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Research Article

Efficacy of Acceptance and Commitment Therapy on Depression and Anxiety of Patients with Celiac (Coeliac) and It's Relation to Therapeutic Response in Yazd

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ABSTRACT

Background: Celiac is an inflammatory bowel disease and an autoimmune disorder which is genetically stimulated by gluten-free protein synthesis. Patients with this disease usually suffer from anxiety and depression. Cognitive-behavioural therapy focusing on mindfulness and considering psychological flexibility have been more effective than other treatments on depression and anxiety of psychiatric patients. The aim of this study was to evaluate the efficacy of acceptance and commitment therapy on depression and anxiety in celiac disease.

Method: This Quasi-Experimental study was carried out on celiac patients admitted to the celiac committee, celiac and gastroenterologists' clinics of Yazd in Iran. Thirty participants selected by available sampling and randomly allocated to two experimental and control groups. Hospital Anxiety and Depression Inventory (HADS) and Gastrointestinal Symptom Scale (GIS) Scale used to collect data. The data analysed by Fisher's exact test, Independent t test and ANOVA.

Result: In the experimental group, the mental health variable (anxiety, depression and therapeutic response) significantly improved after the intervention in the post-test.

Conclusion: Acceptance and commitment therapy was effective in improving depression and anxiety in celiac disease. Probability, the participation of the patient in a group of people with the same illness and the sharing of therapeutic experiences led to reduction of anxiety and depression and, consequently, improved patient function in their treatment.

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Background

Gastrointestinal diseases are one of the most common chronic non-communicable diseases that impose economic and psychological burdens to the society and health system [1]. Celiac disease (CD) is an autoimmune enteropathy caused by the ingestion of gluten in genetically

susceptible individuals. It characterized by the presence of autoimmune antibodies, systemic clinical manifestations, small intestinal enteropathy and genetic predisposition [2]. The prevalence is between 1- 6% of the world population which can decline quality of life and cause mental disorders as depression and anxiety [3-5]. Increasing psychiatric manifestations especially depression and anxiety has become one of the

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serious concerns of psychiatric complications [3]. Previous findings on celiac patients, suggest that serotonergic dysfunction due to impaired availability of tryptophan may play a role in vulnerability to depressive and behavioural disorders among adolescents with untreated celiac disease [6]. Considering the importance of patients' mental health, psychological techniques such as acceptance and commitment therapy based on the cognitive behavioural development performed to improve patients' mental health [7]. Inconsistent to the prior therapeutic behaviour, third wave therapy behaviour instead of changing behaviour, looks for changes in structure and performance through tissue hypotheses, including therapeutic communication [8].

Acceptance and Commitment Therapy (ACT) aims to change the social-verbal context rather than content of clinical behaviour [9]. These treatments focus on flexible and adaptive ways of responding to the internal stimulus [10]. ACT and psychological therapies improve psychological well-being, quality of life, resilience and good attitude, compliance and social acceptance [11]. Researchers look for methods to help celiac patients to pass more smoothly the difficult way of treating and improve treatment by overcoming depression and anxiety. Several studies have assessed the effectiveness of ACT on variables such as pain acceptance and anxiety, obsessive-compulsive disorder, depression and quality of life [11-14]. Hor *et al.* evaluated the effectiveness of ACT on depression in 30 patients with diabetes and concluded that ACT was effective on reducing depression [15]. Anvari *et al.* evaluated the effectiveness of Group-Based Acceptance and Commitment Therapy on Pain-Related Anxiety, Acceptance of Pain and Pain Intensity in Patients with Chronic Pain. Findings indicated the effectiveness of this therapy [7]. On *et al.* evaluated the association between gastro esophageal reflux disease with sleep quality, depression, and anxiety in a cohort study of Australian men. They observed a strong independent association between GERD, anxiety, and current depression [16]. No studies have assessed the effectiveness of depression and anxiety treatment on physical situation of celiac patients around the world and in Iran. Considering the limitations of therapeutic treatments, studying about various therapeutic approaches such as ACT seems essential. Therefore, this study aims to evaluate the efficacy of ACT on depression and anxiety in celiac disease and its association with therapeutic response.

Methods

This Quasi-Experimental study with pre-test and post-test design conducted on thirty Patients. The statistical population included individuals admitted to the celiac committee, celiac and gastroenterologists' clinics of Yazd. The participants selected by convenience sampling method and randomly allocated to two experimental and control groups. Inclusion criteria were ages 16-85, consent to participate in study and eight intervention sessions. Participants, who taking medication or receiving psychotherapy to reduce depression and anxiety, were absent over 2 sessions and did not respond to questionnaires excluded from the study. The intervention was performed during 3 sessions in a week about 45 min per session for experimental group. No intervention performs for the control group.

I Measuring Tools

The Hospital Anxiety and Depression Scale (HADS) and Gastrointestinal Symptom Scale (GIS) questionnaires used for data

collection. These questionnaires were distributed to participants at the beginning of the study. All participants were aware of the aim of study and completed the consent form. Participants were explained that the results will use in a confidential manner and only for research purposes. After 8 weeks, post-test was taken.

II Hospital Anxiety and Depression Scale (HADS) Questionnaire

This questionnaire includes 14 items reflecting depression and anxiety. The HADS takes 2 to 5 minutes to complete and is acceptable for the population from teenagers aged 16 years and older to elderly people. In order to False- Positive reduction in all items (Seven reflecting depression and seven reflecting anxiety) physical signs are removed. The questionnaire subscale focuses on the assessment of the absence of a mood disorders. Therefore, it provides a useful screening tool for depression and anxiety in patients. The answers are based on a 4- point (0-3) scale, so the possible scores ranged from 0 to 21 for each of the two subscales (depression and anxiety). The HADS manual indicates that a score between 0-7 is "normal", 8-10 "mild", 11-14 "moderate" and between 15-21 "severe". [17, 18]. Cronbach's alpha calculation for the seven items of the depression and anxiety subscales confirms the good internal consistency (Alpha = 0.70 and 0.85 respectively).

III Gastrointestinal Symptom Scale (GIS) Questionnaire

This questionnaire was designed in 1988 to assess the symptoms of gastrointestinal disorders [19]. Gastrointestinal Symptom Scale is a 15-item self-report tool designed to measure the severity of physical symptoms of patients with celiac disease. This questionnaire is ranked based on a 7-part Likert scale from no discomfort (score zero) to very severe discomfort (score 6) [20]. The scores of each participant are determined by calculating the scores of gastrointestinal symptoms and a higher score indicates the greater severity of symptoms [21, 22]. Kulich *et al.* reported the internal consistency reliability of the GIS questionnaire was 0.36-0.75 [21]. The duration of the answer to this questionnaire was about 5 to 7 minutes. This questionnaire validated in the present study and has an appropriate reliability and reliability with Cronbach's alpha of 0.80. The data analysed using SPSS software version 20 and Fisher's exact test, Independent t test and ANOVA test. The difference was considered significant at $P < 0.05$.

Results

The mean and standard deviation of the age of the participants in the study was 24.30 ± 8.07 years. The demographic variables of the experimental and control groups have been compared in (Table 1).

Table 1 showed that the experimental and control groups were match in term of demographic variables. The score of anxiety and depression in pretest and posttest were compared in (Table 2).

The Kolmogorov-Smirnov test used to test the distribution of scores. In (Table 3), the details of the test results are shown.

According to the results of the above table, in three variables of depression, anxiety and therapeutic response, the precondition is normal. Levin test used to examine the homogeneity assumption of variances.

The results indicated that homogeneity of variances was assumed. Homogeneity of the covariance matrix of dependent variables between the two groups evaluated using the M-box test. The F value obtained was 1.165 and at the level of $p < 0.05$ implied the covariance matrix assumption of dependent variables. The results of the internal group analysis are shown in (Table 4).

The results indicate that there is a difference between at least one of the variables compared to the pre-test and post-test. The results of multivariate covariance analysis are shown in (Table 5).

Based on (Table 5), there was a significant difference in mental health (anxiety and depression) and therapeutic response scores of post-test. The results of Anova for analyze of Depression, anxiety and therapeutic response are shown in (Table 6).

Table 1: Comparison of the demographic variables between the two groups.

Variable	Experimental n=15	Control n=15	P-value
Age (year, mean± Sd)	24.73±8.92	23.87±7.41	0.774
Sex Male	6 (40)	7 (46.7)	1.000
N (%) Female	9 (60)	8 (52.3)	
Education level Under Diploma	6 (40)	6 (40)	0.638
N (%) Diploma	3 (20)	5 (33.3)	
College student	6 (40)	4 (26.7)	

Table 2: Comparing mean ± SD scores of anxiety and depression in pre and post- test between experimental (n=15) and control groups (n=15).

		Group	Mean ± SD	max	min
		Pre-test	Anxiety	Experimental	16.8 ± 4.75
		control	15.5 ± 3.86	29	9
	Depression	Experimental	17.26 ± 4.49	26	13
		control	18.45 ± 4.33	24	12
	Therapeutic response	Experimental	44.66 ± 8.47	23	5
		Control	48.27 ± 7.16	59	45
Post-test	Anxiety	Experimental	22.2 ± 3.74	28	13
		Control	16.05 ± 4.14	27	10
	Depression	Experimental	23.8 ± 3.98	28	13
		Control	17.32 ± 4.93	26	13
	Therapeutic response	Experimental	56.3 ± 4.3	60	45
		Control	49.69 ± 8.7	61	47

Table 3: The result of Kolmogorov-Smirnov test.

	Anxiety	depression	therapeutic response
Kolmogorov smirnov test	0.241	0.152	0.25
P	0.191	0.200	0.13

Table 4: In-group analysis test.

	Value	F	Hypothesis df	Error df	Sig
Pillais Trace	0.994	1388.424	3	26	0.000
Wilks Lambda	0.006	1388.424	3	26	0.000
Hotelling's Trace	160.03	1388.424	3	26	0.000
Roy's Largest Root	160.203	1388.424	3	26	0.000

Kolmogorov Simonov test.

Table 5: The results of Anova.

Variable		Sum of squares	df	Mean squares	F	P	Partial eta square	Adjusted average
Mental health (anxiety and depression)	Pre-test	3786.64	1	3768.64	30.42	0.000	0.530	55.36
	Group	1152.185	1	1152.185	9.3	0.005	0.256	
		3344.02	27	3344.02				
therapeutic response	Pre-test	1201.8	1	1201.8	44.89	0.000	0.624	72.76
	Group	913.426	1	913.426	34.12	0.005	0.558	
		7222.72	27	26.76				

0.05**

Table 6: The results of Anova for analysis of Depression, anxiety and therapeutic response.

Variable		Sum of squares	df	Mean squares	F	P	Partial eta square	Adjusted average
depression	Pre-test	3365.14	1	3365.14	16.32	0.000	0.67	66.20
	Group	1242.229	1	1242.229	10.1	0.003	0.300	
	Error	350.13	27	350.13				
anxiety	Pre-test	3998.475	1	3998.475	32.87	0.020	0.479	58.912
	Group	1312.17	1	1312.17	9.3	0.028	0.189	
	Error	293.240	27	293.240				
therapeutic response	Pre-test	1201.8	1	1201.8	44.89	0.000	0.624	72.76
	Group	913.426	1	913.426	34.12	0.000	0.558	
	Error	7222.72	27	26.76				

0.05**

There was a significant difference in the mean scores of depression, anxiety and therapeutic response of pre-test and post-test (P). As a result, it can be said that with 95% confidence this hypothesis is confirmed in the present study. Therefore Acceptance and Commitment Therapy (ACT) is effective on therapeutic response in celiac patients.

Discussion

In present study, the effectiveness of Acceptance and Commitment Therapy (ACT) on depression and anxiety in celiac disease and its association with therapeutic response was assessed. The results of this study indicated that ACT was effective in depression and anxiety. This result was in consistent with the study of Fathi Ahmadsaraei *et al.* on the effectiveness of ACT on decreasing depression in diabetic patients [23]. Pourfaraj conducted a study on students with social fearing which ACT had decreased depression and anxiety during 10 sessions [24]. The results of another study by Dehghani indicated that ACT was effective on decreasing depression and anxiety in women with breast cancer [25].

It can be said that the explanation of the cycle of negative thoughts in the sessions reveals how depression is formed and exacerbated. Separating thoughts from feelings, and the inadequacy of thoughts, makes phenomena unpredictable in the person's mind. In the present study, the presence of a patient in a group of people with the same disease was a mode of emotional drainage. These patients, if they received (or did not) receive a physical response during treatment, were difficult, new, and anxious to them. However, when they shared their therapeutic experiences with others, they realized that what they considered strange and scary was a common experience among patients who had celiac disease. As a result, the burden of the disease reduced. In addition, people who had had a higher degree of treatment had their experiences available to those who were on the verge of those steps. This illustration of the higher stages of treatment made them more relaxed and more readily available. People who had higher levels of treatment had a better sense of direction and encouraging others to feel better. In other words, they had found a new meaning in their lives, which gave them new values. In addition, reducing anxiety and depression greatly improved the function of patients in their treatment follow up.

DeRubeis *et al.* conducted a study on depressive individuals and reported that ACT decreased depression [26]. Hor *et al.* investigated the effectiveness of ACT on patients with type 2 diabetes and reported that there was a significant decrease in depression [15]. Jourdin and Dulin showed that ACT had positive effects on depression [27]. Therefore ACT

is effective on improving depression. Several studies have reported the effectiveness of ACT on depression [28, 29]. Performing various methods such as explaining creative disappointment and value clarification technique were effective on improving depression [30-32]. Since patients with CD are confused about life and suffer from depression, reminding purpose of life and identifying values can motivate patients. In the present study, ACT was effective on anxiety. This result was in consistent with the study of Hor *et al.* that concluded effectiveness of ACT on anxiety, stress and negative thoughts in diabetic patients [15]. Irandoost *et al.* performed a study on women with backache and concluded that ACT had significant effects on reducing anxiety associated with pain [8]. Applying various methods like writing negative emotions caused negative and anxious thoughts to be objective. They found out what causes them to be angry. By writing these thoughts, they were able to think about the nature of thought and allowed them to think more closely about their content. In addition, using the method of conscious breathing exercises, training to increase the conscious awareness of our experiences, are all cases that reduce anxiety in the individual.

According to the results of the present study, ACT was effective on therapeutic response in patients with CD. This result is in consistent with the results of Irandoost *et al.* study that reported that ACT decreased anxiety, depression and also pain severity in women with back ache [8]. Anvary *et al.* conducted a study on men with backache and founded that ACT was effective on pain severity, pain acceptance and anxiety associated with pain [7]. CD is a gastrointestinal disease, which stimulated by mental condition and anxiety. In this study ACT have decreased anxiety and stress in patients with CD. Therefore, decreasing anxiety improves gastrointestinal diseases like celiac. Researches showed that celiac improved by treating depression. From the point of psychology depression as a self-violent has negative effects on celiac disease. Since calm patients focus on treatment process and prescribed diet as important factors, the disease improves better.

Limitations of the Study

Although the research has reached its aims, there were some unavoidable limitations. Because of the small population of participants, the statistical population was limited. Therefore, it is essential to perform more studies on ACT and other treatment methods in different diseases. It suggested to follow further studies on ACT and other psychological variables based on sex and disease severity.

Conclusion

Confirming the results, ACT will be proposed by specialists for patients with celiac disease in health centers. Due to the effectiveness of ACT on disease, it recommended to know this therapy and provide it in patient treatment.

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Author Contributions

MB interview with patient and data registration, RB and HM designed and wrote primary draft and discussed about it and submitted it. MH wrote primary draft and did statistics issue.

Conflicts of Interest

None.

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