



Comparing the effectiveness of acceptance and commitment therapy with cognitive-behavioral therapy on quality of life in patients with chronic low back pain

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Abstract

Introduction: The present study aimed to assess the effectiveness of Acceptance and Commitment Therapy (ACT) compared to Cognitive-Behavioral Therapy (CBT) on the patients' quality of life with chronic back pain.

Materials and Methods: The statistical population consisted of all patients with chronic back pain referred to the pain clinic of Akhtar Hospital in Tehran, Iran, in 2021. Thirty patients were selected and randomly assigned to two groups of CBT and ACT. Due to the drop in the sample, finally, ten patients remained in each group. The Personal Well-being Index-Adults (PWI-A) to assess the quality of life was used to collect data. The data were analyzed using descriptive statistics and Wilcoxon and Mann-Whitney U non-parametric tests.

Results: The findings showed that both interventions increased quality of life, while the difference between the two interventions was not significant ($Z = -1.32$, $P > 0.05$). Although according to Z-scores (-1.84 versus -1.17), ACT was more effective than CBT.

Conclusion: Based on the findings, both acceptance and commitment therapy and cognitive-behavioral therapy improve well-being and quality of life in patients with chronic low back pain.

Keywords: Acceptance and commitment therapy, Chronic pain, Cognitive-behavioral therapy, Low back pain, Quality of life

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Introduction

Pain is a distress caused by intense or traumatic stimuli and represents an unpleasant experience associated with tissue damage (1). Chronic pain is unpleasant sensory and emotional pain that lasts longer than 12 weeks and negatively affects various aspects of people's lives (2). The interaction of various physical, anatomical, occupational, behavioral, and psychological variables causes chronic back pain. Modifiable risk factors to treat chronic back pain include physical activity or lifestyle, obesity, and occupational and psychological factors such as depression and anxiety (3).

In 2019, the prevalence of back pain was 223.5 million people, which caused 63.7 million years of life lost due to disability caused by back pain (4). The prevalence of back pain in Iranians aged 35-70 is estimated at 25.2% (5). The evidence shows that chronic diseases, in addition to harmful impacts on the physical and mental dimensions, can greatly damage a person's quality of life. A bidirectional relationship exists between illness and quality of life (6). Therefore, one of the important issues for patients with chronic back pain is improving their quality of life.

Various researches have shown the high efficiency of psychological treatments (7). Fardi et al.'s showed that psychological interventions effectively treat chronic back pain (8). Cognitive-Behavioral Therapy (CBT) for improving chronic diseases has empirical support (9). So far, the effectiveness of CBT in reducing pain intensity and reinterpretation of pain (11) have been confirmed (10,11). The effectiveness of this treatment to increase the quality of life has been proven (12-17).

Although there is strong evidence that CBT is effective in managing chronic pain (18-21), there is a growing interest in applying new CBT approaches, such as ACT, for chronic pain (22). ACT is a psychological intervention recently attracting much attention (23).

ACT is the only psycho-experimental intervention in which acceptance and mindfulness strategies and commitment and behavior change strategies are used to increase psychological flexibility (24). The main goal of it is to correct emotional avoidance, expand cognitive content, and create and maintain a commitment to behavioral changes through psychological flexibility (25). ACT has central processes: acceptance, self-disclosure as

context, connection with the present, values, and committed action (26).

Various studies have shown the effectiveness of ACT in improving the self-efficacy, acceptance of pain, and psychological distress of people with chronic pain (27-29), improving pain management (30), and reducing the intensity of pain experience (31,32).

Regarding the effectiveness of ACT on quality of life, Iran Dost et al. indicated that ACT is effective on the quality of life of women with chronic back pain (33). The results of the studies of Duan et al. (34), Valizadeh et al. (35), Rezaei et al. (36), Mohammadzadeh et al. (37), Mohaddes Shakouri Ganjavi et al. (38), and Roche (39) also indicate the effectiveness of ACT on the quality of life.

Thus, due to apply effective approaches to improve the life quality in patients with chronic low back pain, and the superiority of ACT over CBT in reducing subjects' dropping and providing pleasant experiences, the present study seeks to compare the effectiveness of ACT with CBT in the quality of life of patients with chronic low back pain.

Materials and Methods

In this clinical trial, after selecting samples of chronic low back pain based on the diagnosis of a physician of the Akhtar Clinic (2021) in Tehran, 30 women were selected using randomized sampling. The sample size was based on the average sample size used in interventional studies (40). After selecting 30 patients and their numbering, patients were placed in groups (CBT and ACT) through a lottery, and written consent was obtained from them. Finally, ten people remained in each group due to the drop in the sample for reasons such as not accepting the continuation of treatment, traveling, and family members not agreeing. All patients in both groups took analgesics for several years. The inclusion criteria included having chronic back pain according to experts' criteria, not using any treatment (other than medical therapy) during the period in which subjects are present, having an intermediate education or higher degree, and willingness to participation. The exclusion criteria included substance addiction, having severe mental disorders such as schizophrenia, and severe aggression.

All participants completed the demographic checklist and Personal Well-being Index-Adults (PWI-A) before and immediately after

the intervention. Plan contributors performed all pre-test and post-test evaluations. The information of the patients in this study was confidential throughout.

The ACT and CBT were an 8-week program, with sessions of 2 to 2.5 hours per week, carried out by the second implementer (Ph.D. of clinical psychology) of the plan and supervised by the first moderator (Ph.D. of clinical psychology). These interventions were carried out at the Tehran Institute of Psychiatry in 2021. The ACT was based on the protocol for chronic pain (41).

In general, the content of the ACT sessions was as follows: Session 1: Meet the members together and introduce the order of the treatment; Session 2: Examining the potential values of clients, introducing the behavioral model and the concept of behavior change and mindfulness exercises; Session 3: Clarifying the concept of admission, identifying values and practicing mindfulness; Session 4: Identifying the values and objectives for achieving it, barriers to achievement, commitment to action and practicing mindfulness; Session 5: Practicing a defusion (separating from painful thoughts and feelings) and practicing mindfulness; Session 6: Determining commitment to action and practicing mindfulness; Session 7: Examining the primary and secondary suffering, commitment to action and barriers to accepting and practicing mindfulness; Session 8: Re-evaluating values, reviewing recurrence, and saying good bye. The summary of the CBT intervention sessions was as follows: Session 1: Patient assessment and training on chronic pain; Session 2: Abdominal pain and breathing theory; Session 3: Self-conscious thoughts and pain; Session 4: Cognitive reconstruction; Session 5: Time-consuming activity; session 6: Sleep health; Session 7: Anger management; Session 8: A prevention program of relapse (42).

Research instruments

A) *Demographic Characteristics Checklist*: Personal information such as gender, age, level of education, marital status, and duration of the disease were studied.

B) *Personal Well-being Index-Adults (PWI-A)*: This questionnaire includes seven satisfaction materials that relate to domains of quality of life, such as standard of living, health, achievements, personal relationships with others, personal safety, social affiliation, and future security. In studies in Australia and other countries, the researchers reported that this tool has proper psychometric properties. Each question on the scale is scored from 0 to 10, and the range of grades is from 0 to 70, including the general quality of life (43). Also, Nainian et al. showed that the scale is reliable based on the complete alpha coefficient (0.89) and the correlation coefficient related to its retest (0.79). Exploratory factor analysis indicated the saturation of one factor, and the indicators obtained from confirmatory factor analysis confirmed the average fit of the model. Also, the obtained correlation coefficients indicate the convergent validity of the scale with similar instruments (44). In this study, in addition to descriptive statistical indices and methods such as frequency, mean, and standard deviation for variables, we used the non-parametric Mann-Whitney U Test to compare experimental and control groups due to the drop in subjects and sample size limitation in the CBT and ACT groups. We compared the changes in each group aiding the Wilcoxon test. Data were analyzed by SPSS-21 software.

Results

The demographic variables such as age, and duration of pain were shown in Table 1. Also, 40% of the participants had below-diploma education and major part of the participants were married (75%).

Table 1. The demographic characteristics of the patients

Group	Variable	Minimum	Maximum	Mean	Standard deviation
CBT	Age	30	52	41.90	7.62
	Duration of pain (Year)	2	10	4.10	2.47
ACT	Age	43	69	57.20	9.01
	Duration of pain (Year)	1	20	7.20	5.97
Total	Age	30	69	49.55	11.29
	Duration of pain (Year)	1	20	5.65	4.72

As shown in Table 2, in both CBT and ACT, the mean quality of life increased from pre-test to post-test. The results of the Wilcoxon test

showed that the Z-score of CBT group from the pre-test to the post-test was -1.17 and the Z-score of ACT group from the pre-test to post-

test was -1.84 ($P= 0.08$, $P= 0.06$, respectively). Also, according to the insignificant Z-score (-1.32) related to the Mann-Whitney U test, there

was no significant difference in changes related to quality of life between ACT and CBT groups ($P= 0.18$).

Table 2. Results of the Wilcoxon Test and Mann-Whitney U Test

Variable	Group	Stage	Mean	Standard deviation	Wilcoxon Test		Mann-Whitney U Test	
					Z	P	Z	P
Quality of life	CBT	Pre-test	36.62	10.88	-1.84	0.06	-1.32	0.18
		Post-test	47.62	7.62				
	ACT	Pre-test	26.70	9.98	-1.17	0.08		
		Post-test	38.73	9.16				

Discussion

The results of the present study showed that the mean scores of quality of life in both CBT and ACT groups were increased. The non-significance outcome of treatment groups probably happened for several reasons. One reason is the small sample size and the loss of sample people at the beginning of the research. The results would probably be significant if there were more people, especially in the ACT group. Another reason could be the insufficient cooperation of the participants, which caused them not to take the assignments of each meeting seriously or not do them correctly. There was also no significant difference between the two interventions. The results of Amini Sadr et al.'s study, on depression and quality of life of 45 patients with chronic back pain in Tehran, Iran using Beck Depression Inventory (BDI) and World Health Organization Quality of Life (WHO-QOL) questionnaire, showed that ACT and CBT impacted on depression and quality of life in patients (13). These results are almost consistent with the results of the present study that indicate the effectiveness of ACT on quality of life (33-39). For example, Valizadeh et al. assessed the effectiveness of ACT on quality of life and death anxiety among 30 older adults in Kermanshah, Iran, using the WHO-QOL questionnaire and Collet-Lester Fear of Death Scale (CLFDS). They concluded that ACT improved the quality of life and reduced death anxiety in the elderly. These results, which indicate the effectiveness of ACT on the quality of life of patients, are almost in line with the current study (35). Also, Rezaei et al. investigated the effectiveness of ACT and treatment based on compassion on depression, anxiety, and quality of life of 80 patients with systemic lupus treated in Shiraz hospitals using BDI, Zung's Self-rating Anxiety Scale (SAS), and WHO-QL questionnaire. They showed that ACT had a significant effect on depression, anxiety and quality of life of these patients.

These results are almost consistent with the results of the present study (36). Mohammadzadeh et al. also assessed the effectiveness of ACT on perceived stress, body image, and life quality in 30 women with breast cancer in Tajrish Shahada Hospital using the Fisher Body Image Questionnaire (FBIQ), the World Health Organization's Quality of Life (WHO-QOL) questionnaire and Cohen's Perceived Stress Questionnaire (CPSQ). The results showed that ACT effectively improved body image, increased quality of life, and reduced perceived stress. The effectiveness of this treatment in improving the quality of life is almost consistent with the current study (37). Moreover, a study by Mohaddes Shakouri Ganjavi et al. on 30 women with type 2 diabetes referring to Imam Khomeini Hospital in Tehran using a quality of life questionnaire indicated that ACT increased the quality of life score compared to the control group (38).

Moreover, the results of the conducted studies indicated the effectiveness of CBT on quality of life (12-17). For example, Rouhi et al. studied 30 hemodialysis patients using self-knowledge, emotion regulation and quality of life questionnaires. They showed that the mean scores of emotion regulation and the quality of life increased in the CBT group (12). Also, Alamouti et al. assessed 44 men and women with non-specific chronic back pain in physiotherapy centers of Tehran and Karaj provinces using Visual Analog Scale (VAS), Fear Avoidance Beliefs Questionnaire (FABQ) and Pain Self-Efficacy Questionnaire (PSEQ). They concluded that offline cognitive exercises is useful for reducing pain and improving psychological factors of patients with chronic back pain (15). In this line, Shokrgozar et al. investigated the effectiveness of CBT on pain perception and mental well-being of 30 patients with chronic back pain referred to the Karaj treatment center through McGill pain questionnaire and mental well-being questionnaire. They showed that

CBT had a positive and significant effect on perceived pain and mental well-being in the experimental group (16). In the present study, there was no significant difference between the two groups of ACT and CBT regarding quality of life. To explain this finding, in CBT, the patient achieves positive results by correcting maladaptive thoughts. In ACT, the patient also avoids maladaptive strategies such as avoiding excitement and stress by accepting and committing to their problems. As a result, both treatments have similar results and a common point. As with any research, the present study has limitations, such as small sample size. Another limitation was the lack of follow-up. So, it is unclear how therapeutic effects will be maintained in the long run. In addition, we selected only women with chronic pain and the samples were limited to a specific geographic region, with a limited number of volunteers and target-based ones. These conditions encounter generalized results with caution. It is recommended that patients be followed up in one or more stages to determine treatment effects over time. A similar study should be conducted on samples with a variety of native and demographic characteristics, as well as gender. Future research should also be used to implement other therapeutic patterns based on their therapeutic pattern design to compare the effectiveness of the approaches to improve the psychological symptoms in patients with chronic pain.

Conclusion

The findings of this study support the use of acceptance and commitment therapy and cognitive-behavioral therapy in improving the quality of life in patients with chronic pain.

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As a result, these therapies, as complementary therapies along with other psychological therapies or as independent therapies can be used in patients with chronic pain.

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Conflict of Interests

The authors declare no conflict of interest.

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Ethical Considerations

The Ethics Committee of the Tehran Institute of Psychiatry approved this research. The information of the patients of this study was confidential.

Code of Ethics

24859, IRCT2014092615577N2

Authors' Contributions

The first author (Soheila Ghomian) had a role in the design and implementation of this research (especially treatment implementation). The second author (Samira Masoumian) wrote the text of the article and followed up on the administrative work related to the implementation. Ali Asghar Asghari Nezhad received the funding for this research from the Research Unit and supervised the process of this research. Masoud Hashemi prepared samples with chronic pain, and Sima Pur Akbari and Neda Vahed played a role in the implementation stages of this research, such as evaluating people and inviting them to treatment sessions.

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