



## Commentary

## Food insecurity and cardiovascular health during the COVID-19 pandemic: How it started and has any progress being made? (Fellows voice)



On March 15, 2020, I returned home from my hospital clinical rotations as a last year medical student. Peru had been placed under lockdown as a measure to contain the COVID-19 pandemic and my clinical rotations had been suspended. Six months later, I went back to the hospital, but the reality had changed dramatically. The COVID-19 pandemic had exposed and accentuated pre-existing socioeconomic and health care disparities. I stood in the emergency room overlooking an electrocardiogram on a patient with a ST-elevation myocardial infarction (STEMI) spanning anterolateral leads. This patient had been laid off from his job early during the pandemic. He was forced to stop taking his antihypertensive medications due to their high cost. He was constantly worried, had started smoking over two packs of cigarettes each day and was living mostly off fast food; everything else was too expensive. I wondered: how could this have been prevented?

It is important to remember that atherosclerotic cardiovascular disease (ASCVD) is still the leading cause of overall morbidity and mortality worldwide [1]. While almost 80% of cardiovascular disease (CVD) can be prevented by controlling modifiable risk factors, adopting a healthy lifestyle is often a privilege limited by health care and socioeconomic disparities.

Socioeconomic disparities are considered strong determinants of CVD. These include housing, transportation, health assistance, interpersonal safety, and food security. Food insecurity (FI) is the difficulty of obtaining affordable nutritious food and can range from very low to high severity according to the US Department of Agriculture (USDA). FI is significantly associated with well recognized cardiovascular risk factors, including elevated hemoglobin A1c, hypertension, low high-density lipoprotein cholesterol, obesity, current smoking, and C-reactive protein levels [2]. Furthermore, as FI worsens, the likelihood of having CVD, stroke, and diabetes increases [3]. Associations with food insecurity have also been studied in specific populations. Women with FI are at higher risk for CVD, angina, and heart attack than men, and immigrants with FI living in the US for more than 15 years or less than five years are also at increased risk of CVD [4].

**How it started.** In the United States (US), FI is a major public health concern with a prevalence that ranges from 12% to 79% particularly in low-income, Black/African American, and Hispanic households [5,6]. Prior to COVID-19 pandemic, 1 in 9 households were food insecure [7,8]. People experiencing FI in the US can be eligible for different food assistance programs (FAPs) such as the Supplemental Nutrition Assistance Program (SNAP) or the Special Supplemental Nutrition Program; however, in most states immigrants with a legal status must wait 5 years to be eligible for those FAPs, unless they have children or are disabled [9].

In Peru, despite FI not being routinely measured, the Young Live Survey, a cohort study of families with children in urban and rural districts, reported a food security increase from 27% in 2009 to 44% in 2013. However, very low food security, defined as the reduction in the amount of food and the presence of disrupted eating patterns, increased from 7.5% to 11% during the same period of time [10]. In Perú, people with food insecurity have access to FAPs like “Comedor Popular”, “Vaso de leche”, “Cuna Mas” and “Qali Warma”. Most of the programs are focused on children and households under extreme poverty; however, there is not a hard established criterion for enrollment and beneficiaries are chosen by committees in neighborhoods. Another difficulty is that the quality of food has been reported to be poor [11]. Furthermore, informal strategies to access food include buying food on credit, borrowing money and bartering service for food; these strategies are incrementally used with increasing levels of FI [11].

**Has any Progress been Made?** Approximately 38% of adults in the US experienced an increase in FI when COVID-19 was declared a national emergency [7]. As jobs and incomes were lost, Americans were left without the means to purchase an adequate quantity and quality of food; furthermore, there was an increase in grocery store prices. In Los Angeles, the number of applicants for the SNAP doubled, and across the country, charitable food services demand increased 50%-140% [7]. FI has forced individuals to seek cheaper and shelf-stable food; which typically contain high amounts of sodium, fat, and sugar.

To date, Perú has had the highest mortality rate per million population during the COVID-19 pandemic [12]. By July 4th, 2021, roughly 3 million Peruvians had been vaccinated (9.3% of the country's population), hospitals were still working over 50% of their capacity and the 3rd wave of cases is expected to be four to seven times worse than the previous one. Measures to contain the disease led to an unemployment rate of up to 15.1% by April 2021 with over 77% of the population suffering from FI [13].

What can we do? Our understanding of the relationship that socioeconomic factors have with cardiovascular health has grown. Health care clinicians must also recognize risk factors for FI such as: education, employment, insurance, and household income, especially during the harsh situation that COVID-19 has caused for many of our patients. Physicians can improve the health of patients who experience FI by following the SEARCH (screen, educate, adjust, recognize, connect, help) mnemonic [14]. A 2-item screening test can be performed which has high sensitivity and specificity and has been validated in high-risk adult populations [15]. All patients can be educated with the importance of avoiding unhealthy food and prioritizing quality food over quantity. The USDA website contains guidance regarding basic nutrition, nutrition by age, shopping, cooking, meal planning, and exercise videos for seniors, pa-

tients with chronic conditions, and the general population. Patients with diabetes or hypertension must be educated to learn how to coordinate medications and meals, and to avoid sodium contained in low-cost fast food. Furthermore, medications that are effective and affordable can be prescribed to promote optimal adherence. Food insecurity is a recurrent, but unusually chronic condition, so screening at every visit is important. Patients with FI can be connected with FAPs and encouraged to access food banks [14]. Finally, health care professionals can help other colleagues recognize FI consequences and address it during continual medical education.

After much reflection I now understand that the gentleman's STEMI was not only a consequence of poor cardiovascular health, but rather a result of multiple existing health care and socioeconomic disparities. As physicians we should have recognized his FI early in the pandemic and could have provided adequate education and resources to diminish the effects it may have had on his cardiovascular health, and perhaps even prevented his heart attack.

# Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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