

How Extensive is Childhood Obesity and What is its Relationship to Hunger?

There is growing concern in this nation, appropriately, about increasing obesity among both adults and children and its negative health and social consequences. Most recently, the increased health care costs of obesity have been highlighted through media coverage of the publication of state-by-state estimates of the financial costs associated with obesity prevalence. (Finkelstein, et al., 2004.)

The widespread presence of overweight and obesity, however, does not signal the demise in our nation of the problems of hunger and food insecurity. Although many are not as aware of the presence of the hungry and food-insecure among us, food insufficiency is still a major problem for countless low-income households and leads to negative consequences for both children and adults. Obesity, food insecurity and hunger all are serious public health problems. Sometimes they co-exist in the same households and the same individuals. In fact, insufficient resources to purchase adequate food can actually contribute to the development of obesity. This places an additional risk for obesity on the food-insecure, above and beyond the risk factors for obesity that affect all people regardless of income or food security status. This added risk is on top of the many other negative impacts of food insecurity on educational outcomes and physical and mental health.

Obesity Among Children and Adults

Obesity both is far too prevalent and is growing among both children and adults in the United States. Obesity affects 30.5 percent of adults in the U.S. that are 20 years of age or older, according to data from the 1999-2000 National Health and Nutrition Examination Survey (NHANES). This rate compares to 22.9 percent in the 1988-1994 NHANES. (Obesity in adults is based on a Body Mass Index (BMI) of 30 or greater. The BMI is a number that evaluates a person's weight in relation to height.) Although the media and others often refer to the problem of "childhood obesity," public health professionals generally prefer to use the term "overweight" when referring to children, and define it as BMI-for-age at or above the 95th percentile of charts used by physicians to monitor children's growth, which were developed by the Centers for Disease Control. According to the 1999-2000 NHANES, the percentage of children ages 12 through 19 who are overweight is 15.5 percent, among children 6-11 years of age is 15.3 percent, and among children between 2 and 5 years old is 10.4 percent, compared to 10.5 percent, 11.3 percent, and 7.2 percent, respectively, in 1998-1994. (Ogden, et al., 2002)

The Surgeon General's 2001 Report on Overweight and Obesity describes a complex relationship between poverty and obesity that also contributes to differing rates by race and ethnic group: "For all racial and ethnic groups combined, women of lower socioeconomic status (income less than or equal to 130 percent of the poverty threshold) are approximately 50 percent more likely to be obese than those with higher socioeconomic status (income greater than 130 percent of the poverty threshold)." But this relationship does not hold for men (they are equally likely to be obese whether they are in a low or high socioeconomic group), or for Mexican American and non-Hispanic black children and adolescents (among whom family income does not reliably predict

overweight prevalence). However, “non-Hispanic white adolescents from lower income families experience a greater prevalence of overweight than those from higher income families.” (Surgeon General, 2001)

The Consequences of Obesity

As a society we are concerned about obesity in children, primarily because of our knowledge about the short- and long-term effects of obesity on human health.

We are seeing short-term effects already. We’ve always known about the negative impact of overweight on children’s self-image. We know that this can affect their ability to socialize well with others and to feel comfortable in the classroom setting. It also discourages them from being physically active, which can create a vicious cycle of less physical activity, poor fitness level, and more weight gain.

What we are seeing now, however, that we have never seen before are chronic diseases traditionally associated with adulthood turning up in overweight children—including Type 2 (so-called “adult-onset”) diabetes and hypertension. These conditions, once triggered, can become lifetime problems that are difficult to manage and can be associated with a lower quality of life and premature mortality. Even if these conditions do not show up in childhood, obese children are more likely to become obese adults, increasing the chances that they will suffer from these conditions as adults, along with cardiovascular disease, some cancers and arthritis. (Surgeon General, 2001)

It is also important to note that the impact of these health and other consequences of obesity differs for different population groups. Among people with lower incomes, and among members of some racial and ethnic groups, the negative consequences of obesity-related health problems are more severe—resulting in worse health status and an earlier death. These outcomes are associated with less access to good quality health care and early prevention, screening, and treatment. (California Campaign to Eliminate Racial and Ethnic Disparities in Health, 2003)

What Do We Know About the Causes of Obesity?

Until fairly recently, the primary and sometimes only cause of obesity in the minds of many was lack of personal responsibility. It was the fault of the obese person, or, in the case of the child, the fault of the parent and the child. According to this belief, what was lacking was “will power” and, maybe, lack of information. The prescription for change was individual—nutrition education, improved parental responsibility, and increased strength of character.

The tsunami of obesity that has overtaken America over the last decade has pushed leaders in public health and public policy to explore more deeply what could be happening to produce such an enormous and precipitous increase. While not losing sight of the role of individual responsibility, researchers have identified a range of environmental changes that were encouraging increased food intake and/or decreased physical activity. These changes were happening so quickly and with such simultaneity that they overtook the society before many realized what was happening or the negative

consequences of these changes. The growing obesity numbers and the clear health consequences have caused us to shift from an overwhelmingly individual responsibility perspective on obesity to a more nuanced view that emphasizes environmental factors as well.

Those who have surveyed the situation point to changes in American society that affect all of us—a more sedentary lifestyle that includes less walking, longer working hours, longer commutes, and less physical activity among children. Children have less physical education at school and face the temptations of vending machines and high-fat snack sales in schools at all hours. Entertainment, for both children and adults, as well as children’s schooling and adults’ work experience, tend to be more sedentary, with multi-channel televisions, computers and other thrilling electronic gadgets. Many communities are laid out in ways that discourage physical activity, and parents are often fearful about children walking home from school or playing outside for safety reasons and because parents are not home after school. Large amounts of super-sized tempting high fat foods are readily accessible all around us—at every street corner, at every shopping mall, and in many public buildings—and are advertised to both children and adults on television and in many other venues.

Low-income families and neighborhoods face all of these challenges and more. Their communities have limited resources, grocery stores with limited supplies of inexpensive and nutritious foods, few safe places to play or be physically active, and limited access to after school activities. (Samuels, 2004)

There is not research on all aspects of this environmental change, and on which aspects have a lesser or greater impact on our growing obesity rates. Numerous researchers, government agencies, industry associations, foundations, and public health professionals are currently struggling to pinpoint causes and develop solutions that can be effectively implemented, and there is a great debate going on in the media and among the public about what needs to change and how.

In the midst of this epidemic of obesity is persistent hunger and food insecurity for a significant proportion of low-income Americans. In the next sections we discuss the prevalence of hunger and food insecurity, and their connections to obesity. While some have charged that obesity is evidence that low-income people simply have too much food, a growing body of scientific literature suggests that the obesity phenomenon is different for the poor in certain key respects, and actually has roots in the deprivation they suffer.

Poverty, Food Insecurity and Hunger in Households with Children

Low income often leaves households with insufficient money or other resources to obtain enough food. Food insecurity and, eventually, outright hunger result when people, due to economic constraints, lack access to enough food to fully meet basic needs at all times. (Hamilton, et al., 1997)

Research shows that households that fear running out of food, or cannot buy enough to meet their needs, manage their food problems in such a way as to stave off hunger, especially for their children, as long as possible. First, they reduce the quality of their diets, and eventually they reduce the quantity of food they consume, adults making the adjustments in their diets first before they reduce the quality or quantity of their children's food intake. (Hamilton, et al., 1997)

In the U.S., 11.1 percent of households experience food insecurity, 3.5 percent so severely that the USDA classifies these households as being hungry. This means that 21.8 million adults and 13.1 million children live in households that are food insecure. Food insecure families with children make up over half of all food insecure households. Households with children have higher food insecurity rates (16.5 percent) compared to households without children (8.1 percent). If households with children are female-headed, their rate of food insecurity rises to 32 percent. Needless to say, food insecurity rates are highest in families with incomes below or just a little bit above the poverty line. (Nord, et al., 2003)

As mentioned earlier, research shows that children typically are the last ones in the household to experience hunger, because the adults manage household resources in such a way as to protect children from more severe aspects of food insecurity until even that is no longer possible. (Hamilton, et al., 1997) However, even children who are not “hungry” are affected negatively by living in a food insecure household—their parents are reducing the quality of the food their family eats, or feeding their children unbalanced diets, or skipping meals so their children can eat. When parents who do not know where the next meal will come from, these stresses and changes can affect the behavior and mental health of children. When children are hungry, their health status is impaired, making them less able to resist illness and more likely to become sick and hospitalized. Hunger also can impair children's cognitive and mental function, leading to a reduced ability to learn and lowered grades and test scores. (Center on Hunger and Poverty, 2002)

The Relationship Between Food Insecurity and Obesity

It is at first blush counterintuitive that hunger and food insecurity can co-exist with obesity in the same individual. However, recent research has shown strong associations between food insecurity and obesity. One study looked at women in a rural county in New York State, another analyzed data on women's weight and food security from the U.S. Department of Agriculture's nationally representative 1994 -1996 Continuing Survey of Food Intakes by Individuals, and a third looked at women in the 1998-1999 California Women's Health Survey. (Olson, et al., 1999; Townsend, et al., 2001; and Adams, et al., 2003) One can better grasp this phenomenon by understanding how low-income families cope with food insecurity. Low-income families have to stretch their food money as far as possible. Without consistently adequate resources for food, families must make decisions to maximize the number of calories they can buy so that their members do not suffer frequent hunger. They therefore may consume lower-cost foods with relatively higher levels of calories per dollar. In other words, research shows that households reduce food spending when they have to by changing the quality or variety of food consumed before they reduce the quantity of food eaten. The greater the economic

constraints, the harder it will be for families to achieve the nutritional quality of foods they desire. This in turn affects the overall energy density of the diet, with the potential of causing obesity. (Center on Hunger and Poverty and Food Research and Action Center, 2003)

In addition, obesity can be an adaptive response to recurring periods when people are unable to get enough to eat. Research indicates that chronic ups and downs in food availability can cause people to eat more, when food is available, than they normally would. Low-income mothers first sacrifice their own nutrition by restricting their food intake during periods of food insufficiency in order to protect their children from hunger. This may result in eating more than is desirable when food is available. Finally, physiological changes may occur to help the body conserve energy when diets are periodically inadequate, and this may contribute to overweight over time. (Center on Hunger and Poverty and Food Research and Action Center, 2003)

Childhood Obesity and Food Insecurity

There is a limited amount of research that focuses on the relationship between obesity and food insecurity among children, and it does not paint a consistent or well-understood picture. Two recent studies, using nationally representative data from different data sets, have found positive relationships between food insecurity and obesity among some groups of children studied, but not among all groups. Another study, using a third nationally representative data set, did not find such a relationship. A fourth study of a sample of preschool Mexican-American children in California found a trend toward such a relationship, but it was not statistically significant. The research in this area is just beginning, and no clear pattern has emerged to explain who is affected by this relationship and why. (Alaimo, et al., 2001; Casey, et al., 2001; Jones, et al., 2003; Kaiser, et al., 2002; Center on Hunger and Poverty, 2002; and Frongillo, 2003)

The effects of the coping strategies food insecure households employ to stave off hunger and make it through each month are likely to affect adults more often, and more profoundly, than they do children. However, they will affect children, both directly in food intake, and indirectly in learned food patterns. In fact, the first mention in the scientific literature that obesity and food insufficiency might be causally related was a case reported in the journal *Pediatrics* by Dietz in 1995, in which he described a 7-year-old girl in a weight control program who weighed 180 pounds. Her mother was a low-income single parent, and the family was short of food on a regular basis. The first bill that was paid each month was rent, and the family had no resources by the middle of the month. To cope with this situation, the mother would fix large meals that were inexpensive but high in calories. In the article, Dietz suggests that if obesity is linked to hunger and food insecurity, as it appeared to be in this child's case, the solution to obesity in impoverished populations may be an increased food supply "to achieve a more uniform pattern of food consumption." (US Department of Agriculture, et al., 1994; Dietz, 1995) More recently, Kaiser, a researcher who has focused on low-income Mexican-American children, has suggested that, among the population she has studied, food insufficiency and anxiety about the food supply in the past may lead to less optimal

parenting around food choices, and less desirable food habits in children, when food becomes more available. (Kaiser, et al., 2002)

The Important Role of Nutrition Programs in Protecting Children from Obesity and Food Insecurity

The prevention of both obesity and food insecurity requires regular access to nutritionally adequate food that low-income families can afford. Federal nutrition programs—food stamps, WIC, and child nutrition programs like School Lunch and Breakfast, the Summer Food Service Program and the Child and Adult Care Food Program (CACFP)—play a dual role of fighting hunger and food insecurity and providing nutritious foods on a regular basis.

While the nutritional quality of these programs definitely needs to be improved, the basic fact is that the programs are part of the solution, not the problem. Although the benefit allotments in the Food Stamp Program are still too low for a typical family to obtain an adequate diet, research shows that each dollar in food stamps increases a household's Healthy Eating Index score (an indicator of overall dietary quality). Children who participate in the school lunch and breakfast programs, compared with students who participate in neither program, consume more than twice as many servings of milk and of fruits and vegetables combined, and one quarter the number of soda and fruit-flavored drinks. WIC has been shown to improve the dietary intake of pregnant and post-partum women and young children. Research shows that young children in child care who receive Child and Adult Care Food Program meals and snacks have higher nutrient intakes, and consume more servings of milk and vegetables, and fewer servings of fats and sweets, than children in child care programs that do not participate in the program. (Center on Hunger and Poverty and Food Research and Action Center, 2003) These programs can help to ameliorate the energy density trap and free up resources at home for better quality at-home meals.

In fact, research is beginning to show the positive impact of the nutrition programs on the prevention of obesity among food insecure children. A study of the impact of participation in food assistance programs on risk of overweight among low-income food insecure 5 to 12 year olds, using nationally representative Panel Study of Income Dynamics Child Development Supplement data, showed that: girls in food insecure households had significantly reduced odds of being at risk of overweight if they participated in the School Breakfast Program, School Lunch Program, Food Stamp Program or any combination of these programs. The authors conclude: "These results point to the importance of food assistance to children in food insecure households not only in alleviating food insecurity, but also in potentially protecting them from excess weight gain." (Jones, et al., 2003)

Expanding access to nutrition programs will allow many more children to experience the positive contributions of food security and good nutrition to obesity prevention. As discussed in other papers prepared for this Forum, many nutrition programs proven to increase nutritional quality of diets are underutilized—due to program participation barriers and lack of outreach. This situation must be aggressively remedied. Also,

successful efforts to improve nutrition program benefits will have an additional positive effect on the success of obesity prevention.

For example, the food stamp allotment, on average, amounts to only 90 cents per person per meal, which cannot adequately sustain most families. Food stamp benefits are based on the cost of a market basket of foods called the Thrifty Food Plan, which originally was developed as a short-term, emergency diet. This plan does not take into account the needs of real-life low-income families—it is an economic construct developed by computer and based on a hypothetical household. For example, the plan requires the household to devote several hours every day to cooking from scratch, which has become increasingly difficult as more and more adults in low-income single and two parent families are working, and it does not allow for any special nutrition needs among family members.

Moreover, when low-income families work, they lose 30 cents in food stamp benefits for every dollar they make. In other words, the food stamp allotment that a household receives is based on the assumption that it can spend one-third of its cash to achieve the full cost of the Thrifty Food Plan. This too is increasingly difficult as the costs of health care, child-care, and housing put stress on the household budget and reduce a family's ability to keep one-third of its income available for food. Increasing the food stamp allotment could increase a family's ability to purchase a better balance of nutritious foods like fruits and vegetables, while also staving off hunger.

In the area of foods served to children in the child nutrition programs, more can be done to help schools and program providers to serve lower-fat meals and snacks that include, for example, more, and a wider variety of, fruits and vegetables. This requires national, state and local advocacy and increased financial resources at all levels brought about through efforts to improve program funding and increase attention to nutrition quality.

The overall nutrition environment at school can also be improved, through policies allowing sufficient time to eat school meals, creating a pleasant cafeteria atmosphere, providing effective nutrition education, and controlling the sale of high fat, less healthful foods to children in competition with the school nutrition programs.

Conclusion

As Alaimo, Frongillo and Olson, three of our nation's leading researchers on food insecurity and obesity among low-income people, stated in their 2001 article on food insufficiency in *Pediatrics*, "Tackling only one problem will not ensure that all children in the United States enjoy a healthy childhood, but a key component of any child-centered policy should be ensuring that families have access to enough nutritionally adequate and safe food for an active, healthy life, including the ready availability to acquire such foods in socially acceptable ways. The US government has stated its commitment to achieving food security through *Healthy People 2010*, which includes an objective to increase food security of American households." (Alaimo, et al., 2001) When children live in households with chronically inadequate resources to buy food, they are susceptible to the long-term double damages of food insecurity and hunger and of

obesity. In order to avoid these negative health and developmental consequences, we must ensure better access to comprehensive and high quality nutrition programs for our nation's most vulnerable children.

Prepared by: Lynn Parker

Food Research and Action Center (FRAC)
1875 Connecticut Ave., #540
Washington, DC 20009
202-986-2200, ext. 3012
lparker@frac.org

References

- Finkelstein, EA, Fiebelborn, IC, and Wang, G. State-Level Estimates of Annual Medical Expenditures Attributable to Obesity. *Obesity Research*. 2004. 12:18-24.
- Ogden, CL, Flegal, KM, Carroll, MD, Johnson, CL. Prevalence and Trends in Overweight Among US Children and Adolescents, 1999-2000. *Journal of the American Medical Association*. 2002. 288:1728-1732.
- Surgeon General. *The Surgeon General's Call to Action to Prevent and Decrease Overweight and Obesity*. U.S. Department of Health and Human Services. Atlanta, GA, 2001.
- California Campaign to Eliminate Racial and Ethnic Disparities in Health. *Health for All: California's Strategic Approach to Eliminating Racial and Ethnic Health Disparities Summary*. November 2003.
- Samuels, SE. *Environmental Strategies for Addressing Childhood Obesity*. Berkeley Media Studies Group. January 2004.
- Hamilton, WL, Cook, JT, Thompson, WW, Buron, LF, Frongillo, EA, Olson, CM, and Wehler, CA. *Household Food Security in the United States in 1995: Summary Report of the Food Security Measurement Project*. US Department of Agriculture, Food and Consumer Service. September 1997.
- Nord, M, Andrews, M, and Carlson, S. *Household Food Security in the United States, 2002*. US Department of Agriculture, Economic Research Service. October 2003.
- Center on Hunger and Poverty. *The Consequences of Hunger and Food Insecurity for Children: Evidence from Recent Scientific Studies*. June 2002.

- Olson, CM. Nutrition and Health Outcomes Associated with Food Insecurity and Hunger. *Journal of Nutrition*. 1999. 131: 521S-524S.
- Townsend, MS, Peerson, J, Love, B, Achterberg, C, and Murphy, SP. Food Insecurity Is Positively Related to Overweight in Women. *Journal of Nutrition*. 2001. 131: 2880-2884.
- Adams, EJ, Grummer-Strawn, L, and Chavez, G. Food Insecurity Is Associated with Increased Obesity in California Women. *Journal of Nutrition*. 2003. 133:1070-1074.
- Center on Hunger and Poverty and Food Research and Action Center (FRAC). *The Paradox of Hunger and Obesity in America*. July 2003.
- Alaimo, K, Olson, CM, and Frongillo, EA. Low Family Income and Food Insufficiency in Relation to Overweight in US Children. *Archives of Pediatrics and Adolescent Medicine*. 2001. 155:1161-1167.
- Casey, PH, Szeto, K, Lensing, S, Bogle, M, and Weber, J. Children in Food-insufficient, Low-income Families: Prevalence, Health, and Nutrition Status. *Archives of Pediatrics and Adolescent Medicine*. 2001. 155:508-514.
- Jones, SJ, Jahns, L, Laraia, BA, and Haughton, B. Lower Risk of Overweight in School-aged Food Insecure Girls Who Participate in Food Assistance. *Archives of Pediatric and Adolescent Medicine*. 2003. 157:780-784.
- Kaiser, L, Melgar-Quinonez, HR, Lamp, CL, Johns, MC, Sutherlin, JM, and Harwood, JO. Food Insecurity and Nutritional Outcomes of Preschool-age Mexican-American Children. *Journal of the American Dietetic Association*. 2002. 102:924-929.
- Frongillo, EA. Understanding Obesity and Program Participation in the Context of Poverty and Food Insecurity. *Journal of Nutrition*. 2003. 133:2117-2118.
- US Department of Agriculture, Food and Consumer Service and US Department of Health and Human Services, National Center for Health Statistics (CDC). *Conference on Food Security Measurement and Research: Papers and Proceedings*. January 1994.
- Dietz, W. Does Hunger Cause Obesity?. *Pediatrics*. 1995. 95:766-767.
- Alaimo, K, Olson, CM, and Frongillo, EA. Food Insufficiency and American School-aged Children's Cognitive, Academic, and Psychosocial Development. *Pediatrics*. 2001. 108:44-53.

