors; summary of the sessions; the posttest

for estimating the dependent variables, the presupposition of the scale distance for measuring the dependent variables has been considered. On the other hand, the number of two experimental and control groups was equal to 15 persons in this study; therefore, the number of two groups was equal. To ensure and check the normal distribution of the data, the Shapiro–Wilk test was used, and the Levin test was used to check the equality of the variances. It was proved that both tests were confirmed. Table 3 shows the results of the covariance analysis test to investigate the effect of acceptance- and commitment-based treatment on the disease perception of individuals suffering from IBS.

Based on the findings of Table 3, there was a significant difference between the acceptance- and commitment-based treatment group and the control group in the posttest scores for all components of disease perception except for time length of illness and disease diagnosis ($P < 0.05$). The quantity of the gained effects also, respectively, showed 46%, 42%, 42%, 4%, 40%, and 63% of the differences in the components of disease outcome, personal control, nature of the disease, control through disease, emotional concern, and affective response to the disease at the posttest stage resulting from group membership (acceptance and commitment therapy).

Table 2: Mean and standard deviation of variables

Variables	Group	Posttest		Pretest	
		SD	Mean	SD	Mean
Illness sequences	Control	1.75	6.93	2.42	6.8
	ACT	0.59	5.06	1.53	7.06
Illness duration	Control	2.89	5.66	2.25	6.33
	ACT	0.96	5.26	1.12	7.13
Personal control	Control	2.64	4.4	2.36	4.8
	ACT	1.22	5.93	2.5	3
Nature of illness	Control	1.66	7.06	1.7	7.93
	ACT	0.74	4.86	1.4	7.53
Control through treatment	Control	2.03	5.13	2.01	5.26
	ACT	1.3	7.13	2.54	4.2
Worrying about illness	Control	1.56	6.2	1.08	6.8
	ACT	1.38	4.06	2.46	6.06
Knowing about illness	Control	1.91	5.4	1.62	5.06
	ACT	1.12	6.13	2.21	3.8
Affectional respond to illness	Control	1.13	7	0.88	7.06
	ACT	1.37	4.2	2.47	6.53
Illness perception	Control	9.63	47.08	7.13	50.06
	ACT	4.48	42.66	9.01	45.33

SD: Standard deviation, ACT: Acceptance and commitment therapy

Table 3: Results of the multivariate covariance analysis test to assess the effect of acceptance- and commitment-based therapy on the disease perception

Variables	MS	df	F	*P*	Effect size	Observed power
Illness sequences	18.65	1	17.33	<0.001	0.46	0.98
Illness duration	0.005	1	0.001	0.972	0.00	0.05
Personal control	43.56	1	14.92	<0.001	0.43	0.96
Nature of illness	18.93	1	14.92	<0.001	0.43	0.96
Control through treatment	32.17	1	15.98	<0.001	0.44	0.97
Worrying about illness	28.75	1	13.35	0.002	0.4	0.93
Knowing about illness	9.27	1	3.86	0.063	0.16	0.46
Affectional respond to illness	44.64	1	34.16	<0.001	0.63	1

MS: Mean of square

Discussion

The present study was carried out in order to investigate the effectiveness of acceptance- and commitment-based therapy on disease perception of individuals suffering from IBS. The results demonstrated that acceptance- and commitment-based therapy had a significant effect on components of disease perception except for disease length and its awareness. These results are correspondent with the results of the studies carried out by Jo and Son,[22] Ferreira *et al*.,[3] and Wynne *et al*.[23]

Disease perception includes cognitive representation and emotional response of patients to disease which is formed through information integration of internal and external stimuli with preexisting disease theory. Since patients are active processors of their disease, perceptual representation is the way of patients' response to these factors and determines patients' adaptability with disease and its symptoms. Moss-Morris *et al*.[26] have suggested that interventions have been made on perceptual representations in chronic patients so that disease efficiency can become better, and adaptability with it increases.

It can be concluded from the results that trying to minimize control and suppression of anxiety, thoughts, suffering, and so forth can cause them to appear once more. In this field, acceptance- and commitment-based therapy with special innovations can provide solutions. This therapy focuses on pervasive consciousness along with pain and disease openness and acceptance. In other words, the individual allows thoughts of disease to enter his or her mind without controlling them. When these experiences, namely thoughts and feelings, are observed with openness and acceptance, even the most painful ones seem to be less threatening and more tolerable. In this approach, the patient is trained that any action to avoid or control these involuntary mental experiences is futile and has a reverse effect, and the experiences must be completely accepted without any reactions for removing them. Disease acceptance helps the patient to have a proper point of view to therapy process and follows the therapy with commitment. Therefore, disease acceptance increase and commitment to treatment modify the patient's disease perception. Acceptance- and commitment-based therapy uses some of the fault-tracking techniques, such as acceptance and commitment to behavior change, which can be used for those patients accepting the fault message.[8]

In ACT, clients are challenged so that they can focus on what is important for them in the different aspects of their life including

job, family, friendly relationship, friendship, personal growth, health, spirituality, and so forth. Concentrating on values can increase the motivation of clients in order to participate in therapy. Values are closely related to processes which were already mentioned.[27] For example, values are considered as an important part of acceptance because they cause motivation for acceptance. In fact, acceptance can be difficult and sometimes painful experience, and values can facilitate this pain and troublesome activity. Restraint acceptance and avoidance of challenging with them which are provided in this therapy can lead to disease perception improvement. Fault processes, acceptance, values, and committed action help clients to accept responsibility for behavioral change.[28] Therefore, they balance between strategies that focus on changeable domains for change (explicit behaviors) and acceptance and mindfulness strategies in areas which are unchangeable or inefficient.[21]

To explain of the way of effect of ACT in disease perception of patients suffering from IBS, it can be said that this effect may be due to changing in attitudes of clients to the creation of irrational thoughts in the first session, negative and defective cycle of thoughts and purpose of treatment, the initiation of awareness-based practices, and the creation of creative helplessness in past solutions. In other words, it can be said that acceptance and commitment therapy creates therapeutic changes through the creation and development of "acceptance" and "increase of following values" in clients.[29]

Conclusion

It can be said that due to the fact that acceptance and commitment therapy is a nonjudgment approach of internal experiences (feelings and awareness), individuals are allowed to deal with stressful experiences by reducing automatic responses. Therefore, acceptance and commitment therapy influences the performance of digestive system of patients suffering from IBS by reducing sympathetic system. On the other hand, acceptance and commitment techniques provide patients with the cognitive and behavioral techniques required to deal with the disease. When an individual can cope well with stress, the sympathetic system reduces and parasympathetic system would be activated and the deal with illness would be improved.[23]

The present study constraints include the purposeful sampling method. The result of this research, like other human researches, was influenced by the environment, work, and social and economic conditions of individuals under the study. Hence, the results should be generalized to the total society discreetly. Moreover, considering the problems and conditions of patients and the principles of the research, only patients who volunteered to cooperate participated in this research.

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Conflicts of interest

There are no conflicts of interest.

References

1. Guo YB, Zhuang KM, Kuang L, Zhan Q, Wang XF, Liu SD. Association between diet and lifestyle habits and irritable bowel syndrome: A case-control study. Gut Liver 2015;9:649-56.
2. Hayes PA, Fraher MH, Quigley EM. Irritable bowel syndrome: The role of food in pathogenesis and management. Gastroenterol Hepatol (N Y) 2014;10:164-74.
3. Ferreira NB, Gillanders D, Morris PG, Eugenicos M. Pilot study of acceptance and commitment therapy for irritable bowel syndrome: A preliminary analysis of treatment outcomes and processes of change. Clin Psychol 2018;22:241-50.
4. Canavan C, West J, Card T. The epidemiology of irritable bowel syndrome. Clin Epidemiol 2014;6:71-80.
5. Werlang ME, Palmer WC, Lacy BE. Irritable Bowel Syndrome and Dietary Interventions. Gastroenterol Hepatol (N Y) 2019;15:16-26.
6. Akhani A, Izadi Z, Bagherian Sararoudi R, Khorvash F. The role of disease perception in the relationship between early maladaptive schemas and level of motor disability in patients with multiple sclerosis. J Behav Sci Res 2012;10:609-18.
7. Leventhal H, Leventhal EA, Contrada RJ. Self-regulation, health, and behavior: A perceptual-cognitive approach. Psychol Health 1998;13:717-33.
8. De Gucht V. Illness perceptions mediate the relationship between bowel symptom severity and health-related quality of life in IBS patients. Qual Life Res 2015;24:1845-56.
9. Edgar KA, Skinner TC. Illness representations and coping as predictors of emotional well-being in adolescents with type 1 diabetes. J Pediatr Psychol 2003;28:485-93.
10. Hagger MS, Orbell S. A meta-analytic review of the common-sense model of illness representations. Psychol Health 2003;18:141-84.
11. Moss-Morris R, Weinman J, Petrie K, Horne R, Cameron L, Buick D. The revised illness perception questionnaire (IPQ-R). Psychol Health 2002;17:1-16.
12. Eyigor S, Karapolat H, Akkoc Y, Yesil H, Ekmekci O. 3. Burials and memorials. Education 2010;30:81-1.
13. Rutter CL, Rutter DR. Longitudinal analysis of the illness representation model in patients with irritable bowel syndrome (IBS). J Health Psychol 2007;12:141-8.
14. Kalantari H, Bagherian Sararoodi R, Afshar H, Khoramian N, Forouzandeh N, Daghagh Zadeh H, *et al*. Relationship between illness perceptions and quality of life in patients with irritable bowel syndrome. J Mazandaran Univer Med Sci 2012;22:33-41.
15. Sebastián Sánchez B, Gil Roales-Nieto J, Ferreira NB, Gil Luciano B, Sebastián Domingo JJ. New psychological therapies for irritable bowel syndrome: Mindfulness, acceptance and commitment therapy (ACT). Rev Esp Enferm Dig 2017;109:648-57.
16. Zijdenbos IL, de Wit NJ, van der Heijden GJ, Rubin G, Quartero AO. Psychological treatments for the management of irritable bowel syndrome. Cochrane Database of Systematic Reviews. 2009;1(1):1-10.
17. Zomorrodi S, Rasoolzadeh Tabatabai SK. Comparison of the effectiveness of cognitive behavioral therapy and mindfulness based therapy on improving the quality of life in patients with irritable bowel syndrome. J Clin Psychol Stud 2013;13:63-88.
18. Reme SE, Kennedy T, Jones R, Darnley S, Chalder T. Predictors of treatment outcome after cognitive behavior therapy and antispasmodic treatment for patients with irritable bowel syndrome in primary care. J Psychosom Res 2010;68:385-8.
19. Lackner JM, Jaccard J, Krasner SS, Katz LA, Gudleski GD, Blanchard EB. How does cognitive behavior therapy for irritable bowel syndrome work? A mediational analysis of a randomized clinical trial. Gastroenterology 2007;133:433-44.
20. Naliboff BD, Fresé MP, Rapgay L. Mind/Body psychological treatments for irritable bowel syndrome. Evid Based Complement Alternat Med 2008;5:41-50.
21. Hayes SC, Luoma JB, Bond FW, Masuda A, Lillis J. Acceptance and commitment therapy: Model, processes and outcomes. Behav Res Ther 2006;44:1-25.
22. Jo M, Son C. Effects of acceptance and commitment therapy (ACT) on IBS-symptoms, stress, quality of life, and acceptance-action

of people with irritable bowel syndrome. J Digital Convergence 2018;16:501-9.
23. Wynne B, McHugh L, Gao W, Keegan D, Byrne K, Rowan C, *et al*. Acceptance and commitment therapy reduces psychological stress in patients with inflammatory bowel diseases. Gastroenterology 2019;156:935-45.
24. Agha Yousefi A, Shaghaghi F, Dehestani M, Barghi Irani I. The relationship between quality of life and psychological capital with perception of disease among MS patients. J Health Psychol 2012;1:29-41.
25. Pashang S, Khosh Lahjeh A. Comparison of the effectiveness of acceptance and commitment based therapy and metacognitive therapy on symptom reduction and life satisfaction in patients with irritable bowel syndrome. Digestion 2019;24:23-30.
26. Moss-Morris R, McAlpine L, Didsbury LP, Spence MJ. A randomized controlled trial of a cognitive behavioural therapy-based self-management intervention for irritable bowel syndrome in primary care. Psychol Med 2010;40:85-94.
27. Hayes SC, Strosahl KD, Wilson KG. Acceptance and Commitment Therapy: The Process and Practice of Mindful Change. New York: Guilford Press; 2011.
28. Luoma JB, Hayes SC, Walser RD. Learning ACT: An Acceptance and Commitment Therapy Skills-Training Manual for Therapists. Oakland, California: New Harbinger Publications; 2007.
29. Behrouz B, Bavali F, Heidarizadeh N, Farhadi M. The effectiveness of acceptance and commitment therapy on psychological symptoms, coping styles, and quality of life in patients with type-2 diabetes. J Health 2016;7:236-53.