

# Paediatric chronic pain as a catalyst for toxic stress

Citation for published version (APA):

Nelson, S., Miller, J. V., Timmers, I., Simons, L. E., Meldrum, K., & Noel, M. (2022). Paediatric chronic pain as a catalyst for toxic stress. *Lancet child & adolescent health*, 6(10), 671-672. [https://doi.org/10.1016/S2352-4642\(22\)00187-0](https://doi.org/10.1016/S2352-4642(22)00187-0)

## Document status and date:

Published: 01/10/2022

## DOI:

[10.1016/S2352-4642\(22\)00187-0](https://doi.org/10.1016/S2352-4642(22)00187-0)

## Document Version:

Publisher's PDF, also known as Version of record

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## Paediatric chronic pain as a catalyst for toxic stress



Lancet Child Adolesc Health 2022

Published Online

July 5, 2022

[https://doi.org/10.1016/](https://doi.org/10.1016/S2352-4642(22)00187-0)

[S2352-4642\(22\)00187-0](https://doi.org/10.1016/S2352-4642(22)00187-0)

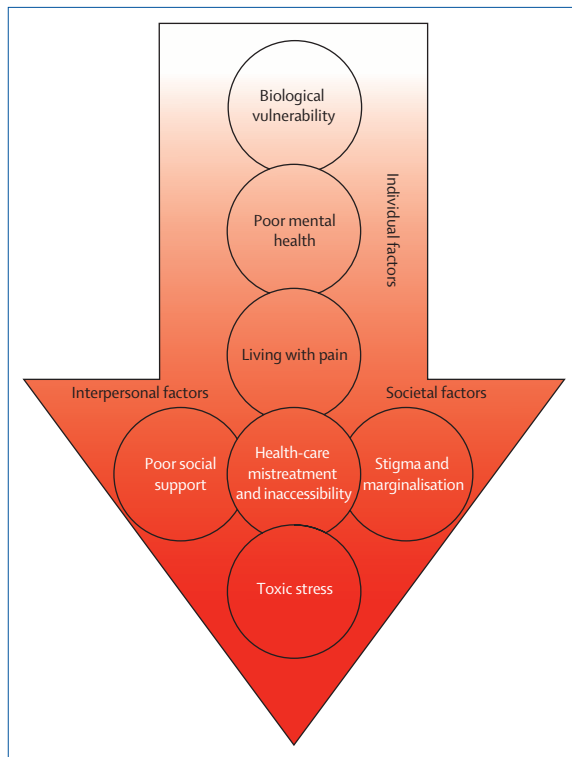
Toxic stress, defined as intolerable, lasting, severe stress in the absence of protective relationships, has been proposed to be “the most physiological threatening kind of stressful experience” for youth, in contrast with positive (ie, mild elevations in the physiological stress response) or tolerable (ie, serious but temporary stress response elevations mitigated by protective relationships) stress.<sup>1</sup> Abundant research has revealed that toxic stress in childhood ( $\leq 18$  years of age) is a significant predictor of lifelong health-related consequences.<sup>1</sup> Sources of toxic stress can include adverse childhood experiences (eg, abuse or neglect), low socioeconomic status, and racial or ethnic discrimination.<sup>1</sup> With toxic stress, prolonged activation of the physiological stress response, combined with inadequate coping resources and protective relationships, results in an inability to restore homeostasis, leading to long-lasting alterations to the brain and nervous system.<sup>2</sup> The cause of many health issues in adulthood could potentially be ameliorated by increased attention to toxic stress in childhood.<sup>2</sup> However, research to date on the relationship between chronic health issues and toxic stress, whether linear or bidirectional, has not been extended to chronic pain (ie, pain lasting  $\geq 3$  months) in the paediatric population.<sup>3</sup> In this Comment, we elaborate on how interpersonal and societal factors in the absence of protective relationships—a key catalyst for toxic stress—can manifest in youth, and, in turn, toxic stress can be fuelled by unique aspects of living with chronic pain. Applying the concept of toxic stress to paediatric chronic pain could serve to reconceptualise and validate how pain can be maintained—most notably through interpersonal and societal risk in conjunction with individual factors, particularly for marginalised individuals including racial and ethnic minorities.

Factors related to the individual experience of chronic pain (eg, biological vulnerability, mental health, and coping resources) are well established to contribute to unfavourable pain-related outcomes.<sup>3</sup> Youth with chronic pain are often absent from school and have worse social functioning compared with peers without chronic pain.<sup>4</sup> Chronic pain often emerges in childhood and adolescence, and two-thirds of youth with chronic pain continue to have chronic pain in

adulthood.<sup>5</sup> Although the support of family and peers can be protective, parents of youth with chronic pain also have increased rates of poor mental health and chronic pain themselves, which has been shown to negatively affect child outcomes.<sup>6</sup> Evidence suggests that contextual drivers, such as uncontrollability and unpredictability, and social-evaluative threat (eg, feeling judged by others), could be important in chronic pain maintenance, via damaging effects on corticolimbic circuitry.<sup>7</sup> However, little research has been done to assess the complex interpersonal and societal factors, within and outside of the individual’s control, that are unique to paediatric chronic pain and could contribute to a severely stressed state.

Across research and health-care communities, positive steps have been taken towards more sensitively approaching the diagnosis and treatment of chronic pain (eg, greater mindfulness surrounding diagnostic labelling and patient education). However, difficulties remain. For example, pain-related stigma frequently occurs across health-care and social settings toward youth with chronic pain. Evidence indicates that youth face negative judgment or disbelief surrounding their pain experience, which can then contribute to increased psychological and physical impairment.<sup>8</sup> Due to a desire to avoid stigmatisation, youth with chronic pain might also attempt to conceal their pain, which can contribute to social isolation, cognitive burden, and increased stress.<sup>8</sup> Furthermore, diagnostic uncertainty—the belief that the diagnosis or explanation for one’s health condition is inaccurate—has also been repeatedly linked to stress and pain.<sup>9</sup> Diagnostic uncertainty is frequently associated with encounters with medical professionals that are invalidating, stigmatising, and stressful, and is associated with mistrust in the medical system.<sup>9</sup>

Paediatric patients with chronic pain who reach tertiary-level pain clinics are predominantly White;<sup>3</sup> therefore, current research on the management and experience of chronic pain in marginalised groups is scarce. This paucity of research is noteworthy and should be urgently addressed given that, in acute settings, marginalised groups face frequent undertreatment or dismissal of pain (eg, with less frequent prescriptions for opioid analgesics), increased rates of perceived discrimination by health-care providers, and medical



**Figure: The proposed conceptualisation of a life with pain as a toxic stressor** Areas identified in the model include individual factors, such as biological vulnerability, poor coping resources, and mental health comorbidities (eg, anxiety, depression, and post-traumatic stress). Interpersonal and societal factors include health-care mistreatment or inaccessibility, poor social support (eg, school or workplace, parents or guardians, or partners or spouses), and racial and ethnic stigma and marginalisation.

mistrust (ie, distrust of their physician or recommended medical care).<sup>10</sup>

We propose viewing a life with paediatric chronic pain as a potential source of toxic stress and present a conceptual framework (figure) to guide future research, and inform recommendations for mitigating toxic stress going forward. Reconceptualising chronic pain in this way, which highlights the importance of interpersonal and societal influences, shifts blame from the individual to the multiple systems that the individual is required to navigate. Considering pain maintenance under this broader lens will serve to move focus to external factors that might maintain chronic pain, such as navigating health care, diagnostic uncertainty, and stigma, which are beyond the individual’s control. This reconceptualisation can be viewed as a more empowering and validating picture of the multifactorial burdens of living a life with chronic pain that will require societal solutions. Going forward, it will be important to

increase awareness and education for those individuals who are often the first point of contact in the provision of pain care, including primary and emergency care physicians and paediatricians, on how their approach to paediatric chronic pain (eg, dismissiveness, invalidation, and stigmatisation) can contribute to toxic stress. Similarly, educating family members about toxic stress could validate and empower them to view themselves as crucial sources of resilience rather than risks. We believe that by reconceptualising a life with pain as a potential source of toxic stress in the absence of protective relationships, we can validate and empower individuals with pain, and ignite an adaptive shift in the systems in which they live.

We declare no competing interests. This Comment was funded by the National Center for Complementary and Integrative Health (grant number NCCIH 1K23AT010643 to SN). KM is a pain advocate and a person with lived experience.

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