

Cognitive Behavioral Therapy for Chronic Pain—One Therapeutic Approach for the Opioid Epidemic

MUHAMMAD HASSAN MAJEED, MD
DONNA M. SUDAK, MD

Opioids are frequently prescribed for chronic pain. For the past 2 decades, long-term opioid analgesic therapy was considered the cornerstone of effective pain management for chronic nonmalignant conditions, despite a lack of documented effectiveness and safety, with the attendant risk of addiction, overdose, and death. Cognitive behavioral therapy (CBT) may be used effectively to treat chronic pain, either as a stand-alone treatment or with other nonopioid pharmacological treatments. CBT improves pain-related outcomes along with mobility, quality of life, and disability and mood outcomes. Compared with long-term use of opioids, CBT has dramatically lower risks and may therefore be worth pursuing.

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Chronic pain is defined as pain lasting longer than 3 months or past the normal time of tissue healing. In the United States, chronic pain is a common complaint, with the prevalence of chronic pain varying from 11.2% to 18% of outpatients in different studies.^{1,2}

Over the past 2 decades, there has been a steady increase in the use of opioid pain medications to treat chronic pain that is not associated with malignancy or end-of-life/palliative care, despite a lack of documented effectiveness and safety. Accompanying this increase has been a steady rise in opioid-use disorders and overdose deaths.^{3,4} However, nonopioid medications, such as nonsteroidal anti-inflammatory drugs (NSAIDs), antidepressants, acetaminophen, and mood stabilizers, have also shown efficacy in the treatment of chronic pain, as have cognitive and behavioral therapies, mindfulness-based therapies, and physical and occupational therapies.

There is a growing evidence base that non-pharmacologic treatments for chronic pain are an important addition to the options available to the clinician.⁵ Cognitive behavioral therapy (CBT) is

efficacious and cost-effective and has lasting effects in the long-term treatment of chronic pain with relatively few side effects.^{6,7} CBT is recommended for the management of most cases of chronic pain either as a stand-alone treatment or along with other non-pharmacological or pharmacological treatments.⁸ Unfortunately, nonpharmacological interventions are often underutilized in primary care settings due to lack of familiarity, time pressure, patient demands, ease of prescribing medications, and low reimbursement rates for these interventions.⁹ The aggressive marketing and excessive dispensing of prescription opioid pain medications for chronic pain in primary care settings have resulted in the recent surge in prescription opioid pain medication addiction in the United States, and the subsequent resurgence of heroin use as a cheaper alternative when opioids are not available or affordable.^{10,11} Consequently, greater consideration must be given to the use of alternative therapies. This article reviews the existing literature about the use of opioids for chronic pain and discusses the evidence for the use of alternative treatments, particularly CBT.

SCOPE OF THE PROBLEM AND IMPLICATIONS OF OPIOID USE FOR CHRONIC PAIN

Between 1999 and 2008, the sale of prescription pain relievers in the United States increased 4-fold, the overdose death rate from opioids quadrupled, and the admission rate for treatment of substance-use disorders soared by 600%.^{12,13} Ninety-one Americans die every day from an opioid overdose.¹⁴ In 2005, approximately 3% to 4% of the adult US population was on long-term, prescribed, opioid medications,¹⁵

MAJEED: Attending Psychiatrist, Natchaug Hospital, Mansfield Center, CT; SUDAK: Professor of Psychiatry, Drexel University College of Medicine, Philadelphia, PA

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Please send correspondence to: Muhammad Hassan Majeed, MD, 11 A Stott Avenue, Norwich, CT 06360 (e-mail: hassan.majeed@icloud.com).

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and a quarter of them struggled with addiction to these medications.¹⁶ In 2012, almost 5 million Americans reported nonmedical use of prescription pain relievers and another 335,000 reported heroin use.¹⁷ Despite aggressive pharmacological treatment, there has been no overall change in the amount and severity of pain Americans have reported in the past decade, leading to questions about the long-term effectiveness of such treatments for chronic pain.^{18,19}

A survey of individuals who were heroin abusers found that, during the 2000s, 3-quarters of these individuals initiated their drug use with prescription painkillers, and 94% reported that they converted to heroin from prescription opioids because of its availability and lower cost.^{20,21} Ironically, improved monitoring and control of opioid prescriptions have inadvertently increased the use of heroin.²²

Although opioids reduce pain, their mechanism of action and their adverse effects demonstrate why they are problematic when used for chronic pain. Opioid medications provide central analgesia without anti-inflammatory actions. Opioids bind to inhibitory G-protein-coupled receptors and mimic the actions of endogenous opioid peptides, thus producing analgesia, euphoria, sedation, dysphoria, respiratory depression, and physical dependence. Opioids stimulate the ventral tegmental area, which results in the release of dopamine in the nucleus accumbens.²³ Such a release causes feelings of pleasure and is part of the reward pathway that induces craving for the drug. This physiological phenomenon produces a high risk of dependence with long-term use.

In March 2016, the Centers for Disease Control released new guidelines for primary care physicians for the treatment of chronic pain.²⁴ It recommended caution in the use of opioids, limiting prescriptions to 3 or fewer days for acute pain, then switching to treatment with NSAIDs or other therapies. Clinicians were encouraged to use prescription drug monitoring programs and a pain-medication contract check (urine drug screen) among other measures to avoid addiction or other complications. In practice, this is not easy. When considering long-term opioid treatment for chronic pain, the physician must balance the risk of addiction against the goal of a functioning life. Often patients believe that the only way that they will be able to tolerate the

pain they experience is if they have opioids to help them. Such beliefs need to be addressed directly, and patients need to agree to an empirical approach to decreasing opioid use. The physician needs to discuss the pros and cons of pharmacologic treatment and the availability of support during any transition to other treatments. Patients may tolerate decreasing medication in small increments so that the experience of changing to a nonopioid modality does not impair functioning.

ALTERNATIVE APPROACHES FOR NONMALIGNANT CHRONIC PAIN

Patients with nonmalignant chronic pain must have a comprehensive evaluation, including education of the patient and family members regarding the risks, benefits, and side effects of proposed treatments. One consequence of the public awareness of the pitfalls of opioid use is that patients may be far more wary of them as a first-line treatment. Treatment alternatives, with an emphasis on achievable and realistic outcomes, must be presented. A multidisciplinary and multimodal approach involving both pharmacological and nonpharmacological measures should be used. The goal of treatment should be a reduction in suffering from pain and improved quality of life, even in the presence of some degree of discomfort. At times, complete elimination of pain is not possible. Emphasis should be placed on increased functioning, not necessarily freedom from pain. Treatment alternatives include pharmacologic approaches and non-pharmacologic approaches, including CBT.

Pharmacologic Approaches

Although many patients with chronic pain can manage their lives without medications, opioids are not the only option among pharmacological approaches. Nonopioid pharmacological treatments such as acetaminophen, NSAIDs, cyclooxygenase 2 inhibitors, antidepressants (particularly tricyclics and serotonin and norepinephrine reuptake inhibitors), or anticonvulsants (gabapentin, carbamazepine, and pregabalin) may be beneficial. The lack of addictive potential and low risk of diversion make such medications alternative first-line treatments for nonmalignant chronic pain.²⁴ If appropriately prescribed, antidepressants are safe and may be

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efficacious in the treatment of multiple chronic pain conditions such as headache, low back pain, neuropathic pain, fibromyalgia, and even in some cancer pain.²⁵ Many antiepileptic medications can be effectively used for migraine prophylaxis, fibromyalgia, and neuropathic pain.²⁶

Nonpharmacological Approaches

Physical Treatments

Physical therapy and exercise may also help alleviate chronic pain, particularly from osteoarthritis and chronic low back pain, and may increase flexibility and function.^{27,28} For example, a recent study showed that 20 hours of Pilates can significantly improve functioning and decrease pain in patients with chronic nonspecific low back pain.²⁹

CBT

A growing body of evidence indicates that CBT is effective in the treatment of chronic pain. In 1965, Melzack and Wall³⁰ pioneered the modern cognitive framework of pain when they proposed a gate-control theory of pain mechanism. They suggested that nonpainful input closes the “gates” in the spinal cord for painful stimuli. Therefore, stimulation by nonnoxious input is able to suppress pain sensation. In 1976, Fordyce³¹ expanded the hypothesis and included operant behavior and learning theory in the understanding of chronic pain. Both of these theories led to the development and testing of CBT treatment protocols for chronic pain.

OVERVIEW OF CBT FOR PAIN

Goals of Treatment

The goal of CBT for pain disorders is to reconceptualize the idea of pain from “pain means tissue damage” and, if no source is found, “it’s all in your head” to the idea that *all* pain is “in the head,” and that multiple factors influence the perception of pain. Treatment goals are established to help the patient see herself or himself as a well person who has pain, and to decrease preoccupation with pain and medical help-seeking (and thus decrease the risk of iatrogenic pain). Frequently, patients with pain believe that they are damaging their body further if they continue to be active while in pain,

which leads to the cycle of inactivity and deconditioning that furthers physical disability. Repeated diagnostic studies by physicians further intensify both the belief that something terrible is wrong and the idea that there exists a solution that will eradicate the pain. Often patients make predictions about pain that further the cycle of withdrawal from usual activities and intensify depressed mood. The therapist helps the patient understand that pain is a stressor and, as with other stressors, coping and adaptation must occur. When such adaptation leads the patient into a cycle of inactivity and chronic help-seeking, pain becomes the center of the patient’s life. Therapy helps the patient see that emotional and psychological factors influence perception of pain and behaviors that are associated with having pain. Therapy, as an alternative intervention, puts in place cognitive and behavioral strategies to help patients cope more successfully.

In initial CBT sessions, the patient is educated about pain and how it arises in the body, establishing a model of pain as a stressor. The therapist is attuned to forming an alliance with the patient. Often, patients with pain require more attention to issues of trust and rapport, and they may be somewhat more difficult to engage, as they consider a referral to a mental health professional as a sign that their distress is not “real.” In such circumstances, concerns may be alleviated by emphasizing that many patients with chronic health conditions have benefited from mental health care and learning to cope better with the stressful demands of illness.

Behavioral Strategies in CBT for Pain

Initial behavioral work with pain patients may include asking patients to make an hourly log of the pain they experience to test assumptions about the frequency and severity of pain and its association with activity. Behavioral experiments follow and may include assigning exercise and coaching the patient to approach meaningful work projects and engage in pleasurable family activities. Graded task assignment—breaking a task into small component parts and incrementally taking steps toward reaching a goal—is often utilized to help the patient test assumptions about what he or she can accomplish. Progressive muscle relaxation and

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meditation are used to manage tension and assist the patient to observe sensations without judgment.

Cognitive Strategies in CBT for Pain

Cognitive strategies include teaching the patient to identify thoughts that occur about pain (“I am in pain 100% of the time” or “I am worthless to everyone because of my pain”) and then using cognitive restructuring—modifying thoughts to increase accuracy and usefulness and learning to use positive coping self-statements (eg, “I am able to cope with this”). Coping skills training may also help patients manage more effectively in the presence of pain.

ACCEPTANCE AND COMMITMENT THERAPY (ACT) FOR CHRONIC PAIN

Another cognitive and behavioral approach, ACT, has been found to be effective for pain.³² The basic tenet of this approach is to increase effective functioning by accepting suffering, using mindfulness, and increasing activity and behavior in the service of the patient’s goals and values. One specific treatment approach in ACT is the goal of increasing psychological flexibility when confronted with a stressor. Effect sizes in treating pain with ACT are significant and larger than those obtained with CBT, although no actual head-to-head comparison studies exist.³²

EVIDENCE OF EFFICACY OF CBT IN CHRONIC PAIN

Several recent comprehensive reviews indicate that alternative approaches to pain management have beneficial effects, although the findings are not entirely as robust as would be optimal. One problem with systematic reviews of pain treatments is that such studies often include a variety of different types of pain, different etiologies for pain, and different treatment modalities.

A systematic review of the studies evaluating the effect of CBT on chronic pain was performed through an electronic search using PUBMED, PsychInfo, Google Scholar, and the Cochrane Database of Systematic Reviews. Key search words included “chronic pain,” “cognitive behavioral therapy,” “psychotherapy,” and “alternative treatment.” Studies were included in this

section on the basis of the level of evidence supporting the use of CBT for chronic pain. Key results of this review are summarized in this section.

Chronic pain can cause a reduction in the brain’s gray-matter volume, presumably due to the effects of chronic stress. Neuroimaging studies have demonstrated the reversal of such anatomical changes in the brain with effective CBT for chronic pain. After 11 weeks of CBT, patients with chronic pain had gray-matter volumes in the bilateral dorso-lateral prefrontal, posterior parietal, anterior cingulate, and orbitofrontal and sensorimotor cortices similar to those found in a healthy control group.³³

In 2016, researchers for the Italian Consensus Conference on Pain in Neurorehabilitation⁵ did an extensive review of the available evidence for psychological treatments such as CBT, mindfulness, and ACT in pain reduction for various medical conditions. They concluded that, for chronic pain syndromes with heterogeneous physiopathology, mindfulness had the greatest impact and CBT had an adequate impact. However, there was strong evidence that CBT was more effective for chronic musculoskeletal pain being treated in group settings. The researchers recommended that both interventions be used along with other treatment modalities.⁵

In a 2012 Cochrane Database Systemic Review,⁷ CBT was found to have small to moderate positive effects on pain, disability, and mood immediately after treatment compared with treatment as usual/waiting list. The authors concluded that CBT is a useful approach in the treatment of chronic pain. Another Cochrane review published in 2015³⁴ demonstrated that CBT produced statistically more significant reductions in neck pain compared with no treatment, and that CBT was significantly better than other treatments for reducing such pain in a short-term follow-up. A 2011 Cochrane review³⁵ of psychosocial treatments for chronic orofacial pain showed that CBT was helpful for both pain and depression.

In other studies, CBT has also been shown to be a very useful tool for treatment of other specific pain disorders, including temporomandibular disorder, neck pain, chronic low back pain, and migraine.⁶ In a recent randomized clinical trial, those who received CBT or mindfulness-based therapy had better results after 26 weeks than those in the usual-care group in relieving chronic low back pain and functional limitations.³⁶

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The limitation of CBT is its moderate effect size; however, it does not carry the risks associated with opioid medications.⁸ Because of lack of familiarity, slow onset of treatment response, and financial issues, CBT is underutilized in clinical settings.⁹ Training in and integration and dissemination of CBT may be resource-intensive; however, it may help to ease the clinical, financial, and social burden of pain disorders on society.

CONCLUSIONS

The management of chronic pain presents unique challenges for the practitioner. CBT is a useful and empirically based method of treatment for pain disorders that can decrease reliance on the excessive use of opioids. There is no evidence that supports the use of opioids for the treatment of chronic pain for more than 1 year, and chronic use increases the serious risks of misuse, abuse, addiction, overdose, and death.²⁴ CBT interventions such as relaxation training, pleasant activity scheduling, cognitive restructuring, and guided exercise in the context of an empathic and validating relationship have the potential to relieve pain intensity, improve the quality of life and improve physical and emotional functioning. Clinicians should consider employing these techniques as stand-alone treatments or in conjunction with other treatment modalities in cases of chronic and subacute pain to improve treatment outcomes.

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