



## The Effectiveness of Acceptance and Commitment Therapy on Depression, Anxiety, and Stress in Patients with Chronic Pain in Ahvaz

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### Abstract

**Background:** Chronic pain causes various problems and agonies including emotional disorders as well as limited personal, social, and occupational functioning. The present study aimed to investigate the effectiveness of acceptance and commitment therapy (ACT) on depression, anxiety, and stress in patients with chronic pain.

**Methods:** The research method was experimental with a pre-test, post-test, and follow-up design and a control group. The study population comprised all patients with chronic pain who were referred to the medical centers of Ahvaz in 2018. Using convenience sampling, we selected 30 patients willing to participate in the study and randomly divided them into experimental (n=15) and control (n=15) groups. Both were groups tested at the beginning and end of the intervention program with the depression, anxiety, and stress scale (DASS-21). The experimental group underwent nine sessions (90-minute sessions per week) of acceptance and commitment therapy. The follow-up was performed after 60 days. Data analysis was done using SPSS version 23.

**Results:** The mean±SD of the post-test scores of depression, anxiety, and stress was (12.03±2.82), (10.50±2.34), and (12.50±1.72) in the experimental group and (21.33±1.84), (19.20±4.12), and (26.71±1.18) in the control group, which had significant differences with each other. The results showed that acceptance and commitment therapy effectively decreased depression, anxiety, and stress in patients with chronic pain in the experimental group (Pvalue<0.05).

**Conclusions:** Acceptance and commitment therapy can be used as an effective intervention program to reduce depression, anxiety, and stress in patients with chronic pain.

**Keywords:** Acceptance and commitment therapy (ACT), Depression, Anxiety, Stress, Chronic pain.

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in their body. Chronic pain is defined as persistent or recurrent pain lasting longer than three months.<sup>3,4,5</sup> Although pain serves as a warning signal that is an indispensable part of living, chronic pain no longer serves as a warning sign and hurts various aspects of life (e.g., quality of life). Therefore, most people experiencing chronic pain suffer from negative emotions including depression, anxiety, stress, anger, and inability to undertake daily activities.<sup>6</sup> People with chronic pain no longer pursue their previous pleasant activities and might be at the risk of depression. The bio-psycho-social model suggests that chronic pain interferes with social, occupational, or recreational activities.<sup>7,8</sup> People with highly severe emotional distress often complain of physical illness, which is a strong predictor of physical, psychological, and social dysfunction.<sup>9</sup> Depression, anxiety, and stress are the most important risk factors for many diseases including heart failure and cancer.<sup>10</sup>

The third generation of psychological therapies and widespread studies have acknowledged the effectiveness of these therapies in chronic physical diseases.<sup>11,12</sup> ACT is one of the third-generation psychological interventions, which can reduce the symptoms of anxiety, stress, and depression in autoimmune diseases.<sup>13,14</sup> Steven Hayes, an American psychologist, designed this therapy in the 1980s and offered growing empirical studies and evidence on its effectiveness, especially in those with high psychological flexibility.<sup>15</sup> ACT has six core processes for establishing psychological flexibility. These processes are acceptance, cognitive defusion (self-as context), contact with the present (values), and committed action.<sup>16,17</sup> ACT aims to reduce experiential avoidance and increase psychological flexibility by accepting unavoidable and distressing unpleasant emotions (e.g., anxiety), fostering mindfulness, and identifying those personal values associated with behavioral goals.<sup>18,19,20</sup>

ACT was found to be effective in a variety of clinical conditions including depression, obsessive-compulsive disorder, workplace stress, end-stage cancer stress, anxiety, post-traumatic stress disorder, mental anorexia, heroin use, and even schizophrenia. EzzatPanah and Latifi<sup>21</sup> showed the effectiveness of ACT in reducing the psychological distress of patients with fibromyalgia syndrome and improving their quality of life. Dereix-Calonge et al.<sup>22</sup> showed the effectiveness of ACT in overcoming negative thoughts. Mohammadi and Soufi<sup>23</sup> also showed that ACT enhanced the quality of life and reduced perceived stress in cancer patients. Kemani et al.<sup>24</sup> also

## Introduction

Pain warns people to steer away from dangerous and unpleasant stimuli thus playing an important role in human survival.<sup>1</sup> Although often a transient feeling, it persists for some people past the point where it contributes to emotional distress and increased use of healthcare system resources.<sup>2</sup> Pain is defined as an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage. Pain is divided into two forms of acute and chronic. Acute pain serves as a warning signal with protective and adaptive function and warns people of a problem

reported the effectiveness of ACT in improving chronic pain of adolescents and their parents. Sheppard et al.<sup>25</sup> showed the effectiveness of ACT in reducing emotional stress and depression, suppressing negative thoughts, and enhancing the quality of life. Sabour and Kakabraee<sup>26</sup> showed that ACT helped people to accept their pain and decreased the severity of pain in women experiencing chronic pain.

The ACT therapist uses metaphors to teach people to cope with problems in the course of treatment. The therapist mostly tries to promote value-based living and helps the patients to find ideal living conditions and commit to those values. Therefore, the studies assessing chronic pain help to increase knowledge of physical and mental health problems. Given the psychological aspects of chronic pain, pharmacological intervention alone cannot help to treat chronic pain. Previous studies have shown that a combination of pharmacological and psychological interventions is effective in relieving chronic pain. Given the importance of the topic of chronic pain treatment, the present study sought to investigate the effectiveness of acceptance and commitment therapy on depression, anxiety, and stress in patients with chronic pain in Ahvaz city.

## Materials and Methods

The research method was quasi-experimental with a pre-test, post-test, and follow-up design and a control group. The study population comprised all patients with chronic pain who were referred to the medical centers of Ahvaz in 2018. Using convenience sampling, we selected 30 patients willing to participate in the study and randomly divided them into experimental (n=15) and control (n=15) groups. After sampling, the experimental group received nine sessions (90-

minute sessions per week) of acceptance and commitment therapy by a psychotherapist in the psychology clinic; the control group did not receive any treatment. The control group was considered on the waiting list of post-intervention. After the intervention sessions, a post-test was performed in the experimental and control groups. Follow-up was further conducted in both groups after 60 days. For ethical considerations, the participants provided written informed consent for participation in the research. Data collection instruments were depression, anxiety, and stress questionnaire (DASS-21). DASS was developed by Lovibond.<sup>27</sup> It has two forms. The short form has 21 items and each subscale of depression, anxiety and stress has seven items. Since DASS-21 is the short form of the original scale (42 items), the final score of each subscale should be doubled. Lovibond assessed the simultaneous validity of the DASS and depression scale in a sample of 717 people and showed that DASS was highly correlated with the depression scale. The validity of DASS-21 was also confirmed by Sahebi et al.<sup>28</sup> who performed factor analysis and extracted three factors of depression, anxiety, and stress. The results of this study showed that 68% of the total variance of the scale was explained by these three factors ( $\alpha=0.97$  for depression,  $\alpha=0.92$  for anxiety,  $\alpha=0.95$  for stress). In the present study, the Cronbach's alpha coefficient was 0.71 for the questionnaire.

The experimental group received nine 90-min sessions of ACT intervention. The content of the sessions is summarized in table 1.

The obtained data were analyzed through repeated measures analysis of variance and Bonferroni post-hoc test by use of the SPSS version 23.0 software. The significant level was set at 0.05.

**Table 1. Acceptance and commitment therapy (ACT) sessions<sup>29</sup>**

Sessions	Content of sessions
First	Introducing the therapist, getting familiar with the clients, creating a therapeutic relationship, setting the rules governing the treatment sessions, discussing data confidentiality and building trust, explaining the objective of training sessions, distributing the demographic questionnaire, and knowing pain severity of the patients through interviews
Second	Pretest, feedback from clients (the reason for continuing treatment, any change or expectations from the session based on clients' views), information on chronic pain, the introduction of ACT, homework.
Third	Feedback from clients, explaining the concept of behavior change, creating a sense of creative despair, and using the metaphor
Fourth	Introducing the concept of values and searching for values in life, explaining the concept of acceptance and its difference with failure, despair, denial, and developing desired skills using metaphor.
Fifth	Re-emphasis on acceptance in recognizing emotions and thoughts, continuing treatment despite obstacles, practicing stop thinking using metaphor, practicing mindfulness
Sixth	Practicing how to avoid painful experiences and know their consequences, introducing the concept of cognitive defusion (deliteralization), and practicing mindfulness.
Seventh	Self as context (self-observer) using metaphor (chessboard - sky), teaching monitory practices, practicing free will for self-body awareness, action-oriented training (separating self from action), mindfulness practicing, summarizing discussions and homework
Eighth	Reviewing the previous sessions, reviewing homework and feedback from the clients, preparing for committed action and consent to commit despite obstacles, teaching the difference between making a decision and taking an action (using the metaphor of jumping), practicing mindfulness
Ninth	Explaining the concept of recurrence in chronic pain and how to avoid recurrence of the disease (permanent pain) and achieving the goal of improving quality of life and reducing anxiety and distress by choosing the goals concerning values and committing to achieving those goals, appreciating their attendance, post-test and follow-up announcements

## Results

The participants included 30 patients with chronic pain, aged between 30 and 65 years old. According to the descriptive statistics, 46.70% of participants were male and 53.30% were female. The mean age of participants in the experimental groups was  $46.86 \pm 12.14$  years, whereas the control group was aged  $47.53 \pm 11.04$  years. Considering the level of education, the participants in the experimental group had secondary education (53.33%), and college education (46.67%). Whereas the participants in the control group had secondary education (40.00%), and college education (60.00%). Table 2 shows the mean and standard deviation (SD) of studied variables in the experimental and control groups in the pre-test, post-test, and follow-up. Mean $\pm$ SD of the depression for the experimental and control groups in the post-test stage was  $12.03 \pm 2.82$  and  $21.33 \pm 1.84$  respectively. Mean $\pm$ SD of the anxiety for the experimental and control groups in the post-test stage was  $10.50 \pm 2.34$  and  $19.20 \pm 4.12$  respectively. However, the mean $\pm$ SD of the stress for the experimental and control groups in the post-test stage was  $12.50 \pm 1.72$  and  $26.71 \pm 1.18$  respectively

(table 2). Therefore, ACT had a positive effect on reducing depression, anxiety, and stress in patients with chronic pain.

Box's M test results showed that the observed covariance matrices for the dependent variables are equal across groups. Levin's test results also showed equality of variances between groups. Mauchly's sphericity test result was also not significant. Shapiro-Wilk test results showed normal distribution of errors and no balance between the groups and experimental stage. Therefore, repeated-measures ANOVA was used to assess the effect of ACT on variables of depression, anxiety, and stress.

According to table 3 there was a significant difference in the three variables of depression, anxiety, and stress between the experimental and control groups.

Table 4 shows a significant difference in the three variables of depression, anxiety, and stress between pre-test and post-test as well as between post-test and follow-up. No significant difference was found in these three variables between post-test and follow-up.

**Table 2. Mean and standard deviation of dependent variable in experimental and control groups in pre-test, post-test and follow-up**

Variables	Phases	Control group	Experimental group
		Mean $\pm$ SD	Mean $\pm$ SD
Depression	Pre-test	23.80 $\pm$ 1.78	24.07 $\pm$ 1.58
	Post-test	21.33 $\pm$ 1.84	12.03 $\pm$ 2.82
	Follow-up	25.40 $\pm$ 1.94	12.09 $\pm$ 3.17
Anxiety	Pre-test	18.40 $\pm$ 4.50	22.46 $\pm$ 2.26
	Post-test	19.20 $\pm$ 4.12	10.50 $\pm$ 2.34
	Follow-up	15.53 $\pm$ 4.41	10.56 $\pm$ 2.32
Stress	Pre-test	25.24 $\pm$ 1.77	24.93 $\pm$ 1.58
	Post-test	26.71 $\pm$ 1.18	12.50 $\pm$ 1.72
	Follow-up	27.61 $\pm$ 1.87	12.08 $\pm$ 2.03

**Table 3. The results of repeated measures ANOVA to compare pre-test, post-test and follow-up of depression, anxiety and stress in experimental and control groups**

Variables	Source	MS	df	F	P	Partial $\eta^2$
Depression	Group	28.42	1	66.09	0.001	0.773
	Error (group)	0.43	14			
	Time	8.76	2	24.33	0.001	0.536
	Error (time)	0.36	28			
Anxiety	Group	27.11	1	84.72	0.001	0.801
	Error (group)	0.32	14			
	Time	6.17	2	26.83	0.001	0.571
	Error (time)	0.23	28			
Stress	Group	21.12	1	70.40	0.001	0.894
	Error (group)	0.30	14			
	Time	7.23	2	24.93	0.001	0.544
	Error (time)	0.29	28			

**Table 4. Bonferroni post-hoc test for paired comparison of the research variables across time series in the experimental groups**

Variables	Phase A	Phase B	Mean difference (A-B)	Pvalue
Depression	Pre-test	Post-test	12.26	0.0001
	Post-test	Follow-up	12.61	0.0001
	Pre-test	Follow-up	0.36	0.9990
Anxiety	Pre-test	Post-test	5.58	0.0001
	Post-test	Follow-up	7.39	0.0001
	Pre-test	Follow-up	1.81	0.9990
Stress	Pre-test	Post-test	5.48	0.0001
	Post-test	Follow-up	5.24	0.0001
	Pre-test	Follow-up	-0.24	0.9990

## Discussion

The present study aimed to investigate the effectiveness of acceptance and commitment therapy (ACT) on depression, anxiety, and stress in patients with chronic pain in Ahvaz city. The results showed the effectiveness of ACT in reducing depression in patients with chronic pain. This finding is consistent with the research results of Kemani et al.<sup>24</sup>, Khanbabaei et al.<sup>30</sup>, and Hor et al.<sup>31</sup>. Thinking and living in the past and future is an important factor that exacerbates the depression of patients with chronic pain. This approach helps the person to live the present instead of in the past and future and determine values and act based on those values despite frustrating thoughts and feelings.

ACT was also found to be effective in reducing anxiety in patients with chronic pain. This finding is consistent with the research results of Ghatrehsamani et al.<sup>32</sup>, Keshavarz et al.<sup>33</sup>, and Shakernegad et al.<sup>34</sup>. ACT suggests that human suffering stems from psychological inflexibility via cognitive fusion and experiential avoidance. The tendency to either engage or avoid mental experiences increases the risk of psychological disorder. Some experts claim that multiple efforts to avoid anxiety increases the risk of anxiety and exacerbate their symptoms. ACT aims to reduce experiential avoidance and increase psychological flexibility through accepting unpleasant, unavoidable, and distressing emotions (e.g. anxiety), fostering mindfulness, and setting personal values associated with behavioral goals.

The results also showed that ACT was effective in reducing stress in patients with chronic pain. This finding is consistent with the research results of Sabour and Kakabraee,<sup>26</sup> Khanbabaei et al.<sup>30</sup>, Ghatrehsamani et al.<sup>32</sup>, and Shakernegad et al.<sup>34</sup>. If people could master their living conditions and manage stressful situations, they can develop a sense of inner satisfaction, self-efficacy, and self-confidence, and improve psychological well-being. However, those suffering from chronic pain are not confident and are constantly concerned for negative assessment of their attitudes if they have not learned cognitive-behavioral skills to cope with stressful situations. Therefore, the most important goals of ACT are reducing stress, anxiety, and depression and assessing the physical, mental and social aspects of these patients.

Follow-up scores within two months also confirmed these findings and showed the effectiveness of ACT in overcoming negative thoughts and concerns and reducing depression, anxiety, and stress. Therefore, the effectiveness of ACT persisted at follow-up, which showed long-term effects of ACT that helped the patients to reduce rumination, anxiety, depression, and stress, and improve their quality of life. Therefore, the patients can overcome dominant repetitive negative thoughts and enhance self-belief and positive thinking to restore their lost potentials.

Limitations of the study were a small sample size (patients with chronic pain in Ahvaz city), mismatched participants in the two groups (in terms of age, occupation, education, type of pain). Therefore, the results should be generalized to the entire population with caution. The strength of the study was the personal-psychological intervention, which showed that

intervention was specific to the person with certain treatment sessions.

Chronic pain causes anxiety, depression, limited daily activities, inability to undertake tasks, and negative thoughts. It also decreases the quality of life. Therefore, psychological intervention helps the patients to specify the source of pain, avoid frequent visits to physicians, and save money and time. The results showed that mindfulness practicing and teaching core processes of ACT can be effective in reducing depression, anxiety, and stress of patients with chronic pain. Therefore, ACT can be used to overcome negative thoughts. It is recommended as a useful therapy to psychologists and counselors. Given the effectiveness of ACT in reducing depression, anxiety, and stress, it is recommended to carry out similar studies and assess the effectiveness of ACT in other physical and mental disorders. It is also suggested to compare ACT with other psychological interventions. Finally, it is suggested to introduce ACT as a standard intervention protocol in medical and counseling centers and encourage ACT therapists to promote the widespread use of ACT in Iran.

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## Conflict of Interest

The authors declare that they have no conflict of interest.

## References

- Moseley GL, Vlaeyen JWS. Beyond nociception: the imprecision hypothesis of chronic pain. *PAIN* 2015;156:35-8. doi:10.1016/j.pain.0000000000000014
- van Hecke O, Torrance N, Smith BH. Chronic pain epidemiology – where do lifestyle factors fit in? *British Journal of Pain* 2013;7:209-17. doi:10.1177/2049463713493264
- Aydede M. Does the IASP definition of pain need updating? *PAIN Reports* 2019;4:e777.
- Treede R-D. The international association for the study of pain definition of pain: As valid in 2018 as in 1979, but in need of regularly updated footnotes. *PAIN Reports* 2018;3:e643. doi:10.1097/PR9.0000000000000643
- Woolf CJ. What is this thing called pain? *The Journal of Clinical Investigation* 2010;120:3742-4. doi:10.1172/JCI45178
- Afzali A, Ebrahimi H, Emamian MH. The prevalence of mental disorders (depression and anxiety) and its related factors among the elderly in Bastam, 2018. *International Journal of Health Studies* 2018;4:12-6. doi:10.22100/ijhs.v4i3.568
- Meints SM, Edwards RR. Evaluating psychosocial contributions to chronic pain outcomes. *Progress in Neuro-Psychopharmacology & Biological Psychiatry* 2018;87:168-82. doi:10.1016/j.pnpbp.2018.01.017
- Kerns RD, Kassirer M, Otis J. Pain in multiple sclerosis: a biopsychosocial perspective. *Journal of Rehabilitation Research and Development* 2002;39:225-32.
- Zarei F, Akbarzadeh I, Khosravi A. The relationship between emotional intelligence and stress, anxiety, and depression among Iranian students. *International Journal of Health Studies* 2019;5:1-5. doi:10.22100/ijhs.v5i3.668
- Rahnama M, Sajjadian I, Raoufi A. The effectiveness of acceptance and commitment therapy on psychological distress and medication adherence of coronary heart patients. *Iranian Journal of Psychiatric Nursing* 2017;5:34-43. doi:10.21859/ijpn-05045

11. Clark DM. Realizing the mass public benefit of evidence-based psychological therapies: The IAPT program. *Annual Review of Clinical Psychology* 2018;14:159-83. doi:10.1146/annurev-clinpsy-050817-084833
12. Mousavi SM, Shabahang R, Khodadadi-Hassankiadeh N. The effects of acceptance and commitment therapy and biofeedback on chronic psychosomatic low back pain. *Caspian Journal of Neurological Sciences* 2019;5:118-26. doi:10.32598/CJNS.5.18.118
13. Amir F, Ahadi H, Nikkiah K, Seirafi M. The effectiveness of acceptance and commitment group therapy and group logotherapy in reducing perceived stress among ms patients. *Caspian Journal of Neurological Sciences* 2017;3:175-84. doi:10.29252/nirp.cjns.3.11.175
14. 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.e1. doi:10.1053/j.gastro.2018.11.030
15. Hayes SC, Levin ME, Plumb-Villardaga J, Villatte JL, Pistorello J. Acceptance and commitment therapy and contextual behavioral science: examining the progress of a distinctive model of behavioral and cognitive therapy. *Behavior Therapy* 2013;44:180-98. doi:10.1016/j.beth.2009.08.002
16. Hayes SC, Luoma JB, Bond FW, Masuda A, Lillis J. Acceptance and commitment therapy: Model, processes and outcomes. *Behaviour Research and Therapy* 2006;44:1-25. doi:10.1016/j.brat.2005.06.006
17. Hill ML, Masuda A, Melcher H, Morgan JR, Twohig MP. Acceptance and commitment therapy for women diagnosed with binge eating disorder: A case-series study. *Cognitive and Behavioral Practice* 2015;22:367-78. doi:10.1016/j.cbpra.2014.02.005
18. Cho S, Heiby EM, McCracken LM, Lee SM, Moon DE. Pain-related anxiety as a mediator of the effects of mindfulness on physical and psychosocial functioning in chronic pain patients in Korea. *The Journal of Pain* 2010;11:789-97. doi:10.1016/j.jpain.2009.12.006
19. Dindo L, Van Liew JR, Arch JJ. Acceptance and commitment therapy: A transdiagnostic behavioral intervention for mental health and medical conditions. *Neurotherapeutics* 2017;14:546-53. doi:10.1007/s13311-017-0521-3
20. Østergaard T, Lundgren T, Zettle RD, Landrø NI, Haaland VØ. Psychological flexibility in depression relapse prevention: Processes of change and positive mental health in group-based ACT for residual symptoms. *Frontiers in Psychology* 2020;11:528. doi:10.3389/fpsyg.2020.00528
21. Ezzat Panah F, Latifi Z. Effectiveness training based on acceptance, commitment and compassion on pain catastrophizing, distress tolerance and post traumatic growth in patients with fibromyalgia syndrome. *Quarterly Journal of Health Psychology* 2020;8:127-42. doi:10.30473/hpj.2020.43700.4227
22. Dereix-Calonge I, Ruiz FJ, Sierra MA, Peña-Vargas A, Ramírez ES. Acceptance and commitment training focused on repetitive negative thinking for clinical psychology trainees: A randomized controlled trial. *Journal of Contextual Behavioral Science* 2019;12:81-8. doi:10.1016/j.jcbs.2019.02.005
23. Mohammadi SY, Soufi A. The effectiveness of acceptance and commitment treatment on quality of life and perceived stress in cancer patients. *Quarterly Journal of Health Psychology* 2020;8:57-72. doi:10.30473/hpj.2020.45019.4308
24. Kemani MK, Kanstrup M, Jordan A, Caes L, Gauntlett-Gilbert J. Evaluation of an intensive interdisciplinary pain treatment based on acceptance and commitment therapy for adolescents with chronic pain and their parents: a nonrandomized clinical trial. *Journal of pediatric psychology* 2018;43:981-94. doi:10.1093/jpepsy/jsy031
25. Sheppard SC, Forsyth JP, Hickling EJ, Bianchi J. A novel application of acceptance and commitment therapy for psychosocial problems associated with multiple sclerosis: Results from a half-day workshop intervention. *International Journal of MS Care* 2010;12:200-6. doi:10.7224/1537-2073-12.4.200
26. Sabour S, Kakabraee K. The effectiveness of acceptance and commitment therapy on depression, stress and indicators of pain in women with chronic pain. *Iranian Journal of Rehabilitation Research in Nursing* 2016;2:1-9. doi:10.21859/ijrm-02041
27. Lovibond PF, Lovibond SH. The structure of negative emotional states: comparison of the depression anxiety stress scales (DASS) with the beck depression and anxiety inventories. *Behaviour Research and Therapy* 1995;33:335-43. doi:10.1016/0005-7967(94)00075-U
28. Sahebi A, Asghari MJ, Salari RS. Validation of depression anxiety and stress scale (dass-21) for an Iranian population. *Developmental Psychology: Iranian Psychologists* 2005;1:36-54.
29. Ducasse D, Fond G. La thérapie d'acceptation et d'engagement [Acceptance and commitment therapy]. *L'Encéphale* 2015;41:1-9. doi:10.1016/j.encep.2013.04.017
30. Khanbabaei N, Zahedi R, Rafiepoor A. The effectiveness of treatment based on acceptance and commitment on the psychological distress and fear of disease progression in patients with rheumatoid arthritis. *Quarterly Journal of Health Psychology* 2019;8:117-32. doi:10.30473/hpj.2019.46137.4395
31. Hor M, Aghaie A, Abedi A, Attari A. The effectiveness of acceptance and commitment therapy on depression in patients with type 2 diabetes. *Journal of Research in Behavioural Sciences* 2013;11:121-8.
32. Ghatrehsamani M, Najafi M, Rahimiab Boogar I. Comparing the effectiveness of acceptance and commitment therapy and physiotherapy on depression, anxiety, and stress in patients with chronic pain. *Journal of Psychoscience* 2019;18:159-69.
33. Keshavarz H, Zahra R, Abbas M. The effectiveness of acceptance and commitment therapy (ACT) on general anxiety. *Payesh (Health Monitor)* 2018;17:289-96.
34. Shakernegad S, Moazen N, Hamidy M, Hashemi R, Bazzazzadeh N. Effectiveness of acceptance and commitment therapy on psychological distress, marital satisfaction and quality of life in women with multiple sclerosis. *Journal of Health & Care* 2017;19:7-17.