Obesity and the Economy
From Crisis to Opportunity

David S. Ludwig, MD, PhD
Harold A. Pollack, PhD

THE ONSET OF A MAJOR RECESSION PLACES THE ECONOMIC correlates of obesity into sharp relief. Even in good economic times, obesity imposes great financial burden on society in the form of higher medical costs and lower worker productivity. The economic downturn can be expected to reduce nutrition quality and physical activity, worsening obesity prevalence when society is least able to bear the escalating financial burden. Yet this crisis also offers unprecedented opportunity. The economic stimulus under consideration in Washington could help launch a comprehensive national obesity initiative with immediate public health benefits, while laying the foundations for economic well-being into the 21st century.

Origins of the Obesity Epidemic

To avoid excessive weight gain and obesity-related chronic disease, virtually all experts recommend regular physical activity and a diet based on vegetables, fruits, legumes, whole (rather than refined) grains, and high-quality proteins and fats. Unfortunately, the last half-century witnessed widening divergence, concurrent with the obesity epidemic, from these recommended behaviors among the US population. This increasingly unhealthful lifestyle is a predictable consequence of national economic, social, and policy trends of recent decades.

Since the 1960s, family farms have all but disappeared, largely replaced by industrial agriculture. During the same time, government spent large sums on agricultural subsidies, primarily to support high-calorie commodities at the expense of more nutritious produce. As a result, highly processed products derived from wheat, corn, rice, soybeans, and livestock raised on these commodities now form the base of the US diet, displacing a wide range of health-supporting whole foods. Indeed, the relative cost of commodity-derived products declined markedly between 1982 and 2008.[1] Reflecting these trends, real (inflation-adjusted) price decreased by 10% for fats and oils, 15% for sugars and sweets, and 34% for carbonated drinks. In contrast, the real price of fresh fruits and vegetables increased by 50% over the same period.[1]

The ultimate incarnation of these agricultural policies is the modern fast food meal, featuring an exceptionally low price. However, this dietary pattern—with low-quality carbohydrates and fats, few essential nutrients, little fiber, high energy density, and poor satiety value—promotes overconsumption, markedly increasing risk for obesity and its complications.[2] Concurrent with these trends, per capita energy intake increased by approximately 300 kcal per day from 1985 to 2000, after having remained fairly constant for the previous 75 years.[3]

As energy consumption increased, physical activity–related energy expenditure level declined. Analogous in effect to agricultural subsidies, federal spending helped build and maintain the national highway system, fostering low-density suburban development dependent on the automobile for transportation. Many of these suburban developments lack sidewalks entirely, while governmental investment for pedestrian paths, bicycle lanes, and other forms of public transportation that would typically require at least some physical activity (ie, a walk to the train station) has been far smaller. In many urban areas, the lack of parks and playgrounds, compounded by fears of crime, limit recreational physical activity. Across the country, constrained school funding restricts physical education classes and after-school sports for children.

Changes in the US family may exacerbate this situation. Parents currently spend more time at work and in commute, leaving less time and inclination to prepare meals at home. Scholastic pressures on children have increased, leaving less time and inclination to engage in recreational physical activity. At the same time, sedentary pursuits linked to obesity, chiefly television viewing[4] and computer use, have increased markedly. Of particular concern, psychosocial stress often undermines the pursuit of healthful lifestyles and may directly induce physiological changes that promote fat deposition.[5]

Effects of Obesity on Economic Well-being

Excessive weight affects virtually every organ system in the body, increasing the risk of diabetes, myocardial infarction,

Author Affiliations: Department of Medicine, Children's Hospital, Boston, Massachusetts (Dr Ludwig); and Center for Health Administration Studies, University of Chicago, Chicago, Illinois (Dr Pollack).
Corresponding Author: David S. Ludwig, MD, PhD, Department of Medicine, Children's Hospital Boston, 300 Longwood Ave, Boston, MA 02115 (david.ludwig@childrens.harvard.edu).

Box. Specific Projects That Could Provide Immediate Economic Stimulus and Also Comprise a Long-term Public Health Strategy for Reducing Obesity

Improving Food Quality

- Provide loans/grants to revitalize family farming
- Establish local farm-to-community (and school) food distribution systems
- Build community produce gardens
- Build fully functional school kitchens (many presently equipped only for microwaving or deep-frying food)

Promoting a Physically Active Lifestyle

- Build sidewalks where lacking, pedestrian paths, and car-free urban zones
- Build bike paths and lanes (protected from car traffic); establish bicycle loan stations at convenient locations
- Build parks, sports facilities, swimming pools, and indoor recreational facilities
- Establish nature preserves with hiking trails
- Build integrated public transportation systems that support a healthful lifestyle by linking bike paths, recreational facilities, farmer's markets, etc.

Comprehensive Approaches

- Build/enhance community health centers to provide inexpensive, nutritious meals (including takeout), recreational facilities, and counseling/education (eg, cooking classes) at one location
- Fund integrated, school- and community-based obesity prevention projects (eg, Planet Health[12] and Shape Up Somerville[13])

stroke, cancer, sleep apnea, osteoarthritis, and other chronic diseases.[6] Moreover, poor diet and a sedentary lifestyle further increase risk for many of these conditions, independent of body weight. Obesity-attributable costs account for 5% to 7% of annual health care expenditures[3]—currently amounting to more than $100 billion per year. The direct economic effects of obesity may be twice this figure, when missed workdays and other costs outside the medical care system are considered. Of particular significance, this estimate is likely to be dwarfed by reasonable economic valuation of reduced longevity and quality of life.[7,8] These economic burdens are borne most heavily by overweight/obese individuals and also by others, for example through higher public and private health insurance costs, diminished employee productivity, and reduced public revenue. As today's children—heavier than any generation in history—reach adulthood, these tangible and intangible costs will escalate.

Effect of the Recession on Obesity

Even as obesity adversely affects the economy, an economic downturn may increase rates of obesity. Economic adversity induces consumers to replace nutritious but expensive produce with less costly, high-calorie, commodity-based products. As one industry financial analysis phrased it: "Fast food tends to be skewed toward lower-income consumers. . . . In times of economic weakness and/or rising costs, consumers tend to trade down to lower price points rather than prepare food at home."[9] This pattern may explain why share prices of some fast food companies outperformed the Standard & Poor's 500 Index in the stock market collapse of late 2008.[10] Food insecurity, heightened in times of economic uncertainty, increases obesity risk through complex dietary and psychosocial mechanisms.[11] In addition, economic hardship aggravates obesity and related conditions by reducing membership in health and sports clubs and youth athletic leagues and (through reduced health insurance coverage) lower use of preventive medical services.

A Window of Political Opportunity

The Chinese word *weiji* is said to denote both crisis and opportunity and seems to aptly describe the current situation. The etiology of the obesity epidemic is multifactorial. The solution at least for the United States will require a long-term, comprehensive national initiative that addresses basic causes of poor dietary quality and sedentary lifestyle. This effort, involving the restructuring of US food production and distribution, along with major investments in social infrastructure, would help to advance the nation's long-term economic (as well as public health) interests.

During normal times, reform of this magnitude might face potentially insurmountable opposition from many political forces. These are not normal times. Severe recession has generated calls from across the political spectrum for an economic stimulus program, at this writing estimated to total $700 billion. Investing part of this money into obesity prevention could produce potent short-term economic effects, while taking action to protect society from the greatest threat to long-term well-being.

Several projects might comprise a strategic obesity initiative (BOX). Many of these projects, like building or modernizing school kitchens to support improved student nutrition, are relatively simple to implement, and most have been implemented by state and local governments and on a national basis outside the United States. For example, in the 1970s, the Netherlands initiated comprehensive transport and land use policies favoring biking over private cars, giving cyclists extensive rights of way, ample parking, full integration with public transportation, and freely available bicycles at many public locations. As a result, the proportion of trips taken by bicycle has increased to 27% in that country, compared with 1% in the United States.[14] In contrast to traditional stimulus projects like new road construction, building and enhancing community health centers would provide opportunities for current employment as well as future employment in tasks valuable for public health.

Over the long term, the investments listed in the Box must be complemented by broader regulatory and policy reforms that address an economic and social environment that increasingly promotes poor nutrition and physical inactivity. Some of these reforms include more stringent regulation of food advertisements and marketing to children[15]; improving funding for school breakfast and lunch programs and for regular physical education and after-school recreation activities; land use regulations to balance development with the need to maintain open space for recreation; a restructuring of farm subsidies to favor nutrient-dense foods, rather than calorie-dense commodities; modification of food assistance programs, for example experiments to allow food stamps to be used at local farmer's markets; and perhaps campaign finance reform to diminish the influence of special interests on matters of strategic importance to public health and the economy.

The successful implementation of a comprehensive initiative to address obesity also would advance other valuable goals: universal health care coverage (by improving medical cost-effectiveness), lower greenhouse gas emissions (by use of transportation and food production methods that consume less petroleum), and equitable global development (by curbing inefficient subsidies that harm farmers in the developing world).

Conclusion

The US economic crisis provides a unique opportunity to examine questions of fundamental importance to public health. Does US society wish to produce vast amounts of low-quality food, neglect the social infrastructure to support physical activity, and sustain the inevitable economic and social harms of obesity-related diseases? Or will this opportunity to align economic and social policies with the interests of public health be seized by implementing a comprehensive, national obesity strategy? Failure to act now could ultimately cost society much more than even the subprime mortgage crisis.

Financial Disclosures: Dr Ludwig reports that he receives royalties from a book about childhood obesity. Dr Pollack reports no disclosures.

REFERENCES

1. June 2008 CPI Detailed Report, Bureau of Labor Statistics. http://www.bls.gov/cpi/cpid0806.pdf. Accessed January 2, 2009.
2. Pereira MA, Kartashov AI, Ebbeling CB, et al. Fast food habits, weight gain, and insulin resistance (the CARDIA study): 15-year prospective analysis. *Lancet*. 2005;365(9453):36-42.
3. Finkelstein EA, Ruhm C, Kosa K. Economic causes and consequences of obesity. *Annu Rev Public Health*. 2005;26:239-257.
4. Caroli M, Argentieri L, Cardone M, Masi A. Role of television in childhood obesity prevention. *Int J Obes Relat Metab Disord*. 2004;28(Suppl 3):S104-S108.
5. Marniemi J, Kronholm E, Aunola S, et al. Visceral fat and psychosocial stress in identical twins discordant for obesity. *J Intern Med*. 2002;251(1):35-43.
6. Haslam DW, James WP. Obesity. *Lancet*. 2005;366(9492):1197-1209.
7. Peeters A, Barendregt J, Willekens F, Mackenbach JP, Al Mamun A, Bonneux L; NEDCOM, the Netherlands Epidemiology and Demography Compression of Morbidity Research Group. Obesity in adulthood and its consequences for life expectancy: a life-table analysis. *Ann Intern Med*. 2003;138(1):24-32.
8. Roux L, Kuntz K, Donaldson C, Goldie S. Economic evaluation of weight loss interventions in overweight and obese women. *Obesity (Silver Spring)*. 2006;14(6):1093-1106.
9. Shand D. Overview of the U.S. Quick-Service Restaurant Sector. *Standard & Poor's*. http://www2.standardandpoors.com/portal/site/sp/en/us/page.article/2,1,1,0,1100500468648.html?vregion=us&vlang=en. Accessed January 2, 2009.
10. Quote Lookup, *The Wall Street Journal*. http://online.wsj.com/public/quotes/main.html. Accessed January 2, 2009.
11. Rose D. Economic determinants and dietary consequences of food insecurity in the United States. *J Nutr*. 1999;129:517-520.
12. Wang LY, Yang Q, Lowry R, Wechsler H. Economic analysis of a school-based obesity prevention program. *Obes Res*. 2003;11(11):1313-1324.
13. Economos CD, Hyatt R, Goldberg J, et al. A community intervention reduces BMI z-score in children: Shape Up Somerville first year results. *Obesity (Silver Spring)*. 2007;15(5):1325-1336.
14. Pucher J, Buehler R. Making cycling irresistible: lessons from the Netherlands, Denmark and Germany. *Transp Rev*. 2008;28:495-528.
15. Ludwig DS, Nestle M. Can the food industry play a constructive role in the obesity epidemic? *JAMA*. 2008;300(15):1808-1811.