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Coping with Pain

When meeting someone who suffers from persistent pain, one key question that often arises is: “How do you cope with the pain?” Attempts to understand pain coping have been a major focus of psychosocial pain research and clinical practice for the past two decades. Much of the interest in pain coping can be traced back to the emergence of more sophisticated models of pain (e.g., the gate control theory, the neuromatrix theory). These models show that pain is a complex, multidimensional experience that not only has a sensory component, but also cognitive, affective, and motivational/behavioral components. One implication of these models is that cognitive, behavioral, and emotional efforts to cope with or deal with pain could influence pain and pain-related outcomes such as psychological and physical functioning.

This issue of *Pain: Clinical Updates* provides a brief overview of clinical research on pain coping. In the first section, we highlight descriptive studies of pain coping. In the second section, we review studies testing interventions designed to enhance pain coping. In the third and final section, we discuss several important directions for future clinical research in this area.

Descriptive Studies of Pain Coping

Coping has been defined as efforts to deal with stressful situations that are appraised as taxing or exceeding one’s individual resources.²² For persons with persistent pain, pain coping efforts usually involve cognitive and behavioral strategies to cope with, deal with, and minimize pain and pain-related distress and disability.²⁸ Recently, we have described five models of pain coping, each of which is linked to particular coping measures that have been used in research on persistent pain: the cognitive/behavioral model, the problem/emotion-focused coping model, the active/passive coping model, the fear avoidance model, and the acceptance model.

Pain coping efforts usually involve cognitive and behavioral strategies to minimize pain and pain-related distress and disability

The cognitive/behavioral model of pain coping is best exemplified by the Coping Strategies Questionnaire (CSQ) developed in our laboratory.²⁸ The CSQ was designed to assess the frequency of use of specific cognitive and behavioral strategies often targeted in cognitive-behavioral pain management protocols—making coping self-statements, diverting attention, reinterpreting pain sensations, ignoring pain sensations, praying or hoping, pain catastrophizing, and increasing behavioral activity). The questionnaire also evaluates the perceived effectiveness of these strategies in decreasing and controlling pain. One of the earliest pain coping measures to be developed, the CSQ has been used to assess pain coping in

persons with acute and persistent pain, as well as in laboratory pain studies. Numerous studies have supported the reliability of the CSQ and have shown that scores on this measure are meaningfully related to measures of pain and adjustment to pain. Of the various coping strategies measured by the CSQ, pain catastrophizing has been found to be the most consistently predictive of outcome. Patients who report high levels of pain catastrophizing report much higher levels of pain, psychological distress, and physical disability.³¹ The robust findings regarding pain catastrophizing led to the development of the Pain Catastrophizing Scale (PCS),³² a measure that incorporates items from the CSQ and is currently being used in numerous clinical and research settings. The PCS has been found to be useful in predicting both future levels of pain and disability due to pain.^{13,27,29,36}

The problem/emotion-focused coping model of pain can be traced back to the stress and coping model of Lazarus and Folkman and is best embodied in the Ways of Coping Checklist (WCCL).¹² This model maintains that coping efforts can be divided into those which are problem focused, i.e., designed to change the situation so as to solve a problem (e.g., avoiding pain by having a partner lift a very heavy suitcase), or emotion focused, i.e., designed to manage the emotional consequences of the situation (e.g., distracting oneself by watching television so as not to feel discouraged about being unable to tolerate the pain involved in driving a long distance to a family reunion). The WCCL is a general coping measure that can be adapted for studying pain coping. It includes one problem-focused subscale and four emotion-focused subscales (seeking social support, wishful thinking, self-blame, and avoidance). It has been used mainly in research on arthritis pain with studies showing that the frequent use of emotion-focused coping efforts (specifically, wishful thinking, self-blame, and avoidance) are related to greater depression and physical disability.²³

The active/passive pain coping model is well illustrated by the Vanderbilt Pain Management Inventory (VPMI),³ which divides coping strategies into those which are more passive (e.g., withdrawing from others, talking about pain, or taking medication to get immediate pain relief) and those which are more active (e.g., engaging in leisure activities, distracting one's attention from pain, or doing strengthening exercises.). Like the WCCL, the VPMI has primarily been used in studies of arthritis patients. A consistent finding emerging from research with the VPMI is that the frequent use of passive coping strategies is related to negative outcomes such as increased pain, depression, and physical disability. Mercado et al. found that levels of passive coping on the VPMI were associated with a 500% increase in the risk of developing disabling pain when compared to lower levels of passive coping attempts.²⁵

The fear avoidance model of pain coping articulated by Vlaeyen and Linton highlights the key role of behavioral coping efforts (specifically, avoiding painful situations rather than approaching and confronting them) in adjustment to pain.³⁴ A scale often used to measure fear avoidance is the Tampa Scale of Kinesiophobia (TSK).²⁰ The TSK has been widely used in studies of patients having chronic pain conditions such as chronic back pain or neck pain.²⁶ Patients scoring high on fear avoidance on the TSK not only report more pain and disability, but also have much more difficulty engaging in physical tasks such as extension/flexion exercises

or lifting/reaching tasks.⁴ Vlaeyen and his colleagues have developed novel exposure-based treatments for patients with high fear avoidance that enable these patients to confront and overcome activity limitations related to their fear.³⁵

The acceptance model of pain coping maintains that the struggle to control pain may be maladaptive and may contribute to increased pain and psychological distress. A key tenet of this model is that accepting that one will have pain and being willing to engage with meaningful life activities despite pain can be much more adaptive. The Chronic Pain Acceptance Questionnaire (CPAQ)¹⁴ is specifically designed to assess these two aspects of acceptance: willingness to experience pain and engagement in activity. In a series of studies, McCracken and his colleagues have shown that scores on the CPAQ explain a significant proportion of variance in pain, depression, and health care utilization.²⁴ Based on these findings, McCracken has been a major advocate of the increased use of acceptance-based approaches (e.g., the use of mindfulness meditation) in the management of chronic pain. Another group recently reported that willingness to accept pain and activity engagement as measured by the CPAQ partially mediated the impact of pain on quality of life in individuals with hemophilia who had chronic arthritic joint pain.⁸

Interventions to Enhance Pain Coping Skills

Interventions for coping with chronic pain have largely focused on the application of cognitive-behavioral strategies, particularly the use of pain coping skills training. Keefe et al.¹⁹ outlined three main components of pain coping skills training for pain: an educational rationale detailing how patients' thoughts, feelings, and behaviors influence pain and pain coping; therapist-guided training in cognitive and behavioral coping strategies (e.g., relaxation, goal setting, and cognitive restructuring); and home practice of coping skills.¹⁹

Obesity can increase joint stress and load forces, which can increase levels of pain

In this section, we discuss the application of coping skills interventions to patients with two types of disease-related pain: arthritis pain and cancer pain.

Coping with Arthritis Pain

Medical approaches to managing arthritis can reduce many pain-related and arthritic symptoms, yet many arthritis patients still experience pain and disability despite optimal medical management. Cognitive-behavioral pain coping strategies may provide patients with new coping skills that can augment medical management of arthritis pain and disability. Sharpe et al.³⁰ examined the short- and long-term effects of an 8-week cognitive-behavioral therapy intervention teaching pain coping skills (e.g., relaxation, attention diversion, goal setting, and cognitive restructuring) to patients with early-onset rheumatoid arthritis. Results of this randomized controlled trial found that patients who received instruction in pain coping skills demonstrated lower depressive symptoms and lower levels of C-reactive protein (a biomarker of disease severity) than patients who did not receive the treatment.

Long-term follow-up found that the intervention provided benefits in both physical and psychological domains. Evers et al.¹⁰ extended this work by examining the impact of a tailored cognitive-behavioral intervention for patients with early-onset rheumatoid arthritis. In this randomized controlled trial, patients who received the intervention condition chose which treatment modules (covering pain and disability, fatigue, negative mood, and social relationships) would be most beneficial to them.

Those who witness pain in their partners demonstrate brain activity that is similar to actually experiencing pain

Study results found that patients who received the intervention demonstrated reduced fatigue and depression, increased perceived support, high compliance with medication, and high levels of actively coping with stress. While studies have also suggested the benefit of cognitive-behavioral coping strategies for osteoarthritis, less work has been done examining the application of these strategies in early stages of osteoarthritis. Understanding the utility of coping strategies for early-stage osteoarthritis is an interesting direction for future research.

Coping with Pain and Obesity

Patients with chronic pain conditions who are obese may face particular challenges coping with their pain due to their increased weight and may require unique intervention techniques. As is the case in osteoarthritis, obesity can increase joint stress and load forces, which can increase levels of pain. One way that obese patients with persistent pain cope with this increased pain is to decrease their activity level, which then leads to weight gain, more pain, and so on. There is growing recognition that patients with chronic pain may be able to break this pain-weight-inactivity cycle with interventions that simultaneously address ways to cope with pain (i.e., pain coping skills training) and decrease weight (i.e., behavioral weight loss strategies). Evidence from osteoarthritis trials suggests that the application of behavioral weight loss strategies focusing on dietary changes and exercise can benefit obese patients.⁵ There is limited information, however, about the potential advantages of simultaneously applying both coping skills and behavioral weight loss strategies. Despite a widespread obesity epidemic, there is little empirical work examining these intervention strategies in pain conditions other than osteoarthritis. We have two ongoing studies in our laboratory investigating the application of pain coping strategies and lifestyle behavioral weight loss. First, we are in the final stages of an intervention testing the separate and combined effects of pain coping skills training and a behavioral weight loss intervention for osteoarthritis patients with knee pain who are overweight or obese. Second, we are also examining the impact of pain coping skills training and behavioral weight loss strategies in rheumatoid arthritis patients who are obese.

Coping with Cancer Pain

Cognitive-behavioral pain coping strategies may also provide a useful adjunct to help patients manage pain caused by cancer and its treatments. A recent meta-analysis found that cognitive-behavioral interventions appear to be efficacious for managing pain and distress in patients with breast cancer.³³ In a group of patients with various types of cancer (breast, lung, lymphoma, colon, or other), Dalton et al.⁶ examined whether a profile-tailored cognitive-behavioral treatment program aimed at pain coping would significantly impact pain levels. In this context, tailored treatment was based on the evaluation of the patient's characteristics and needs and used theoretically and empirically supported interventions that linked assessment to treatment. Patients who received an intervention that was tailored to their own profile showed improvements in pain, sleep, mobility, and relationships immediately following treatment and 1 month after treatment.

Coping Skills for Patients and Their Partners

There is growing recognition of the value of applying psychosocial treatments that focus on pain coping strategies to both patients and their partners. Patients with chronic pain and their partners are significantly impacted by the patient's pain. In fact, evidence suggests that those who witness pain in their partners demonstrate brain activity that is similar to actually experiencing pain.¹¹ Two major intervention approaches have been proposed: the partner-assisted approach, which focuses on the patient while the partner's role is ancillary (e.g., helping the patient control pain), and the couples-based approach, where the focus is on the couple and the role of the partner is equal (e.g., decreasing pain-related distress in both partners).⁹ A partner-assisted approach testing the efficacy of partner-guided cancer pain management at the end of life found that a three-session intervention increased partners' self-efficacy for helping the patient control pain and other symptoms.¹⁸ Studies in arthritis patients have also found that partner-assisted approaches to pain coping can benefit both the patient and the partner.¹⁷ The efficacy of couples-based interventions has been demonstrated in other disorders (e.g., depression or alcohol abuse), but this approach has received limited attention in regard to pain coping. An important new direction for pain coping research is to examine how couples-based interventions may provide significant benefit to both patients with pain and their partners.

New Directions in Pain Coping Research

There are many avenues for pain coping researchers to pursue. Three timely and interesting future directions are highlighted below.

Eating to cope with pain can potentially establish a cycle of increased eating, increased weight, increased pain, and so on

Overeating as a Pain Coping Strategy

There is increasing interest in the possibility that patients with persistent pain conditions may turn to overeating to cope with their pain. Two reasons have been proposed to explain the relationship between eating and pain. First, individuals who experience pain and pain-related distress may find relief from negative affect or stress when they eat certain types of food. Second, several studies from both animal and human models suggest that eating certain types of foods produces an analgesic response and increases pain tolerance. Of particular concern is the possibility that eating foods high in fat or sugar is more likely to alleviate pain and distress.¹⁵ These relationships are particularly problematic in patients with persistent pain conditions that are worsened by increased weight (e.g., osteoarthritis, rheumatoid arthritis, and low back pain). Eating to cope with pain can potentially establish a cycle of increased eating, increased weight, increased pain, and so on. Several studies are underway in our laboratory to better understand this relationship between persistent pain conditions and overeating. We have recently reported that morbidly obese patients with osteoarthritis who use maladaptive cognitive coping strategies (i.e., pain catastrophizing) may be more likely to engage in binge eating behaviors.³¹

Smoking has been associated with both the development and exacerbation of chronic pain conditions

Smoking as a Pain Coping Strategy

Smoking is another maladaptive pain coping behavior that may provide acute relief from pain or pain distress but has potentially negative long-term pain-related consequences. Smoking is common in patients with chronic pain and has been associated with both the development and exacerbation of chronic pain conditions.¹⁶ Both clinical observations and empirical findings suggest that patients with chronic pain conditions use smoking as a pain coping mechanism. In a recent laboratory study, Ditre and Brandon⁷ demonstrated that experimentally induced pain increased patients' smoking urges and was related to shorter intervals before smoking again. Interestingly, the relationship between pain and an increased urge to smoke was partially mediated by pain-induced negative affect, and the relationship between pain and decreased latency to smoke was fully mediated by pain-induced urge to smoke. These investigators proposed that the reciprocal relationship between pain and smoking eventually results in greater pain and greater smoking. An interesting area for future research would be to examine the impact of pain on smoking cessation attempts. Further, it may be that teaching patients pain coping strategies could improve their success in giving up smoking.

Studying Pain Coping Processes Using Daily Diary Methods

Traditionally, pain coping has been studied using questionnaires. These questionnaires rely on patients recalling how they coped with pain over a specific time period (e.g., within the last week or month). Pain coping efforts, however,

are often dynamic and vary from day to day in ways that are not captured fully by questionnaires. While the use of paper-and-pencil daily diaries to assess pain coping has been used for several years, the advent of easy-to-use and economical hand-held electronic mobile devices (palm pilots and cellular telephones) has increased the sophistication of conducting momentary assessments of pain coping. These devices may offer several advantages over one-time or daily diary paper-and-pencil measures. First, as mentioned above, pain coping efforts have a dynamic tendency that is best captured by daily diary methods. Next, patients may demonstrate greater adherence due to electronic time-stamped entries that prevent retroactive diary completion, a significant problem with paper-and-pencil methods. Third, hand-held devices generally improve timeliness of data handling. Finally, there is evidence that patients prefer hand-held device assessment compared to paper-and-pencil measures.²¹

Pain coping efforts have a dynamic tendency that is best captured by daily diary methods

The use of mobile electronic devices to capture momentary assessment of emotions and behaviors has been used in several areas including smoking, workday stress, and eating disorders. Bjorling² recently had adolescent girls use this methodology for a 21-day period and found that momentary level of perceived stress was significantly related to intensity of headache pain. In another study, Aaron et al.¹ used electronic diary methods three times daily for 2 weeks to examine pain coping in chronic temporomandibular disorders. The daily diary data revealed that over the course of the day patients tended to use many different coping strategies when they were in pain. The most common were strategies related to relaxation and activity reduction. The use of momentary assessments to better understand pain coping may provide new insights into patients' patterns of coping in acute and chronic pain conditions that can inform both research methodology and clinical practice.

Conclusion

Tremendous progress has been made in our understanding of how patients cope with the pain they experience. Investigators have used information gained from descriptive studies to inform theoretical models of pain coping and interventions to assist individuals in coping with their pain. Many of these interventions have been shown to be efficacious in decreasing pain and disability for patients with pain. As our understanding of coping with pain continues to advance, it will be important to pay particular attention to examining the role of maladaptive pain coping strategies such as overeating or smoking in and their consequences in day-to-day life.

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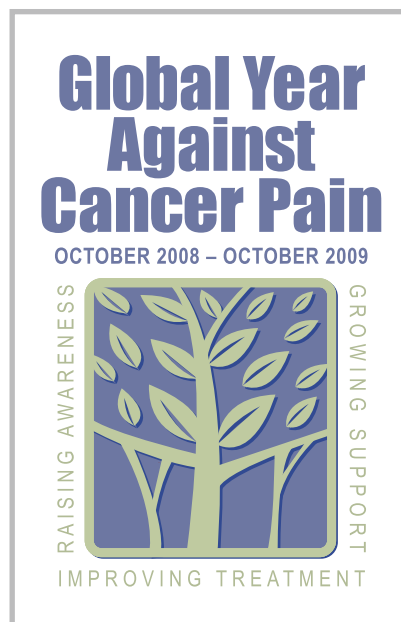
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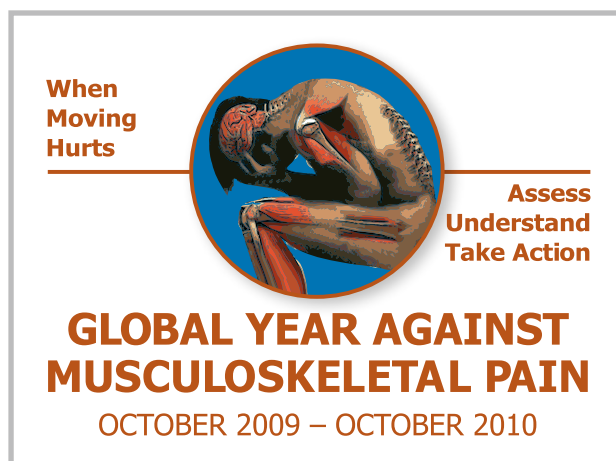
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