

## The Anxiety-Asthma Relationship: Risk or Resilience?

Health disparities in pediatric asthma are well documented.<sup>1-4</sup> Specifically, prevalence, morbidity, and mortality of asthma is greatest in Puerto Ricans and African Americans in comparison with non-Hispanic whites.<sup>1-4</sup> Although prevalence in Mexican Americans appears to be lower than in non-Hispanic whites,<sup>1-4</sup> language and other psychosocial factors contribute to health disparities in the diagnosis and treatment of asthma in this Latino subgroup.<sup>5-8</sup> Multiple contributing factors related to the etiology of health disparities in asthma have been identified including systemic racism, poverty, and other psychosocial factors.<sup>9-15</sup> Reduction of health disparities in asthma is necessary to achieve health equity, and the work of Feldman et al<sup>16</sup> is an important step in this direction when the findings are carefully interpreted.

Increased exposure to psychosocial factors such as stress, trauma, and mental health disorders is a predominant factor contributing to pediatric asthma health disparities.<sup>17</sup> This exposure has generally been linked as maladaptive, predicting worse asthma outcomes,<sup>17-25</sup> but others suggest this relationship may be influenced by other factors, such as a child's perception of asthma symptoms.<sup>26-28</sup> Exposure to violence has been suggested to even cause asthma in Puerto Rican children mechanistically through epigenetic changes<sup>29</sup> and potentially reduce response to life-saving emergency medications such as albuterol.<sup>30</sup> Models of how these psychosocial factors interplay have been presented in the literature, emphasizing potential pathways to reduce health disparities in asthma.<sup>9-11</sup>

In this volume of *The Journal*, Feldman et al help move the literature forward in guiding research in practice. As clinicians, some of the most challenging patients to care for of any background, age, or sex are those who are poor perceivers of dyspnea, as this can often translate to poor self-management of asthma.<sup>31-34</sup> In this context, Feldman et al suggest there is a spectrum of anxiety within asthma, some of which is harmful, but some of which may actually be protective.<sup>16</sup> They highlight the risks associated with low vigilance and awareness of symptoms (ie, low "panic-fear") within an asthma exacerbation, a potentially life-threatening error. It is additionally interesting that a child's level of illness-specific panic-fear may be more protective than that of their caregiver. It is still unclear how the anxiety profiles of child and caregiver interplay with asthma outcomes, particularly in light of findings that there was no reported improvement in adherence. Nevertheless, these findings offer important insight into panic-fear mechanisms.

The report describes the relationship between illness-specific anxiety and asthma as distinct from other measures of anxiety.<sup>16</sup> The authors use the Childhood Asthma Symptom Checklist Subscales (CASCL).<sup>35,36</sup> This scale was origi-

nally developed for English-speaking adults and consists of 47 items, 15 of which measure panic-fear specifically.<sup>35,36</sup>

The utility of this tool in clinical practice, or how these subscales of panic-fear compare with other recognized anxiety scales in this sample, is not known. The existing literature on the anxiety-asthma relationship varies by methodology, outcome measures, severity of asthma, type of anxiety disorder, and specificity of anxiety symptoms being measured. As such, there are still many unanswered questions about the nature and direction of these relationships.

Lastly, this study offers insight into potential pathways to intervention that may help reduce health disparities in pediatric asthma. The authors state that "given the problem of under-prescription of inhaled corticosteroids medications in ethnic minority children, greater child illness-specific panic-fear might lead providers to prescribe a more optimal medication regimen in Latino children who appear more anxious about their asthma attacks."<sup>16</sup> Thus, interventions that aim to educate youth on how to better identify and effectively communicate their symptoms within an asthma exacerbation can optimize treatment regimens.

The authors conclude that "interventions for anxious children with asthma should attempt to reduce trait anxiety while maintaining illness-specific panic-fear."<sup>16</sup> However, many caveats seem important to consider. First, it may be more instructive to redefine and reframe "illness-specific panic-fear" as "asthma-related vigilance" when considering both clinical and research implications. In doing so, we focus on those with low vigilance as a risk factor to best inform intervention efforts. This may prove to be more effective than highlighting panic-fear as an "adaptive" construct for providers to promote, which is potentially risky given that we do not know how illness-specific fear correlates with other psychosocial measures in the context of asthma. Is this construct, tapping into kids with better attentional control, thus more likely to accurately report symptoms and maintain asthma routines, regimens, and avoidance of triggers? If so, it is these specific behaviors we would want to promote rather than the idea that panic-fear is adaptive. Or are these children high risk for general anxiety disorders and/or depression, which may ultimately confer greater risk for worse asthma outcomes? What are the psychosocial risks associated with maintaining a high level of vigilance and illness specific panic-fear? Further research must be focused on whether

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<https://doi.org/10.1016/j.jpeds.2019.07.060>

this construct is truly adaptive prior to implementing interventions promoting panic-fear in any population.

Second, although this work looks at one particular population of 2 urban Latino subgroup cohorts of children with asthma, how this may apply to the general population of those with asthma of varying severities is not yet clear. How does asthma severity interplay with illness-specific panic-fear? Will these findings be translatable to a severe persistent and uncontrolled asthma population? Although the authors did not find evidence of a curvilinear relationship between asthma outcomes and panic-fear, it is likely that there was not enough variance in this measure to observe how these relationships change at higher levels of panic-fear. For example, this study looked at mild-moderate asthma, which corresponded to measured mild-moderate levels of panic-fear. The question thus remains: do these findings still hold as asthma severity and illness-specific panic-fear worsens? Existent literature suggests a possible quadratic function such that high levels of panic-fear may predict greater asthma morbidity. For example, Kean et al found that high levels of post-traumatic stress symptomatology related to a severe asthma event had greater functional asthma morbidity, even when controlling for disease severity and other anxiety and depressive symptoms.<sup>17</sup> These findings suggest that higher levels of asthma-related anxiety may lead to avoidance behaviors as a means of controlling the anxiety that would interfere with asthma management and contribute to morbidity. Thus, with more severe asthma, we may expect illness-specific panic-fear to intensify to a level that compromises asthma care and outcomes.

Feldman et al conclude that we must “continue identifying these behavioral pathways and develop interventions to reduce asthma disparities in ethnic minority, high-risk children.”<sup>16</sup> This is paramount to the goal of achieving health equity for all in the US. However, caution must be taken to clarify definitions, measurements, treatments, and outcomes as to not prevent key treatment opportunities for those with asthma with comorbid mental health disorders. Further research into the concept of panic-fear and its relationship to asthma at higher levels of asthma severity can help clarify how to best incorporate this construct into both clinical and research practice. We believe that the identification of low vigilance as a risk factor for poor asthma outcomes can guide treatment efforts. One clear pathway to the reduction of health disparities in asthma is the promotion and implementation of programming focused on adaptive self-management behaviors<sup>37</sup> that develop resiliency behaviors and attitudes, leverage symptom perception, and influence adherence and asthma control in at-risk youth with asthma. ■

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