

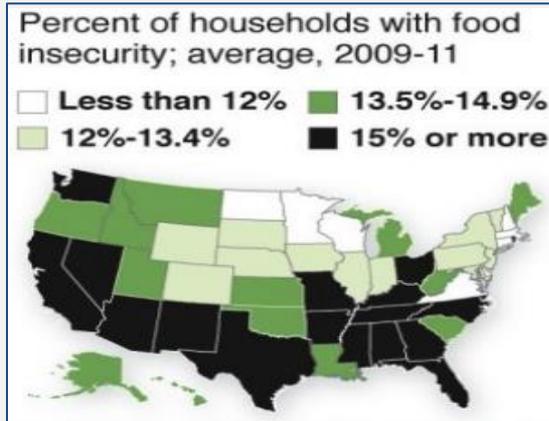
The Relationship between Food Insecurity and Obesity among Children

By Ryan Gamba

In 1994 a case study was done on a 7 year-old overweight African American girl who lived in a house where the availability of food fluctuated throughout the month. This study was the first to hypothesize that her weight status may reflect an “adaptive response to episodic food insufficiency”.¹ This fact sheet aims to address the current literature surrounding the relationship between food insecurity and obesity amongst children.

Epidemiology

- 16 million children in the United States live in a food insecure household²
- Household food security is more common among ethnic minorities³
- Household food insecurity strongly correlates with income and education³
- About 85% of households with food insecure children have a working adult⁴



Measuring Food Security Status

Food security status is typically measured with the USDA’s Standard Food Security Survey Module. This module uses 18 questions to determine household food security status in the past 12 months, and puts households into one of four groups (definitions from Bickel et al.)⁵

High food security- Households had no problems, or anxiety about, consistently accessing adequate food.

Low Food Security- Households reduced the quality, variety, and desirability of their diets, but the quantity of food intake and normal eating patterns were not substantially disrupted.

Marginal food security- Households had problems at times, or anxiety about, accessing adequate food, but the quality, variety, and quantity of their food intake were not substantially reduced.

Very low food security- At times during the year, eating patterns of one or more household members were disrupted and food intake reduced because the household lacked money and other resources for food.

Household food insecurity exists “whenever the availability of nutritionally adequate and safe food, or the ability to acquire acceptable foods in socially acceptable ways, is limited or uncertain”.⁶

Negative health associations seen amongst food insecure children

- Poor nutritional, mental, and physical health³
- Poor behavioral and academic scores³
- Decreased Social Skills⁷

USDA’s Standard Food Security Survey Module- Sample Questions⁵

We worried whether our food would run out before we got money to buy more’. Was that often, sometimes or never true for you in the last 12 months?

In the last 12 months, were the children ever hungry but you just couldn’t afford more food? (Yes/No).

Childhood Obesity

In 2010, more than one third of children and adolescents were overweight or obese.⁸ In children, obesity is defined as body mass index (BMI) greater than or equal to sex- and age-specific 95th percentile.⁸ Childhood obesity has been linked with myriad of negative health outcomes including type 2 diabetes, cardiovascular disease, low self esteem, and morbidity.⁹

How could Food Insecurity and Obesity be Related?

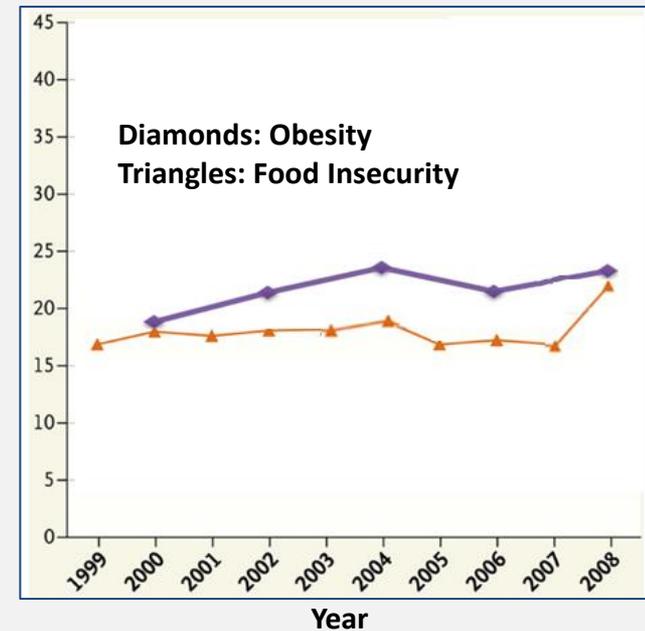
Among adult women there is evidence that supports a positive association between food insecurity and obesity.¹⁰ It has been hypothesized that food insecurity leads to obesity through a diet of high caloric/low nutrient dense foods.¹¹ Research has shown that when you are hungry and stressed you are more likely to choose palatable, filling foods.¹² It is proposed that children in food insecure households would be exposed to high caloric foods, and research shows that dietary energy density in children is associated with an increase in adiposity.¹³

Insufficient Evidence in the Literature

According to literature reviews done by Eisenmann et al, Clark, and the Robert Wood Johnson Foundation, the evidence base associating childhood food insecurity with obesity is inconsistent, and that there is **not enough evidence to state there is an association.**^{3, 14, 15}

Prevalence of food insecurity among children and childhood obesity over time

% of the
U.S.
Population



Graph made with data from Seligman et al. (2010)¹⁶ & Ogden et al. (2012)⁸

Official Stance of the American Dietetic Association

In 2003, the ADA reported that 'household food insecurity does not appear to be associated with overweight among children, a finding that may be due, in part, to the fact that a comprehensive measure of child food insecurity was not used in most studies'.

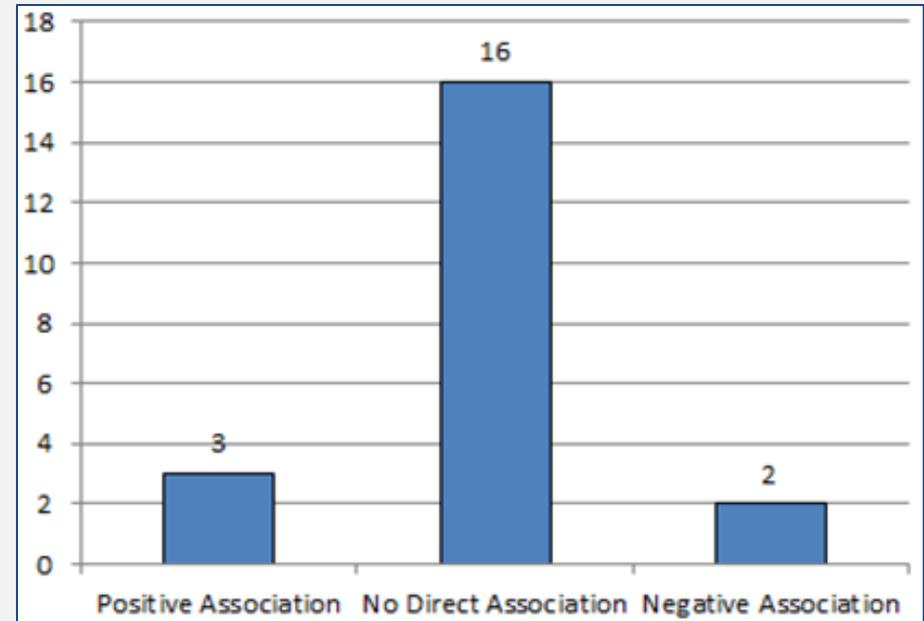
A Closer Look

The most comprehensive review was done by Eisenmann et al, and the majority of the studies they reviewed did not find a direct association between food insecurity and obesity among children. They address the concern from the ADA that studies may be overlooking an association because of the tools they are using to measure childhood food insecurity by separately analyzing studies that directly measured the children's food security status with the Core Module specific to children. However in these studies, the results were still inconsistent. Additionally, it's mentioned that the studies that found associations between food security status and weight tended to be earlier, smaller studies. These smaller studies were also those that provided evidence of sex, race/ethnicity, and age variations in the association. In summation they mention the importance of overcoming methodological limitations in future studies.

Why isn't there an Association?

The fact that no clear association was found between food security status and childhood obesity is somewhat puzzling. There is evidence among female adults that being food insecure is associated with being obese.¹⁰ One hypothesis is that children are not affected by food insecurity as adults due to the "buffer effect".¹⁷ McIntyer et al. showed that parents will change their dietary habits to protect the kids from feeling the ill effects of food insecurity, but it is unclear if this form of compensation is the reason why children with very low food security are not becoming obese.¹⁷

Associations between Food Insecurity and Obesity among Children from the review: "Is food insecurity related to overweight and obesity in children and adolescents? A summary of studies, 1995 – 2009"¹⁴ (n=21)



Information for graph provided by Eisenmann et al.¹⁴

Highlighted Study: Gundersen et al. (2009), "Food Insecurity is not associated with childhood obesity as assessed using multiple measures of obesity"¹⁸

This study looked at 2516 children from 8-17 years of age who had incomes $\leq 200\%$ of the federal poverty level. They used multiple measures of obesity and studied different subpopulations of race/ethnicity and gender. According to Gundersen, they used "state-of-the-art data, state-of-the-art methods of measuring obesity" and found, "there's no relationship between food insecurity and obesity [in children]".¹⁹

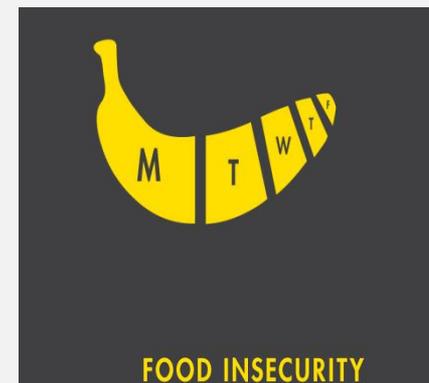


Implications of the Literature

Although childhood food insecurity and obesity do not appear to be associated, all reviews highlighted the importance of their co-existence among some of the most vulnerable Americans. Both food security and obesity have similar risk factors, including income, education, and race.^{8, 10} The research indicates that programs that address food insecurity cannot state that they are addressing the childhood obesity epidemic, unless they do more than simply provide food assistance. This is relevant to the current debate surrounding the purchases of sugar sweetened beverages in the Supplemental Nutrition Assistance Program, or SNAP. SNAP, formerly “Food Stamp Program”, serves over 48 million participants across America and its primary goal is to alleviate food insecurity.²⁰ However, this review of the research has shown that the SNAP program is not positively addressing the childhood obesity epidemic. As SNAP is the largest food assistance program and reaches the most food insecure children, the program is potentially a great vehicle to also address childhood obesity, whether through nutrition education, or limitations on benefit use.

Policy Implications

- Separate efforts need to be made to address childhood obesity and childhood food insecurity.
- Expand the Supplemental Nutrition Assistance Program to provide more nutrition education or by limiting benefit redemptions to healthy foods.



Future Research

- Continue to improve metrics for childhood food security and obesity measures
- Look at the diet quality of food insecure children and how they differ from non-food insecure children
- Determine the role of soda in food security and obesity due to the evidence base and potential for policy change

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