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Pain-related fear, disability, and the fear-avoidance model of chronic pain

Emily L Zale and Joseph W Ditre

Chronic pain is a significant public health concern that imposes substantial burdens on individuals and healthcare systems, and factors that contribute to the development and maintenance of pain-related disability are of increasing empirical and clinical interest. Consistent with the fear-avoidance model of chronic pain, greater pain-related fear has consistently been associated with more severe disability and may predict the progression of disability over time. Recent evidence indicates that treatments designed to reduce pain-related fear are efficacious for improving disability outcomes, and several clinical trials are currently underway to test tailored intervention content and methods of dissemination. Future research in this area is needed to identify factors (e.g., substance use, comorbid psychopathology) that may influence interrelations between pain-related fear, response to treatment, and disability.

Address
Syracuse University, Syracuse, NY 13244, United States

Corresponding author: Ditre, Joseph W (jwditre@syr.edu)

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Introduction

Chronic pain is a significant public health problem that imposes substantial burdens on both individuals and healthcare systems. Recent estimates indicate that chronic pain affects approximately 26–43% of all American adults, and is responsible for greater than $600M in annual healthcare costs and lost productivity [1,2]. Given the substantial and wide-ranging impact of chronic pain, researchers have increasingly focused on the identification of factors that may contribute to the incidence and exacerbation of chronic pain and pain-related disability. The fear-avoidance model of chronic pain posits that pain-related fear plays a central role these processes [3], and the study of potentially bidirectional associations between pain-related fear and disability is an emerging area of clinical and empirical interest across the medical and behavioral sciences. The goals of the current review were to examine and synthesize recent advances in the study of pain-related fear (with a focus on work that has been published since 2012), and to identify factors that may inform future research and the development of novel interventions. We begin with a brief introduction to biopsychosocial perspectives on chronic pain and disability. We then describe the fear-avoidance model of chronic pain, review contemporary research on the topic of pain-related fear and disability, and conclude by identifying psychosocial factors (e.g., comorbid psychopathology) that may influence these associations.

Biopsychosocial model of chronic pain and pain-related disability

According to the biopsychosocial perspective, chronic pain is the result of a complex interplay between biological, psychological, and social factors [4]. The biopsychosocial model provides an optimal framework for conceptualizing pain-related disability because it integrates both medical and psychosocial models [5]. Whereas the medical model views disability as a direct result of disease processes that require treatment or intervention, the psychosocial model posits that environmental (e.g., social, political, physical environment) and individual (e.g., cognitive and affective processes) factors influence the experience of disability. Taken together, a biopsychosocial perspective on disability considers changes to body structure and function (e.g., injury, disease), personal factors (e.g., age, gender), activity limitations (e.g., difficulty executing physical tasks), and participation restrictions (e.g., problems maintaining participation in daily activities) [5].

Pain-related disability encompasses a variety of domains including physical, occupational, recreational, and social functioning. Self-report measures of pain-related disability typically assess pain-related interference with self-care behaviors and family/home responsibilities, physical activity and movement, sleep, sexual activity, recreation, occupation, and social activities [6••]. Although not included in all measures, pain intensity and mood ratings may also be considered when assessing pain-related disability. For example, recent approaches to conceptualizing chronic pain severity have taken into account the magnitude and frequency of both pain intensity and pain-related interference [7]. Thus, application of the biopsychosocial model necessitates consideration of a wide range of factors that may contribute to the development and maintenance of chronic pain and disability.

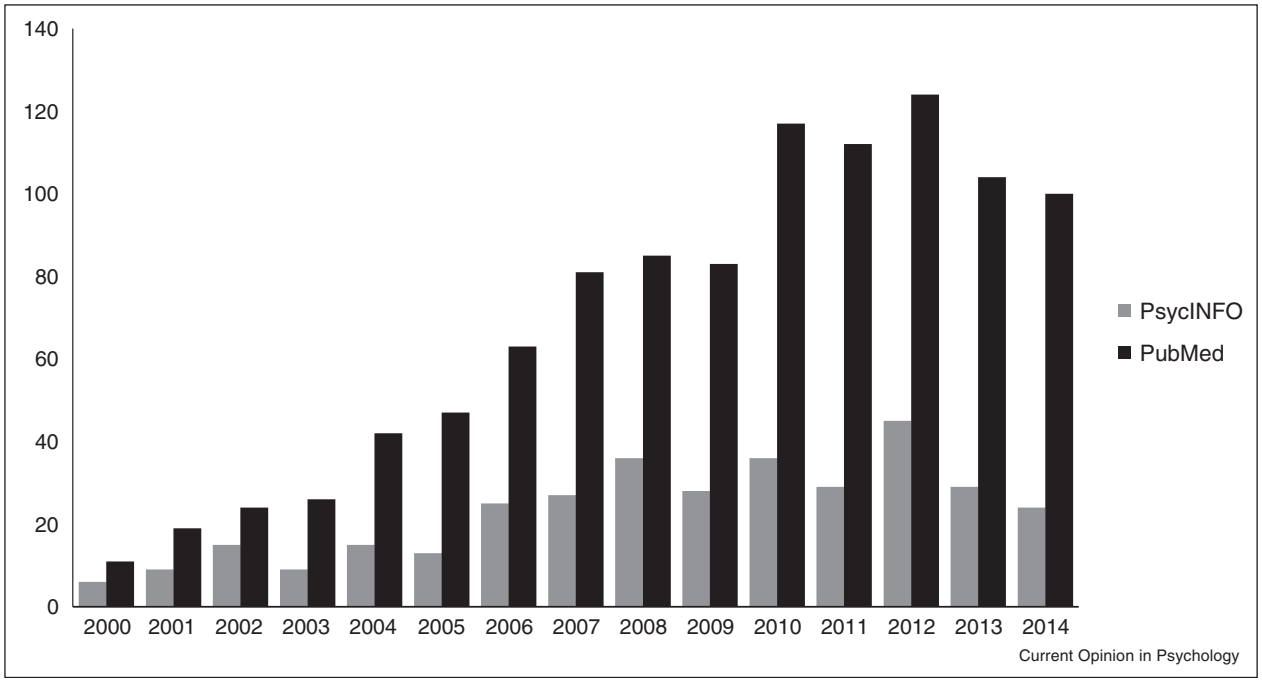
Fear-avoidance model and pain-related fear

The fear-avoidance model of chronic pain was originally developed to explain the transition from acute to chronic low back pain [3], and has become a 'leading paradigm for understanding disability associated with musculoskeletal conditions' [8]. Research in the area of pain-related fear and disability has increased substantially since the introduction of the fear avoidance-model, with approximately half of the articles retrieved through PubMed (N = 557/1038) and PsycINFO (N = 163/346) published in the past four years (see Figure 1). Although there is some disagreement among researchers regarding both the sequential relationships between psychosocial risk factors in the fear avoidance model (e.g., whether changes in catastrophizing precede changes in pain-related fear) and future research directions (e.g., relevance of studying cyclical relationships between the model components) in this area (e.g. [8]), we are of the opinion that the fear-avoidance model of chronic pain provides a useful framework for the study and treatment of pain-related disability. Below, we review the basic tenants of the fear-avoidance model and discuss recent updates to the model.

The fear-avoidance model posits that pain-related fear activates escape mechanisms that lead to the avoidance of movement and activity. Although such behavior may be adaptive in the context of acute pain (e.g., by allowing an injury to heal), long-term avoidance of physical activity may impair functioning (e.g., reduced participation in occupational and recreational activities), increase negative mood (e.g., depression), and contribute to greater levels of disability (via disuse syndrome and physical deconditioning). Indeed, greater pain-related fear has been associated with lower levels of physical activity among persons with low-back pain [9], and recent longitudinal evidence indicates that persons with low-back pain who remain sedentary experience greater levels of disability over time [10]. The model further posits that pain-related fear can be negatively reinforced by avoidance behaviors, such that whereas avoidance of fearful stimuli may reduce fear in the short-term, it may also increase or strengthen the fear response over the long-term. In sum, the fear-avoidance model predicts that mutual reinforcement of pain-related fear and avoidance behaviors may contribute to the maintenance and progression of disability.

The related construct of pain-related fear has been conceptualized as representing fear of experiencing pain sensations, fear of activities that may elicit pain, fear of movement or (re)injury, and pain-related anxiety (i.e., anxious or fearful responses to pain). Similar to perceived disability, pain-related fear can be reliably assessed using self-report measures that query fear of experiencing pain, beliefs that pain may be indicative of serious injury or worsened by movement, and specific avoidance behaviors

Figure 1



Number of citations returned with the search terms (*fear of pain OR pain-related fear OR fear-avoidance OR pain-related anxiety*) *AND disability* in PubMed and PsycINFO databases from the introduction of the fear-avoidance model in 2000 to present.