

# Obesity, diets, and social inequalities

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*Obesity and type 2 diabetes follow a socioeconomic gradient. Highest rates are observed among groups with the lowest levels of education and income and in the most deprived areas. Inequitable access to healthy foods is one mechanism by which socioeconomic factors influence the diet and health of a population. As incomes drop, energy-dense foods that are nutrient poor become the best way to provide daily calories at an affordable cost. By contrast, nutrient-rich foods and high-quality diets not only cost more but are consumed by more affluent groups. This article discusses obesity as an economic phenomenon. Obesity is the toxic consequence of economic insecurity and a failing economic environment.*

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## INTRODUCTION

Rising rates of obesity in industrialized societies have been blamed on increased consumption of sweetened beverages and energy-dense foods.<sup>1</sup> Published research has variously linked rising obesity rates in the United States to the consumption of refined grains, added sugars, added fats, snacks, beverages, fast foods, and eating away from home.<sup>2</sup> One way to change dietary behaviors is by modifying the obesogenic food environment. Reducing consumer access to palatable sweet and high-fat foods seems to be the main goal of many nutrition policies and programs.

Minorities and the poor are clearly at a disadvantage when it comes to the adoption of healthier eating habits. Simply put, fats and sweets cost less, whereas many healthier foods cost more.<sup>3</sup> Researchers have shown that low-income neighborhoods attract more fast-food outlets and convenience stores as opposed to full-service supermarkets and grocery stores. By contrast, more affluent areas generally have access to better restaurants, fresher produce, and more opportunities for physical activity. Such studies merely demonstrate that socioeconomic factors, including inequitable access to healthy foods, have a profound effect on weight and health. It is economic deprivation that is obesogenic, and one key predictor of weight gain may be low diet cost.

The obesity debate in the United States has steered clear of the complex issue of social class. Instead, much time has been spent on genetics, physiology, race/ethnicity, personal responsibility, and freedom of choice. Some in public health nutrition have adopted the view that most Americans could follow a healthy diet but simply choose not to. Attempts to improve population dietary habits have therefore emphasized the food-choice behavior of individuals. The emphasis has been on psychosocial factors, self-efficacy, and readiness to change. The unspoken assumption has been that healthful foods are inexpensive and that all American households, regardless of income, have access to a healthy diet. It may be time to point out that obesity is an economic issue.<sup>3,4</sup> Many segments of society have limited resources and are unable to resist powerful economic forces that are largely beyond their control.

Americans spend the lowest proportion of disposable income on food (~12%) and have the lowest-cost food supply in the world.<sup>5</sup> Until recently, no one seriously questioned the benefits of low-cost foods or indeed the freedom to choose. Official recommendations and guidelines, including the 2005 Dietary Guidelines for Americans, exhorted consumers to “choose” healthful diets as opposed to unhealthful ones. Other documents recommended that obese consumers replace white bread, bologna, and mayonnaise with fresh salads, mangos, and

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Key words: diet cost, energy density, energy intake, obesity, poverty

star fruit. The rapid rise in food prices has helped demonstrate that healthier diets are no longer merely a matter of choice.

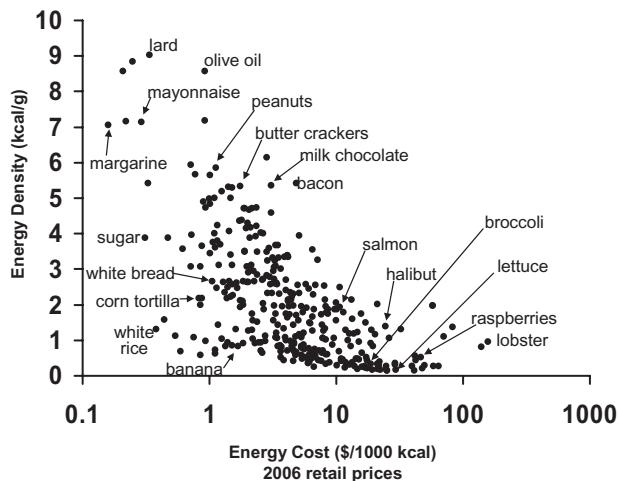
Food choices are made on the basis of taste, cost, convenience, and, to a lesser extent, healthfulness and variety.<sup>6</sup> Refined grains, added sugars, and added fats are good tasting, readily accessible, and inexpensive. Low-cost foods and low-cost diets tend to be energy dense and nutrient poor. On one hand they are associated with over-eating; on the other hand they are preferentially selected by the low-income consumer. The low cost and high palatability of energy-dense foods – mainly sugars and fats – along with the easy access to such foods can help explain why the highest obesity rates are found among the most disadvantaged groups.<sup>3</sup> The key variable, however, is not the macronutrient composition of the diet; rather, what may predict obesity is low diet cost.<sup>7</sup>

### POVERTY AND OBESITY ARE LINKED

The rates of obesity and type 2 diabetes in the United States follow a socioeconomic gradient, with the highest rates observed among racial/ethnic minorities and the poor.<sup>3</sup> At the individual level, obesity rates are linked to low income, low education, minority status, and a higher incidence of poverty.<sup>8</sup> Among women, higher obesity rates tend to be associated with low incomes and low education; the association of obesity with low socioeconomic status has been less consistent among men. At the environmental level, obesity rates are higher in lower-income neighborhoods, legislative districts, and states.<sup>8,9</sup> Although obesity rates have continued to increase steadily in both sexes, across all ages and all races, and at all educational levels, the highest rates occur among the most disadvantaged groups. Obesity and food insecurity, defined as the limited or uncertain availability of nutritionally acceptable or safe foods, also appear to be linked, at least among female recipients of food assistance programs.

### ENERGY-DENSE FOODS COST LESS

Developments in agriculture and food technology have made energy-dense foods accessible to the consumer at a very low cost. Figure 1 shows the inverse relationship between the energy density (kcal/g) of foods and the energy cost (US\$/1,000 kcal). Food prices were obtained in 2006 from supermarkets in Seattle.<sup>10</sup> The energy cost of fresh produce was 10 times as much as that of vegetable oils and sugars. As indicated by the logarithmic scale, the difference in energy costs between the healthy and unhealthy foods was several thousand percent. The



**Figure 1 Relationship between energy density of selected foods (kcal/g) and energy costs (US\$/1,000 kcal).** Food prices from Seattle supermarkets, 2006. Note that the energy cost differential between added sugars and fats and fresh vegetables and fruit can be several thousand percent, as indicated by the logarithmic scale.

energy cost of soft drinks was, on average, 30 cents per megajoule (MJ), whereas that of orange juice from concentrate was 143 cents/MJ.

Fats and oils, sugar, refined grains, potatoes, and beans provided dietary energy at minimum cost. Dry foods with a stable shelf life are generally less costly (per MJ) than perishable meats, fish, dairy products, or fresh produce. The selection of refined grains, added sugars, and vegetable fats may represent a deliberate strategy to save money. Lower food costs may be associated with more energy-dense diets, and total energy intake may actually increase.<sup>7</sup> This means that, paradoxically, it is possible to spend less and eat more, provided that the extra energy comes in the form of added sugar and added fat.<sup>3</sup> The association between poverty and obesity may be mediated, in part, by the low cost and high palatability of energy-dense foods.<sup>3</sup> In fact, the foods implicated in promoting obesity, like snacks, fast foods, sweets, and refined grains, are those that provide dietary energy at a very low cost.

The standard dietary advice is to replace fats and sweets with more fruit, vegetables, whole grains, poultry, and fish.<sup>1</sup> However, these more healthful foods are also more expensive and beyond the reach of many. Some low-income families limit their food budget to \$100 for four people per week, or less than \$4 per person per day. The only foods that can be obtained for this amount of money are high in refined grains, added sugars, and added fats, and the healthful, recommended foods are separated by an immense gap in energy costs.

## HEALTHIER DIETS COST MORE

Not only do healthier diets cost more, they are also consumed by more affluent persons. Diet quality in the United States is very much a function of socioeconomic status. People who are older, wealthier, and better educated are both thinner and have better diets than do the poor. The impact of socioeconomic status variables on diet quality has normally been ascribed to a higher educational level or a greater awareness of health issues among higher-income groups. One less-explored hypothesis is that food choices are driven by the relative differences in cost between high-quality and low-quality foods. This observation is not restricted to the United States: similar associations between higher incomes and higher-quality diets were also found in Canada, France, the United Kingdom, and other countries of the European Union. A study of the relationship between energy density and the cost of freely chosen diets in a French community<sup>11</sup> showed that dietary energy density was associated with higher energy intakes. More energy-dense diets were associated with a higher consumption of grains, fats, and sweets; there was a negative association between energy-dense diets and consumption of fruits and vegetables.<sup>12,13</sup> In addition, the energy density of the diet was inversely linked to the energy cost.

Replacing fats and sweets with more vegetables and fruits was associated with higher diet costs: each 100 g increment in additional fruit and vegetable consumption increased diet costs.<sup>14,15</sup> In contrast, higher consumption of fats and sweets was associated with a net savings in diet costs. These data showed that sweets and fats cost less, while low-energy-density diets high in vegetables and fruits cost more.<sup>14</sup> In Western societies, lower energy costs are generally associated with higher energy intakes.

## OBESITY: AN ECONOMIC HYPOTHESIS

Food choices by the obese have been explained in terms of abnormalities in biology, physiology, and behavior.<sup>16</sup> The biological explanation has been that the observed cravings for fats and sweets are driven by central metabolic events, a serotonin or dopamine imbalance, altered leptin levels, or the endogenous opiate peptide system. Physiological explanations have invoked the glycemic index of foods, individual differences in fructose metabolism, satiety deficits, or insulin resistance. Psychological explanations have addressed an addictive personality, a cortisol-mediated response to stress, or simply the seeking of comfort in high-fat foods. Environmental approaches have blamed the susceptibility of individuals to external cues provided by fast foods or snacks and the inability to regulate calories following the consumption of soft drinks.

Fewer studies have made the link between the low cost of energy-dense foods and the obesity epidemic. The present hypothesis is that the links seen between poverty and obesity are primarily attributable to economic variables.<sup>15</sup> Unhealthy diets cost less, while the recommended healthier diets cost more. As consumers reduce food expenditures, their diet becomes increasingly energy rich but nutrient poor. Whereas increasing food expenditures does not guarantee a healthy diet, reducing food spending below a certain limit virtually guarantees that the resulting diet will be nutrient poor and energy dense. Households on a limited budget will find it difficult to eat more healthfully unless they adopt unfamiliar eating habits, depart from social norms, or eat mostly unpalatable foods. Public policies to promote dietary change should take into account food preferences and usual eating habits.

The growing price gap between healthy and unhealthy foods also supports the causal link between poverty and obesity. The foods that have been found to maintain their price are fats and sweets, which could accentuate disparities in the access that people with lower incomes have to healthy diets.

## CONCLUSION

Given economic constraints, especially among lower-income groups, not all consumers have the same degree of choice when it comes to purchasing healthful fresh produce, fruit, lean meats, and fish. For many, the choice was removed long ago by economic and employment policies. There are sound economic reasons why poverty and obesity are so closely linked, and this could affect future obesity-prevention strategies. A combination of agricultural subsidies, pricing policies, regulatory action, and consumer education, involving cooperation among governments, academia, and the food industry, could facilitate access to an affordable supply of fresh, nutrient-rich foods. In addition, while the onus to provide low-income consumers with inexpensive, healthy foods is currently on the food industry, this view could shift to the need for policies to address broader societal issues, such as the falling value of the minimum wage and declining neighborhood resources. Environmental and policy interventions will be needed to address the observed inequalities in access to healthy foods, particularly as they relate to body weight and health.

## Acknowledgment

*Declaration of interest.* The author has no relevant interests to declare.

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