VIEWPOINT

HEALTH AND THE 2024 US ELECTION

Food Insecurity Is a Source of Toxic Stress

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Food insecurity is a pervasive and persistent issue in the United States that disproportionately affects families with children and Black, Indigenous, and other people of color.[1] Food insecurity has been associated with psychological, cognitive, and behavioral health consequences in children, contributing to lifelong socioeconomic and health inequities.[2] Identifying pathways by which food insecurity affects children's health is critical to informing intervention efforts to eliminate childhood food insecurity. We posit that toxic stress is a prominent pathway underlying food insecurity and children's health and advocate for research, clinical, and policy approaches to better address the root causes of food insecurity and promote lifelong health.

Toxic stress refers to the biological response to experiencing a strong, frequent, or prolonged stressor without the buffering effect of a supportive environment. Risk factors of toxic stress have traditionally focused on adverse childhood experiences (ACEs) but have recently been expanded to include poverty, discrimination, and other chronic exposures.[3] These experiences of adversity can lead to permanent changes in children's brain structure and function, leading to impaired cognitive development, behavioral disorders, and sustained activation of the body's stress responses, resulting in systemic inflammation and immune dysregulation.

Food insecurity meets all the criteria of a toxic stressor. Food insecurity is strong; despite caregivers' efforts to shield them, children not only demonstrate awareness of food insecurity but also can attribute multiple negative psychological states (eg, anxiety, shame, sadness) directly to their experience.[4] Food insecurity can be frequent and prolonged. Many families with children experience cyclical episodes of food insecurity for several months of the year,[1] and food insecurity has been shown to track across the life course and generations.[5] Food insecurity also disrupts caregivers' abilities to create a positive and supportive environment by increasing their anxiety and depression and negatively affecting their interactions with children.[6]

The framing of food insecurity matters. The national discourse has largely emphasized food insecurity as a nutritional concern, focusing on the reductions in diet quality and quantity that occur as food resources become scarce. As a result, interventions to address food insecurity typically work through direct or indirect food provision. While this nutrition safety net has been instrumental in stabilizing food insecurity during economic recessions, more efforts are needed to meet the national goal of eliminating childhood food insecurity.

Framing food insecurity as a toxic stressor not only better underscores children's experiences of food insecurity[4]—on par with other ACEs known to invoke a toxic stress response—but also provides a plausible mechanism for explaining why food insecurity affects children's health and development beyond nutritional intake. The **Table** describes examples of research, clinical, and policy approaches for addressing food insecurity as a toxic stressor to complement current nutrition-focused efforts.

Research Approaches

Stress is a potential pathway connecting food insecurity and health outcomes, but few studies have empirically examined this in children. Mechanistic studies are needed to complement epidemiological and other observational studies. For example, laboratory studies that incorporate cognitive assessments, cortisol, inflammatory markers, cardiovascular reactivity, and neuromodulation can be used to measure children's biological stress responses during acute or chronic food insecurity. These studies can also explore factors that might buffer the stress response and contribute to resilience. Second, research is needed to examine epigenetic alterations of the hypothalamic-pituitary-adrenal axis from early-life exposure to food insecurity that constitute risk factors for later-life health. Third, promising biomarkers to capture toxic stress (eg, cortisol, interleukins) can be incorporated into nutrition program evaluation plans as outcome measures, complementing traditional metrics to appraise program success. Fourth, applying relevant theories and frameworks, such as syndemic theory[7] and the behavioral science framework[8] in research and program evaluation studies focused on capturing and addressing structural and systemic barriers to food security, is critical to assess the impact of chronic food insecurity (a toxic stress) on child health outcomes throughout life.

Clinical Approaches

Several major medical organizations recommend clinical screening for food insecurity using the Hunger Vital Sign. These efforts are often paired with clinical-community partnerships to address food provision and connect patients to federal food assistance. However, pediatricians must also recognize and treat food insecurity as a source of toxic stress, which may require training in therapeutic interventions that can be paired with existing nutrition-focused approaches. Existing models to treat ACEs can also be adapted in the context of food insecurity, including trauma-informed mental health care or stress-reduction interventions, promoting supportive relationships between children, caregivers, and other trusted adults and providing community referrals to address families' other unmet social needs. Extending existing nutrition-focused clinical interventions (eg, Food as Medicine programs) to address the

Table. Comparison of Approaches to Differential Framing of Food Insecurity

Approach to food insecurity	Nutritional concern	Toxic stressor
Operationalization	Food insecurity is a condition of inadequate diet quality and quantity that may increase the risks of diet-sensitive health conditions over time	Food insecurity is a chronic stressor that can lead to dysregulated stress responses and fundamentally impair lifelong health trajectories
Research	Study the links between food insecurity, diet quality, obesity, and cardiometabolic risks; use food and nutrition security as benchmarks for nutrition program and policy evaluation	Extend research to formally investigate the psychological, cognitive, and neurobiological pathways between food insecurity and health; identify novel gene-environment interactions; identify systemic drivers of food insecurity and health using syndemic and multilevel approaches; use toxic stress biomarkers as benchmarks for nutrition program and policy evaluation
Clinical	Screen for food insecurity; create and integrate Food as Medicine programs (eg, medically tailored meals/groceries, produce prescriptions); expand nutrition counseling; provide referrals to food pantries, food banks, WIC program, and school meals; linkages to community organizations for SNAP application assistance	Adopt and prioritize trauma-informed mental health care or stress-reduction interventions; promote supportive relationships; provide referrals for other social needs
Policy	Strengthen and expand federal food and nutrition assistance programs; increase funding for Food as Medicine programs and charitable food providers (eg, food pantries, congregate meals, backpack programs); expand nutrition education programs; enhance evaluation of food and nutrition policies	Focus on upstream social and economic policies to address root causes of food insecurity (eg, income, housing instability, unemployment inequality, and structural racism), and promote food sovereignty in structurally marginalized groups

Abbreviations: SNAP, Supplemental Nutrition Assistance Program; WIC, Women, Infants, and Children.

toxic stress milieu of food insecurity can serve to reduce caregivers' stress and improve children's holistic health.[9]

Policy Approaches

The 2022 White House Conference on Hunger, Nutrition, and Health has highlighted upcoming opportunities to eliminate childhood exposure to food insecurity through investing in health-related social needs, including conducting screenings for food insecurity, strengthening food and nutrition assistance programs, increasing funding for Food as Medicine and nutrition education programs, and prioritizing food and nutrition policy research. At the same time, food insecurity is rooted in poverty. Robust employment, living wages, and housing policies are needed to address the upstream risk factors. Related policies that target structural racism are necessary to dismantle long-standing inequitable systems that have perpetuated disparities in food insecurity among families of color. The Child Tax Credit (CTC) program is an example of an economic support policy with the potential to improve food insecurity and promote health equity without directly or indirectly providing food. Before the COVID-19 pandemic, the CTC had already been shown to decrease poverty and improve health. The 2021 CTC expansion extended the financial benefit to more Black and Hispanic families with children, resulting in reduced food insecurity and larger improvements in mental health for these racial and ethnic groups.[10]

During the COVID-19 pandemic, we witnessed the rapid impact of food assistance and economic relief policies on national food insecurity.[1] We have seen that childhood food insecurity is largely preventable and reversible with political will and structural changes. Yet, food insecurity persists and poses a serious threat to children's future health and well-being. Eliminating food insecurity requires both a model for recognizing how food insecurity acts through toxic stress to affect children's body systems and a coordinated response across researchers, health care professionals, advocates, and policymakers to dismantle the historical and structural inequities that contribute to childhood food insecurity today.

ARTICLE INFORMATION

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