

Childhood Maltreatment and Somatic Symptoms in Adulthood: Establishing a New Research Pathway

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Keywords

Abuse · Neglect · Childhood · Early adversity · Physical abuse · Somatic symptoms

Abstract

Background: Somatic symptoms, such as chronic pain, fatigue, and gastrointestinal disturbances, are commonly reported in individuals with a history of childhood maltreatment (CM), which includes various forms of abuse and neglect experienced before age 18. Although CM is strongly associated with somatic symptoms, the specific relationships between CM subtypes and these symptoms, as well as the mechanisms connecting them, remain insufficiently understood. This review examines the complex interaction between CM and somatic symptoms, which often coexist with mental disorders and significantly impact quality of life and healthcare systems.

Summary: Somatic symptoms, frequently a mix of “explained” and “unexplained” conditions, are associated with personal distress and pose diagnostic challenges. CM has been linked to these symptoms through neurobiological mechanisms, such as HPA axis dysregulation and allostatic load, while theoretical models emphasize the roles of hyperawareness, cultural factors, and vulnerability in symptom development. However, existing research often fails to account for specific CM subtypes, the full range of somatic symptoms, and cultural and situational factors, leading to inconsistencies in findings. **Key**

Messages: Bridging gaps in literature requires adopting the World Health Organization’s CM subtype definitions and ICD-11 codes (MA00-MH2Y) to encompass a broader spectrum of somatic symptoms. Employing rigorous methodologies, such as systematic reviews and meta-analyses, is essential for advancing understanding. These approaches can enhance diagnostic accuracy, support tailored interventions, and promote a biopsychosocial framework for CM research, ultimately improving patient outcomes and alleviating societal burdens.

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Introduction

Childhood maltreatment (CM), including all forms of abuse and neglect – physical and/or emotional ill-treatment, sexual abuse, neglect, and commercial or other forms of exploitation – directed toward a child below the age of 18, is a significant public health concern, affecting up to 36% of the population worldwide [1–3]. CM has frequently been associated with long-lasting mental and physical health consequences and greater utilization of healthcare services [4, 5]. For example, CM has been linked

to mental disorders such as depressive disorders, anxiety, posttraumatic stress disorder, dissociative, bipolar, and psychotic disorders [6–9]. CM has also been linked to various somatic diseases such as diabetes, cancer, and coronary heart disease [4, 10–12], as well as medically explained or unexplained bodily symptoms such as chronic pain [13], including headaches [14].

The term “somatic” originates from the Greek word “soma,” meaning “body.” Somatic symptoms refer to bodily experiences that an individual perceives as deviations from normal health, such as pain, fatigue, changes in appetite, gastrointestinal issues, or neurological problems [15]. Somatic symptoms may or may not be linked to an underlying medical condition; they can arise from changes in bodily function, result from a specific disease, or be a consequence of emotional or psychological distress [15]. Somatic symptoms such as pain or fatigue or gastrointestinal problems are commonly observed both in childhood and adulthood among individuals affected by CM [16–20], and can lead to significant personal distress, disability, as well as an increased burden on the healthcare system, and elevated healthcare costs [21, 22]. It is therefore crucial to understand the possible associations between these symptoms and CM and to elucidate putative pathways linking CM and bodily symptoms. In this state-of-the-art review, we examine current understanding of the associations between CM and somatic symptoms, highlight gaps in the literature, and propose directions for future research.

A More In-Depth Understanding of Somatic Symptoms

The term “somatic symptom” is commonly used in the literature to refer to symptoms lacking a clear medical explanation. However, the distinction between “medically explained” and “medically unexplained” conditions poses a significant challenge in healthcare settings [23, 24]. Patients often present with a mix of both “explained” and “unexplained” symptoms [24, 25], and there are often both physical and psychological etiological factors present [23, 26]. While some symptoms may be well explained by a medical condition (e.g., pneumonia) and resolved with adequate treatment (e.g., antibiotics), for a large array of symptoms the underlying contributor or cause might not always be clear. Receiving a specific diagnosis is determined by clinical judgment [27], cultural context [28], and clinical and laboratory tests, among other considerations. Additionally, symptoms

considered “explained” and “unexplained” often coexist within the same patient [24, 25] and, in the case of chronic pain, do not seem to differ in terms of treatment response to cognitive-behavioral therapy [29]. It is thus preferable to refrain from artificially distinguishing somatic symptoms based on whether they are medically explained or not.

Somatic symptoms, such as pain or fatigue, or appetite changes often accompany a mental disorder, especially in affective and anxiety disorders [30, 31], and may negatively impact the course of depression [32]. Additionally, somatic symptoms constitute a core clinical feature of certain disorders like somatic symptom disorders, and functional neurological or gastrointestinal disorders. Both the International Classification of Diseases (ICD-11) and the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Text Revision (DSM-5-TR) cover diagnostic categories that specifically address somatic symptom and related syndromes [33, 34]. Approximately 30–40% of patients seeking medical attention, many of whom present with somatic complaints such as pain or fatigue or gastrointestinal, or neurological symptoms, have normal laboratory and imaging tests and will have their symptoms labeled in various ways, including but not limited to medically unexplained symptoms, somatization, conversion, functional symptoms, or somatoform symptoms [17–19, 35, 36]. However, many patients experience waxing and waning symptoms, such as pain or dizziness that cannot be characterized by typical functional syndromes (e.g., irritable bowel syndrome) [37], or may not fully meet criteria for a somatic symptom disorder according to ICD-11 or “somatic symptom and related disorder” in the DSM-5-TR.

Nevertheless, there is a consensus among experts that somatic symptoms are characterized by personal distress and impaired quality of life [38] and may lead to negative affective states such as frustration and helplessness for both patients and medical staff [39]. Given that these symptoms cause significant personal distress, disability, increase the service burden of the healthcare system, and impose high healthcare costs, it is important to better understand the factors underlying the development and maintenance of somatic symptoms [21, 22].

Neurobiological Connections between CM and Somatic Symptoms

CM has consistently been associated with somatic consequences such as an enhanced risk of several illnesses including non-communicable diseases such as diabetes

and cancer [4, 9, 11]. Large epidemiological data suggest associations of CM with adult diseases including ischemic heart disease, cancer, chronic lung disease, skeletal fractures, and liver disease and even increased mortality [40–42]. Notably, adults with a history of CM are often present in primary care settings, where healthcare providers frequently face challenges with symptoms that do not meet the diagnostic criteria for specific medical conditions. This can lead to treatment delays and negatively impact treatment outcomes for individuals with CM, resulting in distress and frustration for both patients and medical staff [35, 36, 38, 39, 43].

Several theoretical models have been proposed to understand the underlying mechanisms involved in the genesis of somatic symptoms [44–47]. For example, Barsky and Wyshak [48] developed the somatosensory amplification model, which suggests that individuals who are especially sensitive to threat-related cues tend to become hyperaware of their own bodily sensations and misinterpret them as signs of a medical condition. Löwe and Gerloff [49] have highlighted that several authors have extended this model by adding vulnerability factors (e.g., CM, cultural beliefs) and mediating factors (e.g., education, avoidance) that help explain the development and perception of somatic symptoms [44, 45].

The abovementioned theoretical models of somatic symptoms are underpinned by research examining neurobiological pathways associated with adverse experiences such as CM. Among these, the most discussed in the context of CM involve pathways associated with reward, threat, and somatosensory mechanisms [50, 51], hormonal systems such as the hypothalamic-pituitary-adrenal axis, and epigenetic mechanisms [52, 53]. Repeated activation of these systems and pathways in individuals exposed to chronic stressors including CM might be adaptive in the beginning but can contribute to allostatic overload, i.e., the cumulative “wear and tear” on the body’s systems [54, 55].

CM has been found to predict allostatic load [56] and high allostatic load has repeatedly been associated with poor physical health [57, 58]. As an example, Putnam’s consecutive work provided evidence of allostatic load concept triggered by CM, demonstrating that females with histories of childhood sexual abuse experience increased healthcare use due to HPA dysregulation, manifested in preterm delivery, obesity, and gynecological issues [59]. Recently, a study conducted by Barends and colleagues [60] found that cumulative exposure to potentially traumatic events including CM was associated with a higher burden of persistent somatic symptoms which supports the concept of allostatic load [61].

Gaps and Research Directions for CM-Somatic Symptoms Links

There is a strong consensus and substantial data supporting an association between what has often been summarized as functional somatic symptoms on the one hand and traumatic experiences including CM on the other hand [37, 60, 62, 63]. However, despite this evidence, gaps persist in literature. Below, each identified gap is followed by a research direction to address it.

Gap 1

There is some inconsistency in the literature regarding the specific impact of various subtypes of CM on the development of somatic symptoms. Several studies have found associations of physical [64] and sexual abuse [65] with somatic symptoms development. Recent research by Eilers and colleagues [66] has extended these findings, suggesting that emotional abuse, as well as physical and emotional neglect, may also be relevant to the experience of somatic symptoms. Conversely, some studies have only found associations between somatic symptoms and specific subtypes of CM, such as emotional abuse [67] or physical abuse [68], but not with other types of CM. To the best of our knowledge, these somewhat inconsistent findings regarding specific subtypes of CM have not yet been analyzed in a meta-analysis. While Afari and colleagues [62] conducted a meta-analysis that demonstrated significant effects of physical, sexual, and emotional abuse on the development of functional somatic symptoms, they did not address the impact of emotional or physical neglect.

Research Direction

One key recommendation is to define CM based on WHO standards, which categorize it into emotional, physical, and sexual abuse, as well as neglect experienced before age 18. According to the WHO [3], CM is classified into several subtypes, which may slightly differ in how they impact an individual's short- and long-term health [51, 69]. Studies including both abuse and neglect experiences provide insight into how these similar, yet distinct experiences are associated with somatic symptoms. This approach is critical for current and future therapeutic strategies, particularly within the framework of personalized medicine. CM assessments, as a standard practice, can enhance diagnostic accuracy and support the development of personalized interventions. Ultimately, appreciating CM's impact is crucial across the medical field, extending beyond mental health alone. Recognizing this connection between CM and health can

improve diagnostic accuracy, treatment efficacy, and patient satisfaction, reducing frustration for both patients and healthcare providers.

Gap 2

Much of the existing literature narrows its focus to specific functional syndromes (e.g., fibromyalgia, chronic pain, irritable bowel syndrome, psychogenic non-epileptic seizures), or selected health outcomes (e.g., respiratory disease, heart disease, physical inactivity) rather than somatic symptoms as a broad category [62, 63, 70]. This may lead to an underrepresentation of individuals who do not meet the criteria for specific functional syndromes. Therefore, it remains unclear if, and how strongly, different subtypes of CM are associated with the development of somatic symptoms in adulthood. As a result, there is a gap in literature concerning the impact of CM on the development of somatic symptoms that extend beyond these functional syndromes.

Research Direction

This research direction has the potential to deepen biopsychosocial perspectives across medical fields and strengthen collaboration between medical specialties and mental health providers. When defining somatic symptoms, we suggest using the full range of bodily symptoms classified under ICD-11 codes MA00-MH2Y. Unlike previous studies [62, 63], this inclusive approach adopts a broader and more inclusive definition, moving beyond conventional terms and avoiding commonly used labels like medically unexplained symptoms, somatization, conversion, functional symptoms, or somatoform symptoms. By extending the scope to include all somatic consequences, artificial categorizations and unsupported labeling of symptoms without substantial evidence in etiology can be avoided. From a body-mind interaction perspective, this unique approach offers a deeper understanding of the impact of CM on adult somatic health, providing greater insights into how early life stressors influence long-term health outcomes. By establishing straightforward evidence of CM's role in the development of diverse somatic symptoms – from subjective ones like pain or fatigue to more objective indicators like bleeding – CM can be recognized as a significant factor in various health conditions. Understanding CM's impact on the body and routinely assessing CM experiences during psychosocial evaluations can empower healthcare providers to address these challenges more effectively, benefiting both patients and practitioners.

Gap 3

It is important to acknowledge the impact of cultural factors on both somatic symptoms, as well as the impact of CM itself. For example, cultural differences in

parenting practices and societal norms can affect whether a specific behavior is labeled abusive or normative [71–73]. There may also be barriers to reporting maltreatment due to concerns about family reputation or cultural norms that discourage speaking out against authorities [74]. Similarly, cultural factors can affect whether psychological distress is manifested as a somatic symptoms or emotional complaints [75–77]. Moreover, beliefs about mental health and stigma can further shape how these somatic symptoms are then experienced and even treated within different communities [78]. To develop effective preventive measures and interventions for somatic symptoms, it is thus crucial to understand the influence of CM experiences and consider the role of culture.

Research Direction

Future research could not only focus on creating tailored interventions for diverse types of CM and somatic symptoms, but also consider potential cultural differences in how these symptoms are experienced and manifested. Beliefs about mental health and stigma can shape how somatic symptoms are experienced and treated within different communities [78], which highlight the importance of culturally informed practices, both in the medical and the psychological field. Acknowledging the influence of culture on somatic symptoms (e.g., whether psychological distress is manifested as a somatic symptom [75–77] and CM (e.g., barriers to reporting) [74] is a first step toward more inclusive options including prevention, early identification, and treatment. Cultural influence on both somatic symptoms and CM should be explored through literature. Therefore, research in literature should be widened including a wide range of databases and languages. Moreover, beliefs about mental health and stigma and how these somatic symptoms are then experienced and even treated within different communities may be a target of research. Study groups should include a diversity of participants to enrich discussion and comprehension of findings.

In summary, while convincing evidence links CM with SS, inconsistencies remain regarding specific CM subtypes, and most meta-analyses have focused narrowly on certain health outcomes rather than somatic symptoms as a broad category. Furthermore, the influence of cultural factors on the CM-somatic symptoms relationship remains underexplored. Revisiting and addressing these gaps in literature could enhance understanding and guide more comprehensive future studies. A comprehensive and innovative approach to studying the CM-somatic symptoms link is essential.

Revisiting Literature to Initiate a New Research Pathway

A new research pathway should integrate inclusive definitions and cultural considerations to enhance our understanding of the CM-somatic symptoms relationship and its impact on healthcare strategies and patient outcomes. This integrated approach offers fresh insights into the mind-body connection, providing a review of existing literature and identifying key gaps in our understanding of the CM-somatic symptoms association, enhance awareness of the CM-physical health link among researchers and primary care providers who frequently work with individuals affected by CM and promises to foster communication and collaboration among medical disciplines, advancing holistic patient care [79, 80].

A systematic review and meta-analysis on CM experiences and somatic symptoms in adults would be a valuable first step to develop an evidence-based framework of CM-somatic symptoms associations, clarifying whether somatic symptoms are more frequent and severe in adults with a history of CM and exploring associations between CM and somatic symptoms. Authors have registered a meta-analysis protocol in this context to the PROSPERO system (International prospective register of systematic reviews) under the name of “Childhood Maltreatment and Somatic Symptoms in Adulthood: A systematic review and meta-analysis” and with the ID of 427738. In accordance with the abovementioned research directions, we recommend defining CM according to the WHO criteria and including somatic symptoms based on the full range of ICD-11 bodily symptoms (MA00-MH2Y), using these as keywords in the literature search. In addition, underlying pathways contributing to this connection should be analyzed by incorporating moderators like cultural context and CM subtypes. To ensure methodological rigor, such review should apply precise study selection and exclusion criteria, a comprehensive search strategy, and transparent data analysis protocols. Adherence to the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P) 2015 statement, the Meta-Analysis of Observational Studies in Epidemiology (MOOSE) checklist, and the Enhancing the Quality and Transparency of Health Research (EQUATOR) guidelines will further strengthen the study’s reliability [81–84].

Conclusion

Somatic symptoms are common in individuals with a history of CM. However, despite evidence of significant associations, the specific links between CM types and

somatic symptoms, as well as the underlying mechanisms, remain unclear. This gap partly arises from the limited inclusion of diverse CM subtypes and the narrow definition of somatic symptoms, which often encompasses only medically unexplained symptoms rather than a full range of bodily symptoms. Research that further explores these associations, as well as factors like cultural influences shaping this interaction, is essential. A new research pathway could enhance understanding by categorizing CM subtypes based on WHO standards, broadening the definition of somatic symptoms to include the comprehensive symptom range under ICD-11 codes MA00-MH2Y, and identifying cultural and situational moderators (e.g., cultural beliefs, healthcare access) that shape somatic symptom presentation. As a first step, a systematic literature review grounded in these principles would provide a strong foundation for developing future research aimed at paving the way for preventive and therapeutic interventions.

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Conflict of Interest Statement

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Author Contributions

A.M.L., G.A., N.E.F.-O., U.S., V.S., M.C.P., and D.C. contributed to the conceptualization and methodology development of the project. Project administration was led by A.M.L. and G.A. The initial manuscript draft was prepared by A.M.L., G.A., N.E.F.-O., K.L., M.H., L.P., D.C., T.T., and J.S.W. D.C. supervised the development of the protocol and manuscript and oversaw revisions based on reviewer feedback. All authors (A.M.L., G.A., R.B., J.C.-N., D.J.E., N.E.F.-O., M.H., N.I., D.J., S.K.S., K.L., N.M., C.M.-S., E.N., M.Oe., J.N.O., M.Ol., L.P., S.S., T.T., D.L.W., J.S.W., U.S., V.S., M.C.P., and D.C.) contributed to the manuscript revision and editing.

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