Catastrophic thinking and the experience of pain during dental procedures

Michael J. L. Sullivan, PhD, Department of Psychology; Nancy Neish, MEd, School of Dental Hygiene, Dalhousie University, Halifax, Nova Scotia, Canada

In recent years, considerable research has addressed psychological predictors of pain, emotional distress, and avoidance in relation to dental treatment. Our work has focused on how “pain catastrophizing” impacts on the physical and emotional distress experienced during dental procedures. Pain catastrophizing refers to individuals’ tendency to focus excessively on pain sensations and exaggerate their threat value, and to feel helpless in their efforts to reduce or manage their pain. Several studies reveal that pain catastrophizers report extreme pain even in response to dental procedures not typically considered to be painful. In this paper, we also discuss how practitioners who foster the disclosure of dental worries and concerns can significantly reduce the physical and emotional distress of patients who engage in catastrophic thinking. (Journal Indiana Dental Association, Vol. 79, No. 4, Winter 2000-2001, pp. 16-19.)

In 1840, Morton’s work on the anesthetic properties of ether ushered in what many considered the “era of pain-free dentistry.” Indeed, developments in the pharmacology of dental anesthesia over the past century have almost rid our culture of anecdotes of torturous and frightening dental experiences. Yet despite the sophistication of pain-control procedures in dental treatment, many individuals still consider visits to the dentist to be associated with intense emotional and physical distress.

Our work over the past decade has focused on identifying the psychological predictors of pain experience. We have addressed the psychology of pain in many different samples, including individuals participating in experimental pain procedures, chronic pain patients, patients undergoing aversive medical procedures, and dental patients. Much of our work has focused on what has been termed “pain catastrophizing.” Pain catastrophizing is currently defined as a response style that comprises elements of excessive focus on pain sensations (e.g., rumination), a tendency to exaggerate the seriousness of pain sensations (e.g., magnification), and the belief that one is helpless to reduce the intensity of the pain experience (e.g., helplessness).

The role of pain catastrophizing in dental distress was first described by Chaves and Brown. In their study, patients undergoing a stressful dental surgical procedure were interviewed about their cognitive and emotional reactions to a dental surgical procedure. On the basis of interview responses, patients were classified as catastrophizers, copers, or deniers. Catastrophizers reported being significantly more stressed by the dental procedure than the two other groups.

Since the early work of Chaves and Brown, pain catastrophizing has risen to the status of one of the most robust and reliable predictors of pain experience. To date, nearly 100 investigations have reported on the relationship between catastrophizing and pain. Catastrophizing has been associated with heightened pain experience in several different populations, including dental patients, patients undergoing aversive medical procedures, chronic pain patients, and individuals participating in experimental pain procedures. Findings from this research suggest that individuals who catastrophize report 25 to 40 percent higher pain ratings than individuals who do not catastrophize. The relation between catastrophizing and pain has been so sufficiently robust that several investigators have suggested that reducing catastrophic thinking may be a more important target of psychological intervention than teaching patients coping strategies to deal with their pain experience.

Pain catastrophizing has been assessed either through interview or through self-report questionnaire. In several studies, we have used the Pain Catastrophizing Scale (PCS) to assess catastrophic thinking in patients undergoing dental procedures. The PCS is a 13-item self-report measure that can be completed and scored in less than five minutes, and thus is easily amenable to inclusion in standard clinical practice. The psychometric properties of the PCS are described in Sullivan et al., and the scale is reproduced in Sullivan and Neish.

In our first study examining the relation between pain catastrophizing and distress experienced during dental procedures, we asked 101 patients scheduled for dental...
Interestingly, individuals who catastrophized were more likely to be administered anaesthetic than individuals who did not catastrophize. This finding suggests that individuals who catastrophize may be expressing physical or emotional distress of sufficient intensity to suggest to the clinician that some degree of pain control will be required to complete the necessary treatment.

Our initial work in this area also revealed that the rumination component of catastrophizing was the strongest predictor of physical and emotional distress. In other words, individuals who endorsed items such as “I keep thinking about how much it hurts” or “I can’t stop thinking about the pain” experienced the most intense pain. Typically, dental hygiene procedures are not considered to be associated with high levels of pain. Research conducted in our clinic, however, suggests that many individuals who catastrophize rate the pain of probing and sealing as high as 9/10.11

A number of studies have examined the correlates of catastrophizing in an effort to better understand the mechanisms by which catastrophizing impacts on pain experience. Findings from this research have shown that:

1. women are more likely to catastrophize than men,
2. catastrophizing appears to decrease with age,
3. catastrophizing is related to other indices of emotional distress, such as dental anxiety, fear of pain, and depression, and
4. catastrophizers appear to be unable to make effective use of distraction strategies to reduce their pain and emotional distress.10

We recently completed a study examining the effect of an emotional disclosure intervention on the pain and emotional distress experienced by catastrophizers and noncatastrophizers.43 We reasoned that if catastrophizers are unable
to divert attention away from pain effectively, they may benefit from an intervention that specifically requires them to attend to their pain. This intervention initially may seem counterintuitive. However, it is consistent with research showing the beneficial effects from disclosing emotionally laden material on mental health.

The results of our disclosure study are presented in Table 1. Prior to undergoing a scaling procedure, participants were assigned to a disclosure or control condition. In the disclosure condition, participants were asked to write about their dental worries and concerns. In the control condition, participants were simply asked to list their activities of the previous day. Dental hygienists were blind to intervention condition. In the control condition, we replicated previous findings showing that catastrophizers report significantly more pain than noncatastrophizers. The disclosure intervention resulted in decreased pain and emotional distress for catastrophizers, but surprisingly, it led to increased pain and emotional distress for noncatastrophizers.

Two important points emerge from the research conducted to date. First, for individuals who catastrophize, the dental situation is a particularly distressing one. Catastrophizing contributes to significant physical and emotional distress, even in response to dental procedures not typically considered to be painful. Second, interventions that may be beneficial for catastrophizers might actually be detrimental to noncatastrophizers.

So what are the implications of this research for the dental practitioner? The effective management of individuals who react negatively to dental treatment cannot be underestimated. High levels of pain and emotional distress experienced during dental treatment may contribute to the development of dental anxiety and, ultimately, to avoidance of dental treatment. Given that pain is considered to be a significant determinant of avoidance of dental care, strategies for effective pain reduction, particularly in individuals prone to experiencing high levels of pain, may have beneficial effects on individuals’ oral health.

For the dental practitioner, the challenges include instituting means of detecting individuals who catastrophize, and providing interventions aimed at reducing their physical and emotional distress during dental treatment. Self-report measures such as the PCS can be administered easily during routine clinical practice to assess catastrophic thinking. Alternately, open-ended questions about previous dental care (e.g., “Do you have any questions or concerns about this dental appointment? Are there any procedures you find particularly painful?”) may assist the practitioner in identifying individuals who engage in catastrophic thinking.

Granted, the dental practice environment does not provide the ideal forum for the treatment of catastrophic thinking. Time constraints place limits on the degree and nature of psychological interventions that can be incorporated into standard practice. However, the research conducted in our clinic suggests that simple interaction strategies that facilitate disclosure of worries and concerns can have a marked impact on the catastrophizer’s level of distress. For the dental practitioner who chooses to use disclosure strategies to minimize a catastrophizer’s distress level, it is important to note that those empathetic responses to disclosure are pivotal to the success of these interventions. It has been suggested that empathetic responses to disclosure may promote feelings of social support and foster the sharing of coping-relevant information. However, the disclosure of worries and concerns that is met with minimizing responses or criticism is likely to exacerbate further the individual’s level of distress.

Table 1. Pain ratings as a function of disclosure condition and level of catastrophizing.

18 JIDA • Winter 2000-2001
Conclusion

Dental practitioners have long been aware that some individuals are more prone than others to experience high levels of distress in response to dental treatment. Our research has indicated that distress responses to dental treatment are often the result of engaging in catastrophic thinking. It further suggests that interventions that foster disclosure of dental worries and concerns can lead to significant reduction in pain and emotional distress in individuals who are prone to catastrophic thinking. Screening for catastrophic thinking, and fostering disclosure, may represent effective and time-efficient means by which dental practitioners may intervene with these challenging patients.

References


Research reported in this paper was supported by grants from the Social Sciences and Humanities Research Council of Canada, Dentistry Canada and the Canadian Institute for Health Research. Correspondence should be addressed to Dr. Michael Sullivan, Department of Psychology, Dalhousie University, Halifax, Nova Scotia, B3H 4J1.