

Trauma-Informed Research and Care for Difficult-to-Control Asthma: The Time Is Now!



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Existing studies linking psychological stress and asthma morbidity have largely considered stress occurring more proximate to asthma exacerbations, such as recent negative life events. However, extensive research underscores the need for a broader view that considers stress experienced over the life course, particularly high-impact traumatic experiences that are especially likely to lead to persistent psychophysiological alterations that can impact disease expression remote from discrete events. In addition, research on stress and asthma has largely been focused on children and adolescents.

Wang and colleagues¹ address critical gaps in this area of research and spotlight a highly prevalent traumatic stressor that is not on the radar for the majority of investigators and health care providers whose focus is on difficult-to-treat asthma—intimate partner violence (IPV). Whereas population-based studies from both the United States and globally link IPV and increased asthma prevalence in adults, Wang and colleagues¹ are the first to examine associations between experiencing IPV and asthma control and morbidity among adult asthmatics. These authors leveraged deidentified, public use data available from the 2005 Behavioral Risk Factor Surveillance System survey to conduct a cross-sectional analysis on 2,600 adults across the United States reporting active asthma who also had reported exposure to IPV on a standardized survey administered in select states. Importantly, as IPV affects all regardless of gender, the group included both men and women. They examined associations between IPV (ever vs never in primary analysis) and asthma morbidity outcomes including exacerbations, poor symptom control, asthma-related health care utilization, and an overall composite measure of control. These analyses adjusted for important confounders including age, sex, race, indicators of socioeconomic status including education and health care coverage status, body mass index, and cigarette smoking status. Notably, the majority of those with currently active asthma were uncontrolled (86.8%) with a greater proportion among those reporting IPV exposure (95.9%) compared with those not experiencing IPV (84.1%). These authors demonstrated

significant associations between ever experiencing IPV and asthma exacerbations, increased symptom burden, and poor asthma control in both adult women and men. Consistent with historical epidemiological surveillance data, women, self-identified Black race, and lower socioeconomic status were associated with a higher likelihood of experiencing IPV. Those exposed to IPV were also more likely to be obese and were more than twice as likely to be current smokers. Because obesity and smoking are potentially in the pathway linking traumatic stress and asthma outcomes, the results reported by Wang et al¹ likely underrepresent the total effect of IPV on difficult-to-control asthma in adults. Secondary analyses considering timing effects demonstrated significant associations between remote (>12 months) IPV and all outcomes, and although the recent (within last 12 months) IPV exposure group was small ($n = 54$) limiting power to detect effects, they still found significant associations with increased health care utilization, symptom burden, and nocturnal awakenings. These analyses indicate that experiencing IPV, conceptualized as a chronic traumatic stressor, contributes to difficult-to-control asthma in adult women and men. Several lines of overlapping research provide insights into potential direct and indirect mechanisms linking IPV to asthma severity and/or control.

Asthma is a complex syndrome with multiple phenotypes and endotypes. Optimal management requires that we understand both the underlying pathobiology contributing to disease severity and treatment responses and also the environmental influences that contribute to exacerbation-prone asthma.² Health care professionals are becoming increasingly aware of the social determinants of health, including psychological trauma, that lead to chronic or sustained stress response system activation and downstream behavioral and physiological adaptations manifesting in long-term health consequences.³ Responses that are advantageous in a particular context (ie, chronic IPV) can result in maladaptive consequences in the long term.

Optimal coordinated functioning of complex processes and interactive networks are central to optimal lung function and maintenance of respiratory health. Regulatory systems susceptible to stress programming, including neuroendocrine, autonomic, and immune function, can influence disease vulnerability.⁴ Subcellular components are also prone to stress-related disruption linked to asthma and comorbid psychological disorders.⁵ For example, mitochondria interact dynamically with physiological stress responses coordinated by the central nervous, endocrine, and immune systems. We need to better understand how dysregulation of these interrelated systems and processes may result in distinct asthma phenotypes comprising psychological stress or emotion-induced airway inflammation and bronchoconstriction that influence consequent asthma control.⁶ This understanding will also lead us to further examine the role of alternative treatments

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for stress-related asthma to enhance control⁷ among trauma-exposed patients.

Trauma results in a range of negative affectivity that can have variable behavioral and biological correlates. Understanding such complexities will be needed to determine the most effective treatments for trauma-related asthma. Trauma-associated depression, anxiety, and posttraumatic stress disorder result in psychophysiological phenomena, including dysregulation of the hypothalamic-pituitary-adrenal axis and autonomic nervous system, that can influence asthma morbidity.⁸ In addition to the direct physiological mechanisms that may be contributing to poor asthma control, trauma effects may operate indirectly through behaviors such as medication adherence and utilization. Physiological and psychological dependence on medications such as albuterol can be challenging to distinguish from difficult-to-treat asthma. Both underuse and overuse of controller medications are associated with more frequent symptoms, exacerbations, and health care utilization for asthma as well as poorer mental and physical functioning. It will be important to acknowledge the relevance of symptom perception in the management of severe or difficult-to-control asthma in this context. For example, increased depressive symptoms have been associated with over-perception of airflow obstruction and overuse of controller medications in adult asthmatics, whereas blunted or reduced perception of asthma symptoms relative to objective lung function measurements is also linked to psychological trauma.

Specific vulnerable groups and life stages will need to be taken into account. Racial and ethnic disparities in experiencing IPV as well as associated health problems are documented.⁹ Gender differences in the psychophysiological consequences of IPV have also been described. There will be a need to understand how living at the intersection of multiple forms of oppression shapes Black women's experience with IPV (as well as other minoritized groups) and consequent health effects. This should be extended to consider intersections between IPV and various forms of structural violence, including racism and other forms of discrimination based on gender or sexual orientation. Trauma-informed and intersectional approaches to research understanding the influence of IPV on those differentially impacted by difficult-to-treat and severe asthma may help explain health disparities and define novel phenotypes that lead to innovative treatment strategies for better asthma control in trauma-exposed individuals.

Whereas already an epidemic in the United States with approximately 1 in 3 women and 1 in 10 men over the age of 18 years experiencing IPV, rates have only increased with the social and economic fallout from the coronavirus disease 2019 (COVID-19) pandemic. Time's up for acknowledging the role of traumas, including IPV, in asthma disease expression. The human and financial costs of difficult-to-treat asthma and severe disease that remain recalcitrant despite significant progress through the dissemination of evidence-based treatment guidelines, research characterizing specific phenotypic profiles, and the study and development of novel targeted treatments¹⁰ underscore the need to identify and respond to all potentially modifiable factors. Elucidating mechanisms underlying associations between trauma and asthma will likely identify novel therapeutic targets and more effective intervention strategies. The time is now for comprehensive trauma-informed research and care provision for trauma-exposed individuals with asthma.

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