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Clinical Study

Catastrophizing—a prognostic factor for outcome in patients with low back pain: a systematic review

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Abstract

BACKGROUND CONTEXT: Psychological factors including catastrophizing thoughts are believed to influence the development of chronic low back pain (LBP).

PURPOSE: To assess the prognostic importance of catastrophizing as a coping strategy in patients with LBP.

STUDY DESIGN: This is a systematic review.

PATIENT SAMPLE: This study included patients with LBP.

OUTCOME MEASURES: Work-related outcomes and perceived measures including return to work, pain, and disability.

METHODS: In September 2012, the following databases were searched: BIOSIS, CINAHL, Cochrane Library, Embase, OTSeeker, PeDRO, PsycInfo, Medline, Scopus, and Web of Science. To ensure completeness of the search, a hand search and a search of bibliographies were conducted and all relevant references included. All observational studies investigating the prognostic value of catastrophizing in patients with LBP were eligible. Included were studies with 100 and more patients and follow-up of at least 3 months. Excluded were studies with poor methodological quality, short follow-up duration, and small sample size.

RESULTS: A total of 1,473 references were retrieved, and 706 references remained after the removal of duplicates. For 77 references, the full text was assessed and 19 publications based on 16 studies were included. Of four studies that investigated work-related outcomes, two found catastrophizing to be associated with work status. Most studies that investigated self-reported outcome measures (n=8, 66%) found catastrophizing to be associated with pain and disability at follow-up in acute, subacute, and chronic LBP patients. In most studies that applied cutoff values, patients identified as high catastrophizers experienced a worse outcome compared with low catastrophizers (n=5, 83%).

CONCLUSIONS: There is some evidence that catastrophizing as a coping strategy might lead to delayed recovery. The influence of catastrophizing in patients with LBP is not fully established and should be further investigated. Of particular importance is the establishment of cutoff levels for identifying patients at risk.

Keywords: Low back pain; Back pain; Catastrophizing; Fear avoidance; Fear-avoidance beliefs; Prognosis; Prognostic factors

FDA device/drug status: Not applicable.

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Introduction

Patients' attitudes and coping mechanisms seem to play a causal role in the chronification of low back pain (LBP). Almost all adults once in their lifetime complain about LBP, but 10% to 15% develop chronic LBP [1]. This small percentage of patients accounts for three-quarters of the costs of medical care and lost productivity associated with LBP [2,3]. Consensus among experts recommends to avoid unnecessary investigation and overtreatment by treating symptomatically with encouragement to return to normal activity for treating patients with acute LBP [4]. Persisting pain for several weeks strongly predicts the development of chronic LBP, a condition where complete recovery and return to 100% function are often difficult to achieve [5]. Current research aims to identify risk indicators for delayed recovery in patients with subacute LBP to optimize treatment to avoid chronification. Targeted and timely initiated interventions in patients at risk for chronic pain facilitate recovery and may reduce health-care costs [6].

The fear-avoidance model (FAM) is a theoretical model that describes how psychological factors affect the experience of pain and the development of chronic pain and disability [7]. Within this theoretical concept, catastrophizing is "an exaggerated negative mental set brought to bear during actual or anticipated painful experience" [8]. It is theorized that negative beliefs about pain and/or negative illness information leads to a catastrophizing response in which patients imagine the worst possible outcome. This leads to fear of activity and avoidance that in turn causes disuse and resultant distress, reinforcing the original negative appraisal in a deleterious cycle [7]. The FAM suggests that patients without catastrophizing and fear-avoidance beliefs (FAB) are more likely to confront pain problems and are more active in the coping process. This type of "good" coping has been used to develop interventions for those with catastrophizing and high FAB. In chronic cases, catastrophizing may become a cognitive coping strategy based on the patient's characteristic coping style or because catastrophizing is believed to have prevented severe pain or other aversive outcomes in the past [9].

Although there is some empirical support for the FAM, it is a matter of debate as to how and when to best assess catastrophizing behavior in clinical practice. Current treatment guidelines for LBP recommend the timely identification and initiation of multidisciplinary treatment for other psychological factors (eg, depression, distress, job dissatisfaction) associated with increased risk for delayed recovery [10–12]. Whether and how catastrophizing specifically should be assessed remains unclear. In a recent systematic review, we showed that FAB was prognostic in subacute LBP patients [13]. Catastrophizing is believed to be a precursor for pain-related fear and FAB. It has been shown that patients can have FAB without catastrophizing [14], and it is unclear how catastrophizing as a coping strategy and FAB interact.

To date, the role of catastrophizing as prognostic factor for LBP has not been reviewed systematically. The aim of this systematic review is twofold. First, we review the existing literature on the role of a catastrophizing as a prognostic factor in acute, subacute, and chronic LBP. Second, we analyze the available data in terms of an optimal cutoff value for the scales used.

Methods

This study follows the recommendation of the MOOSE (Meta-analysis Of Observational Studies in Epidemiology) statement (Fig. 1) on conducting systematic reviews of observational studies [15].

Literature search

We identified all observational studies meeting our eligibility criteria (defined in detail subsequently) published between January 1980 and September 2012. The following databases were searched in September 2012: BIOSIS, CINAHL, Cochrane Library, Embase, OTSeeker, PeDRO, PsycInfo, Medline, Scopus, and Web of Science. The search was conducted with the help of an experienced librarian (Martina Gosteli). Search included various terms identified in the literature for catastrophizing (eg, catastrophising, catastrophization, catastrophisation) subject headings and different combinations. Two detailed search strategies are depicted in Supplementary data. To ensure the completeness of the literature search, one reviewer (RE) conducted a hand search of the six most often retrieved journals (ie, *Pain*, *Spine*, *Journal of Pain*, *European Journal of Pain*, *Clinical Journal of Pain*, *Pain Medicine*) and added all potentially eligible references not retrieved by the systematic search. Furthermore, the reviewers screened bibliographies of all included studies, retrieved review articles, and current treatment guidelines in an additional hand. All potential relevant references to the research question were included in the full-text review (inclusion and exclusion criteria applied).

Eligibility criteria

All cohort studies were considered eligible for inclusion in this investigation that met the following criteria: they reported research concerning patients seeking care for NSLBP, they demonstrated at least moderate study quality, they investigated the prognostic value of catastrophizing, and they were published between January 1980 and September 2012. We focused on the cohort studies that included at least 300 subjects with a minimal follow-up of 3 months because of a concern about sample size. Assuming a baseline risk of 20% for chronicity after a bout of acute LBP [1], a sample size of 316 patients in a two-level exposure study (catastrophizing high vs. catastrophizing low) would generate a relative risk of 1.75 for the outcome recovery at 3 months [16].

However, inclusion of cohorts of more than 300 patients would have included almost exclusively cohorts with