The role of mindfulness in a contextual cognitive-behavioral analysis of chronic pain-related suffering and disability

Lance M. McCracken *, Jeremy Gauntlett-Gilbert, Kevin E. Vowles

Pain Management Unit, Royal National Hospital for Rheumatic Diseases and University of Bath, Bath BA1 1RL, UK

Abstract

An increasing number of studies consider the specific processes by which distressing sensations, thoughts, and emotional experiences exert their influence on the daily functioning of those who suffer with chronic pain. Clinical methods of mindfulness and the processes that underlie them appear to have clear implications in this area, but have not been systematically investigated to this point in time. The purpose of the present study was to examine mindfulness in relation to the pain, emotional, physical, and social functioning of individuals with chronic pain. The present study included 105 consecutive patients attending a clinical assessment for treatment of chronic pain. Each completed a standardized battery of questionnaires, including a measure of mindfulness, the Mindful Attention Awareness Scale [Brown KW, Ryan RM. The benefits of being present: mindfulness and its role in psychological well-being. J Pers Soc Psychol 2003;84:822–48]. Correlation analyses indicated that mindfulness was unrelated to age, gender, education, or chronicity of pain, but was significantly related to multiple measures of patient functioning. In multiple regression analyses, after controlling for patient background variables, pain intensity, and pain-related acceptance, mindfulness accounted for significant variance in measures of depression, pain-related anxiety; physical, psychosocial, and "other" disability. In each instance greater mindfulness was associated with better functioning. The combined increments of variance explained from acceptance of pain and mindfulness were at least moderate and, in some cases, appeared potentially meaningful. The behavioral processes of mindfulness and their accessibility to scientific study are considered.
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1. Introduction

One current psychological model of chronic pain suggests that patients with chronic pain suffer and are disabled particularly by process of restricted awareness, overwhelming influences of distressing thoughts and emotions, and from habitual patterns of ineffective avoidance (McCracken, 2005). Some chronic pain sufferers become overly focused on their pain, think in negative terms about their situation, suffer emotionally from both their thoughts and events outside their thoughts, and become fixed in recurrent patterns of unsuccessful struggling with pain in ways that limit their functioning. This general, contextual, cognitive-behavioral model is gaining increasing support, particularly its component processes of acceptance of pain (e.g., McCracken, 1998; McCracken et al., 1999; Viane et al., 2003; McCracken et al., 2004) and values (McCracken and Yang, 2006).

There are specific treatment methods for chronic pain designed to address the processes of suffering and disability outlined above. Mindfulness-based methods are one example. These methods are intended to reduce the contribution of restricted awareness and some of the emotional and behavioral impact of distressing

* Corresponding author. Tel.: +44 1225 473 403; fax: +44 1225 473 461.
    E-mail address: Lance.McCracken@RNHRD-tr.swest.nhs.uk (L.M. McCracken).

psychological experiences (Baer and Krietemeyer, 2006). Mindfulness can be defined as the practice of broad, present-focused, and behaviorally neutral awareness. It is a way to observe experiences, such as physical symptoms, emotions, or thoughts, such that some of the otherwise automatic behavioral influences attached to these experiences are reduced, leading to more balance, non-reactive, and realistic contact with situations, and more effective action. Although mindfulness-based methods appear effective for chronic pain in uncontrolled studies (e.g., Kabat-Zinn, 1982; Kabat-Zinn et al., 1985; Kaplan et al., 1993), and have been the basis for recent quantitative reviews (Baer, 2003; Grossman et al., 2004), there are few studies attempting to directly measure the *processes* of mindfulness, and no empirical studies of this type in relation to chronic pain.

The goal of mindfulness is not to alter the content of what is experienced but to change how it is experienced and the influences it exerts on behavior. In this way, mindfulness is best understood within a functional and contextual framework, as opposed to a framework that advocates the challenging or modifying of thoughts and feelings. This functional aspect of mindfulness appears well suited as a treatment method for intractable chronic pain, where changing what is felt appears dramatically more difficult than changing behavior in relation to what is felt.

The purpose of this investigation was to examine the role of mindfulness in relation to the functioning of persons with chronic pain. In this study, measures of patient functioning included pain, emotional distress, disability, and pain-related medication use. It was predicted that the greater neutral and present-focused awareness implied by mindfulness would be associated with more healthy and less distressed functioning on these measures. An additional purpose of the current study is to examine the relationship between acceptance of pain and mindfulness. It was expected that mindfulness would be positively associated with acceptance of pain but also that mindfulness, as a more general process of awareness and non-reactivity, would predict patient functioning independent of acceptance of pain.

2. Methods

2.1. Participants

Subjects for this study were 105 consecutive patients seeking services on an interdisciplinary pain management unit in the UK between November 2005 and June 2006. The majority were women (60.0%). The overwhelming majority reported their ethnic background as white (including British, Irish, or other) (98.1%). Mean age was 46.9 years (SD = 12.5). Mean years of education completed was 12.3 (SD = 2.3). Most were married (61.9%), followed by single (16.2%), divorced (16.2%), and widowed, separated or co-habitating (5.7%). The median

duration of pain was 96.0 months (range 7–540). Low back pain was the most frequent primary pain complaint (54.3%), followed by lower extremity (14.3%) shoulder or upper limb (11.4%), full body (11.4%), and other locations (8.6%). Only 9.6% of patients were working either full or part time away from home.

The data for this study were collected as part of a standard assessment process to consider patients' treatment needs. Patients were mailed questionnaire packets at home and were asked to complete them and bring them with them to their initial visit in the clinic. All patients provided written consent for their data to be used in research. There was a less then 10.0% rate of non-completion due to lack of reading ability, misplaced forms, errors during the process of assembling the forms, or failures to request consent. In addition to a set of standardized instruments, patients also provided information about background characteristics, ratings of pain and pain-related distress (0–10 scales), estimates of daily time spent upright, standing or walking, and medications taken. Medications for pain were classified into one of ten classes (e.g., weak opioids, strong opiods, NSAID, tricyclic antidepressant, muscle relaxant) and a sum of the number of classes prescribed was used for analysis. Approval to conduct this study was given by the Research Committee at the Royal National Hospital for Rheumatic Diseases.

2.2. Measures

The primary measure of interest in this study was the Mindful Attention Awareness Scale (MAAS; Brown and Ryan, 2003), a 15-item measure of mindfulness. The item content was designed to reflect the opposite of the construct of mindfulness, or "mindlessness," and thus endorsing the item content at a lower frequency is taken to represent a higher level of mindfulness (e.g., "I find it difficult to stay focused on what is happening in the present," "I rush through activities without being really attentive to them," "I find myself preoccupied with the future or the past."). Each item is rated on a scale from 1 (almost always) to 6 (almost never). The items are averaged to form the total score. The initial development studies of the instrument demonstrated that scores from the MAAS achieve alpha reliability levels above .80, appropriately correlate with measures of emotional distress and physical symptoms in students and general adult samples, distinguish individuals based on their history of mindfulness training and practice, and correlate with measures of self-awareness (Brown and Ryan, 2003). Additional study supports the factor structure and validity of the MAAS in a clinical population, patients with cancer (Carlson and Brown, 2005). The internal consistency reliability coefficient (alpha) in the current sample was .87.

The British Columbia-Major Depression Inventory (BC-MDI; Iverson and Remick, 2004) was used to measure depression. The BC-MDI is a relatively new 20-item self-report measure of depression modeled after the Diagnostic and Statistical Manual of Mental Disorders (4th edition; DSM-IV; American Psychiatric Association, 1994) criteria for major depression. Items 1–16 are symptoms of depression. Patients are asked to report whether they had each of these symptoms in the past two weeks and then to rate each endorsed symptom on a 1–5 scale of severity, from 1 (very mild problem) to 5