

Societal Change to Prevent Obesity

Stuart P. Weisberg

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Address submissions and inquiries to:
MSJAMA, Stuart P. Weisberg, Editor,
100 Haven Ave, Apt 19B,
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ON THE COVER

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10.2 × 15.2 cm.

IN A RECENT SURVEY OF THE AMERICAN PUBLIC, 78% OF RESPONDENTS reported that their body weights were not a serious health concern.¹ Approximately one third of these respondents were obese, two thirds were overweight, and 15% of their children were overweight. This indifference is not appropriate. Obesity may soon replace smoking as the leading cause of preventable death in the United States. Obesity may be responsible for approximately 300 000 US deaths per year, and, unlike smoking, the prevalence of obesity is rapidly increasing.²

Public health officials now refer to obesity as an epidemic. Unlike infectious diseases, obesity kills and disables by gradually increasing the risk for diseases like diabetes, heart disease, stroke, and cancer. Recent studies estimate that obesity is more strongly associated with chronic medical conditions, and reduced health-related quality of life, than smoking, heavy drinking, or poverty.³

Articles in this issue of MSJAMA emphasize the importance of societal change to address obesity. Tarayn Grizzard examines the under-treatment of obesity by American physicians. Susan Blumenthal, Jennifer Hendi, and Lauren Marsillo argue that a public health approach is required to address the myriad environmental and sociocultural factors contributing to obesity. Lawsuits have recently emerged to uncover and redress alleged food industry misconduct that may be contributing to the obesity problem. Richard Daynard, Lauren Hash, and Anthony Robbins discuss the future of this food litigation.

The prevalence of obesity among children is also rapidly increasing and has been associated with hyperlipidemia, hypertension, and impaired glucose tolerance.² Robert Carter reviews the rationale and the results of school-based obesity interventions. Ellen Fried and Marion Nestle argue that soda consumption makes an important contribution to childhood obesity. They describe marketing practices designed to increase soda consumption among schoolchildren and discuss recent political initiatives to restrict these practices.

The burden imposed by overweight and obesity on the United States is very high. The estimated total cost of overweight and obesity in 2000 is estimated to have been \$117 billion, nearly 10% of the US health care expenditure.² By contrast, the United Nations estimates that the yearly costs of HIV/AIDS prevention and care in Africa, Asia, and Latin America will be \$9.7 billion by 2005.⁴ Given the exorbitant costs of obesity, more effective interventions are urgently needed to decrease its prevalence. The fact that most Americans are overweight, yet are not concerned about the health importance of their own body weights, suggests that there remains much room for improvement.

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Undertreatment of Obesity

Tarayn Grizzard, Harvard Medical School, Boston, Mass

DESPITE THE EPIDEMIOLOGICAL DATA LINKING OBESITY TO A number of medical diseases, there is evidence that physicians continue to underrecognize and undertreat it in the medical setting. For instance, although the first-line intervention for obesity is nutritional counseling, exercise, and recommendation of lifestyle changes, only 42% of obese US adults who had visited a primary care physician for a well-care visit in 1996 had been counseled about weight loss. Those patients who had been counseled by a physician and told specifically that they should lose weight were significantly more likely to report attempts at weight loss than those who were not.¹ Although this study relied exclusively on self-reported data from patients, which could have confounded its results, other studies have come to similar conclusions using different methods. Analysis of the National Ambulatory Medical Care Surveys found that of 55 858 US adult physician office visits, behavioral counseling on specific weight reduction strategies such as dietary improvements and exercise regimens were individually provided to no more than a quarter of obese patients. Obesity itself was also underreported. Only 38% of patients classified as obese by height and weight were reported as obese by their physician.²

A recent study of pediatrician referral patterns found that pediatricians frequently referred mildly underweight children but not moderately obese and overweight children, for nutritional workups.³ The lack of medical attention for obese children is compounded by the lack of reimbursement for the treatment of pediatric obesity. One study found that only 11% of pediatrician-ordered treatments for obesity were reimbursed.⁴

The undertreatment of obesity may, in part, be a response to the poor efficacy of current treatments for obesity. To date, the only medical intervention effective for the long-term treatment of obesity is bariatric surgery, which carries significant lifestyle and health comorbidities, and is thus indicated only for a relatively small subset of the obese population. The other interventions—lifestyle modification with respect to diet and exercise and pharmacotherapy with concomitant lifestyle modification—result in a mere 5% to 10% weight loss overall with a maintenance period of one to two years at maximum, with 95% of all patients undergoing weight reduction regaining lost weight within seven years.¹ These losses may be frustrating for patients and physicians, although studies have indicated that even short-term, minor weight losses of 5% to 10% can improve glycemic control, blood pressure, and lipid profiles.⁵

Given such poor outcomes from current weight-reduction strategies, physicians may feel unable to treat obesity effectively and at a loss to initiate a successful counseling session

with concrete weight-reduction strategies. In fact, pessimism about treatment outcomes and a lack of counseling knowledge have been identified as significant barriers to treating obesity.^{6,7} Yet similar problems with behavioral counseling for smoking cessation have been overcome in large part not because of improved medical interventions but because of physician motivation and interest in improving these parameters. Several studies documented the effective components of smoking cessation interventions, and this information has been incorporated into resident education programs.⁸ Rates of behavioral counseling for smoking cessation have improved as a result of this and other work.⁹ A 1998 survey of Medicare managed care patients who reported any smoking during the preceding 12 months, 70.7% reported they had been advised to quit smoking by their health care provider.¹⁰ In contrast, only 38.8% of a similar group of adults who smoked were advised to quit in 1991.¹¹

It is important to increase physician awareness of the importance of obesity as a medical problem. Currently, physicians often underemphasize the importance of weight loss with their patients and infrequently offer obese patients the information they need to understand the severity of their disease and the methods available to treat it. Although the available interventions for weight reduction lack long-term efficacy, the high financial and disease burden imposed by obesity in the United States demands increased research activity to improve use of the available interventions and also to develop new modalities to treat one of the nation's most pressing health concerns.

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A Public Health Approach to Decreasing Obesity

Susan J. Blumenthal, MD, MPA, *US Assistant Surgeon General*, Jennifer M. Hendi, MPH, and Lauren Marsillo, *US Department of Health and Human Services, Washington, DC*

IN CONCERT WITH CLINICAL MEDICINE, WHICH ADDRESSES DISEASES in individuals, the public health approach targets behavioral, sociocultural, and environmental factors that contribute to disease and injury in populations. For example, over the last 40 years, coordinated government efforts and private sector initiatives decreased smoking prevalence by almost half through taxation of tobacco products, smoking bans in public places, laws prohibiting tobacco sales to minors, advertising restrictions, and aggressive public education campaigns.¹ Soon, however, obesity may surpass smoking as the leading cause of preventable death in the United States.² Public health interventions to decrease obesity prevalence must apply the same kind of multifaceted and coordinated approach that reduced tobacco use in order to change individual behavior patterns and effectively address the environmental barriers to physical activity and healthful food choices.

Between 1984 and 1997, there was more than a 15% increase in the average daily calorie intake per person in the United States.³ New farming practices, subsidies, and innovations in processing, packaging, preservation, and refrigeration have resulted in an abundance of food that can be easily stored and transported across states and continents.⁴ The food industry spends approximately \$26 billion on advertising annually, and the proliferation of restaurants and fast-food chains has made its products widely available.⁵ To make the public more conscious of their nutrient intake, public health interventions might make labels reporting the calorie and nutrient content of foods more prominent and pervasive. Other strategies include encouraging the sale of more healthful foods in fast-food restaurants, tax incentives, and limiting the sale of high-calorie, low-nutrient snacks on school campuses.

At the same time that calorie consumption has increased, daily physical activity among Americans has decreased for several reasons, including increased reliance on motor vehicles, sedentary occupations, and the proliferation of television and computer technology. Despite evidence of its health benefits, as many as 74% of US adults report that they do not engage in the amount of leisure time physical activity recommended by the US Department of Health and Human Services.⁶ Additionally, the percentage of students attending daily physical education classes decreased from 42% in 1991 to 32% in 2001.⁷ Public health initiatives might target behavioral and structural barriers to physical activity by increasing the number of pedestrian malls in public places and encouraging people to walk or ride bicycles to work and school. Other initiatives might foster regular exercise by increasing the availability of recreational centers, parks, and workplace gyms as well as requiring physical education in schools.

The public's knowledge and attitudes about nutrition and its influence on health have been shown to affect their food choices. Increased amounts of publicly available information linking dietary lipids to heart disease has been associated with decreased consumption of whole milk, eggs, and pork and increased consumption of low-fat milk, poultry, and fish.⁵ Although most Americans are aware of the links between health, diet, and physical activity, most do not consider their body weight to be a major health concern.⁸ The prevalence of obesity is also highest among people with fewer years of education.² School- and community-based health education campaigns tailored to cultural background, gender, and age group as well as health messages widely disseminated in the entertainment and news media can help correct misperceptions that contribute to obesity as well as promote healthy behavior.

Attempts to decrease obesity that focus primarily on changing individual behavior have been ineffective. Last year, more than half of Americans attempted weight loss or maintenance through dieting and spent more than \$33 billion on products and services.⁹ Nonetheless, obesity rates continue to increase and have doubled since 1980.² In order to decrease the prevalence of obesity, a multifaceted public health approach is required to address the many behavioral, sociocultural, and environmental factors that promote caloric intake and discourage physical activity among Americans. In 2001 a *Surgeon General's Call to Action to Prevent and Decrease Overweight and Obesity* was issued to provide the framework for such an approach.² The strategy outlined above can help coordinate the efforts of public and private organizations working in partnership to achieve the broad range of changes needed to prevent and reduce obesity in the United States.

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Food Litigation: Lessons From the Tobacco Wars

Richard A. Daynard, JD, PhD, *Northeastern University School of Law, Boston, Mass*, Lauren E. Hash, *Harvard Law School, Cambridge, Mass*, and Anthony Robbins, MD, MPA, *Tufts University School of Medicine, Boston*

TO SELL THEIR PRODUCTS IN AN ECONOMY OF ABUNDANT choices, food companies employ aggressive marketing strategies. Manufacturers introduce thousands of new food and beverage products into the market every year. Food and food service companies spend more than \$11 billion annually on direct media advertising.¹ As a result, the calories provided by the US food supply have increased from 3300 per capita in 1970 to 3800 in the late 1990s, which may be a contributing factor in the rise of obesity among Americans over the same time period.² Litigation has been successfully employed to reduce industry practices that may be harmful to the public health. For example, personal injury suits by smokers and nonsmokers, suits by state attorneys general to recover Medicaid expenditures, and other class actions have forced tobacco companies to raise prices dramatically and curtailed tobacco industry marketing practices, particularly those aimed at minors.³

The strategies and techniques of tobacco litigation, however, cannot be imported wholesale into food litigation. Tobacco is an addictive and deadly product while food is necessary for life, and small amounts of any food can be part of an appropriate diet. The causes of obesity, unlike the complications of smoking, are multifaceted. While the development of emphysema and lung cancer can be clearly linked to a history of cigarette use, obesity typically stems from a combination of genetic factors, long-term overconsumption of many different foods, and inadequate physical activity.

There are many obstacles to personal injury suits asserting that a lifetime of eating certain foods caused the plaintiff's obesity and consequent chronic illnesses. The plaintiff would need to establish a precise misbehavior committed by the defendant that led him or her to overindulge in their product. Even if the company had behaved properly, the plaintiff may have simply overeaten. Unless these concerns are addressed convincingly, plaintiffs will lose their case, just as suits against cigarette makers used to fail consistently before the overwhelming evidence of the industry's misconduct emerged from their own documents.⁴

We believe that an action to recover funds for a state Medicaid program has a better chance at success, as it might not be necessary to show that a particular food industry action caused obesity and consequent disease. A state could argue that fast food companies contributed to the state's costs of treating obesity-related diseases in proportion to their sales in the state. However, that argument too would be difficult to prove, and the state would still have to show that all the defendants were legally liable.

Lawsuits targeting particular marketing practices that may contribute to obesity may also be successful, because they would not depend on showing how food industry misconduct led to food over consumption and injury to the plaintiffs. Most states have consumer protection laws modeled on the Federal Trade Commission Act, which allow consumers, or classes of consumers, to sue for "unfair or deceptive" commercial practices.⁵ Claims about particular nutrients in food such as "high in calcium," "high fiber," and "low in fat," may be generally understood as meaning that the consumer should eat the food as a larger part of his or her normal diet. If a food with these claims is also highly caloric, the omission of this information may make the overall impression created by the ad deceptive.⁶ Litigation might also target "pouring rights" contracts, in which school districts agree with soda or snack food manufacturers to place their vending machines in hallways and school cafeterias in return for a share of the profits. These contracts are a frequently used direct market technique designed to establish brand loyalty in young children.⁷ Companies seeking such contracts may reasonably be thought unfair because they are marketing non-nutritious products to a captive audience.⁸

Litigation is a new front in the battle to control obesity. While experience with tobacco litigation can help make some predictions, key differences between smoking and obesity will surely affect how the battle will play out. In the absence of proof that particular food industry practices cause obesity, suits seeking compensation for obesity-related injury are unlikely to succeed, while suits seeking to protect consumers from unfair or deceptive food marketing techniques are more likely to succeed. Food industry documents analyzed during such lawsuits will likely reveal whether these marketing techniques were intended to deceive or manipulate consumers. This information will play a major role in determining the outcome of food litigation.

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The Impact of Public Schools on Childhood Obesity

Robert Colin Carter, Johns Hopkins University School of Medicine, Baltimore, Md

CHILDREN SPEND A LARGE PORTION OF THEIR DAY IN SCHOOL. Because many of the lifestyle and behavior choices associated with obesity develop during school-age years, a child's food intake and physical activity at school are important determinants of body weight.¹ By providing meals, physical activity, and health education, school policies can help to prevent childhood obesity.

More than 25 million students use the National School Lunch Program (NSLP) daily, while approximately 7 million utilize the National School Breakfast Program (NSBP) daily.² Meals from these programs may constitute more than half the daily caloric intake for children who participate in both programs, particularly for those from low-income families. Because such children have a higher prevalence of obesity during their adolescent years than do those with higher socioeconomic status,¹ the provision of free or discounted meals through these programs may influence food intake among this group.³

Currently, however, total and saturated fat contents of meals provided by most schools exceed the limits required by the NSLP and NSBP programs.⁴ Training of food preparation staff may effectively address this problem without decreasing student participation rates.⁵ Many schools also have snack bars, student stores, and vending machines that offer foods high in fat and sugar content. Students at schools that offer such food sources in addition to the NSLP are less likely to consume fruits, juice, and vegetables than students who are only offered the NSLP.⁶ Recognizing this problem, the California State Senate passed a bill last year placing nutrition regulations on all foods sold in public schools.⁷

School programs that encourage physical activity are important for increasing children's energy expenditure, because children are less likely to participate in physical activity in the absence of adult supervision.⁸ These programs may also create expectations for regular physical activity that may persist into adulthood. In order to increase physical activity among children regardless of their athletic abilities, the CDC recommends daily physical education classes that emphasize health-related fitness activities over activities requiring specific athletic abilities.⁹ However, in 2001 only half of high school students participated in physical education classes and less than one third of students had physical education daily.¹⁰ In addition to requiring physical education, other opportunities for schools to increase energy expenditure include encouraging physical activity during recess and providing after-school sports and health-related fitness programs.⁹

Schools also have the potential to influence students' beliefs and attitudes regarding nutrition and weight control. A 2001 national survey documented poor eating behaviors

among American youth. Only 21.4% of high school students had eaten more than five servings per day of fruits and vegetables; 13.5% reported fasting for more than 24 hours to lose weight; 9.2% reported using diet pills that were not prescribed by a physician; and 5.4% reported using vomiting or laxatives as a weight control measure.¹⁰ In another national survey, fat comprised an average of 35% of total caloric intake in youth aged 2 to 19 years, and almost two-thirds of these youth did not eat recommended amounts of fruits and vegetables.¹¹ Nutrition education could give students the tools they need to make healthy choices regarding eating and physical activity. More research is needed to examine the effects of such education programs on behaviors and body weight.

Although schools could potentially have a large impact on determinants of obesity, results of studies examining school-based obesity interventions have been variable.¹¹ A review of these studies found that strategies aimed at younger children had better long-term results than those focused on adolescents, which may suggest that eating and physical activity behaviors are more difficult to change as children get older.¹² The variability of results in studies examining school-based interventions underscores the fact that many influences outside schools are important determinants of children's body weight. While childhood obesity may not be overcome by the efforts of the education system alone, schools provide an important opportunity for prevention.

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The Growing Political Movement Against Soft Drinks in Schools

Ellen J. Fried, JD, and Marion Nestle, PhD, MPH, *Department of Nutrition and Food Studies, New York University, New York, NY*

THE CAUSES OF OBESITY ARE COMPLEX AND REFLECT FOOD AND lifestyle choices that ultimately result in an energy intake that exceeds expenditure. In 1997, American children obtained 50% of their calories from added fat and sugar (35% and 15%, respectively); only 1% regularly ate diets conforming to the recommendations of the Food Guide Pyramid, and 45% failed to achieve any of the Pyramid recommendations.¹ Although parental influence remains a critical determinant of children's dietary intake, environmental factors outside parental control also influence what children eat. These factors include the marketing of high-calorie, low-nutrient soft drinks and other snack foods to children in schools.

In 2001, the advertising budgets of Coca-Cola and PepsiCo approached \$3 billion in the United States alone.² Soft drink companies aim advertising campaigns at children in efforts to develop lifetime brand loyalties and capture market shares.³ Entire conferences are devoted to marketing to children, offering sessions on effective promotional campaigns and "emotional branding for kids."⁴ That these advertising and marketing techniques affect children's recognition of brand names, requests for food purchases, food choices, and levels of consumption is well established.⁵

The consumption of soft drinks is of special concern because many contain sugars and corn sweeteners but few essential nutrients, and because soft drinks are currently the leading source of added sugars in the adolescent diet. Nearly one fourth of adolescents drink more than 26 oz/day, which provides at least 300 kcal, approximately 12% to 15% of their daily caloric need. Children who habitually consume sodas take in fewer nutrients but more calories; they are more likely to be overweight or obese after adjustment for anthropometric, demographic, dietary, and lifestyle variables.⁶ Furthermore, students in schools that provide access to soft drinks and snack foods are less likely to consume fruits, juice, milk, and vegetables than students who do not have such access.⁷

Nevertheless, about 60% of US middle and high schools sell soft drinks in vending machines.⁸ In 2002 an estimated 240 US school districts had entered into exclusive "pouring rights" contracts with soft drink companies.⁹ Typically, the companies give the schools cash and other incentives in return for the right to sell sodas in vending machines, and to advertise on scoreboards, in hallways, on book covers, and other places. These contracts reward schools for selling more soda to students, and some even directly link the school's revenues to the amount of soda sold.¹⁰

School nutrition has become an important focus of political and legislative initiatives targeting the causes of obesity. Recently, several school districts across the country have

refused to enter into deals with soft drink companies after protests by parents, students and school officials.¹¹ In February 2002, the Oakland school district banned all sales of soda and candy. In August, the Los Angeles school board voted to take soft drinks off cafeteria menus and end the sale of soft drinks in vending machines by 2004. This action is especially significant since the Los Angeles district is so large (677 schools and 736 000 students) and its schools sell \$4.5 million worth of sodas annually.¹² These actions signal a growing movement to oust soft drinks from schools. These actions will most likely decrease soft drink companies' support for schools, but for many schools, contracts with soda companies are a significant source of revenue. Strong public advocacy is critical to ensure that schools are adequately funded from noncommercial sources.

Voicing opposition to a ban on school soda sales, a spokesman for the National Soft Drink Association implied that the problem is lack of activity rather than too many calories. He said that obesity is "about the couch and not the can."¹² To prevent childhood obesity, it is necessary to promote greater activity but also to eliminate environmental factors that foster excess caloric intake. As political initiatives increasingly eliminate soft drink vending machines and advertising from schools, it will be important to assess whether doing so significantly decreases calorie consumption and obesity among children.

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The Masonic Temple Bride

Dagan Edrick Coppock, *Yale Medical School, New Haven, Conn*

The man in the black tuxedo inhaled.
With the long pull of wind, an atmosphere brewed
at the tip of his Pall Mall. A pinpoint of orange
flared in the vacuum as a brief red sun.
Over its light he loomed as a god, king and creator—
a Mason, a patriarch of the groom's family.

The cigarette dimmed with his exhalation.
Smoke from deep in his chest rose up,
rolled through his throat, curled from his lips
to wallow with the evening. His mist of ash
joined Appalachian fog, and settled over
the fiberglass sphinx—giant and golden,
glazed in condensation—a beast
that crouched by the doors of the temple.
The bride's honor guard, all fezzes and Southern accents,
laughed and cursed as red sand billowed
in the mural behind them—a freeze-frame of wind,
the North African desert, a mirage of water.

In the window I could see my aunt's attendants,
exotic and toothless, swarming around her.
The doctor had stained her skin with hash marks,
a permanent dye to aim each treatment.
With cosmetics, the attendants powdered the marks,
made her body seamless for the night of her wedding.
As her flesh was smudged, my aunt stared away
ready for the aisle, the walk through the crowd,
the eyes of her family, the glare of radiation.