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Mindfulness-based stress reduction for chronic pain conditions: Variation in treatment outcomes and role of home meditation practice

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Abstract

Objective: This study compared changes in bodily pain, health-related quality of life (HRQoL), and psychological symptoms during an 8-week mindfulness-based stress reduction (MBSR) program among groups of participants with different chronic pain conditions. **Methods:** From 1997-2003, a longitudinal investigation of chronic pain patients (n=133) was nested within a larger prospective cohort study of heterogeneous patients participating in MBSR at a university-based Integrative Medicine center. Measures included the Short-Form 36 Health Survey and Symptom Checklist-90-Revised. Paired t tests were used to compare pre–post changes on outcome measures. Differences in treatment effect sizes were compared as a function of chronic pain condition. Correlations were examined between outcome parameters and home meditation practice. **Results:** Outcomes differed in significance and magnitude across common chronic pain conditions. Diagnostic subgroups of patients with arthritis, back/neck pain, or two or more comorbid pain conditions demonstrated a significant change in pain intensity and functional limitations due to pain following MBSR. Participants with arthritis showed the largest treatment effects for HRQoL and psychological distress. Patients with chronic headache/migraine experienced the smallest improvement in pain and HRQoL. Patients with fibromyalgia had the smallest improvement in psychological distress. Greater home meditation practice was associated with improvement on several outcome measures, including overall psychological distress, somatization symptoms, and self-rated health, but not pain and other quality of life scales. **Conclusion:** MBSR treatment effects on pain, HRQoL and psychological well-being vary as a function of chronic pain condition and compliance with home meditation practice.

Keywords: Chronic pain; Compliance; Effect size; Health-related quality of life; Meditation; Mindfulness-based stress reduction; Psychological distress

Introduction

An estimated one in three people suffer from chronic pain, a condition frequently associated with decreased health-related quality of life (HRQoL) and high levels of psychological distress [1]. Despite conventional healthcare utilization, nearly half of patients with chronic pain report their pain as not under control [2]. Limitations of drug therapy for chronic pain reflect the complex pathophysiology of the condition, as well as the profound contribution of psychosocial factors to the perpetuation of pain and suffering [3,4]. Mind–body medicine is defined by a range of therapies intended to enhance the mind's capacity to improve bodily function and symptoms [5]. Despite consensus that mind–body therapies can be effectively

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incorporated into comprehensive management of chronic pain, only 20% of chronic pain patients report using such interventions in the past year [6,7]. A better understanding of the effectiveness of particular mind–body therapies for specific patient subpopulations may support wider and more successful integration of mind–body medicine with conventional pain management [8].

Mindfulness-based stress reduction (MBSR) is a group intervention that appears to be a promising adjunct to treating chronic pain and attendant reduction in physical functioning and psychological well-being [9–11]. The core of MBSR is intensive training in mindfulness meditation and its applications for daily living and coping with stress, illness, and pain [12,13]. Mindfulness meditation is the practice of paying attention, on purpose, moment-to-moment, in a way that is nonjudgmental and nonreactive. Practitioners report greater equanimity and less distress secondary to uncomfortable sensations, thoughts, and emotions [10,11,14].

A series of early treatment outcome studies found that MBSR program participants with various self-reported chronic pain conditions demonstrated significant changes in pain intensity, medical symptoms, psychological symptoms, coping ability, and inhibition of daily activity by pain, most of which were superior to standard medical care alone and persisted up to four years later [15–17]. Another descriptive study of patients with heterogeneous chronic pain conditions reported significant changes in self-report measures of pain, pain beliefs, and psychological symptoms following MBSR combined with conventional medical treatment [18]. The mean posttreatment effect size (d=.15) in the latter study, however, was substantially smaller than the MBSR effect sizes reported previously for chronic pain patients (.36<d<.70) [10]. Therefore, it remains to be determined whether the health benefits of MBSR in mixed diagnosis pain cohorts generalize across study sites.

Investigators have also studied MBSR for groups of patients diagnosed with a common chronic pain condition. Studies of fibromyalgia patients have demonstrated improvements in pain, anxiety, depression, somatic complaints, sense of coherence, global well-being, coping, sleep quality, and fatigue [19–22]. A waitlist controlled trial of rheumatoid arthritis patients reported no difference in disease activity but did not include pain as an outcome measure [23]. A randomized trial of patients with chronic musculoskeletal pain found that MBSR effects on pain intensity did not differ significantly from massage therapy or standard medical care; however, MBSR uniquely improved psychological well-being at follow-up [24]. Finally, a randomized clinical trial of MBSR for older adults with chronic low back pain found significant improvement in pain acceptance, and for one of three measures of physical functioning, but not for pain intensity [25].

Given these mixed empirical findings, more needs to be known about the effectiveness of MBSR in chronic pain conditions, especially in relation to specific pain conditions. A neglected but potentially important methodological consideration is whether or not MBSR is taught to a medically heterogeneous or homogeneous patient population. MBSR programs generally serve mixed cohorts of patients who may or may not have chronic pain or share a medical condition. Studying MBSR for medically homogeneous cohorts may introduce unmeasured, confounding group effects.

The primary aim of this study, therefore, was to compare MBSR treatment effects among subgroups of patients with different chronic pain conditions who participated in an MBSR program offered to a medically heterogeneous community population. Outcomes were HRQoL, including an index of bodily pain and pain-related limitations in daily functioning, and psychological distress, including measures of anxiety, depressive symptoms, somatization, and overall psychological distress level. Secondarily, because relatively little is known about the processes of therapeutic change during MBSR, the relationship between intervention outcomes and adherence to formal home meditation practice was assessed.

Materials and methods

Design and procedure

This study used a prospective cohort design to assess changes in bodily pain, HRQoL, and psychological symptoms during an MBSR program modeled after the curriculum developed by Kabat-Zinn et al. at the Stress Reduction Clinic of the University of Massachusetts Medical Center [26]. The intervention took place at a large academic medical center (Thomas Jefferson University Hospital, Philadelphia, PA, USA) where study participants were recruited through local medical clinics and media advertisements. Participants were both physician- and self-referred. All participants underwent a one-on-one intake interview prior to enrollment in MBSR during which a brief medical history was taken, course expectations were communicated, and informed consent was obtained for participation in outcome research. This study includes all MBSR program participants who reported one or more chronic pain conditions during the intake interview. The study protocol was approved by the Thomas Jefferson University Institutional Review Board.

The present study of individuals with chronic pain was nested within a larger prospective study of heterogeneous patients (n=450) participating in MBSR through the Jefferson-Myrna Brind Center of Integrative Medicine from 1997 to 2003. Participation in Jefferson's MBSR program was open to anyone interested in exploring the potential health benefits of meditation practice. Persons were excluded and referred for appropriate healthcare services if they reported severe psychopathology during the intake interview, such as psychotic symptoms, active