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## Hidden hunger: food insecurity in the age of coronavirus

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Dr. Nevin Scrimshaw, 1991 Laureate of the World Food Prize, was highlighting the often invisible but devastating scourge of chronic undernutrition in poor countries when he warned that “the silent emergency of hidden hunger chronically and often permanently damages hundreds of millions of individuals” (1). He described the insidious effects of chronic undernutrition on physical performance, academic achievement, and health.

In the United States, food insecurity, in which “access to adequate food is limited by a lack of money or other resources,” represents a related type of “hidden hunger” (2). In recent years, food insecurity has often been overlooked and overshadowed by the alarming rise in the prevalence of obesity and associated diseases. However, the coronavirus disease 2019 (COVID-19) pandemic has brought with it heartbreaking images of Americans queuing up at local food banks, in scenes reminiscent of Great Depression-era breadlines. These dramatic images have put a spotlight on food insecurity in one of the world’s wealthiest countries.

Although it may seem at first paradoxical, a growing body of evidence suggests a possible association between food insecurity and obesity, particularly in women, first suggested by Dietz in 1995 (3, 4). Research indicates that individuals with food insecurity consume diets of lower quality (including fewer fruits and vegetables and more added sugars) and lower in micronutrient content than those who are food secure (5, 6). Other potential mediators of chronic disease risk in food-insecure individuals include physiologic adaptation to periodic food deprivation, disordered sleep, depression, and anxiety (4, 7, 8). Despite increased awareness of the associations between food insecurity, low dietary quality, and disease, there remain significant gaps in our understanding of the many possible physiologic and behavioral pathways involved. Additional work is needed to elucidate apparent gender, racial, and ethnic disparities in obesity and chronic disease risk with exposure to poverty and food insecurity (3, 9).

Even before the COVID-19 pandemic, rising income inequality and unequal access to resources left many Americans vulnerable and unable to afford food and other necessities (10). The pandemic has simultaneously magnified and widened preexisting gaps in our fragmented systems of health care, education, housing, and food supply, putting even more individuals at risk. Early data from the USDA and the US Census Bureau suggest that the percentage of American households

with *very low* food security, in which some household members reduced their food intake as a result of having limited access to food, rose from 4.3% in 2018 to 9.7% in June 2020 (2, 11). Even before the pandemic, US households with very low food security reported striking levels of disruption in eating patterns within the family. In 2018, 69% reported a family member skipping meals when hungry due to limited availability of food, 47% indicated they had lost weight because of lack of money for food, and 25% reported that an adult in the household did not eat for at least 1 full day per month, due to insufficient food access, and that this fasting had occurred in 3 or more months in the year (2). As cooler weather approaches and the virus continues to spread, more challenges lie ahead, including additional potential income losses due to enhanced social-distancing efforts, increased educational responsibilities for parents assisting children with online learning, and the convergence of the pandemic with the annual flu season.

In this issue of the Journal, Leddy and colleagues (12) offer a helpful model for conceptualizing the complex relations between the COVID-19 pandemic, food insecurity, preexisting economic and health disparities, behavior changes (including those related to food intake and physical activity), stress, inflammation, and chronic disease. Importantly, the proposed framework can guide vital research on food insecurity and its sequelae, which, in turn, can be used to develop programs and policies designed to improve access to nutritious food and reduce health disparities. In addition, although the proposed model focuses on the impact of the current COVID-19 pandemic, the framework could be adaptable to other world events that may adversely impact food security in the future, such as emerging pathogens, climate change, or political conflict.

Three decades ago, Dr. Scrimshaw challenged us to remember that “prevention of famine and hunger is not primarily a technological issue, but a moral, political, and social one” (13). His words serve as a powerful reminder of our obligation to humanity as nutrition researchers and clinicians. In this era of social distancing and strained health care and research resources, it will be more difficult than ever to conduct research and

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interventions that can help us better understand and alleviate food insecurity, malnutrition, and related disease. However, we must rise to the challenge: the price of inaction is too high. Fortunately, Leddy and colleagues have offered us a roadmap for the difficult journey ahead.

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