The effectiveness of acceptance and commitment therapy (ACT) on quality of life of women with chronic low back pain

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Abstract

Introduction: Acceptance and commitment therapy [ACT] can enhance psychological flexibility and subsequently improve mental health and quality of life of individuals. Also recovery of patients with chronic low back pain (LBP) is depended on several physical and psychological factors. Therefore, the authors aimed to examine the effectiveness of acceptance and commitment therapy (ACT) on quality of life of women with chronic low back pain.
Method: It was a semi-experimental research with pre-test and post-test design together with control group. Participants were 14 women with chronic low back pain attending clinical centers and hospitals of Rasht who were selected by convenience sampling. Next, they were randomly assigned to experimental (ACT+ usual medical care) and the control group (usual medical care only).Then experimental group received ACT for 8 one-hour sessions. To analyze the data, covariance analysis was used. The instrument was self-reported by the World Health Organization's quality of life. Data analysis was performed using analysis of independent t-test.

Results: Results indicated reduction effect in pain severity in the patients who practiced 8 sessions ACT reported significantly lower pain than patients who only received usual medical care. Also, the results shows that except of subscale of physical health ($P < 0.38$) there was significant increase in all other subscales of quality of life in experimental group ($P < 0.001$).

Conclusion: The results show that acceptance and commitment therapy reduces pain severity and improve the quality of life and recommend use of coping strategic with pain in patients with chronic low back pain (CLBP). Counselors and family therapists recommended a counseling centers and family education classes in order to improve quality of life of female patients with CLBP.

Keywords: Acceptance and commitment therapy; Chronic low back Pain; Quality of life;Women

Introduction

Low back pain has a lifetime prevalence ranging from 60% to 70% in industrialized countries, causes more years of disability than any other health condition and is the second most frequent reason for absence from work (1). Chronic LBP is not only prevalent, but is also a source of great physical disability, role impairment, and diminished psychological well-being and quality of life (1, 2).

Chronic low back pain (CLBP) is a type of low back pain that has lasted for more than 12 weeks. It causes considerable suffering to the individual and is a major financial burden on the National Health Service (NHS) and wider society. UK healthcare costs are £1.6 billion annually (3), and CLBP is responsible for 80% of this cost (4).Physiotherapy is a common treatment for CLBP, with 1.26 million patients referred to NHS physiotherapists at a cost of £150 million per annum (5).

The strong relationship between pain and disability has led to a focus on pain reduction for many treatment approaches. Several forms of physiotherapy are recommended for CLBP, including exercises, manual therapy and back classes (6). The type of physiotherapy delivered varies considerably in duration and content, and there is little consensus about the most appropriate and cost-effective treatment (7, 8). It is likely that the prominence given to pain relief is based on the commonsense notion that pain reduction is a necessary precursor to disability reduction.

In contrast, psychosocial approaches to the treatment of chronic pain have historically focused, at least to some extent, on altering responses to pain such that these responses lead to disability reduction (9, 10). A recent example is that of Acceptance and Commitment Therapy (11), which has amassed considerable evidence with regard to Pain relief effectiveness(12) and is considered ad an intervention with “strong” empirical support according to the American Psychological Association’s (APA) Division of Clinical Psychology (13). In attempting to change responses to the experience of persistent pain, the overarching focus of ACT is to assist pain sufferers in engaging in a flexible and persistent pattern of values-directed behavior while in contact with continuing pain and discomfort, particularly when efforts to control or reduce pain or discomfort have failed in the past or contributed to greater difficulties over the longer term (9, 10, 13).

A recent trial of ACT for CLBP delivered by psychologists found that patients referred for physiotherapy were somewhat resistant to seeing a psychologist and consequently has recommended combining ACT with physiotherapy (14). A qualitative study investigated potential barriers and facilitators to embedding ACT within a physiotherapist-led pain rehabilitation program. Findings suggested this presented challenges and opportunities but was a positive experience overall if extra support was provided (15).

Change in pain responses has, thus far, been operationalized in two ways: (1) reducing the occurrence of pain control efforts and (2) increasing the frequency of activities that directly contribute to value living.

In summary, although it appears that ACT for chronic pain is effective, it is not the theorized pattern of change in pain control efforts and engagement in valued activity occurs or (b) that these patterns of behaviors are related to reduction in disability. Specifically, from the perspective of the ACT model, one would hypothesize that successful reduction in disability necessitates that pain control attempts decrease over the course of treatment, while engagement in personally-valued activities increase. Also, there is a need for further studies into the specific effects of mindfulness studies on chronic pain. Regarding as the researcher knowledge efficacy of mindfulness has not been explored on quality of life of chronic pain patients in Iran. Therefore, the authors aimed to examine the effectiveness of acceptance and commitment therapy (ACT) on quality of life of women with chronic low back pain.

Method

Sampling

Out of initial female samples aged 30–45 (n = 35) who diagnosed as CLBP by physicians in physiotherapy centers of Rasht-Iran at least 6 months before. Only 26 met inclusion criteria and gave consent to participate in the research program. Patients were randomly assigned in small groups to receive medical usual care (experimental group) and medical usual care (control group). Some patients dropped during and after the treatment. The final sample of the study comprised of 14 females.

Inclusion criteria

- Age 30–45 years
- Gender - female
- Language – Persian
- Qualification - educated at least up to high school
- Being under medical treatments like physiotherapy and medicine
- Medical problem-history of CLBP and persisting pain for at least 6 months
- Consent and willingness to alternative and complementary therapies for pain management.

Exclusion criteria

- History of Spinal cord surgery
- Unavailability in next 3 months
- Combination with other chronic disease
- Psychotherapy during the last 2 years excluded

The proposal of study approved by the scientific committee of "Department of Psychology, Karaj Branch, Islamic Azad University, Karaj, Iran" psychology department and all patients signed consent form participate in the present study. Approval from Institutional Ethics Committee of physiotherapy center of Rasht was obtained in Iran also to carry out the research. It was a semi-experimental research in pre-test and post-test design together with control group to assess the efficacy of ACT in 2 times frames (before-after the program). An ACT program administered one session per week for explaining techniques, practice, and feedback and share their experience for 8 weeks beside 30–45 min' daily home practice [Table 1]. The process of framing the program was based on the quid lines provided by Kabat-Zinn, Morone (2008a, 2008b and 2007) (16-19) and some adaptation done for the patients involved in the study. The control group was not offered any type of intervention in the research project. Consequently, they underwent the normal routines in healthcare including physiotherapy and medicine.

Table 1: ACT Content of Sessions

Week 1	Welcome and introduction of psychologist Ice breaker exercise Explanation conceptual framework and rational of ACT for LBP Explanation of fundamentals of mindfulness approach Brochure given about mindfulness and all coming sessions	Week 2	Delivering the rational of effectiveness of mindfulness of breathing on reduction of pain Educating patients about two ways of practicing mindfulness of breathing (1-while formally sitting, 2-any time of day and anywhere) Practicing breathing mindfulness Mp3 cd provided for home practice (everyday 10-15 min)
Week 3	Delivering the rational of effectiveness of sitting meditation on reduction of pain Explanation and practicing sitting meditation Mp3 cd provided for home practice (everyday 15-20 min)	Week 4	Explanation of the body scan techniques benefit and rational in relation to LBP Practicing body scan step by step Mp3 cd provided for home practice (everyday 20-25 min)
Week 5	Explanation and practicing advanced body scan aimed to body as whole Mp3 cd provided for home practice (everyday 20-25 min)	Week 6	Explanation of walking meditation and rational of using walking meditation for LBP Practicing walking meditation Home practice (everyday 25-30 min)
Week 7	Explanation of how mindful living leads to reduction of pain Mindful living's instruction and exercises The participants choice to practice any mindfulness exercise daily	Week 8	Acknowledgment Summarizing sessions Feedback Posttest

ACT= Acceptance and Commitment Therapy (ACT) ; LBP =Low Back Pain

The sessions conducted in Bahar counseling center in Rasht. Sessions took 8 weeks, and each session lasted for 60 min. Table 1 shows the details of the intervention session's content, which was prepared according to books and to previous studies(16-19).

The questionnaire completed by patients before the intervention and after the interventions.

The following are used for assessment of participants:

Pain intensity was assessed with two measures: the McGill Pain Questionnaire Short Form (MPQ-SF) (20), that has reliability

and validity in an older population (21) with lower scores indicating less pain. Pain was also measured with the SF-36 Pain scale (22) with higher scores indicating less pain.

Pain acceptance was measured with the Chronic Pain Acceptance Questionnaire (CPAQ)(23), that has been shown to correlate with reports of lower pain and greater physical function (23). The Activity Engagement subscale was separately analyzed but not the Pain Willingness subscale as the former is a more robust predictor of pain-related outcomes (24). Improvement is reflected in higher scores.

Quality of life (QOL) was measured with the SF-36 Health Status Inventory (21). The three summary scores, and the scales for Pain and Physical Function were included. Higher scores reflect improvement.

Statistical analysis

The SPSS 20 (Armonk, NY: IBM Corp) was used for data analyzing. For descriptive analysis mean and standard deviation (SD) were used. For performing ANCOVA, the pretest scores were used as covariates.

The final data analysis was carried out using SPSS-19 (version 19; SPSS Inc., Chicago Illinois, USA). After confirming of normal distribution of the variables using by the Kolmogorov- Smirnov (K-S) test, independent t-test were used for data analysis. Data are presented as mean ± SE. Significance for all analyses was set at $P < 0.05$

Results

The mean age was 40.3, SD = 8.2. 36% of females were working and the rest were a house wife. All were married and from middle-income families. 9.8% of patients reported very low physical quality of life, and the rest were low (65.8%) and moderate (34.2%). This was 32.4%, 30% and 37.6% very low, low and medium levels of mental quality of life in patients participated in our study (n = 14).

The results shows that except of subscale of physical health ($p < 0.38$) there was significant increase in all other subscales of quality of life in experimental group ($p < 0.001$).

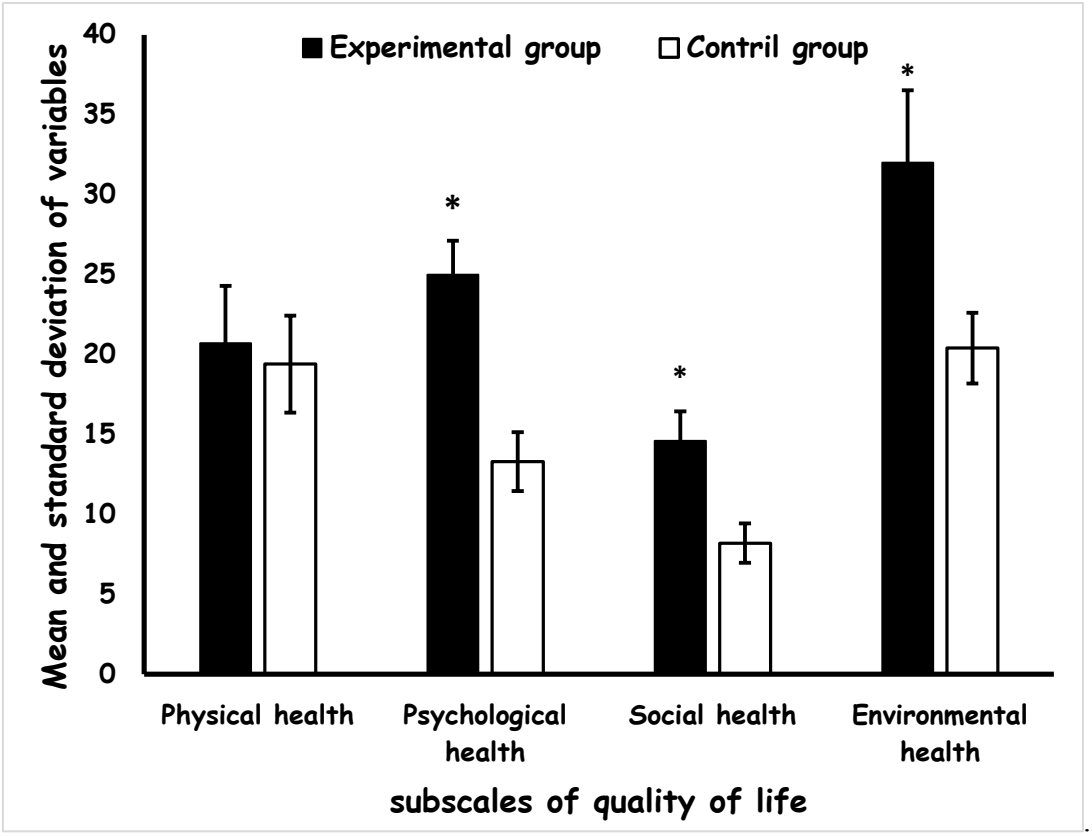

Figure 1. The comparison of subscales quality of life of experimental group and control group after intervention

***Significantly different in comparison pre and post-test within the groups**

The results indicated that after adjusting for pre-test scores, there was a significant effect between subject factor group (F [1, 38] =110.4, $p < 0.001$) and (F [1, 42] =113.8, $p < 0.001$). Adjusted post-test scores suggest that the intervention had an effect on decreasing the pain scores of the CLBP patients who received the experimental as compared to those who were in the control group and did not receive any mind-body therapy.

In summary, the mean and SD of patients in experimental group showed a decrease in pain and increase in quality of life.

Discussion

From the perspective of modern behavior analysis, a primary purpose of the treatment of chronic pain is to alter responses to pain, such that responses contribute to decreased disability (or at the very least do not contribute to increased disability)(15). In technical terms, treatment aims to alter the stimulus function of pain, such that it no longer unavoidably occasions disability behavior. One therapeutic model, that of ACT, specifically hypothesizes that successful treatment necessitates (a) enhanced willingness to have pain without unnecessary and unhelpful struggles for pain control and (b) behavioral changes such that actions are purposively directed towards activities that bring meaning and satisfaction to living(16-19). The results showed that the experimental group who were subjected to the ACT showed a significant improvement in their overall pain severity and quality of life scores due to the training received as compared to the control group who received only usual medical care. The acceptance and commitment therapy program reduced pain perception and enhanced both physical and mental quality of life and impacted on the experimental group clearly in comparison of the usual medical care. In the current study, the participants uncoupled the different components of the experience of pain. Breathing exercise distract their mind from pain to breathing and mindful living made them aware about maladaptive coping strategies. Baranoff et al., 2013(25) Nyklícek and Kuijpers, 2008(26) and Morone et al., 2008 (27) reported the same results. Overall, the present results have provided additional positive support for the ACT theoretical model with regard to its specified treatment processes.

It is also worth noting that there are aspects of the ACT model that were not investigated with the present study. Recently, the primary processes targeted for change within the model have been defined as three pairs of response options (11) and there is evidence in chronic pain specifically to support this conceptualization (28). The first pair, technically termed diffusion and acceptance, relates to the decreased efforts for pain control assessed here. The second pair, values clarity and committed action, was reflected in the engagement in valued activities items. The third pair, present-focused awareness and self-as-context, were not assessed in the present study(25). This latter pair of responses refer to the within treatment augmentation of "mindfulness" type behaviors, where patients become more attentive to the present, which hypothetically augments their ability to respond effectively to the stimuli, internal and external, that are present(27). Although the treatment package included content specific to these aspects of pain responding, it was not assessed as part of the weekly diary data(9, 10, 13).

This study also has other limitations. Perhaps foremost among these from a methodological standpoint are the lack of a comparison condition and absence of an assessment of steady state responding prior to the intervention. In addition, while the emphasis on data evaluation on a case-by-case basis allows perhaps a more fine-grained analysis of patterns of change over treatment, it is not clear if the relatively small sample size included in this study will generalize to the wider population. One final limitation is apparent from a conceptual level of analysis. Although this study attempted to focus more fully on the measurement of altered stimulus functions of pain in those with chronic pain, it was not a true test. Rather, this was an observational study where a pattern of responding, theorized to be a proxy indicator of altered stimulus function, was specified and then evaluated relative to patient data. Taking these caveats into consideration, our findings are the first to attempt to examine the theoretical underpinnings of ACT for chronic pain in this way.

Conclusion

In summary, an 8-week effectiveness of mindfulness ACT program is feasible among community dwelling women with chronic low back pain (CLBP). 2-month follow-up suggested sustained benefit from the program as measured by continued ACT by program participants and sustained improvement in physical function and pain acceptance. Mind-body therapies such as the ACT program are a promising non-pharmacologic adjunct to current pain treatment for women with CLBP. However, larger more rigorous trials must be undertaken to convincingly demonstrate their effectiveness. This article was extracted from a PhD thesis by the author Maryam Mousavi for the health psychology at Karaj Islamic Azad University, Karaj Iran.

Conflict of interests

Authors declare no conflict of interest.

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