Comparing the efficacy of quality of life therapy and cognitive-behavioral therapy on chronic pain in female patients in Esfahan

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Abstract:
Psychosocial and behavioral factors have important role in the continuity of chronic musculoskeletal pains. This research is an attempt to compare the effect of medication, cognitive-behavioral therapy plus medicine and quality of life therapy plus medicine on female patients with chronic musculoskeletal pains.

Method: This research is a quasi-experimental one with pretest, posttest and control group. The population were all the women with chronic musculoskeletal pains referring to medical and rehabilitation centers in Esfahan in 2011-12. The sample were 30 women selected through available random selection and allocated in two groups of experimental and control. The participants completed Mc Gill's pain multidimensional and demographic questionnaires in pretest and posttest stages. The intervention were in 8 sessions, one in a week. To analyze the data, covariance analysis was used.

Findings: The results showed that cognitive-behavioral therapy plus medicine (p<0/05) and quality of life therapy plus medicine (p<0/05) were more effective than medication (control group) in multidimensional quality and intensity of the pain.

Conclusion: Based on this research, cognitive-behavioral therapy and quality of life therapy are effective methods to decrease the multidimensional quality and intensity of pain.

Key words: Cognitive-behavioral therapy, quality of life therapy, pain intensity, multidimensional quality of pain and chronic musculoskeletal pains.

Introduction:
Chronic musculoskeletal pain is one of the pervasive pain in which millions of people suffer. Chronic pain is a pain which takes one month more than general period of acute disease or rational period for damages improvement or even it is related to a chronic pathologic process which leads to pain continuity or relapse in the distance of months and years time (Bonica, 1990).

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The diversity of patients' reaction to stimuli in injured organs and treatment is better understood when pain is considered as personal experiences and can be affected by situation meaning, heart learning history and physical damages. It often seems that biomedical factors create the pain but psychosocial and behavioral factors make the pain worse or better and affect on adjustment and inability during the time. When a pain continues for a long time, it is not an exclusively physical or psychological pain. The experience of the pain is complicated which goes on because of complicated internal relationship of biomedical, psychosocial and behavioral. It must be paid attention that these relationships are not static but it is evolved during the time (Gatchel & Turk, 2002).

Chronic musculoskeletal pains are arthritis rheumatism, chronic backache, Fibromyalgia and myofascial pain. The related theories are pain sensory/specialized theory, pain gate control theory and causality-stress theory. The psychoanalytic approach believes that this chronic pain has unconscious meaning which is rooted in childhood experiences and it is a way to attract kindness and the compensation of guilt feeling and internal negative feeling (Miller, 1993).

In behavioral approach, learned pain behavior is based on conditioning. Reward and punishment are basic concepts of this approach to chronic musculoskeletal pain. Cognitive approach emphasizes on the role of cognitive variables such as beliefs and control about pain and cognitive errors. Cognitive-behavioral approach emphasizes not only on pain behavior but also on cognitive and emotional elements (Turk, Meichenbaum, 1994).

Parallel with chronic pain, psychosocial variables have important role in the retention of pain behavior and its discomfort. Clinicians in different intellectual domains have the same idea that depression and anxiety decrease is the best way to reduce chronic pain disorder (Gatchel, Turk, 2002).

From the clinical point of view, chronic musculoskeletal pains are multi-factorial and complicated processes. Suggested treatment for these disorders is compound treatment. In this kind of treatment, psychologists or psychiatrists pay attention to patients' psychological problems and an orthopedist or a brain/nerve specialist to physical problems and it needs practitioners' and psychologists' cooperation (Kaplan & Sadok, 2007).

The suggested treatments for musculoskeletal disorders are:
1- Factor conditioning treatment
2- Response conditioning treatment
3- Cognitive therapy
4- Cognitive-behavioral therapy
5- Psychodynamic treatment and hypnotism
The purpose of this research is to study and compare the efficacy of quality of life therapy and cognitive-behavioral therapy on chronic musculoskeletal pain disorder.

Quality of life therapy (QOLT, also referred as CASIO model) is based on the positive psychology, cognitive therapy and the theory of life quality. It is used both for clinical groups and general people. The aim of quality of life therapy is to increase the happiness and life satisfaction.

In the assessment and intervention, the individuals are sensitive to 16 areas of life. They include health, self-esteem, goals and values, finance, work, play, learning, creativity, helping, affection, friends, children, relatives, home, neighborhood and community.

The five components of the CASIO is based on quality of life theory and is the basis of many therapeutic interventions in life quality. It consists of 1)circumstances, 2)attitudes, 3)personal standards, 4)importance, and 5) other areas. This intervention (QOLT) offers strategies for 16 areas of life, and includes a general model of problem solving on the five components of the CASIO model (Fig. 1).

Choose one of 16 areas of life → Change circumstances → Change attitudes

Change personal standards → Change importance or value → Change other areas

Life satisfaction (quality of life)

Fig. 1 Five paths or CASIO model of life satisfaction or QOLT (Abedi & Vostanis, 2010)

The brief therapeutic stages are as: 1) Diagnostic interview of the disorder based on DSM-IV-TR 2) Test of QOL scale and writing goals 3) Problem conceptualization 4) Concentrating on a special area 5) Analysis the problem based on CASIO model 6) The client's familiarity with QOL principles 7) Applying special techniques 8) Assignments 9) Feedback.

QOLT is one of approaches in positive psychology and aims to increase happiness and human's quality of life and also supports life satisfaction. In this approach, clients are trained with theory, principles and skills which are helpful in diagnosis,
searching and achievement of important and valuable goals, needs and requirements of their life. QOLT improves clients' quality of life in 10-15 sessions (Frisch, 2004 & Kazdin, 2003). Clinical experiences show these sessions can be more or less due to client's personality and his/her problems.

The cognitive-behavioral approach of musculoskeletal chronic pain is based on this assumption that client enters the therapeutic stage with this belief that most of his/her problems can not be controlled. Therefore, the purpose of cognitive-behavioral therapy is to show the patients they can control their problems effectively, then it is necessary to be taught skills to answer their present and future problems at the end of therapy. Four main components of this therapy are training, skills obtaining, cognitive-behavioral assignments and generalization and maintenance. The therapeutic stages are 1) interview and assessment 2) education 3) relaxation 4) cognitive restructuring 5) stress management 6) timed activities 7) reintroduction of a healthy and more active lifestyle 8) preventing relapse program.

There are a large number of researches regarding cognitive-behavioral therapy application in the improvement of chronic musculoskeletal pain such as chronic backache (Turner & Chapman, 1982; Linton et al., 1989; Nicholas et al., 1991; Fordyce, 1976; Keefe, et al., 1992; Fernandez, 1989; Newton et al., 1995; Vlaeyen et al., 1995; Goosense, 1998; Najaf et al., 2009; Reishahri et al., 2001), arthritis rheumatism disorder (Parker et al., 1988, Bradley et al., 1988; Keefe et al., 1992;) and Fibromalgia (Bennett, 2000) have been successfully accomplished.

In the systematic review of some meta analysis of randomly controlled experience, it is found that in comparison with waiting list and prevalent therapy, the cognitive-behavioral therapy was much more better in chronic musculoskeletal pain disorder (Turner, 1996; Morley et al., 1999 & Fernand and Turk, 1994).

Rodrigue et al. (2005, 2010) studied the comparison between QOLT and supportive therapy in patients waiting for lung and renal transplantation. The results revealed that QOLT was following with life quality improvement, discomfort decrease and social intimacy increase.

In a research, Abedi and Vostanis (2010) showed the effect of QOLT in obsessive-compulsive disorder decrease, anxiety symptoms and increasing satisfaction in mothers and children. Other researches reveal that 80% of people in some countries sometimes experience this pain (Deyo, 1998). A recent study estimated the total cost of backache in health centers was more than 90/7 billion dollars in 1998. This statistics caused to name the 108 congress of 10-year period in 2001-2011 as pain research and control decade (Otis, 2007).

The important and basic problem in this research is high prevalence, direct and indirect costs, no result of therapy and lack of researches in the country for
patients with musculoskeletal disorders which shows the importance of new therapeutic methods.
The research thesis: There is a different between the efficacy of QOLT and cognitive–behavioral therapy on female 's pain with chronic musculoskeletal disorders.

**Method:**
This research is a quasi-experimental with pretest, post test and control group. The population are all women with chronic musculoskeletal pain referring to medical and rehabilitation centers in 2011-2012. 30 patients were diagnosed with this pain by orthopedists, nerve/brain and physical medicine specialists and were selected. The sampling was available random one. The clients were randomly allocated in 3 groups of medication, cognitive-behavioral plus medication and quality of life therapy plus medication. Since drug stop was not possible scientifically and ethically, they all received medicine but experimental group also got psychological intervention compound with medication.

The inclusion criteria were patient's consenting, being female, the history of more than 6 months with this pain, 20-55 years old and the academic level of guidance school. The exclusion criteria were psychosis symptoms, disorders due to substance abuse and a serious and limited medical disease which lead to life quality and psychological health decrease. It was done individually.

**Assessment Measure**
- Demographic information such as age, job, occupational experience, academic level, marriage status, number of children, economical status and disease duration.
- McGill Pain Questionnaire (MPQ) which was prepared by Melzack (1975). This is the best and practical scale of multidimensional pain. It has three independent parts.
  A: The intensity of pain is descriptive scale with the verbal pain rating.
  B: The picture of patient's height with face to face and back in which s/he must mark the pain location.
  C: The pain rating index has 78 traits in 20 groups with unequal numbers. 42 traits assess sensory dimension, 14 traits assess affectional dimension and 5 traits assess cognitive dimension of pain. The other 17 traits are classified in miscellaneous groups (Melzack & Ketz, 1992). The validity and reliability of McGill Pain Questionnaire were approved in experimental and clinical studies. Also, in this research Cronbach alpha was 0.88.
- The quality of life questionnaire (Frisch, 1994) has 16 items with different dimensions of life (health, self-esteem, goals and values, relationships…) which are related to life total satisfaction practically. The participants have classified its important degree in 16 areas (0-2). They also classify their satisfaction of each area (-3 - +3). The rating of importance is multiplied by satisfaction degree in order
to produce the rating of satisfaction based on the importance from -6 to +6 as a profile. Also, The rating of life satisfaction is asked in a question as a whole. This questionnaire has the Cronbach alpha of 0/76. The retest reliability coefficient is 0/73 with 2 weeks interval and it is significant in p<0/001. This questionnaire has predictive validity, too.

The data was analyzed with SPSS18 and covariance analysis.

**Findings:**

In this research, pain was assessed based on two components. The first one was intensity by numerical rating scale (0-10) and the other was pain quality with 78 traits in the form of 20 systemized groups (McGill Pain Questionnaire).

Hypothesis 1: There are differences among the efficacy of medication, cognitive-behavioral therapy (plus medicine) and quality of life therapy (plus medicine) on the intensity of female's pain with musculoskeletal disorders.

Hypothesis 2: There are differences among the efficacy of medication, cognitive-behavioral therapy (plus medicine) and quality of life therapy (plus medicine) on the quality of female's pain with musculoskeletal disorders.

The mean and standard deviation of pain intensity and quality scores in two groups in pretest and posttest are in table 1.

Table 1: Mean and standard deviation of the intensity and multidimensional quality of pain in two groups in pretest and posttest

<table>
<thead>
<tr>
<th>Variable</th>
<th>statistics indicator</th>
<th>pre mean</th>
<th>test standard deviation</th>
<th>post mean</th>
<th>test standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intensity</strong></td>
<td>1(medication)</td>
<td>7/2000</td>
<td>1/39841</td>
<td>3/9000</td>
<td>1/44914</td>
</tr>
<tr>
<td></td>
<td>2(cognitive-behavioral therapy)</td>
<td>7/3000</td>
<td>1/76698</td>
<td>2/3000</td>
<td>0/67495</td>
</tr>
<tr>
<td></td>
<td>3(quality of life therapy)</td>
<td>7/2000</td>
<td>2/20101</td>
<td>1/8000</td>
<td>1/47573</td>
</tr>
<tr>
<td><strong>the sensory dimension of pain quality</strong></td>
<td>1</td>
<td>14/000</td>
<td>6/73300</td>
<td>7/8000</td>
<td>4/87169</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>16/8000</td>
<td>8/37722</td>
<td>7/3000</td>
<td>3/56059</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>12/6000</td>
<td>7/56013</td>
<td>2/7000</td>
<td>2/05751</td>
</tr>
<tr>
<td><strong>the affective dimension of pain quality</strong></td>
<td>1</td>
<td>6/8000</td>
<td>3/61478</td>
<td>2/9000</td>
<td>1/37032</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>5/6000</td>
<td>4/52647</td>
<td>0/9000</td>
<td>0/87560</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>4/7000</td>
<td>3/09300</td>
<td>0/6000</td>
<td>0/84327</td>
</tr>
<tr>
<td><strong>the cognitive dimension of pain quality</strong></td>
<td>1</td>
<td>3/5000</td>
<td>1/26930</td>
<td>2/2000</td>
<td>1/47573</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>3/5000</td>
<td>1/71594</td>
<td>0/7000</td>
<td>0/94868</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>2/8000</td>
<td>1/98886</td>
<td>0/4000</td>
<td>0/84327</td>
</tr>
<tr>
<td><strong>Different</strong></td>
<td>1</td>
<td>5/5000</td>
<td>3/17105</td>
<td>1/7000</td>
<td>1/63639</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>7/2000</td>
<td>3/64539</td>
<td>1/4000</td>
<td>1/50555</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>5/000</td>
<td>4/24264</td>
<td>0/5000</td>
<td>0/97183</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1</td>
<td>29/8000</td>
<td>10/73727</td>
<td>14/6000</td>
<td>7/136</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>33/1000</td>
<td>13/12716</td>
<td>10/3000</td>
<td>5/41705</td>
</tr>
</tbody>
</table>
Table 1 shows the scores of pain intensity and multidimensional quality of pain in three groups have been decreased in posttest stage in comparison to pretest. In this research, Levin is used to test the pre assumption of variances equality in the population. The results in table 2 reveal that groups variances are equal in the population.

<table>
<thead>
<tr>
<th>research scale</th>
<th>F</th>
<th>df1( freedom degree1)</th>
<th>df2</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>intensity</td>
<td>1/027</td>
<td>2</td>
<td>27</td>
<td>0/372</td>
</tr>
<tr>
<td>the sensory dimension of pain quality</td>
<td>0/073</td>
<td>2</td>
<td>27</td>
<td>0/930</td>
</tr>
<tr>
<td>the affective dimension of pain quality</td>
<td>2/760</td>
<td>2</td>
<td>27</td>
<td>0/081</td>
</tr>
<tr>
<td>the cognitive dimension of pain quality</td>
<td>3/365</td>
<td>2</td>
<td>27</td>
<td>0/050</td>
</tr>
<tr>
<td>different</td>
<td>1/236</td>
<td>2</td>
<td>27</td>
<td>0/306</td>
</tr>
<tr>
<td>total</td>
<td>0/073</td>
<td>2</td>
<td>27</td>
<td>0/930</td>
</tr>
</tbody>
</table>

To test the first hypothesis, covariance analysis was used and the variables such as the scores of pain intensity in pretest, age, academic level, number of children and the past history of the disease were considered as control variables. The results are in table 3.

The results of covariance analysis indicate that the variables such as age, academic level, number of children and the past history of the disease do not have any relationship with pain intensity. The results in table 3 show that the differences among the rest mean in the groups are significant. The effect of group membership on pain intensity was 41%. It means that 41% of variance of pain intensity scores is related to group membership.

The results of paired comparison related to the significance of the difference among scores mean of pain intensity in the groups are in table 4.
Based on the results in table 4, the differences among the scores mean of pain intensity in medication group with cognitive-behavioral group and medication group with QOLT group are significant but the difference between the scores mean of pain intensity in cognitive-behavioral group and QOLT group is not significant.

Covariance analysis was utilized for the second hypothesis. The variables of scores of pain quality in pretest, age, academic level, number of children and past history of the disease are considered as control variable. The results are in table 5.

The results of covariance analysis revealed that the variables of age, academic level, number of children and the past history of the disease have not any relationship with the pain quality. Also, the results in table 5 show that the effect of group membership on sensory, affective, cognitive dimensions and total quality of pain is significant but not on different pain.

The results of paired comparison related to the significance of mean differences of the scores in total quality of pain are in table 6.
Table 6: Paired comparison related to the significancy of mean differences of the scores in total quality of pain

<table>
<thead>
<tr>
<th>compared groups</th>
<th>mean differences</th>
<th>standard errors</th>
<th>sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>sensory dimension</td>
<td>1 &amp; 3</td>
<td>4/448</td>
<td>1/488</td>
</tr>
<tr>
<td>affective dimension</td>
<td>1 &amp; 2</td>
<td>2/006</td>
<td>0/495</td>
</tr>
<tr>
<td>cognitive dimension</td>
<td>1 &amp; 2</td>
<td>2/223</td>
<td>0/510</td>
</tr>
<tr>
<td>affective dimension</td>
<td>1 &amp; 3</td>
<td>1/585</td>
<td>0/521</td>
</tr>
<tr>
<td>total</td>
<td>1 &amp; 3</td>
<td>1/501</td>
<td>0/538</td>
</tr>
<tr>
<td>total</td>
<td>1 &amp; 2</td>
<td>1/422</td>
<td>0/670</td>
</tr>
<tr>
<td>total</td>
<td>1 &amp; 3</td>
<td>5/702</td>
<td>2/587</td>
</tr>
<tr>
<td>total</td>
<td>1 &amp; 3</td>
<td>9/433</td>
<td>2/611</td>
</tr>
</tbody>
</table>

Discussion and conclusion
The findings of this research declares the efficacy of cognitive-behavioral therapy on the score of pain intensity. Also, there was not any significant difference between the efficacy of cognitive-behavioral therapy and QOLT. The present research results are consistent with different researches such as Nicholas et al (1991), Keefe et al (1992), Fernand and Turk (1994), Turner (1996), Goosense (1998), Newton et al (1995) and Haffman (2007). To clarify these results, it must be noticed chronic musculoskeletal pain affects on back, waist, shoulder, knee… It also affects on “how to think”, “how to feel” and “how to do” styles. Patients often feel that their pain is out of their control. This treatment trains patients how to recontrol their pain with managing and controlling their thought, emotion and behaviors. Relaxation is also used to increase energy and decrease muscle contraction and pain. At last, concerning gate control theory, this therapy closes pain gate and in the following decrease the pain perception with controlling physical components (muscle contraction), cognitive components (self-initiated thought, cognitive distortion and insufficient beliefs about pain), emotional components (depression, anxiety, anger) and activity components (high or low activity). Some researchers believe that medicine control the pain just for a short time and they do not influence on chronic musculoskeletal pain because patients tolerate and depend on them (Arnoff et al 1986).

The results in this study showed QOLT decreases pain intensity. It is congruent with other researches finding such as Frisch (1998), Rodrigue et al (2005, 2010).

The purpose of physical care, in addition to its effect on biological treatment or disability, is to improve quality of life. Health psychologists believe that health biological criteria must be completed with quality of life and happiness criteria in order to demonstrate individual' or groups' health. Happiness helps adjust with chronic pain problems and therefore, decreases chronic pain. In this therapy, patients with chronic musculoskeletal pain increases health positive habits such
as physical, occupational and recreational activities through special techniques of habit control. In this way, pain is removed from their awareness area (Frisch, 2004).

The results of the second hypothesis indicate the efficacy of cognitive-behavioral therapy and QOLT in the decrease of pain quality scores in sensory, affective and cognitive dimensions. The results of researches like McCrae et al (2000), Morley et al (1999), Wetering (2010) confirm these findings. Probable clarification for the efficacy of cognitive-behavioral therapy in the decrease of multidimensional quality of pain are as follow:

Pain experience is not the basic factor of pain multidimensional symptoms creation in patients with chronic musculoskeletal pain, but psychological, affective, social and behavioral factors, patient's beliefs system, insufficient cognition, inadaptable attitudes and interpretation of pain, cognitive distortion of pain such as catastrophising pain, excessive generalization, fear of doing activities, using negative coping strategies, feeling the lack of control on pain are factors which lead to desperation feeling and multidimensional symptoms of pain more than pain experience itself and they are the goals of cognitive-behavioral therapy.

The results explain the efficacy of QOLT on multidimensional quality of pain. Although research literature shows that there is no similar researches related to this part of this study, these results are in the same line with other researches referred to the efficacy of QOLT in other areas (Diener & Seligman, 2004, Dworkin et al, 1992).

The studied reveal that there is a mutual relationship between health and quality of life. Clients with chronic problems of health and pain talk less about pain and chronic problems of health and less explain about their organs (Frisch, 2006).

Finally, the results showed there is no difference between the efficacy of cognitive-behavioral therapy and QOLT. Two clarifications are presented here. First, the framework and foundation of these two theories are close to each other and are based on cognitive theory. Second, although the difference between the intensity and multidimensional quality of pain was not significant, the rate of pain intensity and quality decrease was more in QOLT. This can be due to this point that QOLT has utilized both cognitive-behavioral theory, positive psychology and quality of life theory and with the increase of life satisfaction and quality of life decreases the intensity and multidimensional quality of pain.

Appreciation
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References


