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Change in Illness Perception to Improve Quality of Life for Chronic Pain Patients

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Change in Illness Perception to Improve Quality of Life for Chronic Pain Patients

Abstract

**Background:** Roughly 100 million Americans suffer from chronic pain. Individuals with chronic pain frequently experience decreased quality of life due to pain, decline in health, financial burdens with monthly doctor visits, medication expenses and reduced activity in the workforce. Cognitive intervention in an interdisciplinary approach can help patients cope with their pain, improve quality of life, reduce pain medication use, reduce missed workdays and improve their outlook on pain and its impact on their life. Is an adaptation of this approach needed in the outpatient setting with physical therapists and occupational therapists trained in cognitive treatment of illness perceptions in order to provide a more balanced approach to chronic pain management?

**Methods:** An exhaustive search of available medical literature was conducted using Medline-OVID, CINAHL and Web of Science using the keywords: *chronic pain, pain management* and *perception*. The bibliographies of the articles were further searched for relevant sources. The search was then narrowed to include only English language articles. Relevant articles were assessed using GRADE.

**Results:** Two studies met inclusion criteria and were included in this systematic review. A randomized controlled trial with 156 participants demonstrated a statistically significant difference between intervention and control groups for the change in patient illness perceptions and patient-relevant physical activities. A retrospective study of 280 participants in a group-based, interdisciplinary chronic pain program demonstrated significant pre- and post-treatment improvements in ratings of pain severity, pain intensity, functional limitations, pain catastrophizing and self-efficacy.

**Conclusion:** Cognitive treatment of illness perception can improve quality of life for chronic pain patients. Pain management specialties and physical therapists can add cognitive treatment to their armamentarium to provide patients with an additional modality to improve patient outcomes and compliance to treatment regimens in both fields.

**Keywords:** chronic pain, pain management, perception

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Change in Illness Perception to Improve Quality of Life for Chronic Pain Patients

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[Redacted for privacy]
Abstract

**Background:** Roughly 100 million Americans suffer from chronic pain. Individuals with chronic pain frequently experience decreased quality of life due to pain, decline in health, financial burdens with monthly doctor visits, medication expenses and reduced activity in the workforce. Cognitive intervention in an interdisciplinary approach can help patients cope with their pain, improve quality of life, reduce pain medication use, reduce missed workdays and improve their outlook on pain and its impact on their life. Is an adaptation of this approach needed in the outpatient setting with physical therapists and occupational therapists trained in cognitive treatment of illness perceptions in order to provide a more balanced approach to chronic pain management?

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Table I: GRADE Quality of Assessment Characteristics of Reviewed Studies

List of Abbreviations

CTIP  Cognitive Treatment of Illness Perceptions
WTL   Waiting List
PSC   Patient-Specific Complaints
SRM   Leventhal’s Self-Regulation Model
IPQ-R Illness Perceptions Questionnaire-Revised
OR    Odds Ratio
CI    Confidence Interval
Change in Illness Perception to Improve Quality of Life for Chronic Pain Patients

BACKGROUND

Roughly 100 million Americans suffer from chronic pain.\textsuperscript{1} For some it may cause brief episodes of pain, but for others it becomes a constant companion and its effects on the individual can be far reaching, leading to depression, sleep disturbance and fatigue, altered physical and cognitive functioning, changes in mood, personality, and social relationships.\textsuperscript{2} Combine these negative aspects with increased healthcare costs for monthly doctor visits and medication expenses and the result is an overburdened patient with reduced compliance to prescribed treatment regimens.

Pain management specialists may lose their relationship of trust with patients when recommending a psychological referral for Cognitive Behavioral Therapy as an adjuvant to their current pain management regimen as the patient may feel “shoved off.”\textsuperscript{3} Patients are often required to participate in physical therapy prior to being approved for certain medications or procedures as per insurance and are already accustomed to this route of adjuvant treatment. Good physical therapy groups trained in cognitive treatment can help patients improve their perception of pain, create alternative illness perceptions and improve quality of life for the chronic pain sufferer.

Cognitive treatment of illness perception (CTIP)\textsuperscript{3} in an interdisciplinary approach can help chronic pain patients cope with pain, improve quality of life, reduce pain medications, reduce missed workdays, and improve their outlook on pain and its negative
impact on their life. Adaptation of this approach into an outpatient setting with physical therapists and occupational therapists trained in cognitive treatment of illness perceptions is needed to provide a more balanced approach to chronic pain management.

METHODS

An exhaustive search of available medical literature was conducted using Medline-OVID, CINAHL and Web of Science using the keywords: chronic pain, pain management and perception. The bibliographies of the articles were further searched for relevant sources. The search was then narrowed to include only English language articles. Relevant articles were assessed using Grading of Recommendations, Assessment, Development and Evaluation (GRADE).5

RESULTS

The initial result of the search yielded 682 articles for review. After applying search criteria of only English language and articles published between the years 2011 and 2013, 154 articles remained. The bibliographies of the articles were further searched for relevant sources. Relevant articles were assessed using (GRADE).5 After application of the inclusion and exclusion criteria, two studies3,6 met inclusion criteria and were included in this systematic review. A randomized controlled trial with 156 participants demonstrated a statistically significant difference between intervention and control groups for the change in patient illness perceptions and patient-relevant physical activities.3 A retrospective study of 280 participants in a group-based, interdisciplinary chronic pain program demonstrated significant pre- and post-treatment improvements in
ratings of pain severity, pain intensity, functional limitations, pain catastrophizing and self-efficacy.⁶

**Cognitive Treatment of Illness Perceptions in Patients with Chronic Low Back Pain: A Randomized Controlled Trial**

In this randomized controlled trial,³ Siemonsma et al investigated whether patient relevant activity limitations could be reduced by adjusting illness perceptions with application of cognitive treatment of illness perceptions (CTIP) in patients’ chronic low back pain. The trial enrolled 156 participants in an outpatient rehabilitation clinic. The primary outcome was improvement of Patient-Specific Complaints (PSC)⁷. Three prioritized activities were: sports, standing for a long duration, and walking outside.³

Leventhal’s self-regulation model (SRM)⁸ was used and defined seven dimensions the authors were investigating to see if application of CTIP could reduce the activity limitations chronic pain patients encounter. The seven dimensions of SRM are stated as follows with examples of how the authors applied SRM to their patient population: 1) Identity (“symptoms experienced: pain, fatigue”); 2) Cause (“individual’s ideas about the cause of the illness”); 3) Time line and time line cyclical (“how long the illness will last and whether it will be a temporary or a persistent problem”); 4) Consequences (“individual’s ideas regarding the possible impact of the illness on his or her life”); 5) Personal control and treatment control (“patient’s ideas about whether or not the illness can be controlled by the patient or by treatment”); 6) Coherence (“individual’s ideas about understanding the illness”); and 7) Emotional response (“reflects the patient’s feeling in reaction to the illness”). The Illness Perceptions Questionnaire-Revised (IPQ-R)⁹,¹⁰ was used to measure these dimensions.³
Eligibility criteria was age between 18 and 70 years with nonspecific low back pain, with or without radiculopathy, for at least 3 months and no more than 5 years. Patients also had to have some limit of their activities because of chronic pain. Excluded patients were those who participated in a previous multidisciplinary treatment for their chronic low back pain and had psychological, psychiatric or substance abuse issues. Patients were randomly assigned to the CTIP group or to a waiting list (WTL) group. Researchers and independent assessors were blinded for both allocation and the randomization schedule. An independent randomization officer organized randomization and treatment or WTL.3

A 2:1 ratio of patients in the CTIP group compared to the WTL group was created to improve statistical power for a future study. All patients were informed they would receive the same treatment but would not know when. This encouraged equal treatment expectations for both groups. WTL participants received CTIP after 18 weeks. Therapists were blinded to the timing of the CTIP; otherwise, all participants and therapists were not blinded to treatment allocation.3

CTIP entailed 10 to 14 one-hour individual treatment sessions each week. Each member of the CTIP was with one experienced occupational or physical therapist. The treatments consisted of four phases: the first phase of treatment was mapping the illness perceptions using the answers to the IPQ-R9,10 for a baseline. During this phase, patients discussed their activity limitations and thoughts about their pain in regards to the limitations imposed. For example, “I need to rest in bed in order to allow the pain to fade away.”3
The second phase challenged the illness perception that most limited physical activity and, based on the therapists expertise, was deemed maladaptive. Therapists would then raise doubt in the patient’s mind regarding their perception. For example, the therapist would challenge the idea that “resting in bed would decrease the pain.”

The third phase developed alternative illness perceptions to allow for increased physical activity to replace their original illness perception. “Doing light jobs is a suitable replacement for bed rest, as it allows the body to recuperate and it distracts my attention away from the pain.” Completion of the third phase occurred when the patient and therapist both agreed the alternative illness perception was conceivable and logical.

The fourth phase tested the new alternative perceptions and strengthened them by daily practice. Patients performed “light jobs instead of bed rest,” as an example. A minimum of 5 sessions were required for the fourth phase to be considered complete in order to map illness perceptions (2 sessions), challenge illness perceptions (2 sessions), and create alternative illness perceptions (1 session).

WTL participants were asked to not participate in any therapeutic treatments for their chronic low back pain during the 18 weeks. Participants were asked to keep a diary of health care costs related to chronic low back pain; back pain related visits to general practitioner, medical specialist, physical therapist or alternative practitioner, and any medication taken for the back pain.

Cognitive treatment of illness perception resulted in a higher reduction in PSC scores than in the WTL group. CTIP resulted in clinically significant relevant PSFL (acronym of study with considerable similarities to PSC) change score of -19.1 (95% confidence interval (CI) = -24.3 to -13.9) compared with -5.2 (95% CI= -14.7 to 4.2) for
the WTL group. In the CTIP group 46 out of the 93 (49%) showed a clinically relevant change compared to 12 of the 46 (26%) from the WTL group. Resulting in an odds ratio (OR) of 2.77 (95% CI=1.28 to 6.01) and an NNT (number needed to treat) of 4. Indicating that for every 4 patients treated, at least 1 will benefit from CTIP.3

Authors found the PSC to be highly responsive to change when reporting reduction in pain symptoms. However, the PSC was unable to detect deterioration in patients with mild to moderate disability. Therefore, measurement bias is possible with interpretation of positive results with the PSC. They also pointed out the debate of the best method of determining or defining a clinically relevant change. This study is the first study to perform cognitive intervention focusing on illness perceptions in patients with chronic low back pain and the authors are encouraged by the results. Focusing on the illness perceptions is a clinically relevant addition to the current treatment practices for chronic low back pain.3

Changes in Perceived Pain Severity During Interdisciplinary Treatment for Chronic Pain

In this retrospective study,6 280 participants completed a four-week, group based, interdisciplinary chronic pain self-management program at a rehabilitation hospital. Participants completed pre- and post-treatment questionnaires. The questionnaires consisted of global change ratings of pain severity and clinically relevant measures, pain intensity ratings, functional limitations, pain catastrophizing and self-efficacy.6

Kowal et al6 inclusion criteria was the presence of chronic pain of at least three months as diagnosed by a physiatrist, willingness to engage in the program and ability to participate in medical and psychological perspectives. Those excluded from the study had
a primary substance abuse problem or pain exclusive to headaches, pain arising from female reproductive organs, and urinary or gastrointestinal sources of pain. Participants were also excluded if actively seeking medical interventions for their pain.6

The treatment program consisted of two phases: assessment/education and treatment. The assessment/education phase consisted of patients being seen individually and in groups with professionals from psychology, social work, occupational therapy and physiotherapy. Over four half-days, patients received a formal assessment, a clinical interview and educational sessions on pain physiology and pain management principles and strategies. All participants completed pre-treatment questionnaires during the assessment/education phase.6

The treatment phase was three weeks and commenced after completion of the assessment/education phase. Group sessions were offered by psychology, nursing, physiotherapy, occupational therapy, vocational rehabilitation, recreational therapy, and social work. Once a week patients would attend a series of educational lectures. Several times a week, the treatment team would meet to discuss patients’ progress and plan future treatments. Patients would meet weekly with at least one interdisciplinary team member for feedback and to discuss treatment progress and goals in helping them manage their chronic pain more effectively. The treatments focused on education about chronic pain, disability management; modifying activity levels to remain active and work within their tolerances. Improving physical fitness levels in strength, flexibility and posture, and enhancing emotional functioning. Post-treatment questionnaires were completed during the final week of the treatment phase.6
The author’s were measuring patient improvements in seven aspects of their illness. Sociodemographic characteristics were age, sex, marital status, work status, and education level. The first of the seven aspects measured was pain intensity rating. Pain intensity was rated on a 4-item scale assessing current, worst, least, and average pain. Each item was scored ranging from 0 (no pain) to 10 (intense pain). The sum of the four items was combined to make a composite score with values ranging from 0 to 40. Higher scores correlated with greater pain intensity.6

An adapted version of the Task Force on Records and Data Retrieval of the International Association for the Study of Pain12 was used to assess patients’ functional limitations. Sixteen items, which represented activities of daily living (eg, making meals, getting in and out of bed, and participating in social activities), were scored on a 5-point scale from 1 (no difficulty) to 5 (unable to do). Scores ranged from 0 to 64 with higher scores indicating greater functional limitations.6

Negative thoughts about pain were assessed on a 13-item scale using the Pain Catastrophizing Scale.13 Responses ranged from 0 (not at all) to 4 (all the time). Total scale score ranged from 0 to 52, with higher scores indicating greater catastrophic thinking.6

Patient’s confidence to be able to enjoy life and participate in activities despite experiencing pain were assessed using the Pain Self-Efficacy Questionnaire.14 Ten items were measured with a point scale from 1 (not at all confident) to 6 (completely confident). Scores ranged from 0 to 60, with higher scores indicating greater confidence.6

Beck Depression Inventory-II15,16 was used to evaluate depressive symptoms experienced by the participants over the past two weeks. Four response categories were
used ranging from 0-3. Scores ranged from 0 to 63, with higher scores denoting greater depressive symptomatology.\textsuperscript{6}

The 17-item Tampa Scale of Kinesiophobia\textsuperscript{17} as used to assess fear of re-injury. Total scores ranged from 0 to 68, with a greater fear of re-injury during an activity with higher scores.\textsuperscript{6}

The Change Questionnaire for Clients\textsuperscript{18} as used post-treatment to evaluate global change in pain severity and global overall change. Participants rated their degree of change since the beginning of the program to now with respects to global pain severity and global overall change. A 15-point scale was used, -7 (a very great deal worse) to +7 (a very great deal better). 0 indicated no change and positive scores indicate improvement with negative scores indicating a decline.\textsuperscript{6}

In review of the results of the global change ratings, 5.4\% (n=152) reported worse outcome, 1.4\% (n=4) reported no change and 93.2\% (n=261) reported improvement. In patients reporting increased global pain severity a significant increase in pain intensity was found by the 4-item pain scale (P<0.05). In the no change in pain severity group, no difference was found between pre- and post-treatment pain intensity means (P=0.38). The improved pain severity group, revealed significant decrease in pain intensity (P<0.001). Overall, patients had significant pre- to post-treatment improvements in the variables studied. Interdisciplinary chronic pain treatment is effective for improving patients’ functioning in multiple aspects.\textsuperscript{6}

The authors acknowledged the limitations of the article with patient selection and time for follow up. Patients may not represent the general pain population as they were selected from a chronic pain management program at a rehabilitation hospital. Change
could have been measured at greater intervals following completion of the program. Three weeks may not be long enough for sufficient follow up and to reveal the effectiveness of the treatment in regards to patient integration of the program into their life outside of the rehabilitation hospital.6

DISCUSSION

Cognitive treatment of illness perception (CTIP) can improve the perception of pain and quality of life in patients with chronic pain and can be a successful treatment modality as demonstrated by the two studies3,6 reviewed in this article. Pain can be approached each day with application of the methods and activities taught with CTIP therapy and patients will be able to improve their outlook on chronic pain and its negative and draining effect on their life. Pain management specialists can incorporate this approach into their practice by working with physical therapists and occupational therapists trained in cognitive treatment.

While different methods were used in each study,3,6 outcomes proved to be similar. The two studies,3,6 reported overall improvement from the treatment programs. A small number of patients (n=99) reported an increase in pain severity in the Kowal et al6 study but the results found 93.2% (n=261) with improvement in global change ratings.6

While promising results for cognitive treatment of illness perception and improved quality of life can be found within each study, they have their limitations. Both studies3,6 acknowledged difficulties with methodological approaches to the treatment that may have hindered some patients receiving better results from the treatments. Patients were recruited from a chronic pain management program at a rehabilitation hospital in the Kowal et al study.6 All patients were also willing to work in a group-based self-
management approach which may not be representative of the general population of chronic pain patients. Lack of a control group and a short duration of follow up could affect true results of the Kowal et al\textsuperscript{6} study. Follow up after 3 weeks of treatment could result in inaccurate numbers as some patients may continue to improve given more time to apply treatments to their daily life and others may stop using the lessons learned, reducing the results.

The skills learned from these programs can help patients apply better coping skills during painful episodes, improve their dependence on exogenous treatment modalities and pain medications and may even decrease the potential of developing tolerance to opioid medications. Further study would need to be performed to look at the effects of CTIP therapy and reduction in medication use to validate this thought. CTIP treatment resulted in increased physical activity and positive changes in illness perception.\textsuperscript{3} These results could lead to better compliance at physical therapy sessions in the outpatient setting. Improvements in functional capabilities and new approaches to painful episodes may result in better compliance to medication regimens. Training physical therapists and occupational therapists to use cognitive treatment of illness perception and ways to incorporate it into each visit should be studied in the outpatient setting.

**CONCLUSION**

Cognitive treatment of illness perception can improve quality of life for chronic pain patients. Pain management specialties and physical therapists can add cognitive treatment to their armamentarium to provide patients with an additional modality to improve patient outcomes and compliance to treatment regimens in both fields.
References


