



Clinical pain research

The mediating role of catastrophizing in the relationship between pain intensity and depressed mood in older adults with persistent pain: A longitudinal analysis



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HIGHLIGHTS

- The cognitive-behavioural model proposes a role for cognitions in the pain experience.
- The role of cognitions in the pain experience of older adults has been unclear.
- The role of catastrophizing in the pain experience of older adults was examined.
- Catastrophizing mediated the relationship between pain intensity and depressed mood.
- Reducing catastrophizing in older adults is an important treatment target.

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ABSTRACT

Background and aims: Depression is common in older adults with persistent pain. Cognitive-behavioural models of pain propose that the relationship between pain and depression is influenced or mediated by interpretations of events (cognitions), rather than by the event itself. Almost exclusively, the evidence for this position has come from studies of people aged less than 65 years. The role of cognitions in the pain experience of older adults has been unclear due to the limited and conflicting evidence available. The aim of our study was to examine the role of catastrophizing in mediating the relationship between pain intensity and depressed mood in older adults with persistent pain using reliable and valid measures for this population.

Methods: In a two-wave longitudinal design, a sample of 141 patients (89 women, 52 men) 65 years and over with persistent pain participating in an evaluation of a pain self-management programme completed questionnaires measuring usual level of pain intensity (NRS), depressed mood (DASS-21) and the catastrophizing factors of magnification and helplessness (PRSS) at the beginning of the programme and 6 months later. Demographic data and pain history were collected by self-completion questionnaires, which were mailed to patients prior to participating in the programme and returned by post.

Results: Change scores for usual level of pain intensity (NRS), depressed mood (DASS-21) and the magnification and helplessness factors on the PRSS-Catastrophizing were calculated by subtracting the scores at 6 months after completion of the study (Time 2) from the scores at the beginning of the study (Time 1). In the longitudinal analyses of mediation, using a series of regression analyses, change scores for both factors (magnification, helplessness) of the measure of catastrophizing (PRSS) totally and significantly mediated the relationship between change scores for pain intensity and depressed mood. The significant relative magnitude of beta between pain intensity and depression reduced from 0.22 to 0.13 and became non-significant after introducing magnification as a mediating variable, whilst the significant relative magnitude of beta reduced from 0.22 to 0.12 and also became non-significant after introducing helplessness as a mediating variable.

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Conclusions: These results support a cognitive-behavioural model and highlight the importance of cognitive factors, in this case catastrophizing, in the relationship between pain intensity and depressed mood in older adults with persistent pain.

Implications: These findings also have important clinical implications for the treatment of older adults with persistent pain. They highlight the importance of targeting interventions to reduce the influence of catastrophizing as a prerequisite for reducing depressive symptoms in this growing population.

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1. Introduction

Many older adults with persistent pain also suffer from depression [2,26], with higher levels of pain associated with increased severity of depression [5,26,27,44]. While depression is relatively common in older adults with persistent pain, it seems less frequent or less severe in comparison to younger adults with persistent pain [6,29,46]. No explanations for this difference have been established, but one possibility is that older people are more stoic, especially as their pain severity levels are similar to those reported by younger adults [45]. This might mean older adults catastrophize less about their pain, or there is a different relationship between catastrophizing and pain in older people. Cognitive-behavioural mediation models propose that behaviour and emotions are influenced or mediated by interpretations of events (cognitions), rather than by the event itself [39]. Catastrophizing about pain has been broadly defined as an exaggerated negative appraisal of pain and the pain experience [37]. The relationship between pain and depression has been shown in younger adults to be mediated by cognitive factors [31], in particular catastrophizing [17,28,30,35,41]. Also, change in catastrophizing has been associated with change in depression in patients receiving a pain management intervention [32,43], including in older adults [8]. However the role of cognitive factors in older adults has been unclear due to the limited and conflicting evidence available. Some studies have supported a role for catastrophizing [7,21], while one study found no support for the role of cognitive factors and instead found a direct association between pain and depression [38]. A recent study found that catastrophizing mediated the relationship between pain intensity and depressed mood in older adults [47]. This study helped clarify the mediating role of cognitive factors, in this case catastrophizing, in the pain-depression relationship in older adults. However, these findings were based on a cross-sectional analysis. A significant limitation of cross-sectional analysis is that analysis is confined to a specific point in time. Longitudinal analysis not only allows the examination of differences among individuals but importantly adds the examination of change within individuals [24]. This is important when examining depression in older adults as depression is associated with temporal factors such as cognitive decline [10]. The mediating role of catastrophizing in the pain-depression relationship in older adults over time has not been examined. The analysis of a mediation model with longitudinal data will strengthen the existing evidence of the mediating role of catastrophizing in the relationship between pain intensity and depressed mood in older adults with persistent pain.

This study is a two-wave design examining whether changes in catastrophizing over 6 months mediate the relationship between changes in pain intensity and depressed mood over the same period. Given the previous finding of the significant mediating role of catastrophizing in the relationship between pain intensity and depressed mood at a single point in time, we hypothesized that the significant role of catastrophizing in mediating this relationship at a single point in time would hold over a 6 month period.

2. Method

2.1. Participants

Participants included patients aged 65 years and over with persistent non-cancer pain for more than 6 months who were part of a larger study evaluating a pain self-management programme [25]. Recruitment of participants commenced in June 2006 and ended in June 2009. Participants were assessed for cognitive deficits and were only included if they showed evidence of normal range short-term memory functioning as determined by a score of 22 or greater on the Rowland Universal Dementia Assessment Scale (RUDAS) [34]. For a full description of the participants and the inclusion and exclusion criteria refer to the above study [25].

2.2. Procedures

Demographic information and pain history was collected by self-completion questionnaires, which were mailed to patients and returned by post. Patients completed a set of self-report measures, including the PRSS-Catastrophizing, DASS-21 and NRS at the start of the study (Time 1). These measures will be described in the following section. Patients were also requested to complete the same set of self-report measures 6 months later (Time 2). None of the measures were modified in any way (e.g. font size), although participants were permitted to use spectacles, etc. to account for any sensory loss.

2.3. Measures

2.3.1. Pain-Related Self Statements Scale–Catastrophizing subscale (PRSS-Catastrophizing)

The Pain-Related Self Statements (PRSS) [12,13] scale was developed to assess the frequency of use of cognitions by people with persistent pain that either assist or hinder their attempts to cope with severe pain. The measure consists of two subscales: active coping and catastrophizing. This study only used the catastrophizing subscale (PRSS-Catastrophizing). The catastrophizing subscale contains nine items and for each item individuals are asked to rate on a six-point scale, with 0 = “Almost never” and 5 = “Almost always”, how often they think in such a way when they experience severe pain. The total score for all items is divided by nine to obtain a mean item score. A higher score indicates a greater frequency of catastrophizing. The PRSS-Catastrophizing was validated by the authors [12] using predominantly younger adults with persistent pain, and was shown to have excellent internal consistency ($\alpha = 0.92$) and construct and discriminant validity. The psychometric properties of the PRSS-Catastrophizing subscale have also been established in a sample of older adults with persistent pain [47]. This study found that the PRSS-Catastrophizing consisted of 2 factors labelled magnification and helplessness. These factors were used in the analysis.

2.3.2. Depression Anxiety Stress Scales (short version) (DASS-21)

The Depression Anxiety Stress Scales (DASS) [22] was developed to assess the severity of the core symptoms of depression, anxiety

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