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Catastrophizing Mediates the Relationship Between Pain Intensity and Depressed Mood in Older Adults With Persistent Pain

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Abstract: **This study examined 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. A convenience sample of 669 patients 61 years and over attending a tertiary-level referral pain center completed questionnaires measuring pain intensity, depressed mood, and catastrophizing as part of a clinical assessment process. The catastrophizing subscale of the Pain-Related Self-Statements scale (PRSS-Catastrophizing) was examined for internal consistency and factor structure. Mediation was tested for each factor from the optimal model of the PRSS-Catastrophizing scale using regression analyses, which included measures of pain intensity and depressed mood. The PRSS-Catastrophizing scale was found to be a reliable measure of pain-related catastrophizing. A 2-factor solution (magnification, helplessness) was identified. Both factors partially and significantly mediated the relationship between pain intensity and depressed mood. This study highlights the importance of cognitive factors—in this case catastrophizing—in the persistent pain experience of older adults. It also demonstrates that pain-related catastrophizing can be reliably measured in this population. These findings have important clinical implications. They emphasize the importance of using interventions to reduce catastrophizing to modify the pain experience of older adults with persistent pain.**

Perspective: ***This study confirms the mediating role of catastrophizing in the relationship between pain intensity and depressed mood in older adults with persistent pain using psychometrically sound measures. These findings indicate that clinicians should address catastrophizing to improve treatment outcomes with this population.***

Key words: *Catastrophizing, depression, elderly, persistent pain.*

There is considerable evidence indicating an association between pain and depression.[2,35,37,52] However, a cognitive-behavioral mediation model proposes that pain by itself is not sufficient for the development of depression and that this association is mediated by cognitive factors.[41] Catastrophizing, a cognitive factor, has been shown to be an important mediator of the association between pain and depression.[22,38,40,45,51] Catastrophizing is defined as an exaggerated negative appraisal of the pain experience.[47]

While depression is relatively common in people with persistent pain,[2] it seems less frequent or less severe in older adults with persistent pain.[54] No explanations for this difference between older and younger adults with persistent pain have been established, but 1 possibility is that older people are more stoic,[55] especially because their pain severity levels are similar to those reported by younger adults.[9,53] This might mean that older adults catastrophize less about their pain or that there is a different relationship between catastrophizing and

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pain in older people. There is limited and conflicting evidence available on this issue. One study found that catastrophizing was a significant predictor of pain, mood, and disability scores in older adults.[7] Another study found that depressed older patients reported higher levels of catastrophizing compared to nondepressed patients.[29] However, Turk et al[50] found support for a mediating role of cognitive factors in the relationship between pain intensity and depression in younger adults but not older adults when a direct association was found between pain intensity and depression. An age analysis of the fear-avoidance model of persistent pain found the relationship between catastrophizing and depression to be more strongly mediated by fear of (re)injury in older patients compared to middle-aged patients.[6]

In summary, there is evidence of age differences in depression in people with persistent pain and some evidence that differences in pain-related cognitions, like catastrophizing, may account for differences in the pain-depression relationship for older adults, but this is not well established. Because treatments such as cognitive-behavioral therapy normally address cognitive factors, it is important that there is a good understanding of the relationship between pain, depression, and cognitive factors in older adults if such treatments are to be applied to this population. Interestingly, a recent review of cognitive-behavioral interventions for older adults with persistent pain found no significant improvement in depression.[31]

Our main aim was to assess whether catastrophizing played a mediating role in the relationship between pain intensity and depressed mood in older adults with persistent pain as proposed by a cognitive-behavioral mediation model.[41] We also examined this relationship separately in older adults classified as the oldest old (>80 years). There is a particular lack of knowledge of the pain experience in this group and there is evidence of age differences in pain perception and report across the older pain population.[16] A secondary aim of this study was to confirm some of the psychometric properties of the catastrophizing measure used. To our knowledge there are no published studies that have examined the psychometric properties of measures of catastrophizing exclusively in older adult pain populations. When assessing persistent pain it is important to heed the call by the Initiative on Methods, Measurement, and Pain Assessment in Clinical Trials (IMMPACT) to use measures that are psychometrically sound for use in older adult populations.[10,18,49]

Methods

Participants

Participants were selected from a convenience sample of patients aged 61 years and over assessed at the Pain Management and Research Centre at the Royal North Shore Hospital, Sydney, Australia, over a 7-year period (2001–2007). As part of their usual care, all patients attending this tertiary-level referral center were asked to complete a number of commonly used pain assessment measures, including the Pain-Related Self-Statements (PRSS), Depression Anxiety Stress Scales (short version) (DASS-21), and Numerical Rating Scale (NRS) at their initial clinic visit. Additional pain history and demographic information was collected prior to this visit by self-completion questionnaires, which were mailed to patients and returned by post. Patients must have reported persistent pain for a minimum of 3 months to be included in the study, and informed consent was obtained from each participant to allow their de-identified data to be used for research purposes. None of the measures were modified in any way (eg, font size) to account for sensory loss in participants. There was no assessment of cognitive status, and no assistance in completing the measures was given by staff; however, printed instructions appeared at the beginning of each measure. Additionally, there was no restriction placed on significant others' assisting patients to complete the measures. Finally, there was no follow-up by staff to ensure that the measures were completed.

The initial sample consisted of 800 participants. Participants were removed from the study if more than 1 out of 9 items on the catastrophizing subscale of the PRSS was missing. There were 131 participants who fitted this criterion and who were excluded from the study. There were no further exclusion criteria, which left a final sample size of 669 participants. Within the 669 participants, there were 66 participants with only 1 item missing, and mean replacement was used to replace the missing item. An independent samples t-test revealed no significant differences between the included and excluded patients on gender, pain duration, and pain intensity measured on an NRS. However, the excluded group was significantly older (M = 74.08, SD = 7.94) than the included group (M = 71.80, SD = 7.53), t (798) = 3.14, $P = .002$.

Measures

PRSS Scale

The PRSS[11,12] 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 18-item measure consists of 2 subscales: active coping and catastrophizing. The PRSS scale is a widely used scale and has been used in our clinic since 1994. Normative data on the PRSS scale is also available.[33] This study only used the catastrophizing subscale (PRSS-Catastrophizing). The catastrophizing subscale contains 9 items; for each item individuals are asked to rate on a 6-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 9 to obtain a mean item score. A higher score indicates a greater frequency of catastrophizing. The PRSS-Catastrophizing scale was validated by the scale's authors[11] using predominantly younger adults with persistent pain and was shown to have excellent internal consistency (α = .92) and construct and discriminant validity.

DASS-21 (Short Version)

The DASS[30] was developed to assess the severity of the core symptoms of depression, anxiety, and stress. The