Yoga attitudes in chronic low back pain: Roles of catastrophizing and fear of movement

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ABSTRACT

Chronic low back pain is a significant public health problem and, although underused, yoga may be an effective complementary treatment. The current study examined associations of pain catastrophizing and fear of movement with attitudes toward yoga in adults with chronic low back pain. Participants completed three quantitative questionnaires assessing specific constructs: beliefs about yoga, fear of movement, and pain catastrophizing. A semi-structured in-person interview was then conducted to obtain specific pain-related information. Hierarchical regression and mediational analyses were used to test hypotheses. Consistent with the fear-avoidance model of chronic pain, catastrophizing and fear of movement were negatively associated with yoga attitudes. Specifically, fear of movement was a mediator between catastrophizing and attitudes toward yoga. Individuals with higher levels of catastrophizing and fear of movement may be less likely to consider a pain treatment involving physical movement.

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1. Introduction

Chronic pain is a significant public health problem in the United States (U.S.), affecting at least 116 million American adults and costing up to $635 billion each year [1]. Chronic low back pain is the second most common cause of disability in American adults [2] and is one of the most common reasons individuals seek consultation from their primary care providers [3]. Biomedical treatments (e.g., medication and surgery) for chronic low back pain are expensive with estimated annual costs of $62.5 and $4.7 billion, respectively [4], often do not result in long-term improvement, and pose risks for significant side effects [4—7]. It is thus important to provide treatments that are not only effective, but safe and cost-effective, as well.

A growing body of evidence supports complementary and alternative medical treatments as beneficial. The National Center for Complementary and Integrative Health (NCCIH) defines complementary health approaches as health care practices, techniques, and products typically considered to be outside the traditional medical model and usually fall into one of two categories: natural products or mind-body practices [8]. One integrative treatment often studied in the context of chronic low back pain is yoga. As defined by NCCIH, yoga is a mind-body practice that combines breathing, physical movements, and meditation or relaxation to benefit health and well-being [9]. Evidence suggests that yoga is feasible and efficacious for treating chronic low back pain in adults [10—14]. Outcomes include decreased perceived pain [12], decreased pain-related disability, improved balance, flexibility, and back function [10,13,14], and improved pain self-efficacy [14]. Recent systematic reviews of RCTs using various types of yoga as an intervention for chronic pain suggested that yoga results in significant reductions in pain and functional disability when compared to various control conditions [15,16].

Given this evidence for yoga's potential benefits it is important to assess the barriers and facilitators to consideration of yoga as a viable treatment for chronic low back pain. Although some research has focused on the benefits, barriers, and cues to action of yoga in general [17], the examination of factors influencing attitudes toward yoga in a population of individuals with chronic low back pain is a step that has been neglected thus far in both pain and yoga research.

Although research has examined various styles of yoga and there is still need for additional studies to establish evidence-based yoga treatment protocols, most researched yoga interventions for chronic low back pain adapt poses in a hatha yoga style in an effort to protect participants' safety and prevent injury. This is a unique

characteristic of yoga, in that it is implemented in such a manner as to proactively prevent injury and protect specific weak or injured areas of the body, if presented by a competent and informed instructor with knowledge of the various origins of low back pain. Specific types of yoga, restorative yoga or Viniyoga, for example, may be functionally distinct from many other types of yoga (e.g., classic Iyengar, Ashtanga, traditional Hatha, Kundalini, Bikram) in that they have a more primary therapeutic focus and perhaps may be better suited for use as a therapeutic intervention in chronic pain conditions. Certainly, as yoga is traditionally movement-based, it is likely that a yoga intervention is not right for everyone who has chronic low back pain and should be considered very carefully with the assistance of a medical professional and a qualified yoga therapy instructor.

Yoga participation in the United States has increased from 5.1% of the population in 2002 to 6.1% in 2007 [18] and researchers estimate that approximately 16 million Americans currently practice yoga [19]. Yet, there still exist many misconceptions about what yoga is, how it is practiced, and the various ways it can be beneficial. Commonly cited barriers to practicing yoga include time (e.g., long duration of class), cost (e.g., buying own equipment), perceived difficulty or inappropriateness for people with certain physical conditions (e.g., frail or elderly patients), and other negative pre-existing conceptions (e.g., lack of aerobic challenge) [17]. Attitudes towards yoga are likely to affect an individual's willingness to consider it as a beneficial treatment for chronic low back pain.

Although not previously linked to attitudes toward yoga, pain catastrophizing (CAT) and fear of movement (FOM) are well-researched constructs in the chronic pain literature. Pain catastrophizing has been defined as an exaggerated negative mental set about real or anticipated pain and is often considered a precursor to pain-related fear of movement [20]. Fear of movement is conceptualized as a cognitive state that leads to an individual's engagement in protective behaviors in an effort to avoid pain [20]. Research has demonstrated that CAT and FOM lead to avoidance behaviors (e.g., limiting physical activity) and suggest that these concepts may be primary contributors to the development of chronic pain [20]. Fear-avoidance beliefs (e.g., a patient's beliefs about how certain activities may affect his or her pain) in individuals who experience chronic pain are linked to increased pain-related disability and worse overall physical health, even when other variables such as demographics, pain intensity, and pain duration are statistically controlled [21].

Vlaeyen and colleagues (2002) posit that FOM is one of the most relevant predictors of a variety of physical performance measures in patients with chronic pain, and FOM, along with CAT, is a robust predictor of chronic pain in adults [22]. Previous studies have also linked pain catastrophizing with pain intensity and disability [23—25]. The most common relationships between CAT, FOM, and pain outcomes are further explained in Vlaeyen's conceptual fear-avoidance model for pain. The model posits that, in the presence of pain, catastrophizing about pain leads to increases in pain-related fear of movement, which leads to avoidance behaviors (disengagement from activity) and ultimately a higher level of overall disability [20].

If CAT and FOM lead to avoidance behaviors it is possible that these cognitive constructs could also be associated with attitudes toward yoga. Specifically, in individuals high in CAT and FOM, yoga may be viewed as an activity with potential to cause pain and these individuals may thus have more negative attitudes toward yoga therapy related to possible perceived threat of pain, regardless of information indicating its likely benefits. The utilization of Vlaeyen's fear-avoidance model [20] to inform our study rationale provides an innovative approach to conceptualizing potential barriers and facilitators associated with someone accepting yoga as a pain therapy.

It was hypothesized that higher levels of FOM and CAT would negatively predict an individual's attitudes toward yoga. In addition, it was hypothesized that FOM would mediate the pathway between CAT and yoga attitudes. Understanding the cognitive factors that influence negative (or positive) biases regarding considering yoga as a possible treatment may provide an avenue for intervening and facilitating eventual acceptance of an alternative, efficacious, and low-risk treatment for chronic pain.

2. Method

2.1. Participants

A sample of 102 community participants from Tuscaloosa, Alabama self-reporting chronic low back pain (defined as pain resulting from an injury or condition that interferes with daily functioning and has lasted at least six months) were recruited to participate in the study via publicly distributed flyers, local newsletters, and in-person recruitment at a number of community sites. Recruitment sites included University of Alabama's Student Recreational Center, Maude L. Whatley Community Health Center, FOCUS on Senior Citizens organization, Tuscaloosa YMCA, Tuscaloosa Parks and Recreation Authority, and Osher Life Long Learning Center. Participants provided a variety of stated causes of current low back pain (e.g., accidents, injuries, musculoskeletal issues). Although disability status was not determined, all participants reported some interference in daily activities for at least 6 months. An incentive of $10 was paid to participants for completion of the study. The sample spanned ages 19 to 84 (Mean age = 50.5) and was limited to participants who were able to communicate in English and who were not reporting acute pain (defined as temporary pain resulting from a specific injury) as a primary pain source. There were no exclusions based on sex or ethnicity.

2.2. Measures

2.2.1. Semi-structured interview

Participants were asked to provide information on their age, sex, ethnicity, marital status, and level of education as part of the interview. Participants were also asked to provide information about their pain history (including stated cause of pain, duration of pain in months and pain intensity over the last week) and perceived barriers and facilitators to trying yoga. The qualitative information regarding perceived barriers and facilitators to trying yoga was reported in a separate manuscript [26].

2.2.2. Beliefs About Yoga Scale

The Beliefs About Yoga Scale (BAYS [27]); was used to measure individual attitudes towards yoga. The BAYS consists of 11 items examining common positive and negative beliefs about yoga as they relate to participants' expectations about potential benefits, discomfort, and social acceptability of yoga. Items are rated on a Likert scale ranging from 1 to 7 (1 = extremely unlikely, 7 = extremely likely) and assess the strength of individual beliefs about yoga outcomes, such that a higher total score on the BAYS indicates more positive beliefs about yoga. The BAYS has been validated in a general, non-clinical sample and was shown to have adequate psychometric properties, with an internal consistency of 76 [27].

Given that the previously validated scale did not include items assessing beliefs about physical discomfort and this seemed specifically relevant to chronic pain, three items removed during original scale development were reincorporated (with some rewording) for exploratory purposes. These items were worded as