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**Poverty and obesity**

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**Summary**

The obesity epidemic in the US has become much more than a biomedical problem. Obesity is the consequence of economic decisions – some voluntary and others not - that have much to do with social and economic resources, food prices, and diet costs. This presentation will focus on two aspects of the obesity epidemic – neighborhood resources and diet costs. Area-based measures of socioeconomic status supplement the conventional measures of education and income. The issue of diet costs represents a new look at the standard advice to consume “healthier” diets. Diets composed of refined grains, added sugars, and added fats are more affordable than are diets based on lean meats, fish, fresh vegetables, and fruit. There is an inverse relationship between energy density (kJ/g) and energy cost (\$/MJ), such that energy-dense foods also provide the most dietary energy per dollar. Good taste, high convenience, and – even more important – the low cost of sweets and fats may indeed lead to overeating and weight gain. Not surprisingly, highest rates of obesity are found among population groups with highest poverty rates and the least education. Are the various sectors of the food, grocery, and restaurant business legally liable for providing low-income consumers with overly cheap food? Or does the broader problem lie with the current wage policies, employment practices, imports, tariffs and trade?

## **Introduction**

Rising rates of obesity in the U.S. have been linked to the growing consumption of fast foods, snacks, caloric beverages, sweets and desserts. Studies have examined the contribution to rising obesity rates of added sugars, added fats, increased portion sizes, nutrient composition of foods away from home, and the energy density of the diet. Public health policies for the prevention of obesity increasingly call for taxes and levies on fats and sweets, both to discourage consumption and to promote alternative food choices. The new emphasis on the “toxic” or “obesogenic” food environment has led to legislative and policy measures to improve nutrition in workplaces, in neighborhoods, and in schools. In addition, various sectors of the food, grocery and restaurant business find themselves exposed to lawsuits for their alleged role in causing the obesity epidemic.

The basis of obesity lawsuits is that consumers are deceived or enticed by the food industry into overeating, if not actually made addicted to fast foods. The basis of obesity defense is that the consumers have a choice and are capable of saying no. The present economic argument is that not all diets cost the same, such that consumer choices are limited by the economic realities of life. Whereas “unhealthy” diets cost less, the recommended “healthful” diets are likely to cost more. As a result, the industry has no need to entice consumers through deceptive marketing practices to purchase “unhealthy” foods. Such purchases are, in many cases, driven by the families’ economic circumstances, over which the food industry has no control. Not all consumers have the same degree of choice when it comes to purchasing more healthful fresh produce, fruit, lean meats, and fish. There are some good economic reasons why poverty and obesity are so closely linked.

## **Poverty and obesity are linked**

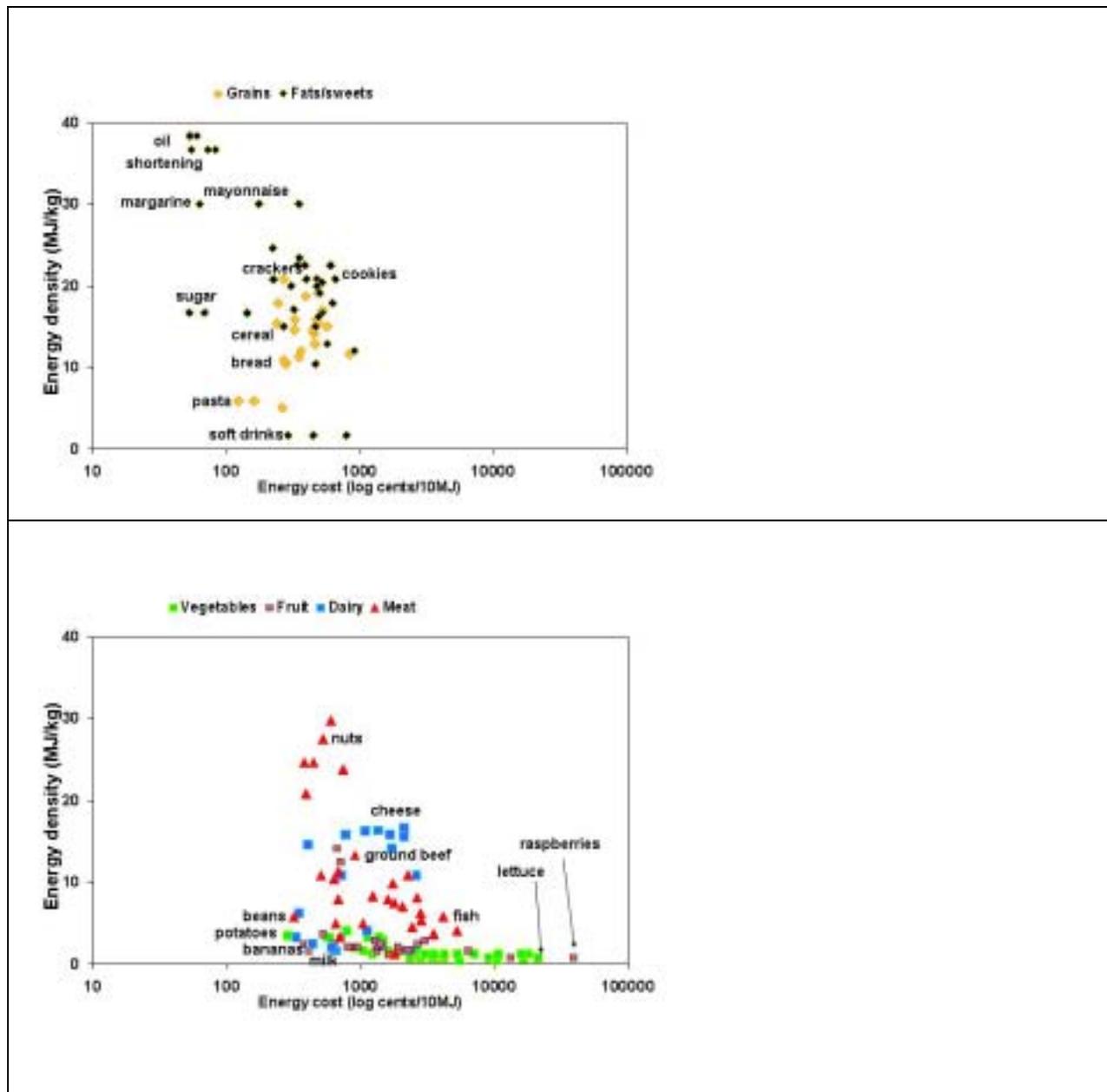
The rates of obesity and type 2 diabetes in the U.S. follow a socioeconomic gradient, with highest rates observed among racial/ethnic minorities and the poor. Among women, higher obesity rates tend to be associated with low incomes and low education. The association of obesity with low socioeconomic status (SES) has been less consistent among men. Obesity is defined as body mass index ( $BMI = kg/m^2$ ) greater than 30, whereas overweight is defined as BMI greater than 25. Although obesity rates have continued to increase steadily in both sexes, at all

ages, in all races, and at all educational levels, highest rates occur among the most disadvantaged groups. Obesity and food insecurity, defined as “limited or uncertain availability of nutritionally acceptable or safe foods,” also appear to be linked. In particular, female recipients of USDA food assistance were more likely to be obese. Given that low-income families are the chief beneficiaries of food assistance programs, links between food insecurity and obesity have implications for food and nutrition policies in the U.S.

### **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 energy density (MJ/kg) of foods and their energy cost (cents/10MJ). Food prices were collected in early 2003 in a Seattle supermarket. Energy cost of cookies or potato chips was 20 cents/MJ (1,200 kcal/\$), whereas that of fresh carrots was about 95 cents/MJ (250 kcal/\$). Energy cost of soft drinks was, on average, 30 cents/MJ (875 kcal/\$), whereas that of orange juice from concentrate was 143 cents/MJ (170kcal/\$). Fats and oils, sugar, refined grains, potatoes, and beans provided dietary energy at the lowest cost. As indicated by the logarithmic scale, the differential in energy costs between lard and lettuce was several *thousand* percent. Dry foods with a stable shelf life are generally less costly (per MJ) than are perishable meats or fresh produce with a high water content. As a rule, potato chips, chocolate, and locally-bottled soft drinks are less expensive – per calorie - than are lean meats, fish, fresh vegetables, and fresh fruit. Selecting refined grains, added sugars, and vegetable fats may represent a deliberate strategy to save money. Lower food costs may lead to more energy-dense diets, and total energy intakes may actually increase. 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. The association between poverty and obesity may be mediated, in part, by the low cost and high palatability of energy-dense foods.

**Figure 1:** Inverse relationship between energy density (MJ/kg) and energy cost (\$/10MJ)



Obesity studies have stressed the sugar and fat content of snacks, fast foods, beverages, and confectionery. Epidemiologic studies have linked the consumption of fats and sweets, potatoes, and refined grains with higher glycemic load and higher risk of obesity and type 2 diabetes. Interestingly, foods implicated in promoting obesity were those that provided dietary energy at a very low cost. The same ingredients, when priced higher, have been immune from complaint. A case in point, sweetened soft drinks – principal ingredient sugar – are routinely associated with weight gain. Yet Slimfast – principal ingredient sugar (Slimfast is 66% sugar) –

is generally associated with weight loss. Seemingly, the objection is not so much to sugar *per se* but to its excessively low price.

The standard dietary advice is to replace fats and sweets with more fruit, vegetables, whole grains, poultry, and fish. However, the more healthful foods are also more expensive and beyond the reach of many. Some low-income families limit their food budget to \$100 for 4 people per week, or less than 4 dollars per person per day. The only foods that can be obtained for this amount of money will be high in refined grains, added sugars and added fats.

### **Do healthier diets cost more?**

Diet quality in the U.S. 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. This is not restricted to the U.S.: similar associations between higher incomes and higher quality diets were also found in Canada, France, the U.K. and other countries of the European Union. The impact of SES variables on diet quality has normally been ascribed to a higher educational level or greater awareness of health issues among higher-income groups. Another possibility is that food choices are driven by the economic realities of life.

That the share of income spent on food decreases as incomes rise is known in economics as Engel's law (1857). Because incomes have increased faster than food costs, average food expenditures in the U.S. have dropped to only 10.7% of incomes in 1997. In 1997, Americans spent 9.4% of disposable income on foods consumed at home and 4.1% on foods consumed away from home. The drop in food spending was disproportionately greater than the drop in spending on other goods. Despite spending less, low income families devoted a higher proportion of disposable income to food. By 1999, mean total expenditure on foods and beverages (including alcohol) was estimated at just under \$8.00 per person per day. Assuming a daily ration of 10.5 MJ (2,500 kcal), the estimated mean energy cost of the total diet was 76.9 cents/MJ. In Western societies, lower energy costs are associated with higher energy intakes.

### **Obesity: an economic hypothesis**

Food choices in obesity have been explained in terms of biology, physiology, and behavior. The biological explanation has been that “cravings” for fats and sweets are driven by central metabolic events, serotonin imbalance, altered leptin levels, or by the endogenous opiate peptide system. Physiological explanations have invoked insulin resistance and the glycemic index of foods. Psychosocial explanations have addressed inadequate nutrition knowledge, an addictive personality, stress, or seeking comfort in high-fat foods. Environmental approaches have blamed the wide availability of snacks, fast foods, and soft drinks, “supersized” portions, and the presence of vending machines in schools

The present model holds that obesity is, to a degree, a socio-economic phenomenon. The lower cost diets tend to be higher in refined grains, added sugars and fat. Energy-dense foods are not only palatable, but satisfy hunger at the lowest cost. Access to healthy diets can be limited not only by economic limitations, but also by features of the built environment. Obesity in the US is an environmental problem and requires environmental and policy interventions.

### **Further reading**

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