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EDITORIAL

"Catastrophization", Its Weaponization, and Opiophobia: A Perfect Landscape for Unnecessary Harms, or "Catastrophization About Catastrophization"?

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Introduction

The current climate of opiophobia has dominated American pain medicine for at least a decade,[1] with many believing that this "crisis" fueled by fears of unprecedented regulatory and legal sanctions is becoming progressively more severe.[2–6] Although physician refusals to initiate opioid therapy and the deprescribing of opioids among stable and adherent patients for whom there are no accessible options may have been rooted in good intentions, involuntary opioid tapers have been empirically associated with severe harms. These harms have included subsequent drug overdoses[7,8] as well as suicidal ideation and suicides.[9,10]

"Catastrophization" is a term introduced in 1962 by Albert Ellis,[11] one of the founders of cognitive behavior therapy. The term refers to negative expectations of future events, even when there is no evidence that these expectations are likely to be accurate. Ellis described catastrophization as a "cognitive distortion". The initial application of catastrophizing to pain was published by Brown in 1984 in a study of imaginal strategies in the treatment of migraines.[12] Catastrophization has been associated in a narrative review with a wide variety of negative pain management outcomes, including adversity of pain experience, increased pain severity, emotional distress, greater healthcare utilization, increased disability, worse outcome after surgery, and feelings of helplessness in controlling pain.[13] A 2022 meta-analysis identified positive associations between catastrophizing, anxiety and depression, in addition to some of the pain-related constructs listed in the aforementioned narrative review.[14] A 2021 systematic review and meta-analysis identified a strong positive relationship between catastrophization and insomnia in patients with chronic spinal pain.[15] This list of associations is hardly exhaustive, yet it is sufficient to demonstrate that catastrophization is positively associated with numerous sequelae of chronic pain that result in more negative pain experiences and inferior outcomes for patients with chronic pain.

Catastrophization and Opioids

Regarding catastrophization and opioids, the connection is not quite as clear. Early research focused on postsurgical opioid use, with a study by Pavin et al determining that catastrophizing was not associated with higher postsurgical analgesia requirements.[16] Similarly, patients who were catastrophizers were not found to be at higher risk of prescription opioid abuse than were those who scored lower on a catastrophizing scale.[17] It was not until 2013 that a study produced a clear association between catastrophizing and prescription opioid misuse, although it should be noted that this finding was in a group of patients with histories of substance use disorders.[18] Accordingly, these findings do not necessarily generalize to a broader population of individuals with chronic pain. Also in 2013, a study determined that catastrophizers

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were potentially at higher risk of prescription opioid misuse as measure by SOAPP-R scores,[19] although conclusions regarding the relationship between catastrophization and misuse were limited, as the SOAPP-R measures only "potential" abuse rather than "actual" abuse. Similarly, the same group of investigators then determined that catastrophizing was associated with opioid craving among patients with chronic pain, but not with actual abuse.[20] Numerous studies have suggested a relationship between catastrophizing and misuse, with some suggesting that not only catastrophizing, but also anxiety and depression, predict prescription opioid misuse.[21] Unfortunately, the lack of sophistication of research designs typically utilized fails to control for the confounding effects of the multiple variables that tend to be measured. For example, the authors of a 2021 investigation of patient factors associated with opioid consumption following major surgery wrote,

> younger age, non-Caucasian race, lack of a college degree, current tobacco use, decreased functional status, and higher fibromyalgia, fatigue, sleep disturbance, anxiety, depression, catastrophizing, surgical site pain severity scores, overall body pain severity scores, and OME of initial prescription were significantly associated with increased opioid consumption in univariable analysis.[22] (p. 509).

In this case, the number of confounding variables could not have been larger, and the simplicity of the statistical analysis could not have been less appropriate. Accordingly, it is unsurprising that the authors of a 2020 investigation concluded that pain catastrophizing scores are insufficient to predict long-term postsurgical outcomes, as catastrophization is a dynamic rather than a discrete construct.[23] In a 2019 study on problematic prescription opioid use in a pain treatment facility, the authors wrote in the abstract, "We assessed traditional risk factors (substance use history, pain, psychiatric distress, and pain catastrophizing)…"[24](p. 495). With the inconsistency of the empirical data that has been discussed in this analysis, we question the authors' assignment of "traditional risk factor" status to catastrophizing. Not surprisingly, pain catastrophizing failed to reach statistical significance in its correlation with opioid use disorder symptoms.

A 2015 study determined that higher pain catastrophizing scores were actually associated with a lower likelihood of opioid use following total knee arthroplasty.[25] Another more recent investigation failed to identify any relationship between opioid consumption and catastrophizing among arthroplasty patients.[26] Conversely, another study of hand surgery patients determined that preoperative catastrophizing was predictive of increased postoperative opioid consumption.[27] However, these results are inconsistent with those from a 2019 study, in which hand surgery patients higher in catastrophization were not more likely to receive a second opioid prescription postoperatively.[28] Further, the authors of a 2020 study in which catastrophization did not predict prolonged opioid use following arthroplasty suggested that opioid risk tools, rather than measures of catastrophization, be used to predict risk of drug-related aberrancy.[29] In summary, one can analyze hundreds of studies examining the relationship between catastrophizing and post-operative opioid use, and recognize that the body of literature neither supports nor refutes the presence of a significant relationship.

Often, studies fail to identify significant relationships between catastrophizing and opioid misuse/abuse, yet they "speculatively extrapolate", resulting in the "creation" of the relationship. For example, a 2019 study identified a significant relationship between pain catastrophizing and opioid withdrawal severity, and speculated that severe withdrawal may result in, "higher levels of self-reported pain and perhaps corresponding differences in the frequency of prescription opioid misuse".[30] (p. 1945). Another example of speculative extrapolation can be found in a study in which catastrophization was a variable, with the authors stating, "distress intolerance was associated with likelihood of opioid misuse, which may reflect the use of opioids to escape negative affect".[31] (p. 626). This type of interpretation of data does not suggest in any way that the authors are consciously attempting to draw conclusions not supported by the data. Rather, our concern is that many practitioners are not particularly research-savvy, and the risk exists that they may choose to interpret these statements as the "truth" of the catastrophization-opioid use/misuse relationship. A 2020 systematic review examined the relationship between cognitive and emotional factors (including catastrophizing) and medication use in patients experiencing pain, with any associations deemed "inconclusive".[32] However, following years of studies that failed to adequately assess the role of pain catastrophizing, specifically, in prescription opioid use and misuse, a systematic review was finally published in 2021.[33] Given the findings and interpretation of previous studies that we have discussed above, it is not surprising that the authors found only "very low evidence" of relationships between pain catastrophizing and prescription opioid dose, prescription opioid use, and prescription opioid misuse. Further, the

authors expressed concern regarding the variance in assessment of aberrancy, as well as with the formidable inconsistency between the numerous studies that were included in their review, with high risk of bias and methodological imprecision noted. As a result, the authors recommended the use of standard screening tools such as the Screener and Opioid Assessment for Patients with Pain, not catastrophizing scores, for prescription opioid risk assessment in clinical practice.

Although we were unable to identify a single study that explicitly suggested that high catastrophizing scores should preclude opioid analgesia, social media postings suggest that using pain catastrophization as an excuse not to prescribe and even to deprescribe opioids, is common. In revisiting social media posts on the topic, we found 2 distinct posts in which patients claimed that they were denied opioid therapy or involuntarily tapered due to their physicians' excuse of catastrophizing as a cause of opioid misuse. Not surprisingly, the term became a target of frustration among many chronic pain sufferers, even if they had never experienced "catastrophizing-related opiophobia" firsthand. In our literature search, the only published article that we were able to identify which failed to address catastrophization as merely a modifiable risk that should be clinically addressed was a Japanese nursing study.[34] The study and its conclusions were not particularly robust, evident of possible confirmation bias. In their article, the authors wrote, "Opioid therapy may be ineffective in patients who have a history of occupational injury or catastrophizing". (p. 229). The investigators failed to mention the efficacy of evidence-based, brief psychological treatments such as Cognitive Behavior Therapy (CBT)[35,36] and Acceptance and Commitment Therapy (ACT),[37,38] both of which have been widely investigated as effective means of reducing pain catastrophization and its sequelae. Further, they failed to mention the importance of early detection and intervention in order to optimize overall pain outcomes.[39,40] Their statement does not go as far as to suggest that a history of catastrophization should preclude opioid therapy, but the implication of their conclusions is relatively clear. Combining it with a suggestion that opioid therapy may be ineffective for those with histories of occupational injuries, which has also never been empirically established, we wonder whether these authors believe that those who suffer severe, painful injuries while working should also be denied opioid analgesia. Irrespective, given that the Japanese study has been cited only 3 times since its publication (one of which was a self-citation), it is doubtful that this concerning study has had a significant impact on opioid prescribing patterns.

Summary and Recommendations

To summarize, the research indicates the existence of a strong relationship between pain catastrophizing and numerous pain management outcomes. While pain catastrophizing appears to be quite common among sufferers of chronic pain, cognitively based psychotherapies appear to be quite effective for reducing this cognitive distortion, with the literature indicating that psychological treatment of pain catastrophizing enhances pain management outcomes, broadly. Although many have investigated the relationship between pain catastrophization and opioid analgesia use and misuse, the literature continues to paint a murky picture. The studies vary in regard to measurement, nomenclature, potential biases, and other methodological issues, which likely explains the tremendous variance in results.

Unfortunately, some potentially biased investigators have made an effort to "create" a relationship between pain catastrophization and prescription opioid misuse, extrapolating and speculating to create the "appearance" of an association and, perhaps in some cases, of a causal relationship. As most practicing physicians are neither trained nor experienced in research analysis, these biased conclusions based on insufficient or nonexistent data may be interpreted by some readers as "proof" that catastrophization causes opioid misuse. During this time of high levels of regulatory scrutiny of physician prescribing behavior, those who are anxious regarding prescribing may become motivated to consider these faulty conclusions as empirical evidence against initiating opioid therapy, or, perhaps even more damaging, deprescribing in stable and adherent patients. Again, this is speculative, as we were able to identify only a single study in which the authors concluded that high catastrophizers are poor candidates for opioid analgesia. However, as discussed above, that problematic conclusion did not go as far as suggesting that nonprescription and deprescription are prudent strategies in treating catastrophizing patients with pain.

We do not doubt that some patients with intractable pain who could benefit from opioid analgesia have been denied such treatment. However, social media postings suggest that this is common, which does not appear to be the case. Social media hysteria associated with opioid prescribing and deprescribing remains rampant, and likely is contributing to the

misconception of catastrophization being weaponized broadly. Ironically, we question the possibility that catastrophization, even if only among a small percentage of patients relying on the misinformation and disinformation on social media for their medical "facts", is driving patients with pain to reject the concept of pain catastrophization altogether. Given its relative ease and effectiveness of treatment, such catastrophization regarding pain catastrophization may be dissuading susceptible patients from receiving the cognitive-based treatments that may make their lives with chronic pain considerably more bearable.

Disclosure

Dr Michael Schatman is a research consultant for Modoscript, AdComm for Syneos Health, outside the submitted work. The authors report no other conflicts of interest in this work.

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