

The Impact of Poverty, Food Insecurity, and Poor Nutrition on Health and Well-Being

There is growing awareness and acknowledgment in the health care community that health outcomes and disparities, more often than not, are driven by social determinants of health than by medical care.¹ Social determinants of health include social, economic, physical, or other conditions where people live, learn, work, and play that influence their health.² Poverty and food insecurity are social determinants of health, and are associated with some of the most serious and costly health problems in the nation.

Maintaining good health, consuming a nutritious diet, managing an existing chronic disease, or a combination of these can be a challenge for those struggling with poverty or food insecurity for a variety of reasons, including limited finances and resources, competing priorities, and stress. In addition, those impacted by poverty or food insecurity are likely experiencing additional resource-related hardships (e.g., housing instability, energy insecurity)³ that, in turn, can contribute to poor nutrition, health, and disease management.^{4,5,6}

This white paper reviews the latest research on the harmful impacts of poverty, food insecurity, and poor nutrition on the health and well-being of children and adults. Two other accompanying white papers from the Food Research & Action Center (FRAC) describe the critical role of the Supplemental Nutrition Assistance Program (SNAP)* and federal Child Nutrition Programs† in alleviating poverty, reducing food insecurity, and improving nutrition, health, and well-being.

* Hartline-Grafton, H. (2017). *The Role of the Supplemental Nutrition Assistance Program in Improving Health and Well-Being*. Washington, DC: Food Research & Action Center.

† Hartline-Grafton, H. (2017). *The Role of the Federal Child Nutrition Programs in Improving Health and Well-Being*. Washington, DC: Food Research & Action Center. [The federal Child Nutrition Programs include the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC); National School Lunch Program (NSLP); School Breakfast Program (SBP); Child and Adult Care Food Program (CACFP); Summer Food Service Program (SFSPP); and Afterschool Nutrition Programs.]

Poverty, Health, and Well-Being

In 2016, about 40.6 million Americans (12.7 percent of the population) lived in poverty.⁷ This included nearly 13.2 million children, or 18 percent of all children.⁸

Furthermore, one estimate finds that nearly two-thirds of Americans will experience at least one year of relative poverty at some point between the ages of 25 and 60, indicating that “relative poverty is an economic condition that will strike the majority of Americans.”⁹ (Relative poverty was defined as falling below the 20th percentile of the income distribution.)

A considerable amount of research demonstrates that people living in or near poverty have disproportionately worse health outcomes and less access to health care than those who do not.^{10,11,12,13} In addition, neighborhoods with many poor or low-income residents often have fewer resources that promote health (e.g., full-service grocery stores offering affordable and nutritious foods, parks and recreational facilities that encourage physical activity) and have more environmental threats that harm health (e.g., poor air and water quality, poor housing conditions) compared to higher-income neighborhoods.^{14,15,16,17}

During childhood, low-income children are more likely to experience food insecurity,^{18,19} obesity,^{20,21} tobacco exposure,^{22,23} lead exposure,²⁴ poor oral health,²⁵ poor growth (e.g., low birth weight, short stature),²⁶ asthma,²⁷ developmental risk,²⁸ learning disabilities,²⁹ poor academic outcomes,^{30,31} behavioral and emotional problems,³²

unintentional injury,³³ and physical inactivity.³⁴ Low-income adolescents also are more likely to engage in health-compromising behaviors, such as smoking.³⁵

Childhood poverty and socioeconomic inequalities have health implications that carry through into adulthood as well — for example, lower childhood socioeconomic status is associated with chronic disease, poor mental health, and unfavorable health behaviors in adulthood.^{36,37,38} Poverty in childhood also has been linked to serious, long-term economic consequences, including higher health care expenditures, lower educational achievement (e.g., not completing high school and college), lost productivity and lower earnings in adulthood, and increased risk of poverty later in life.^{39, 40,41}

Toxic Stress and Adverse Childhood Experiences

Growing up in poverty is associated with toxic stress — which is chronic stress that can have enormous impacts on child development and health.^{42,43,44} Under prolonged stress, stress hormone levels become excessively high for long periods of time. This leads to a “wear and tear” on the brain and body, referred to as allostatic load. Toxic stress can inhibit normal brain and physical development and metabolic processes among children, making them more susceptible to learning and behavior impairments and physical and mental illness later in life.⁴⁵

Toxic stress in children often results from strong, repeated, or prolonged exposure to adversity, such as adverse childhood experiences (ACEs).⁴⁶ ACEs are potentially traumatic experiences, such as economic hardship, loss of a parent due to divorce, witnessing domestic violence, or the incarceration of a parent. ACEs are more common among children living in poverty.⁴⁷ Exposure to more ACEs puts children at greater risk for health and economic problems later in life.^{48,49} For instance, one study found that female caregivers’ ACEs were associated with current household and child food-insecurity status.⁵⁰



Adults living in poverty are at greater risk for a number of health issues, such as diabetes,⁵¹ heart disease and stroke,^{52, 53} obesity (primarily among women),⁵⁴ depression,⁵⁵ disability,⁵⁶ poor oral health,⁵⁷ and premature mortality.⁵⁸ Those living in poverty also have higher rates of physical inactivity, cigarette smoking, and inadequate micronutrient intake.^{59, 60} In addition, the high levels of stress facing low-income families, including children, can contribute to, or worsen, existing health problems.^{61, 62} While the enactment of the Affordable Care Act of 2010 improved health insurance coverage and health care access in the nation, poor and near-poor adults are still more likely to be uninsured, less likely to have a regular place to go to for medical care, and are more likely to forgo needed medical care due to cost, compared to their not-poor counterparts.^{63, 64}

Did you know? Treat or Eat

In general, one out of three chronically ill adults is unable to afford medicine, food, or both.⁶⁸

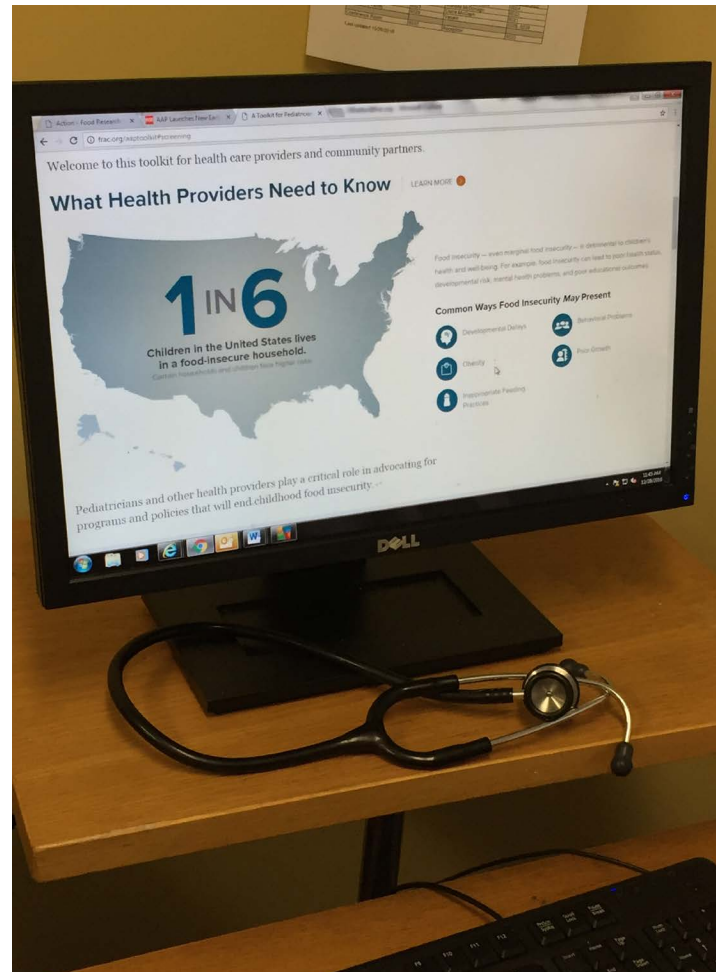
Finally, poverty reduces life expectancy and quality of life. One study found a 4.5 year gap in life expectancy at birth between counties with the highest versus lowest socioeconomic ranking.⁶⁵ Another estimate found that living at less than 200 percent of the federal poverty line results in a net loss of 8.2 years of quality-adjusted life expectancy at age 18.⁶⁶ Research shows that these inequalities have widened over time as life expectancy has risen more rapidly for higher-income groups than lower-income groups.⁶⁷

Food Insecurity, Health, and Well-Being

In 2016, approximately **28.3 million adults (11.5 percent of all adults) and 12.9 million children (17.5 percent of all children) lived in food-insecure households.**⁶⁹ Food insecurity — even marginal food security (a less severe level of food insecurity)^{70, 71, 72} — is associated with some of the most common and costly health problems and behaviors in the U.S., as shown in Figure 1 on the next page. While food insecurity has direct and indirect impacts on physical and mental health for people of all ages, food insecurity is especially detrimental to the health, development, and well-being of children in the short and long terms.^{73, 74, 75, 76}

“After multiple risk factors are considered, children who live in households that are food insecure, even at the lowest levels, are likely to be sick more often, recover from illness more slowly, and be hospitalized more frequently. Lack of adequate healthy food can impair a child’s ability to concentrate and perform well in school and is linked to higher levels of behavioral and emotional problems from preschool through adolescence.”

— American Academy of Pediatrics’ Policy Statement, *Promoting Food Security for All Children*⁷⁷



According to a study of working-age adults living at or below 200 percent of the federal poverty line: *“In general, lower food security is associated with higher probability of each of the chronic diseases examined — hypertension, coronary heart disease (CHD), hepatitis, stroke, cancer, asthma, diabetes, arthritis, chronic obstructive pulmonary disease (COPD), and kidney disease ... Moreover, differences between adults in households with marginal, low, and very low food security are very often statistically significant, which suggests that looking at the entire range of food security is important for understanding chronic illness and potential economic hardship. Indeed, food security status is more strongly predictive of chronic illness in some cases even than income. Income is significantly associated with only 3 of the 10 chronic diseases — hepatitis, arthritis, and COPD — while food insecurity is significantly associated with all 10.”*

— From *Food Insecurity, Chronic Disease, and Health Among Working-Age Adults*⁷⁸

Figure 1:

Chronic Diseases, Health Conditions, and Health Behaviors Associated With Food Insecurity

Children	Adults*	Older Adults
Asthma ⁷⁹	Arthritis ⁸⁰	Asthma ⁸¹
Behavioral and social-emotional problems (e.g., hyperactivity) ^{82,83,84}	Asthma ⁸⁵	Congestive heart failure ⁸⁶
Birth defects ⁸⁷	Cancer ⁸⁸	Depression ⁸⁹
Developmental risk ⁹⁰	Chronic kidney disease (especially among those with either diabetes or hypertension) ⁹¹	Diabetes ⁹²
Iron deficiency anemia ^{93,94}	Chronic obstructive pulmonary disease (COPD) ⁹⁵	Gum disease ⁹⁶
Less physical activity ⁹⁷	Cigarette smoking ⁹⁸	History of a heart attack ⁹⁹
Low birth weight ^{100,101}	Coronary heart disease ¹⁰²	Hypertension ¹⁰³
Lower bone density (among boys) ¹⁰⁴	Depression (including maternal depression) ^{105,106}	Limitations in activities of daily living ¹⁰⁷
Lower health status ^{108,109}	Diabetes ^{110,111}	Lower cognitive function ¹¹²
Lower health-related quality of life ¹¹³	Functional limitations ¹¹⁴	Lower intakes of calories and key nutrients (e.g., protein, iron, calcium, vitamins A and C) ¹¹⁵
Lower physical functioning ¹¹⁶	Hepatitis ¹¹⁷	Obesity (primarily among women) ¹¹⁸
Mental health problems (e.g., depression, anxiety, suicidal ideation) ^{119,120,121}	Higher levels of C-reactive protein (a marker of inflammation) ^{122, 123}	Osteoporosis ¹²⁴
More frequent colds and stomachaches ¹²⁵	Hyperlipidemia ¹²⁶ and dyslipidemia ¹²⁷	Peripheral arterial disease ¹²⁸
Poor dietary quality ¹²⁹	Hypertension ¹³⁰	Poor or fair health status ¹³¹
Poor educational performance and academic outcomes ^{132,133,134,135}	Insufficient sleep or poor sleep outcomes ^{136,137}	
Untreated dental caries (i.e., tooth decay) ¹³⁸	Less physical activity ¹³⁹	
	Mental distress ¹⁴⁰	
	Obesity (primarily among women) ^{141,142,143}	
	Poor dietary intake ¹⁴⁴	
	Poor or fair health status ¹⁴⁵	
	Pregnancy complications (e.g., gestational diabetes, iron deficiency) ^{146,147}	
	Stroke ¹⁴⁸	
	Suicidal ideation ¹⁴⁹	

* Studies that examine food insecurity among adults have considerable variation in the ages of those included in the study. Many studies focus on adults under 65, while others include all adults over 18 or 20 years of age.



Because of limited financial resources, those who are food insecure — with or without existing disease — may also use coping strategies to stretch budgets that are harmful for health, such as:

- engaging in cost-related medication underuse or non-adherence (e.g., skipping doses, taking less medicine than prescribed, delaying to fill a prescription, not taking certain medications with food as instructed);^{150,151,152}
- postponing or forgoing preventive or needed medical care;^{153,154}
- forgoing the foods needed for special medical diets (e.g., diabetic diets);¹⁵⁵
- purchasing a low-cost diet that relies on energy-dense, but nutrient-poor, foods;^{156,157}
- diluting or rationing infant formula;¹⁵⁸ and
- making trade-offs between food and other basic necessities (e.g., housing, utilities, transportation).^{159,160}

Food insecurity, along with the health-compromising coping strategies associated with food insecurity, can exacerbate existing disease. Some of these exacerbated conditions include poor glycemic control for people with diabetes,^{161,162,163,164} end stage renal disease for people with chronic kidney disease,¹⁶⁵ and low CD4 counts and poor antiretroviral therapy adherence among people living with HIV.^{166,167} Food insecurity also can complicate and compound the health challenges and expenses faced by households with children who have special health care needs or adults with disabilities — populations at high risk for food insecurity.^{168,169,170,171} For example, children with epilepsy living in food-insecure households have significantly worse health-

related quality of life and more medication side effects than their counterparts in food-secure households.¹⁷²

Did you know?

Food-Insecure Older Adults Resort to Cost-Related Medication Underuse

Cost-related medication underuse for this study was defined as: skipping medications, taking less medicine than prescribed, delaying filling a prescription, using lower cost medications, and not being able to afford medicine.

Rates of cost-related medication underuse among adults ages 65 and over are:¹⁸⁵

- 25 percent for those experiencing marginal food security (low level of food insecurity);
- 40 percent for those experiencing low food security; and
- 56 percent for those experiencing very low food security (most severe level of food insecurity).

Not surprisingly, research shows that household food insecurity is a strong predictor of higher health care utilization and increased health care costs.¹⁷³ For instance, food insecurity and its associated health-compromising coping strategies can increase physician encounters and office visits,^{174,175} emergency room visits,^{176,177,178} hospitalizations,^{179,180,181} and expenditures for prescription medications.¹⁸² The implications for health care costs are staggering: the direct and indirect health-related costs of hunger and food insecurity in the U.S. have been estimated to be \$160 billion for 2014 alone.¹⁸³

Furthermore, using data from 2011 to 2013, researchers estimated that those experiencing food insecurity have an extra \$1,863 in health care expenditures each year, compared to their food-secure counterparts.¹⁸⁴ This translates to \$77.5 billion in excess annual health care expenditures among those with food insecurity. The extra health care expenditures are particularly high among food-insecure adults with heart disease (\$5,144 extra), diabetes (\$4,414 extra), and hypertension (\$2,176 extra), when compared to food-secure adults with these chronic diseases.

Poor Nutrition, Health, and Well-Being

Food insecurity can contribute to, or exacerbate, nutrition deficits, and that is linked to chronic diseases and conditions. This is known from research on all income groups.

Americans from all income groups fall short of meeting federal dietary guidance — consuming diets too low in fruits, vegetables, whole grains, and low-fat dairy, and consuming diets too high in added sugars, sodium, and solid fats.^{186,187,188} In general, poor dietary intake (e.g., excess saturated or trans fat intake, a diet low in fruits and vegetables) has been linked to a number of diseases and chronic conditions, including cardiovascular disease, Type 2 diabetes, some types of cancer, and osteoporosis.^{189,190} In addition, inadequate dietary intake during pregnancy and early childhood — which may be a consequence of food insecurity — can increase the risk for birth defects, anemia, low birth weight, preterm birth, and developmental risk.^{191,192,193,194}

Poor dietary intake also contributes to obesity, which is associated with many serious physiological, psychological, and social consequences for children and adults, including high blood pressure,^{195,196} heart disease,¹⁹⁷ diabetes,^{198,199} pregnancy-related complications,²⁰⁰ decreased life expectancy,²⁰¹ asthma,^{202,203} depression,^{204,205} and stigmatization.^{206,207}

Food-insecure and low-income people can be especially vulnerable to poor nutrition and obesity, due to additional risk factors associated with inadequate household resources as well as under-resourced communities. This might include lack of access to healthy and affordable foods; cycles of food deprivation and overeating; high levels of stress, anxiety, and depression; fewer opportunities for physical activity; greater exposure to marketing of obesity-promoting products; and limited access to health care.²⁰⁸ In addition to these unique challenges, those who are food insecure or low income are subject to the same and often challenging cultural changes (e.g., more sedentary lifestyles, increased portion sizes) as other Americans in trying to adopt and maintain healthful behaviors.²⁰⁹

Food-insecure and low-income people can be especially vulnerable to poor nutrition and obesity, due to additional risk factors associated with inadequate household resources. This might include lack of access to healthy and affordable foods; cycles of food deprivation and overeating; high levels of stress, anxiety, and depression; fewer opportunities for physical activity; greater exposure to marketing of obesity-promoting products; and limited access to health care.

Conclusion

Poverty, food insecurity, and poor nutrition have serious consequences for the health and well-being of children, adults, and older adults, including a greater risk for chronic disease and poor mental health. Beyond the consequences for individuals and families, these consequences also have costly implications for the economy and health care system. Fortunately, solutions exist to tackle these challenging issues, including increased utilization of the federal nutrition programs. SNAP and the Child Nutrition Programs are important, effective, and widely available interventions to improve the health and well-being of vulnerable Americans. Research demonstrates that these programs can reduce food insecurity, alleviate poverty, support economic stability, improve dietary intake and health, protect against obesity, and boost learning and development. Connecting people to the federal nutrition programs is a critical way to support and improve the nation's health.

For more information on the connections between federal nutrition program participation and health, see FRAC's two companion white papers: *The Role of the Supplemental Nutrition Assistance Program in Improving Health and Well-Being* and *The Role of the Federal Child Nutrition Programs in Improving Health and Well-Being* at www.frac.org.

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