

# Cognitive Behavioural Therapy: A Psychological Approach for Chronic Pain

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## Introduction

The International Association for the Study of Pain (IASP) defines pain as “an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage” (IASP, 1994). Pain is a subjective experience dependent on the self-report of the individual. For this reason, another popular definition of pain is that it is “whatever the facing person says it is, existing whenever he (or she) says it does” (McCaffrey & Pasero, 1999).

Pain needs treatment to disappear. One of the most important differences in understanding and treating pain is between acute and chronic pain. Some of the most important differences are highlighted as given below:

*Acute Pain* persists for less than 3 months, it is usually a symptom of some other problem, it has an identified cause or is a body's response to injury and diminishes with healing and responds to treatment. Acute pain typically arises following an identifiable incident where an injury is sustained, such as a broken arm or cut. It is adaptive because it results in focused attention on a situation that is threatening. Acute pain is time-limited, reduces with healing, and the cause usually is known.

While, *Chronic Pain* lasts for more than 3 months, it is a condition in itself, may develop after incident; may have known or unknown cause and persists beyond expected healing time and/or despite treatment. Chronic pain, on the other hand, continues beyond the expected time and indicated point of healing, and is typically defined as longer than 3 months duration. It may be present in multiple circumstances and have an unknown or known cause (e.g., identified injury, osteoarthritis). While pain is present and may feel identical to acute pain, the experience does not have the same meaning. More recent understandings of chronic pain suggest that when pain continues in the absence of ongoing tissue damage, the nervous system itself is misfiring pain signals. Chronic pain, therefore, is best understood as a chronic disease to be managed versus an acute symptom to be cured. Some Chronic pain conditions that were normally spectator in the patients were as Low back pain (LBP), Middle and Upper Back Pain, Arthritis Osteoarthritis (OA), Rheumatoid Arthritis, Tendonitis/Bursitis, Pelvic Floor Disorders, Neck Pain, Peripheral Neuropathic Pain, Radicular Pain, Phantom Limb, Migraine, Gout, Fibromyalgia (FM), Complex Regional Pain Syndromes etc.

The various treatments used for the Pain are Pharmacological Treatments i.e. Analgesics, Anaesthetics, Anticonvulsants, Opioids, Topical agents, Tricyclic antidepressants (TCAs), Selective serotonin reuptake inhibitors (SSRIs), In- combination with opioids for moderate pain, and Non-steroidal anti-inflammatory drugs (NSAIDs), American pain Society (2007) and Non-Pharmacological Treatments i.e. Hot or cold compression

(as appropriate and used in combination), Massage, Therapeutic touch, Decreasing environmental stimuli (e.g. Sound, lighting, temperature), Repositioning, Immobilization, Range of motion or physical therapy, Relaxation techniques and imagery, Distraction, Biofeedback, Music therapy, Aromatherapy, Acupressure, Transcutaneous electrical stimulus (TENS), Acupuncture, and Psychotherapy or cognitive behavioural therapy (American Pain Society, 2007).

In the present study, chronic pain conditions were taken for managing pain through Cognitive Behavioural Therapy. CBT has been used as an umbrella term to include both standard CT and theoretical combinations of cognitive and behavioural strategies (Beck, A. T. 2005).

Cognitive-behavioural therapy, also called CBT, is a psychological approach to cope with a wide range of mental health related problems. It focuses on thought (cognitive) and action (behavioural). CBT helps individuals resolve their problems concerning maladaptive emotions, behaviours, and cognitions through a goal-oriented, systematic process. While it was originally used for treatment of those with depression and anxiety disorders, it has been used with a variety of other conditions from insomnia to substance abuse. CBT is based on the idea that how a person thinks (cognition), how a person feels (emotion) and how a person act (Behaviour) all interact together.

The focus of this study is to use Cognitive Behavioural Therapy for Chronic Pain and to improve quality of life by improving functioning in multiple domains. Reducing the negative effects of pain on daily life by engaging in more activities, improving mood, and increasing coping skills. Hence, the objectives are to study the pain before and after CBT intervention as per variables gender and age.

## Methods

**Research Design** - Randomized Control-Group Pre-test and Post-test Design was used for the study as it measured both the quantity (duration of pain) and the quality (Pain) before and after intervention.

### **Sampling Design**

The snowball sampling method was used to reach the and the references of the health professionals (doctors/ Nurse/ psychologist) were used to reach the other patients as it was suitable to use this sampling technique for selection of the sample.

**Sample Size**- In this study 80 patients (Early Adulthood- 19- 40 years, Middle Adulthood- 41- 60 years) suffering from chronic pain were included as sample, which were selected from various clinics and hospitals.

**Inclusion and Exclusion Criteria**- Their inclusion in the study depended on the scores of Short Portable Mental Status Questionnaire (SPMSQ) and the samples that indicated cognitive incapacity were excluded. Also, the cases of extreme health complexities too were excluded from the study.

**Sample and Sample size**- This study was based on 80 patients, 19- 65 years of age (Early adulthood- 19- 34 years, Middle adulthood- 35- 65 years), suffering from chronic pain and visiting hospital, due to various reasons.

**Tools and Techniques-** The independent variable, different qualities of pain was assessed using Pain Quality Assessment Scale (PQAS) by Galer, Gammaitoni, & Jensen, (2010). The tool measured the different pain conditions.

**Data Collection-** The patients suffering from chronic pain were provided CBT sessions of different duration, and frequency as per need, introducing Pain Quality Assessment Scale for pre and post intervention. The CBT were introduced as per need of an individual and the sessions were halted when, the patient reported actual reduction in pain.

**Statistical Analysis-** The gathered data was put to statistical analysis using SPSS version 21 to compute the mean, SD, Z test and ANOVA.

CBT sessions were planned as per the individual need of the patients. The general format of the CBT session consisted of 1) Interview and Assessment to share their chronic pain condition and converse how it had affected their lives. This important meeting established the first face-to-face contact with the patient and was vital in setting the value for the rest of treatment, 2) Treatment Orientation to deliver an orientation to the CBT treatment model as well as education about the complex nature of chronic pain, 3) Assessment Feedback and Goal Setting to reflect back the pain-related impairments in their lives, and perhaps drawn attention to the individualized Patients-centric goals, 4) Exercise and Pacing to understand avoidance related to activities, anxiety of movement, and a series of negative significances, clarifying this pattern and highlighted the need for physical stimulation, 5) Relaxation Training for specific techniques: diaphragmatic or deep breathing, progressive muscle relaxation, and guided imagery 6) Pleasant Activities I to patients living with chronic pain and avoiding engaging in activity, including enjoyable activities, 7) Pleasant Activities II for solidifying the activities that they wish to pursue and developed a concrete plan for accomplishment, 8) Cognitive Coping 1 for understanding the self-motivated relationship between their thoughts and pain, and identifying to multiparty cognitive distortions to increase awareness about how their thoughts were related to their pain or negative mood, 9) Cognitive Coping 2 to monitor their negative thoughts and have increased their awareness of such thoughts' power and frequency, 10) Sleep to understand that pain may make falling and staying asleep more difficult and disturbed, and inadequate sleep increased next day pain and ways to get sound sleep, 11) Discharge Planning for developing a discharge plan, which included anticipating obstacles that was arise including increases in pain, 12) Booster Session focused-on patients' implementations of the CBT skills so that accessing the most relevant topics based on the pain experienced person's feedback was easy.

## **Results and Discussion**

To compare the scores of Quality of Pain, and find out if there is any significant difference in the patients before and after intervention or not, the hypothesis was tested using t-test and Z test, the results for same being are depicted by the below-given table-

**Table- 1**

### **Pre and Post Intervention Differences in the Quality of Pain of the Patients**

Sl.No.	Different Qualities of Pain	Pain						p	z
		Pre- Test			Post- Test				
		Mean	SD	Df	Mean	SD	df		
1.	Intensity	6.73	1.36	78	4.81	1.36	78	0.00*	8.929
2.	Sharpness	6.03	1.85	78	4.7	1.50	78	0.00*	4.995
3.	Hotness	5.7	2.23	78	4.26	1.11	78	0.00*	5.171
4.	Dullness	1.88	1.71	78	3.15	1.11	78	0.00*	5.996
5.	Coldness	1.35	1.39	78	2.94	1.40	78	0.00*	7.209
6.	Sensitivity	5.48	1.96	78	3.83	1.90	78	0.00*	5.406
7.	Tenderness	1.95	2.15	78	3.72	1.53	78	0.00*	5.999
8.	Itchiness	1	1.50	78	2.8	1.56	78	0.00*	7.439
9.	Shooting	6.03	2.29	78	2.51	2.56	78	0.00*	9.166
10.	Numbness	4.08	2.48	78	4.04	1.33	78	0.8988	.127
11.	Electrical	2.5	2.35	78	6.46	0.96	78	0.00*	13.953
12.	Tingling	2.9	3.54	78	2.15	1.77	78	0.0302*	2.167
13.	Cramping	4	3.10	78	2.6	2.45	78	0.0015*	3.169
14.	Radiating	4.48	2.34	78	4.23	2.02	78	0.4695	0.723
15.	Throbbing	3.65	2.77	78	3.81	1.69	78	0.6592	0.441
16.	Aching	7.8	1.26	78	4.72	2.06	78	0.00*	11.408
17.	Heaviness	6.9	1.48	78	4.89	1.75	78	0.00*	7.844
18.	Unpleasant	7.95	1.34	78	4.69	1.68	78	0.00*	13.569
19. (a)	Intense Deepness	6.95	2.11	78	4.69	1.95	78	0.0212	2.304
19. (b)	Intense Surface	2.4	2.15	78	4.5	2.96	78	0.00*	6.456

The results from the pre-test and post-test comparison i.e. scores of quality of pain for the various domains indicate that scores for the **Intensity of pain** ( $M=6.73; 4.81, SD=1.36; 1.36$ ),  $p=0.00, z=8.929$ , scores for the **Sharpness of pain** ( $M=6.03; 4.7, SD=1.85; 1.50$ )  $p=0.00, z=4.995$ , scores for **Hotness of pain** ( $M=5.7; 4.26, SD=2.23; 1.11$ ),  $p=0.00^* z=5.171$ , scores for **Dullness of Pain** ( $M=1.88; 3.15, SD=1.71; 1.11$ ),  $p=0.00, z=5.996$ , scores for **Coldness of Pain** ( $M=1.35; 2.94, SD=1.39; 1.40$ ),  $p=0.00, z=7.209$ , scores for **Sensitivity of Pain** ( $M=5.48; 3.83, SD=.96; 1.90$ ),  $p=0.00, z=5.406$ , scores for **Tenderness of Pain** ( $M=1.95; 3.72, SD=2.15; 1.53$ ),  $p=0.00, z=5.99$ , scores for **Itchiness of Pain** ( $M=1; 2.8, SD=1.50; 1.56$ ),  $p=0.00, z=7.439$ , scores for **shooting Pain** ( $M=6.03; 2.51, SD=2.29; 2.56$ ),  $p=0.00, z=9.166$ , scores for **Electrical Pain** ( $M=2.25; 6.46, SD=2.35; 0.96$ ),  $p=0.00, z=13.953$ , scores for **Tingling of Pain** ( $M=2.9; 2.15, SD=3.54; 1.77$ ),  $p=0.0302, z=2.167$ , scores for **Cramping of Pain** ( $M=4; 2.6, SD=3.10; 2.24$ )  $p=0.0015, z=3.169$ , scores for **Aching of Pain** ( $M=7.8; 4.72, SD=1.26; 2.06$ ),  $p=0.00, z=11.408$ , scores for **Heaviness of Pain** ( $M=6.9; 4.89, SD=1.48; 1.75$ ),  $p=0.00, z=7.844$ , scores for **Unpleasant Pain** ( $M=7.95; 4.69, SD=1.34; 1.68$ ),  $p=0.00, z=13.569$ , and scores for **Intense surface Pain** ( $M=2.4; 4.5, SD=2.15 2.96; 1.95$ ),  $p=0.00, z=6.456$ , were

found to be significantly different in both the groups at .05 level of significance.

While the scores of quality of pain for the various domains indicate that scores for the **Numbness of pain** ( $M=4.80; 4.04, SD=2.48; 1.33$ ),  $p=0.8988, z=.127$ , scores for the **Radiating** ( $M=4.48; 4.23, SD=2.34; 2.02$ ),  $p=0.46940, z=0.723$ , the scores for **Throbbing of Pain** ( $M=3.65; 3.81, SD=2.77; 1.69$ ),  $p=0.6592, z=0.441$ , and the scores for **Intense Deep Pain** ( $M=6.95; 4.69, SD=2.11; 1.95$ ),  $p=0.0212, z=2.304$  were not found to be significantly different in both the groups at .05 level of significance.

The 20<sup>th</sup> item of the tool analyzed the pain of different time qualities-

1. When the person felt pain sometimes but was pain-free at the other times, that was referred to as intermittent pain.
2. When the person felt pain all the time but had severe pain in between it was called variable pain.
3. When the person had constant pain that never change much and had no pain free period it was called stable pain.

**Table-4.3**

**The difference in the quality of Pain before and after providing CBT**

Time Quality	Pre -Intervention n (%)	Post- Intervention n (%)	Decrease in percentage n (%)
Intermittent Pain	30 (24)	13 (10.4)	17 (13.6)
Variable Pain	26 (20.8)	17 (13.6)	9 (7.2)
Stable Pain	24 (19.2)	19 (15.2)	5 (4)

The 20<sup>th</sup> item of the tool analysed the pain of different time qualities. When the person felt pain sometimes but was pain-free at the other times, that was referred to as *Intermittent Pain.*, that reduced to 13.6%, When the person felt pain all the time but had severe pain in between it was called *Variable Pain* that reduced to 9%, and when the person had constant pain that never change much and had no pain free period it was called *Stable Pain*, that reduced to 4 %. Thus, clearly showing reduction in pain as a result of CBT intervention.

A study by Veehof, M.M, Trompetter, H.R, Bohlmeijer, E.T, et al., (2016) concluded that their examination of the effects of Cognitive Behavioural Therapy (CBT) on understanding in patients with chronic pain highlighted that women revealed higher empathic capabilities and testified more severe sentimental responses to the intensity of their pain than did men both before and after Cognitive Behavioural Therapy. Certainly, the higher emotional nature of pain and empathic aptitudes of female patients, this population may show different treatment consequences from CBT compared to male patients. Hence, gender differences in the studies can enhance the pool of information.

On the other hand, the results of a study by Lim, J. A., Choi, S. H., Lee, W. J., Jang, J. H., Moon, J. Y., Kim, Y. C., & Kang, D. H. (2018). recommend that the efficiency of Cognitive Behavioural Therapy may be pretentious by chronic pain patients' level of understanding. While the evident result was not highlighted in this study, findings of this study suggested that female patients may formulate outstanding therapeutic cooperation in CBT intervention that can lead to a clinical benefit.

## Conclusion

The goal of cognitive-behavioural therapy is to change the way a person thinks about the pain, so that his body and mind respond better when they have episodes of pain. Therapy focuses on changing the thoughts about illness and then helping adopt positive ways of coping with illness. For cognitive-behavioural therapy to be most effective, working together with the counsellor toward common goals.

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