

Literary Review of Food Insecurity Measures and Impact

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Introduction

The purpose of this literature review is to analyze social and personal determinants of health that contribute to food insecurity. In addition to, the effects and impacts of food insecurity in the general population, as well as on the student population. Food insecurity “is a condition when persons do not have adequate resources to feed themselves, either nutritiously, or at all” (Cady, 2014). With a broad range to assess the population, a scale to measure food insecurity was made by the Voices of the Hungry project called the Food Insecurity Experience Scale (FIES) (Smith, 2017). This review will cover the background of food insecurity and scale of the issue in the United States of America, Latin America, and the Caribbean; methods used to gather data among different populations, and their findings. Finally, the review will show the impacts of food insecurity in the student population and how they are at risk. The literature has been chosen based on relativity to the issue and if published no later than 2012.

There will be several terms used throughout the review. The FIES is a scale that is primarily used today to assess a population or group's experience of food insecurity. It goes from mild food insecurity, which is when one is worrying about their ability to obtain food, to moderate food insecurity, where one is compromising quality or variety of foods, to severe food insecurity, which is when one experiences hunger (Smith, 2017). Hunger is defined as “an uncomfortable or painful physical sensation caused by insufficient consumption of dietary energy” by the Food and Agriculture Organization of the United Nations (FAO) (2022). Malnutrition is the imbalance of nutrients and sources of caloric- intake (FAO, 2022). Undernutrition is

when an individual is at a low weight or height due to long-term malnutrition (FAO, 2022).

Background

Food insecurity can lead to malnutrition which can have long lasting effects on development and an increase in disability- adjusted life years (DALYs). DALYs is defined by the World Health Organization (WHO) as the loss of the equivalent of one year of full health due to a disease or health condition (WHO, n.d.). Children were found to have an increased risk of having anemia and cognitive problems, as well as an increased rate of hospitalization and poorer health due to food insecurity (Gundersen, 2015). In nonsenior adults, higher rates of mental health problems such as depression and anxiety, as well as chronic conditions such as diabetes and hypertension associated with food insecurity (Gundersen, 2015). Poor health and sleep outcomes were also found to be positively correlated with food insecurity (Gundersen, 2015). Seniors were found to have poorer nutrient intake, more depressed and had a higher chance of having issues with daily activities (Gundersen, 2015). With an increase of diseases, whether chronic or acute, through association with food insecurity, medical costs and usage increased with it (Niles, 2020). A common trait that was present in all age groups was a decrease in nutrient intake (Niles, 2020).

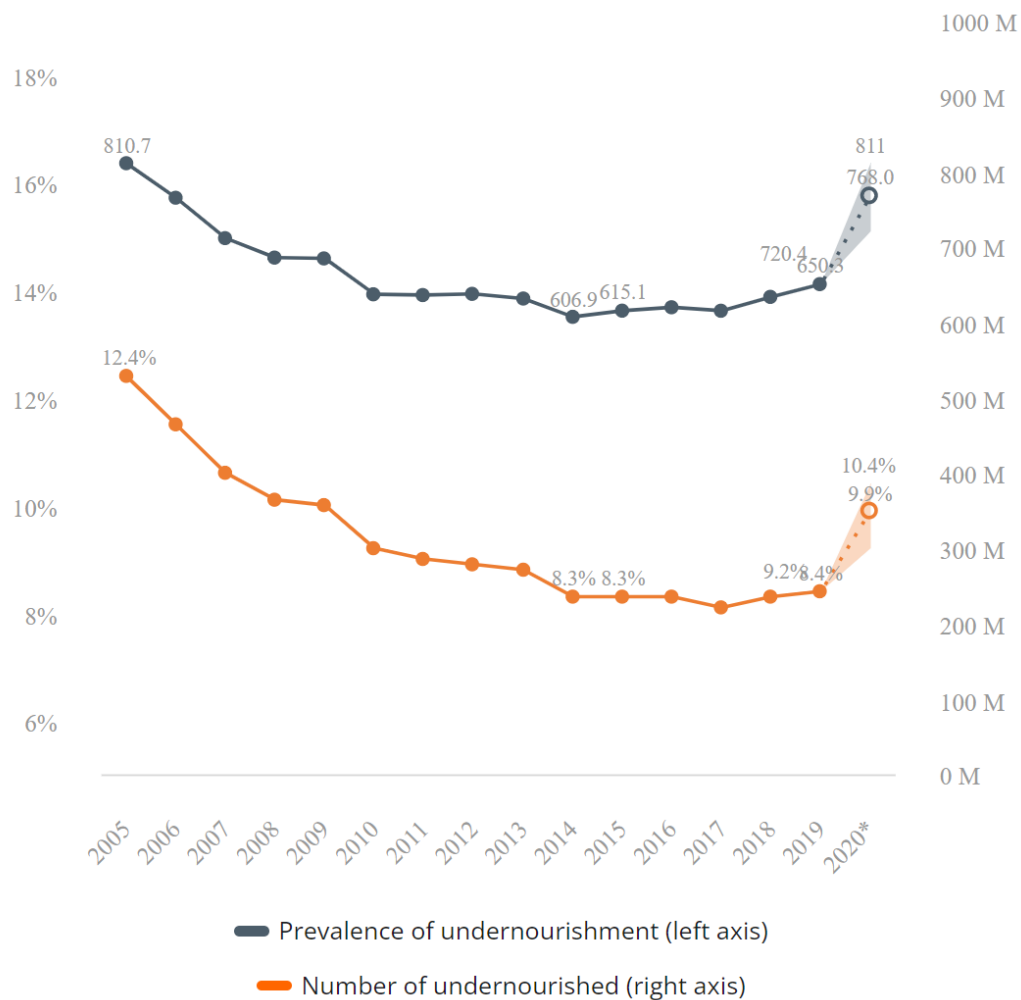
Methods

Other countries have established their own food insecurity measurements and surveys such as the U.S. Household Food Security Survey Module (US HFSSM) and Escala Latinoamericana y Caribeña de Seguridad Alimentaria (ELCSA) from

Latin America and the Caribbean. Due to inconsistent forms of measurements on food insecurity research, the specific conclusions such as prevalence were difficult to ascertain (Smith, 2017). In spite of the inconsistency on accurate data, the surveys showed similar findings between the measurements despite cultural contexts, which led the Food and Agriculture Organization of the United Nations (FAO) to create the FIES for the global scale (Smith, 2017).

The FAO created the first measurement for food insecurity to be used globally (Smith, 2017). The scale can be used as a reference scale for previous and future research data to convert to (FAO, 2022). The newly converted datasets can then be compared with other research more accurately. Based on this scale, Michael Smith and his fellow researchers Woubet Kassa and Paul Winters found three determinants of health that were “associated with the biggest increase in the likelihood of experiencing food insecurity in Latin America and the Caribbean” (2017). Low levels of education, living in a low GDP per capita area, and limited social capital were found to be associated with experiencing food insecurity (Smith, 2017). They also found common stages a household will go through if they experience hunger in both developed and developing countries. The household will first worry about having enough food, followed by compromising quality or nutrition, and lastly a decrease in consumption to make food last longer (Smith, 2017). The experience will start with adults first and then children (Smith, 2017). Other determinants of health that has a relatively high association with experiencing food insecurity are having children/dependents and other financial burdens.

Several programs were created in Latin America to eliminate hunger and extreme poverty, such as *Fome Zero* (Zero Hunger) and *Plan Brasil sem Miseria* (Plan Brazil Without Poverty) (Smith, 2017). Improvement in the global economy and programs such as *Fome Zero* has decreased food insecurity globally (Smith, 2017). This can also be seen in FAO’s graph on Prevalence of undernourishment (Figure 1) (FAO, 2022).



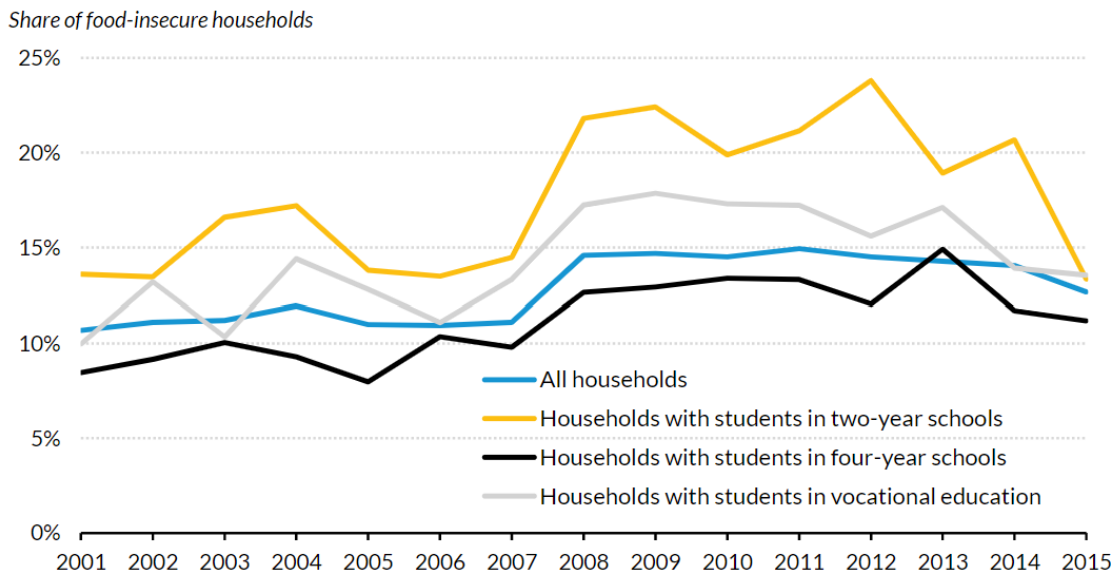
NOTES: * Projected values for 2020 in the figure are illustrated by dotted lines. Shaded areas show lower and upper bounds of the estimated range. SOURCE: FAO.

Figure 1. FAO Graph of Prevalence of Undernourishment 2005-2020 (FAO, 2022).

However, only focusing on economic growth to solve global hunger is inefficient because that is to ignore individual and local level aspects that can also contribute to food insecurity. The individual and local aspects refer to financial burdens, location, age, and other personal determinants of health (Smith, 2017). In the United States of America, there were findings where households with students seeking advanced education had similar levels of food insecurity at the national level (Blagg, 2017). Food insecurity has been associated with higher levels of poor health, academic performance and prevalence of mental health issues in college students (Blagg, 2017). There were higher rates of food insecurity in households with students at a two-year college compared to households with students at a four-year college as seen in Figure 2 (Blagg, 2017).

Food Insecurity among Households with College Students, 2001-15

Twelve-month measure



Source: Urban Institute analysis of data from the October and December CPS Supplements.

Note: Estimates are weighted using household-level food security status weight (fshwtscale).

Figure 2. Food Insecurity among Households with College Students (Blagg, 2017).

One in five households with students will experience food insecurity (Blagg, 2017). Based on Blagg's study data, Black and American Indian or Alaskan Native college students showed the highest rates of food insecurity at 22% and 23% respectively (2017). While Asian or Pacific Islander college students showed the lowest rates of food insecurity at 7% (Blagg, 2017). Other factors such as unemployment, aged 18-20 and having their own children showed higher rates of food insecurity (Blagg, 2017). In contrast, if one was employed full-time or head of household, they typically experience less food insecurity, 9% and 11% respectively (Blagg, 2017). However, if they are college students themselves, there is a 5- 10% increase in experiencing food insecurity. In other words, if one was an Asian full-time worker, their food insecurity rate is around 8%, or a Black student in a two-year college food insecurity rate is around 28% (Blagg, 2017).

Social Context

The COVID-19 pandemic had a major impact on food insecurity throughout the world due to a reduced workforce, lower personnel capacities, and other factors. (Niles, 2020). The pandemic also greatly reduced the capacity of workers available to support the global agricultural and transportation economy, reducing the quality, quantity, and affordability of food items (Niles, 2020). Near the beginning of the pandemic, in the United States of America, food insecurity shifted more due to consumer's panic buying goods in large quantities (Niles, 2020). Many businesses went bankrupt or had to layoff employees to reduce expenditure, which increased unemployment levels. As mentioned earlier, being unemployed was shown to increase the chance of food insecurity (Blagg,

2017). In addition, forced stay at home quarantines greatly reduced the potential income that could have helped the individual or families afford already difficult to obtain food.

In the USA, certain minority groups were found to have higher levels of food insecurity, especially those who live in areas with low GDP per capita (Dabone et al, 2021). Black people were shown to have nearly double the national average for food insecurity (Dabone et al, 2021). A survey conducted in May 2020 found that nearly 50% Black and Hispanic people with children said that they experienced food insecurity (Dabone et al, 2021). A contributing factor to why minority populations are more likely to experience food insecurity could be due to living in impoverished areas, where state and federal support is not as apparent (Dabone et al, 2021). Systemic racism and societal inequalities predisposes people of color to poor health inequalities and opportunities (Dabone et al, 2021).

Recommendations

With this literature review, we can see the importance and impact food insecurity has on the whole population. Food insecurity can In addition, the COVID-19 global pandemic has greatly increased food insecurity in all populations, especially minority populations. Some articles suggest screening for food insecurity and referrals at primary care visits for food stamp programs or to local community organizations. This can help lower the impact of food insecurity by reducing the financial burdens on families. However, some families annual income might make them ineligible to be admitted into a food stamp program (Gundersen, 2015). This could be resolved by raising the income limit to allow more people to be eligible for the food stamp programs.

Local community organizations can also help by providing families basic non-perishable goods or connecting them to similar resources. At some university campuses, religiously affiliated organizations provide lunches and food goods to the student populations to help with food insecurity. However, some students might be deterred from using the service due to their religious affiliation. To address this issue, some campuses had started establishing their own food pantries to their student population that were not religiously or politically affiliated. However, university food pantries have only recently started to be established within the last decade and the extent of their impact on food insecurity in the student population has yet to be researched in depth.

Another suggestion would be for garnering federal or state support in community-based organizations. The community organization can cater to the unique blend of ethnic groups in their area better than a large overseeing party. The community-based organizations are more attuned with the local needs and culture to the area to deliver the services in an acceptable manner. The federal or state support improves the scale and quality of service the community organizations can provide.

Conclusion

Food insecurity has been shown to have large impacts in the quality of life of every individual and community. Food insecurity is experienced when individuals or families are forced to compromise on quality or quantity of their food to sustain themselves, and can be as severe as starvation. Research has shown an association between food insecurity and non communicable diseases such as diabetes, hypertension, depression, anxiety, and many other conditions. These outcomes further lower quality of life and life expectancy. There are programs available that can help the community

combat food insecurity, but it is not enough. As nearly 1 in 5 students face food insecurity and 1 in 10 people in the USA experience food insecurity. Recommendations to fight food insecurity range from food pantries for immediate relief, to nutrition education for the long term.

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