

Obesity in Mexican-Origin Children

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Research results from the *Ninos Sanos, Familia Sana* project found that mothers have a dominant role in the weight of their children. Obese children are more prone to gain more weight, at the margin, if their mothers are overweight. Other factors are also important in explaining obesity in Mexican-origin children.

Obesity among adults and children is a serious health problem. According to the Food and Agriculture Organization of the United Nations' (FAO) most recent estimates of the world population, 795 million go to bed hungry or suffer undernourishment regarding energy intake. At the same time, 1.4 billion people are overweight, of whom 500 million are obese; see Figure 1. Overweight and obesity can lead to diseases linked to type II diabetes, heart disease, and cancer. Most of the world's population lives in countries where overweight and obesity kills more people than underweight. Worldwide, forty-two million children under the age of five were overweight or obese in 2013.

For adults, the U.S. Centers for Disease Control and Prevention (CDC) classify persons obese if they have a body mass index (BMI) of 30 or greater, and overweight if they have a BMI of 25 or greater. For children, the CDC's guidelines are: normal-weight (5th–84th percentile), at-risk-for overweight (85th–95th), and overweight (>95th). Hammer et al. BMI Z-scores adjust BMI's for normal growth rates of children and are widely used to classify children as normal, overweight, or obese.

There are many approaches to explaining the causes and prevention of

obesity, which can be broadly grouped into medical, nutritional, social/cultural, and economic. This paper focuses on the socio-economic explanations of obesity. In particular, some reported empirical results help to explain the high rates of obesity in Mexican-origin children in California's Central Valley.

Economic Approaches

Philipson and Posner, two economists, attribute the long-run growth in the number of overweight and obese people to two primary factors. Technological changes have lowered both the real price of food and reduced the amount of physical activity in the workplace. These changes have both lowered the cost of consuming calories and raised the cost of expending them.

Regarding causes of overweight and obesity in children, they state some plausible factors. Children's eating and exercise routines are strongly influenced by their parents, they spend more time watching television and playing video games, and with more and more parents working outside the home, children's health habits are less monitored.

Cost of Obesity

There are several economic costs associated with obesity: (1) direct healthcare costs associated with obesity-related

diseases such as treatment for hypertension, diabetes, coronary heart diseases, strokes, asthma, and arthritis, (2) decreased worker productivity and increased absenteeism, (3) higher workers' compensation claims, (4) emergency transportation and safety costs, and (5) human capital costs.

In the United States, numerous cost studies have been performed. Table 1 on page 10 summarizes a few of the estimates of obesity and obesity-related costs in the United States.

Cost-Benefit Analysis

Roux and Donaldson argue that the role of economics is not in measuring the economic burden of obesity, as Table 1 illustrates, through so-called cost-of-illness studies. Such studies merely, they assert, confirm that obesity is a serious societal issue and adding a monetary figure to this does not add much. Instead, they believe that the real value of economics lies in evaluation, through cost-benefit analyses of different strategies to prevent and treat obesity.

Research results from our recent USDA-funded project, *Ninos Sanos, Familia Sana*, found that a multifaceted intervention, community-based empowerment approach significantly reduced the rates of weight gain among obese Mexican-origin boys and

Figure 1. Worldwide Hunger and Malnutrition vs Overweight and Obese

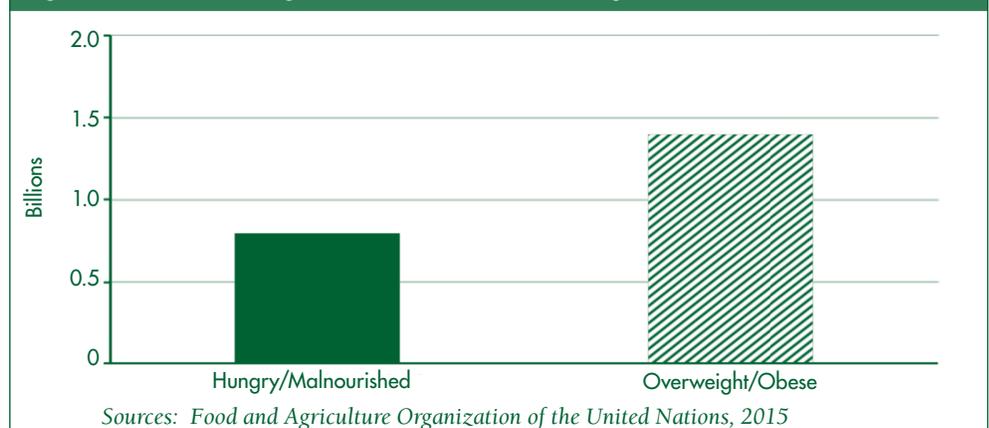


Table 1. Economic Costs of the Obesity Epidemic in the United States

Cost Category	Total Costs (Billion/Yr.)
Direct Medical Spending (Childhood Obesity)	\$147.0-\$210.0 \$14.0
Productivity Costs (Absenteeism, etc.)	\$4.3
Transportation Costs	\$2.0-3.0

Sources: Cawley, 2010; and Hammond and Levin, 2010.

girls in California’s Central Valley.

Theoretical Economic Models to Explain Health (Obesity) Problems

Michael Grossman, widely cited for his health care modeling approach, assumes that the individual makes decisions about how much to invest in his stock of health capital at any instant. He/she does this on the basis of a calculation of the costs and benefits, where both costs and benefits are distributed over time. The benefits side of the calculation has two components: consumption benefits, in the sense of the direct utility that an individual receives as a result of being healthier, and investment benefits, which refer to the impact of the individual’s health on their income.

Green et al. (2015) have applied some aspects of this approach by estimating a health production function of children using a hedonic model and using baseline data from the *Ninos Sanos, Familia Sana* project. As Figure 2 demonstrates, Mexican-origin children in our sample in California’s Central Valley are grossly overweight relative to the reference population based on a similarly aged group in the United States. The mean of the adjusted BMI (adjusted for age and rate of growth of a child, known as z-scores) should have a mean of zero—but the distribution in Figure 2 balances on one, not zero.

The implication of this is that only approximately 16% of Mexican-origin children in our sample are below the mean of BMI, compared to the 50% of the reference population of children in the United States who are below the mean BMI z-score of zero

(by construction of the standardized z-score). In other words, the average Mexican-origin child’s BMI is larger than all but 16% of U.S. children as a whole.

Based on a cross-sectional data set of over 300 Mexican-origin children in California’s Central Valley, Green et al. found that the mother has the dominant role in the weight of her children. However, the amount of inactivity in children per day, budget shares of certain food products, acculturation, and other factors also have a significant effect on Mexican-origin children being either overweight or obese.

More specifically, the mother’s BMI has a positive impact on the weight of their children. For example, for the majority of children in the middle-weight category, there is a 13% marginal increase in the child’s BMI for a marginal increase in the mean of the mother’s BMI. For children in the obese category, there is a 27% increase in a child’s BMI at the mean of the mother’s BMI. Thus, obese children are more prone to weight gain, at the margin, if their mothers are overweight.

In this study, the mothers were largely of children between the ages of 3-8 years of age. Thus, these observations indicate that, particularly for young children, a mother’s role is very significant in the nutritional choices and development of food preferences for her children. Also, another interesting observation from this sample was that the longer the parents are in the United States, the more weight the children gain (based on z-scores adjusted for normal growth rates).

Although we understand that lack

of physical activity is an important driver of greater weight gains in children, as is the consumption of more high-energy dense foods, it is clear from the above observations that other factors may come into play when addressing young children’s nutrition and physical activity behaviors.

Food Insecurity and Poverty

What is the association between food insecurity and obesity? Lucia Kaiser et al. found that Latino households in the United States report relatively high levels of food insecurity compared with other ethnic groups. Their research finds a significant association between deepening food insecurity and (1) declines in household food supplies; (2) less frequent fruit and vegetable consumption; (3) higher levels of unemployment; (4) increased participation in food assistance programs; and (5) disordered eating behaviors.

Families that frequently experience food insecurities may purchase less healthy foods because they are, in general, cheaper or easier to prepare. Lower-priced foods are usually more energy-dense and contain lower quality nutrient intakes than other foods. Thus, food insecurity may lead to more overweight and obese children and adults through lowered consumption of vegetables (fruits can be very fattening) and disordered eating habits.

Importance of Exercise

Furthermore, our qualitative observations from *Ninos Sanos, Familia Sana* suggest that community-wide interventions that target improved nutrition and healthy living spark greater community engagement to support increased physical activity programs for children and their parents. For example, as a result of the community empowerment approach utilized in our study, combined with our culturally tailored nutrition intervention, our target

community of Firebaugh developed programs such as community walking programs, after-school ballet, and girls' softball programs.

Increasing physical activity requires both convincing those who need it to participate and making facilities available that they will likely use. For children, schools need to increase support for non-competitive exercise both through enhanced physical education programs, as well as after-school physical activity programs. Schools might reasonably consider facilities for vigorous, non-competitive exercise in addition to their competitive programs.

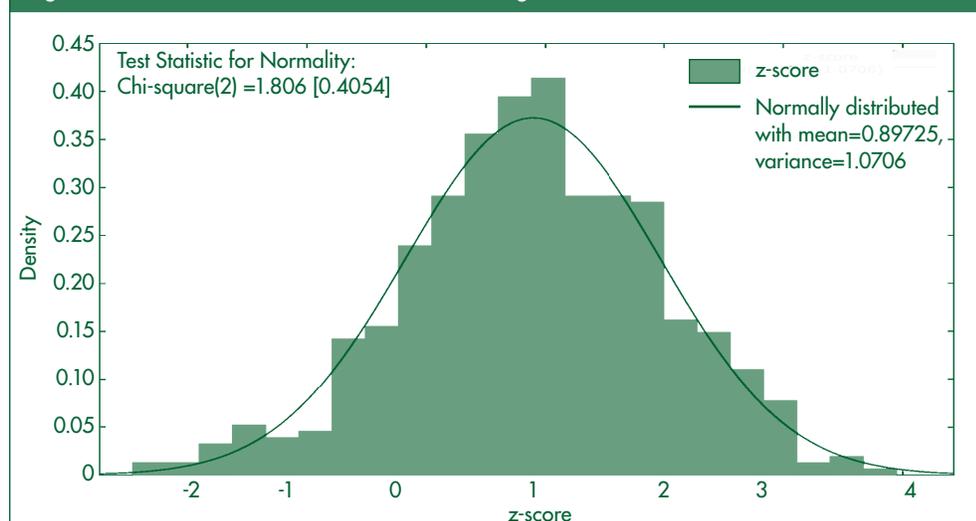
Virtually anyone who wants to exercise can, at some cost. Increasing physical activity becomes an issue of convincing people to participate, and perhaps lowering the cost. Convincing people to participate involves marketing campaigns and requires creating the type of community environment that supports and nurtures healthy behaviors. Lowering the cost is more problematic as it requires policy makers to address the broader structural inequities that exist across communities, as well as the adverse behavioral impacts resulting from food or income insecurity.

Nevertheless, given the growing health risks and health costs associated with the growth of obesity across the world, these issues require targeted interventions focused on key household decision makers—more often than not young mothers—as well as broader input from communities that are disproportionately affected by this growing epidemic. Also, ensuring that these interventions are culturally sensitive and sustainable over time is critical in supporting long-term behavioral change in many low-income and under-resourced communities, particularly in rural areas.

Conclusions

Obesity is endemic worldwide, especially in wealthier countries such as the United States and the European

Figure 2. Distribution of Z-scores of Mexican-Origin Children



countries. However, Mexico, northern African countries, and some other countries also have very serious problems with obesity. Furthermore, China and other nations are seeing a rise in obesity rates as their economies transition from rural to urban, with the attendant loss of physical activity. The increasingly sedentary world workforce, with electronic recreation through games and videos, etc., does not augur well for obesity.

The social and direct costs of obesity are clearly enormous. It is less clear what can be done about it. One can argue that society as a whole has an interest in minimizing obesity. But what is the role of government, schools, private companies, medical personnel, nutritionists, economists, and others? Our research and a survey of others' research indicate that the person who buys and prepares the food is the key, along with the amount of physical activity typically undertaken by each individual.

Thus, the prescription is to target the right person regarding nutrition and to facilitate physical activity for the whole family. It is clear to us that this common sense insight should underlie programs and policy prescriptions.

Economic analysis helps assess the efficacy of health care projects and, in particular, programs to reduce or

alleviate obesity by using a cost-benefit analysis. Applications of these methodologies are essential to appraise the economic feasibility of every proposed project.

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For additional information, the authors recommend:

Cawley, J., ed. 2011. *The Oxford Handbook of the Social Science of Obesity*, Oxford University Press, Oxford.

Green, R., A. Havenner, R. Gomez-Camacho, M. Hanbury, and A. de la Torre. 2015. "Obesity of Mexican-Heritage Children in California's Central Valley: A Hedonic Model," Working Paper.