VIEWPOINT

Trauma Recovery Can Be Supported by “Food as Medicine” Interventions

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Violence continues to be a major contributor to global morbidity and mortality, disproportionately affecting individuals from socioeconomically disadvantaged backgrounds. Increasingly, research points to the profound influence of social drivers of health, such as poverty, unstable housing, and food insecurity, on trauma outcomes and recovery.[1,2]

Food insecurity, defined by the US Department of Agriculture (USDA) as limited or uncertain access to sufficient and nutritious food, is an especially critical and highly modifiable factor that can adversely affect wound healing, immune response, medication adherence, and long-term recovery after injury.[2,3] Food insecurity also has been associated with increased incidence of gun violence.[2]

This article aims to elevate awareness of food insecurity as a critical yet often overlooked determinant of trauma recovery and reinjury prevention. By advocating for the integration of food-based interventions into trauma care pathways, we highlight an attainable opportunity to improve outcomes for injured patients.

Link Between Food Insecurity and Violence

In 2023, nearly 47,000 firearm-related deaths occurred in the US, according to the Centers for Disease Control and Prevention. That same year, 13.5% of American households experienced food insecurity with the highest rates concentrated in southern states.[1]

The populations most affected by food insecurity and firearm violence overlap significantly. Emerging evidence underscores this connection. Research has shown a significantly positive correlation between food insecurity and firearm injury and mortality, respectively.[2,3]

High food insecurity is independently associated with patients having more severe injuries, Level I trauma activations, and having higher risk of death from firearm-related injuries.[2] To put this in perspective, for each 1% increase in food insecurity, firearm injury rates increase by an estimated 56 cases per 100,000.[2] This association remains on a granular level in our cities and even specific zip codes.[3]

National data corroborate the findings of our local community in Atlanta, Georgia, yet our center's demographics add more context. At Grady Hospital, Atlanta's only Level I trauma center and one of the busiest trauma centers in the nation, patients reported experiencing food insecurity four times as often as the general Atlanta public.[4]

Of the 1,700 patients studied by Smith and colleagues, firearm injury was highest in five major ZIP codes of the city, with three of the five demonstrating the highest food insecurity rates and two out of five without vehicular access.[4]

Not only is firearm injury associated with violent injury, but these injuries are occurring in the most vulnerable populations, both stratified by their local communities—especially those with high stress and low-income levels.[4] The relationship between the social drivers of food insecurity is complex, but highlights the need for validated tools to identify when food insecurity is significant in our patient populations. Thus, our understanding of the intersection between violence and food insecurity must be matched by the prevalence and precision of screening, especially in victims of firearm injury.

Consequences of Food Insecurity

Food insecurity impacts social constructs while also having profound consequences for both healthcare systems and patients. The psychosocial and physical health effects of food insecurity often begin in childhood.

Poor nutrition in early life can lead to impaired cognitive development, anxiety, and poor academic performance. When food insecurity persists into adulthood, it is tied to an

increased likelihood of hypertension, prediabetes, functional limitations, and impaired immune function.[5]

Mental health also is significantly and negatively impacted. Studies show both poor mental health assessment scores and elevated depression rates in individuals experiencing food insecurity.

Food insecurity directly affects healthcare because it is associated with more frequent emergency department visits, delayed care, and decreased access to prescription drugs.[6] These trends are likely related to higher rates of financial hardship by this patient population prior to engaging with the medical system.

Ehsan and colleagues further characterized the impact of food insecurity on trauma patients, noting longer hospital stays and an increase in subsequent medical complications at 1 month and 3 months postoperatively.

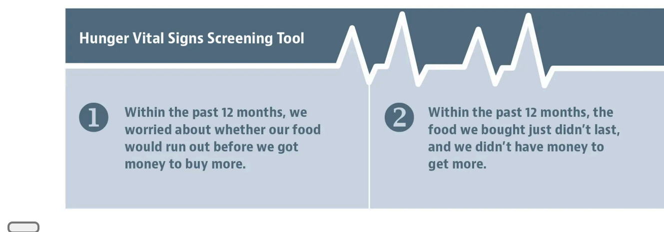
Screening for Food Insecurity in Trauma Patients

Screening for social drivers of health is not only necessary, it is required. The Centers for Medicare & Medicaid Services mandates that healthcare systems screen for food insecurity, interpersonal safety, housing instability, transportation needs, and difficulties with utilities to accommodate basic patient needs. Screening for all social drivers can be difficult, but screening for food insecurity remains particularly challenging. Although multiple validated food insecurity screening tools exist, the Hunger Vital Signs is widely known and accepted.

There is robust literature describing the assessment of food insecurity in pediatric emergency department settings, but significantly less in adult populations. In hospitals that use a complete social determinants screener, however, food insecurity is most often screened (88.2%), and there are programs in place once needs are identified (83.8%).[7]

Studies that have trialed adult emergency department screening show that patients are receptive to receiving assistance but follow-through with interventions such as food vouchers is limited.[8] There also is no consistency in the setting of screening or the administrator of the screening.

These challenges beget the question: how and when can vulnerable populations, such as trauma patients, be effectively screened to not just identify need but ethically and successfully provide resources once food insecurity is identified?



Food as Medicine: A Model for Trauma Recovery

A growing body of literature supports the clinical integration of food-as-medicine initiatives to improve outcomes in high-risk populations.

In a randomized clinical trial, researchers demonstrated that an intensive food-as-medicine program, providing medically tailored meals and nutrition counseling, led to improved biometric health indicators as well as reduced inpatient admissions and emergency department visits among patients with chronic disease.[9] These findings underscore the potential for nutrition interventions to not only improve health status but also reduce healthcare use.

Evidence also suggests that nutrition-based interventions can be highly engaging, particularly within safety-net settings. Researchers evaluated a food-as-medicine pilot program at a large safety-net hospital in the southeastern US, showing that the program successfully engaged racially and socioeconomically diverse participants, many of whom

experienced high levels of food insecurity and chronic illness.[10] Participants reported improvements in dietary habits and appreciated the culturally tailored, community-based approach to nutrition support.

Beyond clinical and educational settings, community-based interventions also are gaining traction. One such intervention is the Healthy Food Centers program, launched by Allegheny Health Network in western Pennsylvania, which empowers patients and addresses root causes of poor health with food insecurity interventions such as "produce prescriptions," cooking classes, and one-on-one nutrition support.[11]

Similarly, another study reported that during the COVID-19 pandemic, federally qualified health centers successfully implemented produce-prescription programs and group medical visits to deliver nutrition support despite strained societal and clinical conditions.[12]

Importantly, the framing of food as medicine continues to evolve. Food is not merely a therapeutic intervention, it also is deeply tied to identity, culture, autonomy, and dignity. Effective food interventions must go beyond clinical metrics to consider the broader social context in which patients live and heal. The Food as Medicine initiative at our hospital has made strides to make food a necessity in holistic care. Institutional buy-in on the importance of mitigating food insecurity has provided a framework for trauma recovery. Linking hospital-based violence intervention programs with Food as Medicine initiatives, for example, creates a synergistic model that addresses food insecurity as a critical social driver of health while simultaneously promoting safety, healing, and long-term well-being. For instance, our hospital-based violence intervention program provides supermarket gift cards to those noting food security struggles, halting one of the many factors that can be a barrier to their road to recovery. Highlighting the importance of food safety is a necessity for trauma patients and other at-risk demographics.

Trauma surgeons, who frequently serve as early points of contact for medically and socially complex injured patients, are uniquely positioned to screen for food insecurity

and connect patients with resources. While screening is mandated for our patients, our system is imperfect and deserves review. Optimizing this system helps us broaden our scope of practice in caring for patients. We urge surgeons to advocate for institutional support and increased resources to sustain and expand Food as Medicine programs for nontraditional populations such as those who are violently injured.

Disclaimer

The thoughts and opinions expressed in this column are solely those of the authors and do not necessarily reflect those of the ACS.

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