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Are your patients hungry? An examination of food insecurity in America

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Adequate food access is key to the health of individuals; yet, lack of access to food for an active, healthy life—food insecurity—continues in more than 17 million households across the United States, according to the most recent (2008) estimates. This paper examines food insecurity in America, including its negative health outcomes, and it suggests resources for use by osteopathic family physicians to improve food access in patients. Food insecurity is an avoidable, public health threat that can negatively affect patient well-being and outcomes, including physical impairments, psychological issues, and socio-familial disturbances. Osteopathic family physicians can play vital roles in identifying and alleviating food insecurity.

Limited or intermittent access to nutritionally adequate, safe, and acceptable foods acquired in socially acceptable ways (*food insecurity*)[1] continues in 17.4 households across the United States.[2] This avoidable, public health issue can have negative outcomes on patients, including physical impairments, psychological suffering, and socio-familial disturbances.[3] The purposes of this paper are to examine food insecurity in America, including its negative health outcomes, and to suggest resources for use by osteopathic family physicians to improve food access among patients.

Is food insecurity common in the United States?

Although adequate food access is key to the health of individuals, food insecurity continues in the United States. It is especially rampant now, because food insecurity worsens in recessionary times.[4] *Food security* refers to "Access by all people, at all times to sufficient food for an active and healthy life. . .[and] includes at a minimum: the ready availability of nutritionally adequate and safe foods, and an assured ability to acquire acceptable foods in socially acceptable ways."[1] One of the nutrition-related objectives for the nation, as part of the US Department of Health and Human Services' Healthy People 2010 initiative,[5] is to "increase food security [to 94%] among US households and in so doing reduce hunger." We are not on track to achieve that goal.

Table 1 summarizes some of the food security classifications used in the United States. As shown in Figure 1, according to the most recent national estimates,[2] 85.3% of US households were food secure throughout 2009. However, 14.7% of households (17.4 million), representing 50.2 million individuals, experienced food insecurity sometime during the year, because of resource constraints.[2] Of all US households, 9.0% (10.6 million households) had low food security, representing 32.5 million individuals.[2] Among this group, a variety of coping strategies are typically used to avoid very low food security, including: (1) eating less varied diets,

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Table 1 US Department of Agriculture Food Security Classifications[6]

Food-secure classifications	*High food security* No reported indications of food access problems or limitations.
	Marginal food security One or two reported indications—typically of anxiety over food sufficiency or shortage of food in the house. Little or no indication of changes in diets or food intake.
Food-insecure classifications	*Low food security* Reports of reduced quality, variety, or desirability of diet. Little or no indication of reduced food intake.
	Very low food security Reports of multiple indications of disrupted eating patterns and reduced food intake.

(2) participating in federal food and nutrition assistance programs, and (3) obtaining emergency food from community food pantries, emergency kitchens, and shelters.

In the United States, 5.7% of all households (6.8 million), representing 17.7 million individuals, experienced very low food security in 2009. Children, especially younger children, are often protected from hunger by older members in the household, especially the mother,[7] but additional research is needed to better understand the household dynamics of food insecurity. Overall, almost 1 million children lived in households classified as "very low food security" among children (1.3 % of the children in the nation).[2]

Who is most vulnerable to food insecurity in the United States?

Patterns observed for households at risk for food insecurity during 2009[2] were typical of what has been observed during previous years. Those at greatest risk included:

- *Households with low incomes*. Households with incomes less than the poverty line were the most vulnerable, with 43.0% of households experiencing food insecurity. Households with incomes <130% and <185% of poverty experienced food insecurity at rates of 39.7% and 34.8, respectively.
- *Single-parent households*. Households with children and headed by a single female (36.6% of households) or male (27.8% of households) experienced food insecurity at rates twice that of the average American household.
- *Black and Hispanic households*. Households headed by a Black non-Hispanic (24.9% of households) or Hispanic (26.9% of households) experienced food insecurity at rates of almost twice that of other households.
- *Inner-city households*. Households located in inner-city, metropolitan areas were more vulnerable than those located in other regions (17.2% of households).[2] Previous years' surveys also found households located in rural areas to be more vulnerable than households located in other areas.
- *Households receiving food from emergency food providers*. Emergency food providers include pantries (e.g., food pantries, food shelves), kitchens (e.g., soup kitchens, emergency dining rooms), and shelters (e.g., emergency shelters, homeless shelters). Households using these community agencies for food appear to be particularly vulnerable to food insecurity, according to the 2009 national estimates, which probably underestimate participation because of the sampling strategies used.[2] According to the 2009 estimates, about 4.8% of US households (5.6 million), representing 10.5 million adults and 5.7 million children, obtained food from pantries at least once in 2009, and 0.5% of households (625,000) ate at least one meal at a kitchen. The 2010 Feeding America study summarized that only 24.5% of households using pantries, kitchens, or shelters were food secure (high food security, marginal food security), and 75.5% were food insecure, with 44.3% and 34.2% of all households being characterized as having low food security and very low food security, respectively.[8]

When interpreting national food security assessment measures used for the annual US estimates, it is important to note that questions are posed to respondents regarding the previous 12 months. Therefore, those experiencing food insecurity any time during the previous year are classified as food insecure. Consequently, the daily rates of food insecurity are substantially less than the annual rates. On average, it is estimated that 0.8% to 1.1% of households (0.9–1.3 million households) have very low food security each day.[2] In addition, experiencing very low food security and the associated reduced food intake and disrupted eating patterns appear to be episodic, rather than chronic, in nature.[2]

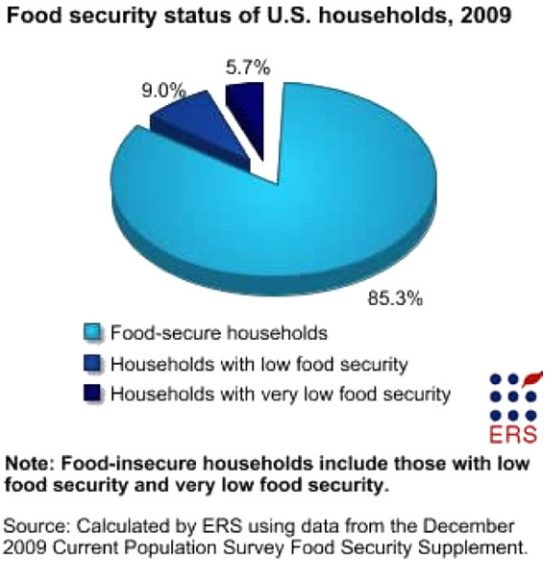

Figure 1 Household Food Security in the United States, 2009.[2]

What are the causes of food insecurity in the United States?

In the US Conference of Mayors,[9] poverty, high housing and utility costs, unemployment, medical and health costs, mental health problems, lack of education, transportation costs, and substance abuse were cited as factors contributing to food insecurity in American cities.[9] It appears that food insecurity is often triggered by an event that stresses the household budget—losing a job or assistance benefits, including Supplemental Nutrition Assistance Program (SNAP) benefits, or gaining a household member.[10] As previously alluded to, food-insecure households must often choose between buying food and buying or paying for other items or needs, including medication,[11,12] healthful housing conditions,[13] and utility costs for heating or cooling.[14,15] Households using food pantries and other emergency food programs are especially vulnerable to food insecurity, and many reported choosing between buying food and medical care/medication (31.6%), rent/mortgage (35%), or utilities/heating (41.5%).[16]

What are the negative nutritional and non-nutritional outcomes of food insecurity?

Food insecurity can have grave consequences, including physical impairments related to insufficient food, psychological issues because of lack of access to food, and sociofamilial disturbances.[3] Food insecurity is associated with many negative health-related consequences[17,18] including:

- inadequate intake of key nutrients;
- poor physical and mental health in adults and depression in women;
- overweight and weight gain (especially among women from marginal and low-food-security households);
- adverse health outcomes for infants and toddlers;
- behavioral problems in preschool-aged children;
- lower educational achievement in kindergarteners; and
- depressive disorder and suicidal symptoms in adolescents.

Several studies have demonstrated a relationship between food insecurity and less than optimal food and nutrient intake, as well as risk for nutrient deficiencies among some age groups. Although children may be protected from very low food security in the United States, evidence suggests that food insecurity is associated with lower dietary quality in children, especially older children (and adults).[19] Related to dietary intake among children and adolescents, the literature demonstrates that individuals residing in households lacking access to food may consume diets deficient in particular food groups and nutrients, increasing the risk of poor health, chronic disease development, and other non-nutritional outcomes, if not immediately, in the long term.[20]

For food-insecure adults and older adults, poor nutrition outcomes, including inadequate intakes of key nutrients, have been previously reported in nationally representative samples.[21,22] In US adults, energy intakes did not differ between food-secure and food-insecure adults. Rather, meal and snack behaviors differed, with food-insecure adults consuming fewer (but larger) meals and more snacks, which may compensate for the reduced meal frequency.[23]

In addition to dietary intake, the literature demonstrates that food insecurity has negative nutritional and non-nutritional outcomes, and it underscores the potential negative implications of food insecurity on both the health of citizens and residents of the United States and US health care costs. Overall, food insecurity is related to poor overall health status; increased chronic disease incidence and risk (including diabetes, overweight, and obesity); poor school performance; and poor mental health.

Specifically, food insecurity is associated with adverse health, growth, and development outcomes among children 0 to 18 years old.[24] In addition, maternal food insecurity has been shown to be associated with increased risk of certain birth defects.[25,26] For children, food insecurity/insufficiency is associated with poor health.[27-30] Very low food security among children further increases the odds of poor health and is associated with more frequent hospitalizations among young children.[29] Children of immigrant mothers are especially prone to this negative outcome.[31] Infants and toddlers from food-insecure households have also been shown to be at developmental risk,[32] and at risk for iron deficiency and iron deficiency anemia, especially among ethnic families.[33,34] Compared with those from food-secure households, children and adolescents in food-insecure households are also more likely to exhibit behavioral and psychological problems, including suicidal risk in adolescents,[35-39] as well as poorer academic performance and achievement.[35,40]

Among adults, food insecurity/insufficiency is associated with poor physical and mental health status, as well as depression in women[41-46] and risk for and incidence of chronic diseases, including diabetes.[11,12,22,47] For children, studies exploring the relationship between food insecurity and childhood obesity have used a variety of datasets and methods, yielding mixed results—a positive, negative, or no relationship.[30,48] Although additional research should further explore the trends, most recently, a study by Gunderson and Krieder[30] found food security to be positively associated with a healthful weight in a nationally-representative sample of US children (National Health and Nutrition Examination Survey 2001–2006). For adults, research continues to support that food insecurity is associated with overweight and obesity, especially among women from households experiencing marginal food security or low food security.[48-50]

How can food insecurity in the United States be alleviated?

Community-based and federal food and nutrition assistance programs have been shown to improve food insecurity.

Table 2 US food and nutrition assistance programs and related programs/resources

Program	Website
Federal nutrition assistance programs: Child and Adult Care Food Program Food Assistance For Disaster Relief School Meals (Fresh Fruit and Vegetable Program; National School Lunch, School Breakfast Program; Special Milk Program; Team Nutrition) Special Supplemental Nutrition Program for Women, Infants, and Children (WIC); WIC Farmers' Market Nutrition Program; Senior Farmers' Market Nutrition Program Summer Food Service Program Supplemental Nutrition Assistance Program (SNAP); Healthy Incentives Pilot Program; *see also* SNAP Ed-Connection and SNAP Nutrition Education	www.fns.usda.gov/fns/
Federal nutrition assistance programs—food distribution programs: Commodity Processing Commodity Supplemental Food Program Department of Defense Fresh Fruit and Vegetable Program Food Distribution Disaster Assistance Food Distribution Program on Indian Reservations Nutrition Services Incentive Program Schools/Child Nutrition Commodity Programs The Emergency Food Assistance Program	www.fns.usda.gov/fdd/
Feeding America (formerly America's Second Harvest)	http://feedingamerica.org/default.aspx
Food Security in the US Briefing Room (an informational website on food security, including national estimates of food security and food security measurement)	www.ers.usda.gov/briefing/foodsecurity/
Meals on Wheels Association of America	www.mowaa.org/Page.aspx?pid=183
SNAP-Ed Connection	http://snap.nal.usda.gov/nal_display/index.php?tax_level=1&info_center=15
SNAP Nutrition Education	www.fns.usda.gov/fsp/nutrition_education/

Robust safety net programs are vital to helping US citizens and residents achieve food security.[51] Adequate funding for food and nutrition assistance programs is vital to maintain the integrity of the US nutrition safety net. Table 2 lists several food and nutrition assistance programs and other informational sources related to food security.

The most recent national estimates support that those with greater difficulty accessing food participate in food assistance programs.[2] While it may seem counterintuitive, those seeking food and nutrition program assistance are typically those with greater levels of food insecurity. As previously noted, households utilizing community emergency food and meal programs appear to be particularly vulnerable to food insecurity. Gaining an understanding of the potential outcomes of food insecurity is vital, as is appropriate referral and community involvement strategies.

The effectiveness of federal programs can be enhanced by community-based programs.[52,53] Examples of community food security program that benefit both farmers/food producers and community residents include[53]:

- *Farmers markets*. These boost incomes of local farmers, while increasing community access to fresh produce.
- *Community gardens*. These help residents in public housing and other low-income households supplement their diet with fresh produce.
- *Community-supported agriculture programs*. These help to stabilize small farmers economically, while providing high-quality, below-retail-cost produce to consumers.
- *Farm-to-school initiatives*. These assist local farmers in selling fresh produce directly to school meal programs.
- *Food recovery programs*. These rescue wholesome food from being thrown away and provide food to groups serving those in need.

Despite the potential for these community-based programs to enhance food insecurity, education may be needed for community members on basic culinary and gardening techniques, among others, to maximize their potential effectiveness.

What strategies can I use as an osteopathic family physician to assist my patients in improving food access?

As previously noted, patients may lack resources to be able to comply with treatment strategies prescribed, including

Table 3 Strategies for osteopathic family physicians to assist in improving food insecurity among patients

Medical Education
- Incorporate food security– and poverty-related concepts into medical education programs using creative pedagogy.
- Learn about food insecurity and its consequences on patients when you complete continuing medical education.

Clinical Practice
- Screen patients for lack of access to food using a single-item food by asking, "Which of the following statements best describes the food eaten in your household?: (1) Enough of the kinds of food we want to eat; (2) Enough but not always the kinds of food we want to eat; (3) Sometimes not enough to eat; or (4) Often not enough to eat."[19]
- Obtain food access– and availability-related information during the patient history and examination. Know and understand the culture of the local community to further assist in determining appropriate questions and/or information to include about food access. Information to gather:
  - factors such as food and beverage intake (amount/variety/quality)
  - food planning and purchasing abilities and limitations, including availability of transportation
  - food acquisition practices, including gardening, farming, hunting/fishing, and/or begging, borrowing, or stealing food
  - preparation abilities and limitations, including availability of appliances and utilities
  - food safety practices
  - federal and community food and nutrition assistance program use
  - information related to building and using social networks
  - anthropometric measurements, including growth pattern and/or weight changes
  - nutrition education needs regarding meal planning and purchasing, label reading, and food safety
- Refer eligible clients on the availability and benefits of federal and non-federal resources available in the community and make referrals or recommend participation. Table 2 lists some of the programs where some patients can be referred. Developing an informational handout for patients, including the federal and community food and nutrition assistance programs in your area would be helpful.
- Partner with registered dietitians (RDs), dietetic technicians–registered (DTRs), public health professionals, case managers, and other professionals to improve food access for patients.
- Network with organizations and programs addressing food insecurity in the local community, including food and nutrition assistance programs, emergency food and meal programs, food recovery groups, farmers markets, community-supported agriculture farms, community gardens, anti-hunger advocacy organizations, and food cooperatives.
- Collaborate with RDs, DTRs, county extension educators, and others who provide nutrition education and build skills to improve the food security of individuals, households, and communities. Those involved with programs focusing on the development of effective household management strategies and food preparation, as well as those that foster economic self-sufficiency of individuals and households, are especially useful.

Research
- Partner with researchers to study the impact of food insecurity on patient health outcomes.

Advocacy and Public Policy
- Support legislative and regulatory processes that promote uniform, adequately funded food and nutrition assistance programs, nutrition education, and programs that support the economic self-sufficiency of individuals and families.
- Serve as advocates for patients and groups at increased risk for food insecurity.
- Assist in efforts to improve food access and acquisition by individuals and reduce edible food loss through food recovery and gleaning.
- Partner with local and state anti-hunger advocacy organizations.
- Serve on local community organizations related to food access and health. One example is a local food policy council that examines local food systems and provides recommendations for social and public policy changes.

dietary advice. Osteopathic family physicians can assist in improving food insecurity among patients, however. As summarized in Table 3, osteopathic family physicians can: (1) incorporate food security- and poverty-related concepts into both medical education training and education programs; (2) infuse clinical practice with strategies to screen and assess for food insecurity; (3) refer patients to programs that help to alleviate food insecurity in partnership with registered dietitians, other health care team members, and community organizations; (4) develop research programs related to food insecurity; and (5) advocate to improve food insecurity.

Summary

Food insecurity is an avoidable, public health threat that can negatively affect patient well-being and outcomes. In the United States, 17.4 million households experienced food insecurity in 2009, with households having low incomes, being headed by a single parent, being located in an inner-city area, or using an emergency food pantry or kitchen being the most vulnerable.[2] Community-based and federal food and nutrition assistance programs can improve food insecurity among patients. Osteopathic family physicians can play vital roles in alleviating food insecurity through medical education, clinical practice, research, and advocacy.

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