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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±7.72) in the experimental group and (21.33±1.84), (19.20±1.12), 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 (P-value<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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Introduction

Pain warns people to steer away from dangerous and unpleasant stimuli thus playing an important role in human survival. 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. 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 in their body. Chronic pain is defined as persistent or recurrent pain lasting longer than three months. 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. 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.

The third generation of psychological therapies and widespread studies have acknowledged the effectiveness of these therapies in chronic physical diseases. ACT is one of the third-generation psychological interventions, which can reduce the symptoms of anxiety, stress, and depression in autoimmune diseases. 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. 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. 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.

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 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. showed the effectiveness of ACT in overcoming negative thoughts. Mohammad and Soufi also showed that ACT enhanced the quality of life and reduced perceived stress in cancer patients. Kemani et al. also...
reported the effectiveness of ACT in improving chronic pain of adolescents and their parents. Sheppard et al.28 showed the effectiveness of ACT in reducing emotional stress and depression, suppressing negative thoughts, and enhancing the quality of life. Sabour and Kakabaei29 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.27 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.30 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 (α=0.97 for depression, α=0.92 for anxiety, α=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>
<thead>
<tr>
<th>Sessions</th>
<th>Content of sessions</th>
</tr>
</thead>
<tbody>
<tr>
<td>First</td>
<td>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</td>
</tr>
<tr>
<td>Second</td>
<td>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.</td>
</tr>
<tr>
<td>Third</td>
<td>Feedback from clients, explaining the concept of behavior change, creating a sense of creative despair, and using the metaphor</td>
</tr>
<tr>
<td>Fourth</td>
<td>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.</td>
</tr>
<tr>
<td>Fifth</td>
<td>Re-emphasis on acceptance in recognizing emotions and thoughts, continuing treatment despite obstacles, practicing stop thinking using metaphor, practicing mindfulness</td>
</tr>
<tr>
<td>Sixth</td>
<td>Practicing how to avoid painful experiences and know their consequences, introducing the concept of cognitive defusion (depersonalization), and practicing mindfulness.</td>
</tr>
<tr>
<td>Seventh</td>
<td>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</td>
</tr>
<tr>
<td>Eighth</td>
<td>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</td>
</tr>
<tr>
<td>Ninth</td>
<td>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</td>
</tr>
</tbody>
</table>
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±12.14 years, whereas the control group was aged 47.53±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 (47.53±1.04 years. Considering the level of education, the participants in the control group had secondary education (53.33%), and college education (46.67%). The mean and standard deviation (SD) of the studied variables in the experimental and control groups in the pre-test stage were 10.50±2.34 and 19.20±4.12 respectively. However, the mean and standard deviation (SD) of the depression for the experimental and control groups in the post-test stage was 12.03±2.82 and 24.93±1.58 respectively. 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. The results of repeated measures ANOVA to compare pre-test, post-test, and follow-up. The results of repeated measures ANOVA to compare pre-test, post-test, and follow-up. Therefore, repeated-measures ANOVA was used to assess the effect of ACT on variables of depression, anxiety, and stress.

Table 2 shows the mean and standard deviation (SD) of studied variables in the experimental and control groups. 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. None significant difference was found in these three variables between post-test and follow-up.

Tables:

<table>
<thead>
<tr>
<th>Variables</th>
<th>Source</th>
<th>MS</th>
<th>df</th>
<th>F</th>
<th>P</th>
<th>Partial η²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>Group</td>
<td>28.42</td>
<td>1</td>
<td>66.69</td>
<td>0.001</td>
<td>0.773</td>
</tr>
<tr>
<td>Error (group)</td>
<td></td>
<td>0.43</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>8.76</td>
<td>2</td>
<td>24.33</td>
<td>0.001</td>
<td>0.536</td>
<td></td>
</tr>
<tr>
<td>Error (time)</td>
<td>0.36</td>
<td>28</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group</td>
<td>27.11</td>
<td>1</td>
<td>84.72</td>
<td>0.001</td>
<td>0.801</td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>Error (group)</td>
<td>0.32</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>6.17</td>
<td>2</td>
<td>26.83</td>
<td>0.001</td>
<td>0.571</td>
<td></td>
</tr>
<tr>
<td>Error (time)</td>
<td>0.23</td>
<td>28</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group</td>
<td>21.12</td>
<td>1</td>
<td>70.40</td>
<td>0.001</td>
<td>0.894</td>
<td></td>
</tr>
<tr>
<td>Stress</td>
<td>Error (group)</td>
<td>0.30</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>7.23</td>
<td>2</td>
<td>24.93</td>
<td>0.001</td>
<td>0.544</td>
<td></td>
</tr>
<tr>
<td>Error (time)</td>
<td>0.29</td>
<td>28</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Variables</th>
<th>Phase A</th>
<th>Phase B</th>
<th>Mean difference (A-B)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>Pre-test</td>
<td>Post-test</td>
<td>12.26</td>
<td>0.0001</td>
</tr>
<tr>
<td>Anxiety</td>
<td>Post-test</td>
<td>Follow-up</td>
<td>5.58</td>
<td>0.0001</td>
</tr>
<tr>
<td>Stress</td>
<td>Pre-test</td>
<td>Follow-up</td>
<td>5.24</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

Table 4. Bonferroni post-hoc test for paired comparison of the research variables across time series in the experimental groups
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., Khanbabei et al., and Hor et al. 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 Ghatehresamani et al., Keshavarz et al., and Shakernejad et al. ACT suggests that human suffering stems from psychological inflexibility via cognitive fusion and experimental 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 experimental 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 Kakabaei, Khanbabei et al., Ghatehresamani et al., and Shakernejad et al. 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.

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