

Trauma matters: psychological interventions for comorbid psychosocial trauma and chronic pain

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There is growing interest in psychosocial trauma and chronic pain (CP). Numerous retrospective studies link trauma or posttraumatic stress disorder (PTSD) to CP,^{6–9,12,35,54,78,96,97} and prospective studies indicate that earlier trauma is a risk factor for later CP.^{16,27,44,45,49,57,69,76,77,86} Some scholars have offered explanations of this link, focusing on the commonalities of trauma and CP or their bidirectional relationships, such as the shared vulnerability,¹⁴ mutual maintenance,⁸⁴ and perpetual avoidance⁵⁵ models. Others have proposed how trauma might cause, exacerbate, or maintain CP by disrupting physiological, cognitive, emotional, or interpersonal processes.^{29,52,53,62,67} Unfortunately, these models have rarely informed treatment initiatives, leaving key questions unanswered: How does one define trauma in populations with CP? Is it beneficial to treat comorbid trauma or CP? What interventions effectively do so? This topical review addresses these questions.

1. Effects of psychological treatments of posttraumatic stress disorder on chronic pain

In 1980, the DSM-III introduced the diagnosis of PTSD, which sought to legitimize and destigmatize the intense reactions of military personnel, rape survivors, and others experiencing stressors outside the range of usual human experience. The criteria for PTSD have evolved, and the DSM-5 now requires exposure to actual or threatened death, serious injury, or sexual violence (either direct exposure or through witnessing, learning about, or being repeatedly exposed to aversive details), accompanied by symptoms of intrusions, avoidance, altered arousal and reactivity, and altered negative mood and cognition.¹³

Treatments for PTSD have developed independently from those for CP. Treatment guidelines routinely list PTSD and CP separately, and clinical settings typically treat PTSD and CP by different professionals, in different clinics, using disorder-specific treatments. However, the high comorbidity of PTSD and CP has led some clinicians treating PTSD to examine CP outcomes as well.⁸⁵

The U.S. Department of Veteran Affairs has been particularly interested in studying and treating PTSD and CP.³¹ For example,

Otis et al.⁷³ combined cognitive processing therapy for PTSD and cognitive-behavioral therapy (CBT) for CP, creating the Pain and Trauma Intensive Outpatient Treatment program; initial case reports among veterans are positive for both pain and trauma symptom reduction.⁴⁷ Others working with veterans with PTSD and CP have developed interventions that integrate behavioral activation⁷⁵ or exposure and relaxation.¹⁹ All of these approaches, however, await controlled trials. It is somewhat surprising that the recommended therapies for PTSD in the Veterans Affairs System—prolonged exposure therapy and cognitive processing therapy—have not yet been examined for their effects on CP among those treated for PTSD. A newer PTSD intervention, however, which integrates exposure, eye movement desensitization and reprocessing (EMDR), and trauma imagery rescripting—accelerated resolution therapy³⁰—was shown in a randomized clinical trial (RCT) among military personnel with PTSD to yield large reductions in both PTSD symptoms and pain intensity.⁴⁸

In civilian motor vehicle accident survivors with PTSD and CP, 3 RCTs tested trauma-focused CBT, which combines education, exposure, and self-regulation skills. All 3 trials found reductions in PTSD symptoms, but not CP.^{11,17,28} A similar outcome was found in an RCT of somatic experiencing therapy for people with chronic low back pain.¹⁰

There have been several recent reviews of the PTSD/CP treatment literature. A meta-analysis of 11 trials (including 7 RCTs) of various psychological interventions concluded that such treatments reduced PTSD symptoms with a large effect (−0.79 SD) but pain intensity with only a medium effect (−0.51 SD; see published erratum).³⁸ One narrative review of 6, mostly uncontrolled, psychological interventions for refugees with PTSD and CP concluded that both PTSD and pain outcomes were improved,⁸⁰ whereas another narrative review of 7 trials of PTSD-focused treatment concluded that pain reduction was minimal.⁷⁹ Overall, these reviews suggest that PTSD-targeted treatments lead to large reductions in PTSD symptoms but smaller and less consistent improvements in CP.

2. Critique of treating posttraumatic stress disorder in chronic pain

The diagnosis of PTSD has the apparent advantage of providing a reliable operational definition, and the requirement for both exposure to a traumatic event and resulting symptoms suggests that the trauma remains unresolved and in need of intervention. Yet, there are numerous limitations of this diagnosis, of treating only patients with PTSD, and of specifically targeting PTSD in people who also have CP.

Many scholars have raised concerns about the diagnosis of PTSD,^{18,34,40,66,81,91,93} including problems defining the qualifying traumatic events, the range of included or excluded symptoms, the lack of patient homogeneity, and the artificiality of a dichotomous

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categorization. Of note, trauma is broader than PTSD, although many people seem to equate PTSD with the experience of trauma more generally. There are likely several drivers of this conflation, including the hegemony of psychiatric diagnosis, funding agencies' focus on PTSD, and treatment or disability benefits that are contingent on having the diagnosis. We recognize, however, that the term "trauma" is vague and often used indiscriminately; for example, people speak of "big T and little t trauma"—the former referring to PTSD-type events and the latter to more common but still distressing events. Adversity is an even broader term than trauma and includes potentially distressing or traumatic experiences occurring throughout life, such as abuse, neglect, parental loss, family discord, assault, partner violence, workplace abuse, national displacement, and social injustice.²⁶ Many studies include people who have experienced a potentially traumatic event and report some PTSD symptoms but do not meet full PTSD criteria^{33,38,80}; such subsyndromal, subthreshold, subclinical, or partial PTSD is clinically significant.⁶⁵ Other studies focus only on elevated posttraumatic stress symptoms without requiring a specific traumatic event.^{43,70} These practices increase the number of people who qualify for PTSD-related research or treatment while also revealing concerns about the boundaries of the diagnosis of PTSD and its utility in research and treatment.

Other limitations of the diagnosis of PTSD pertain to the qualifying traumatic events. The DSM-5 diagnosis focuses on an index trauma, although earlier trauma, deprivation, adversity, or attachment difficulties are substantial risk factors for the development of PTSD on later exposure.³² Other diagnostic systems reflect this variability. The ICD-11, for example recognizes not only PTSD stemming from index events but also complex PTSD, which can result from prolonged, chronic exposure to traumatic experiences, such as childhood abuse, torture, domestic abuse, or slavery.⁹⁴ The sociocultural context also may affect symptom presentation, such as whether the event violates culturally specific moral norms.¹⁰⁰ The focus of PTSD on events that are external to the person also minimizes the key role of internal processes such as needs, emotions, and defenses. For example, psychological conflicts can contribute to CP, and such conflicts usually reflect a combination of external adversity and unfulfilled, competing, or suppressed emotional/relational needs, often related to connection/communion, agency/assertion, and self-care/compassion.^{37,41,46,51} Notably, most PTSD treatments do not address these developmental, contextual, and conflictual contributions.

The treatment studies of comorbid PTSD/CP described above were PTSD-centric; that is, they recruited patients with PTSD, used PTSD-focused treatments, and examined PTSD symptoms as the primary outcome. Pain, in contrast, was a secondary outcome and typically not targeted, which may have limited its reduction. We have identified 2 other approaches to treating comorbid trauma and CP that seem to redress these concerns and may lead to better CP outcomes. One approach focuses on people with CP and targets their adversities or potentially traumatic events, including pain-related trauma. A second approach treats trauma and psychological conflict in people who have a subtype of CP that is most strongly linked to cognitive/emotional factors. That is, these approaches start with CP rather than PTSD, target the trauma/adversity/conflict presumed to be driving the pain, and emphasize pain reduction.

3. Targeting life adversity, stressors, or traumatic events

Some interventions identify people with CP who report a traumatic or adverse event, or who are believed to have

experienced such, and the intervention focuses on that adverse event. One such intervention is written (or verbal) emotional disclosure, which is typically self-guided, in which people write (or in some studies, speak) about the facts and feelings related to a stressful, adverse, or traumatic experience.⁷⁴ Many studies have tested emotional disclosure in patients with various types of CP, typically comparing disclosure to an emotionally neutral control exercise. A review of 18 RCTs of disclosure in CP concluded that there were small benefits in pain overall, but the effects likely depend on pain type.⁶¹ For example, most trials in rheumatoid arthritis found little benefit of disclosure, whereas trials in fibromyalgia yielded meaningful benefits perhaps because of the greater trauma, adversity, and psychological conflicts found in people with fibromyalgia than rheumatoid arthritis.^{39,92} A limitation of most of these studies is that they assumed that people with CP had trauma to disclose, but the studies did not screen to include only patients with trauma histories.

Another trauma-focused therapy tested in people with CP is EMDR. Originally developed for PTSD, EMDR has been broadened to various adversities or conflicts believed to be driving symptoms. There are several "pain protocols" for EMDR, which may target general trauma memories, the specific accident/injury experienced, or even pain-related sensations and emotions, while the patient engages in bilateral stimulation—usually eye movements, but possibly taps or tones.⁸³ As detailed in several reviews,^{87–89} there are numerous case reports and uncontrolled case series often reporting substantial pain reduction or elimination. One RCT found that EMDR for patients reporting chronic back pain and a traumatic event reduced pain intensity at posttreatment (large effect) and 6-month follow-up (medium effect), with smaller effects on disability.³⁶ Another RCT reported that over 90% of EMDR-treated patients with phantom limb pain reported substantial or complete pain relief at 2-year follow-up, compared with none of the controls,⁸² and another trial found that EMDR was superior to both guided imagery and no treatment control in reducing pain in rheumatoid arthritis.⁷¹ Several other RCTs also support the efficacy of EMDR for CP.^{20,63}

4. Targeting trauma or conflict in centralized or nociplastic pain conditions

Some types of CP are believed to be driven largely by central nervous system processes. Such centralized or nociplastic pain conditions include fibromyalgia; tension and migraine headaches; irritable bowel syndrome; most cases of temporomandibular, pelvic, abdominal, and back/spinal pain; and most of the somatic conditions traditionally labeled "functional" or "somatoform."^{72,98} In contrast to CP that is considered secondary to pathophysiological processes (ie, nociceptive and neuropathic), centralized conditions are closely tied to PTSD, adversity, and interpersonal/emotional regulation difficulties.^{6,25,92,99} Thus, studies have targeted patients with centralized CP conditions based on the assumption that most people with such pain will have trauma or conflict to address and that doing so can reduce their pain and other somatic symptoms.

Short-term psychodynamic psychotherapy has been tested on a wide range of patients. This therapy focuses on developing insight into psychological conflicts and recurrent patterns, expressing blocked emotions, and linking emotions to somatic symptoms.⁵ Many RCTs of short-term psychodynamic psychotherapy for "functional" somatic disorders have been conducted, and a recent meta-analysis of 17 RCTs found that this therapy led

to a large magnitude reduction in somatic symptoms and pain, compared with controls.⁴ A subsequent meta-analysis of 37 trials of within-treatment effects found large reductions in somatic symptoms from pretreatment to posttreatment and beyond 6-month follow-up.³ One type of psychodynamic therapy is intensive short-term dynamic psychotherapy, which specifically targets the activation of inhibited or unconscious emotions related to intrapsychic conflicts and explicitly links them to bodily changes.¹ Several uncontrolled trials of this therapy have found large reductions in pain and substantial improvements in other outcomes, such as healthcare utilization,^{2,56} and several RCTs have also demonstrated substantial reductions in centralized (“medically unexplained”) CP.^{23,24}

Emotional awareness and expression therapy (EAET), which was derived from short-term psychodynamic as well as emotion-focused and exposure therapies, was developed specifically for patients with centralized CP. This therapy posits that pain can be reduced by integrating pain neuroscience education with awareness and expression of avoided, adaptive emotions.⁵⁸ Uncontrolled studies of EAET have found very large reductions in CP²¹ and centralized somatic symptoms.⁶⁴ Two RCTs found that a single EAET session led to greater pain reduction than waitlist controls, with medium effect sizes,^{22,101} and 3-session version of EAET reduced somatic symptoms in irritable bowel syndrome.⁹⁰ In a large study of fibromyalgia, group EAET was superior to fibromyalgia education on most outcomes and superior to CBT on several secondary pain-related outcomes (small-medium effects).⁶⁰ Another RCT found that group EAET surpassed CBT in reducing musculoskeletal pain intensity (large effect) and pain interference (medium effect) in older military veterans.⁹⁵

5. Implications, limitations, and future directions

These alternative approaches to treating comorbid trauma and CP overcome some of the limitations of targeting only PTSD; they capture a larger pool of patients using simpler methods to define the population, allow for variability in event exposure and symptoms, address lifespan adversity and psychological conflicts, directly link trauma with pain, and target common mechanisms underlying both trauma and pain. Importantly, these treatments of comorbid trauma/CP emphasize the potential reversibility of both trauma symptoms and pain, and they may reduce pain more than PTSD-focused treatments do. Better quality clinical trials are needed, however, including larger samples, investigator equipoise, and outcome measures other than self-report.

There are various challenges to treating comorbid trauma and CP. First, methods to assess trauma remain undeveloped, and patient selection approaches that target only PTSD symptoms, life adversity, or psychological conflict have limitations. Second, the mechanisms of action of comorbid trauma/CP therapies remain unknown. We hypothesize, however, that a central process is reversing avoidance of feared—yet actually safe—emotional, interpersonal, and somatic experiences including pain, along with making adaptive changes in one’s core beliefs about the danger of these experiences.⁵⁹ Third, research should determine which patients have the most success with these trauma/CP-focused treatments. We hypothesize that better outcomes are likely among people who have past (rather than ongoing) unresolved traumas and centralized or nociplastic pain. Finally, research is needed to understand who is receptive to such therapies and to develop and test methods to increase the motivation of those who are not.

Instead of conceptualizing trauma and CP as distinct and treating each separately—or just treating one problem in the hope that the other will improve—we encourage the use of these therapies for comorbid trauma and CP. Doing so is not only clinically efficient but also scientifically illuminating. Controlled trials that demonstrate that treating trauma substantially reduces or even eliminates pain provide evidence of the causal or contributory role that trauma plays in CP—a question that the abundant correlational research leaves unanswered. A barrier to treating comorbid trauma/CP, however, may be the presence of competing intervention frameworks. Trauma is typically “treated” psychologically with the goal of symptom remission or recovery, whereas CP is typically “managed” or “accepted” with the goal of functioning better with a chronic condition. The effective interventions for comorbid trauma and CP, however, along with emerging neuroscience on pain and emotions, such as predictive coding and interoceptive theories, challenge this dichotomy.^{15,42,68} We recommend that treatments of comorbid trauma/CP include pain neuroscience, linking both trauma and CP to brain processes and emphasizing neural plasticity and the possibility of treating—rather than just managing—both trauma and pain disorders.^{50,59}

Conflict of interest statement

The authors have no conflicts of interest to declare.

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