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Anger differentially mediates the relationship between perceived injustice and chronic pain outcomes

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ABSTRACT

Emerging evidence suggests that perceived injustice is a risk factor for adverse outcomes associated with chronic pain. To date, however, the processes by which perceived injustice impacts on pain outcomes remain speculative. Evidence from several lines of research suggests that anger may mediate the relationship between injustice and pain outcomes. However, this relationship has not been empirically tested in patients with chronic pain. Thus, the purpose of this study was to examine whether anger mediates the relationships between perceived injustice and pain intensity, depressive symptoms, and self-reported disability. One hundred and seventy-three individuals with chronic musculoskeletal pain completed self-report measures of perceived injustice, anger, pain intensity, depressive symptoms, and disability. Consistent with previous research, high scores on a measure of perceived injustice were associated with greater pain, more severe depressive symptoms, and more pronounced disability. Hierarchical regression analyses indicated that anger variables completely mediated the relationship between perceived injustice and pain intensity, and partially mediated the relationship between perceived injustice and depressive symptoms. Anger did not mediate the relationship between perceived injustice and self-reported disability. The Discussion addresses the theoretical and clinical implications of the findings.

1. Introduction

Biopsychosocial models suggest that the meaning individuals impart on their pain influences pain-related adjustment. Much research has examined meaning in the form of appraisals of the threat value of pain, or individuals' perceived ability to cope with the threat of pain [16,60]. Emerging research also suggests that the construal of pain in terms of justice-related themes may be an important determinant of pain outcomes.

Discourses of justice and injustice appear inherent to the chronic pain experience [39]. The experience of undeserved suffering or of multiple losses (eg, loss of function, financial security, identity, etc.) might give rise to perceptions of injustice among individuals with chronic pain [36,45]. Individuals with chronic pain may ascribe external blame for this suffering [18,40], which may increase the likelihood that pain is experienced with an elevated sense of injustice [43,45].

Perceived injustice in the chronic pain context has been operationally defined as an appraisal reflecting the severity and irreparability of pain-related loss, blame, and unfairness [56]. Mounting evidence indicates that perceived injustice contributes to problematic outcomes associated with persistent musculoskeletal pain. Perceived injustice has been associated with greater pain severity, pain behavior, and mental health difficulties, reduced physical function, and prolonged work disability [53,54,56,58,59]. Perceived injustice predicts adverse pain outcomes even when controlling for other pain-related psychosocial constructs, such as pain catastrophizing and fear of movement [52,53,58,59].

There are indications that perceived injustice might be more resistant to change than other psychosocial pain-related variables [56]. In a study examining treatment-related changes in psychosocial risk factors following participation in a multidisciplinary rehabilitation program, perceived injustice was the risk factor that showed the least improvement [56]. It is unclear whether these data indicate that perceived injustice is non-modifiable, or whether they reflect a failure to effectively target perceived injustice during treatment. An understanding of the processes linking perceived injustice to adverse pain outcomes may provide insight into potential intervention strategies to mitigate its impact.

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Social psychological research indicates that anger is the predominant emotional response to perceiving injustice [42,43]. Furthermore, numerous investigations have shown that elevated levels of anger are associated with adverse pain outcomes [4,12]. Research suggests that both anger intensity (state/trait) and regulation style (inhibition/expression) negatively impact pain outcomes [4,12,32,47]. It has recently been proposed that perceived injustice might be a cognitive antecedent to anger in chronic pain patients [63]. To date, however, the inter-relations among perceived injustice, anger, and adverse pain outcomes have not been empirically investigated. It is also not presently known which facets of the anger experience (ie, intensity vs regulation style) may account for the negative impact of perceived injustice.

This study examined whether anger intensity and regulation style mediated the relationship between perceived injustice and pain outcomes. Consistent with previous research, it was hypothesized that perceived injustice would be associated with greater pain intensity, depressive symptoms, and disability. It was hypothesized that anger intensity and regulation style would be associated with more negative pain outcomes and that these variables would mediate the relationship between perceived injustice and pain outcomes.

2. Methods

2.1. Participants

One hundred and seventy-three individuals (113 women, 60 men) with chronic musculoskeletal pain participated in this study. Chronic low back pain was the most prevalent diagnosis in this sample (approximately 42% of participants), followed by fibromyalgia/diffuse myofacial pain (approximately 26%), and chronic pain in the cervical spine (approximately 15%). Participants had a mean age of 49.67 years with a range of 21–65 years. The mean duration of pain was 9.98 years with a range from 1 to 50 years. The majority of participants (68%) had completed at least 12 years of education. Approximately half the sample (54%) was married or living with a common-law partner. At the time of assessment, the majority of participants (65%) were not working. Approximately 94% of participants were taking at least one class of analgesic medication, and approximately 58% of the sample were receiving at least one non-pharmacological intervention (including psychological intervention). At the time of assessment, approximately 24% of the sample indicated they were receiving psychological treatment.

2.2. Procedure

The Quebec Pain Registry (QPR) was used to identify patients with diagnoses of chronic musculoskeletal pain. The QPR is a database of over 3000 patients with chronic pain conditions who have received treatment at 1 of 3 university-affiliated tertiary pain management clinics in the province of Québec. Patients with musculoskeletal pain represent the majority of patients in the QPR.

Recruitment letters describing the procedures of the present study were mailed to patients with a diagnosis of chronic musculoskeletal pain, who were entered in the QPR at the time the present study began. The desired sample size was calculated to be between 150 and 200 patients, assuming power = 0.80, $\alpha < 0.05$, and medium effects sizes for the associations among study variables [27]. Approximately 900 letters were mailed to patients registered in the QPR. In total, 183 individuals contacted the laboratory following receipt of the recruitment letter, representing a response rate of approximately 20%.

Interested participants contacted a research coordinator at McGill University. Individuals were considered eligible for the study if they had a current diagnosis of a musculoskeletal pain condition that had been present for at least 3 months. Individuals were included if they were capable of completing study measures in English or French. Of the 183 individuals who contacted the laboratory, 4 individuals were ineligible or declined to participate. Of the 179 eligible participants, 6 were excluded due to incomplete data. Participants with and without complete data did not differ significantly for any demographic or study variables. Data were collected over a period of approximately 3 months.

Participants provided demographic information and completed self-report measures of perceived injustice, anger, pain intensity, depressive symptoms, and disability. Participants were given the option to complete questionnaires online or to mail their questionnaire responses to the laboratory. Volunteers were invited to sign a consent form as a condition of participating in the study. The research was approved by the Comité d'Éthique de la Recherche du Centre Hospitalier de L'Université de Montréal.

2.3. Measures

2.3.1. Perceived injustice

The Injustice Experiences Questionnaire (IEQ) was used to measure pain-related perceptions of injustice [56]. Participants rated the frequency with which they experienced each of 12 pain-related thoughts on a 5-point scale, ranging from 0 (never) to 4 (all the time). Previous findings suggest that the IEQ yields two correlated factors, labeled "severity/irreparability of loss" and "blame/unfairness." Examples of items loading onto the former factor include, "Most people don't understand how severe my condition is," and "My life will never be the same." Examples of items loading onto the latter factor include, "I am suffering because of someone else's negligence." and "It all seems so unfair." The IEQ has been shown to have high internal and test–retest reliability, and to be valid for use among individuals with persistent musculoskeletal pain [52,56].

2.3.2. Anger

The State-Trait Anger Expression Inventory—II (STAEI) [3,55] was used to assess anger. Participants were asked to rate 57 statements on a 4-point Likert scale. The following subscales of the STAEI were examined in the present study: state anger (15 items); trait anger (10 items); anger inhibition (8 items); and anger expression (8 items). Anger inhibition items assess the frequency with which participants attempt to suppress feelings of anger. Anger expression items assessed the frequency with which anger is outwardly expressed. Previous research suggests the distinctiveness of the anger intensity and anger regulation subscales (ie, inhibition and expression) of the STAEI [12]. Research supports the reliability and validity of these subscales for use with chronic pain patients [6,15].

2.3.3. Pain intensity

Participants were asked to rate their present pain intensity on a numerical rating scale ranging from 0 (no pain) to 10 (excruciating pain). Previous research indicates that this is a reliable measure of pain intensity [19]. Participants also indicated the location of their pain on a body schematic.

2.3.4. Depressive symptoms

The Patient Health Questionnaire 9 (PHQ-9)[33] was used to measure depressive symptom severity. The PHQ-9 is a 10-item questionnaire that asks respondents to indicate the frequency with which they experience each of the 9 symptoms considered in the diagnostic criteria for Major Depression, and 1 item assessing the difficulty with which they experience these symptoms. The PHQ-9 has been shown to be a valid and reliable measure of depressive symptoms in patients with a variety of medical conditions [14,33].