

Reducing Obesity: Motivating Action While Not Blaming the Victim

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Context: The rise in obesity in the United States may slow or even reverse the long-term trend of increasing life expectancy. Like many risk factors for disease, obesity results from behavior and shows a social gradient. Especially among women, obesity is more common among lower-income individuals, those with less education, and some ethnic/racial minorities.

Methods: This article examines the underlying assumptions and implications for policy and the interventions of the two predominant models used to explain the causes of obesity and also suggests a synthesis that avoids “blaming the victim” while acknowledging the role of individuals’ health behaviors in weight maintenance.

Findings: (1) The medical model focuses primarily on treatment, addressing individuals’ personal behaviors as the cause of their obesity. An underlying assumption is that as independent agents, individuals make informed choices. Interventions are providing information and motivating individuals to modify their behaviors. (2) The public health model concentrates more on prevention and sees the roots of obesity in an obesogenic environment awash in influences that lead individuals to engage in health-damaging behaviors. Interventions are modifying environmental forces through social policies. (3) There is a tension between empowering individuals to manage their weight through diet and exercise and blaming them for failure to do so. Patterns of obesity by race/ethnicity and socioeconomic status highlight this tension. (4) Environments differ in their health-promoting resources; for example, poorer communities have fewer

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The Milbank Quarterly, Vol. 87, No. 1, 2009 (pp. 49–70)
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supermarkets, more fast-food outlets, and fewer accessible and safe recreational opportunities.

Conclusions: A social justice perspective facilitates a synthesis of both models. This article proposes the concept of “behavioral justice” to convey the principle that individuals are responsible for engaging in health-promoting behaviors but should be held accountable only when they have adequate resources to do so. This perspective maintains both individuals’ control and accountability for behaviors and society’s responsibility to provide health-promoting environments.

Keywords: Obesity, behavior, explanatory model, justice.

OVER THE LAST HALF CENTURY, THE U.S. POPULATION’S LIFE expectancy at birth steadily increased while the leading causes of death shifted from infectious diseases arising from environmental causes such as unhygienic living conditions, to chronic diseases resulting from “lifestyle” causes such as smoking, diet, exercise, and sexual practices. Health behaviors are currently estimated to account for about 40 percent of premature mortality (McGinnis, Williams-Russo, and Knickman 2002). Among other things, the diminishing rates of smoking have helped increase longevity, but the obesity epidemic may slow or even reverse the trend toward longer life expectancy (Olshansky 2005). A recent NCHS data brief reported that in 2005/2006, 34.3 percent of U.S. adults were obese and that the entire BMI distribution had shifted over the last twenty-five years toward a greater number of the extremely obese (Ogden et al. 2007). Wang and Beydoun (2007) reported that 16 percent of children and adolescents were overweight, with another 34 percent at risk for overweight, and that 66 percent of adults were overweight or obese. They estimated that by 2015, 75 percent of adults would be overweight and, of those, 41 percent would be obese.

Although the estimates of the impact of overweight and obesity on mortality differ (Manson et al. 2007), epidemiologic studies demonstrate that overweight leads to a moderate increase in mortality and that obesity leads to a two- to threefold increase in mortality. Excess weight is a major risk factor for type 2 diabetes, hypertension, coronary heart disease, stroke, heart failure, and several types of cancer (McTigue et al. 2006; Moghaddam, Woodward, and Huxley 2007; Mokdad et al. 2001; Must et al. 1999). Manson and colleagues (2007) concluded that

quality-adjusted life expectancy at age eighteen was reduced by 7.2 years for obese women and 4.4 years for obese men.

Like most risk factors, obesity is found more often in socially disadvantaged groups. Obesity is more common among lower-income individuals and those with less education. In 2001, 27 percent of adults who had only a high school education or less were obese, compared with 20.8 percent of those who had at least some college. Similarly, 28.6 percent of those who were poor were obese, compared with 20.7 percent of those with incomes 400 percent or more over the poverty level (Rhoades, Altman, and Cornelius 2004). Although men and women have comparable rates of obesity, low socioeconomic status is more closely linked to obesity in women than in men (Drewnowski and Specter 2004). U.S. women of lower socioeconomic status (SES) are 50 percent more likely to be obese than are higher-SES women (U.S. Dept. of Health and Human Services 2000). Not only is obesity more common among members of some racial/ethnic groups, but differences among groups also are more pronounced among women than among men in a number of these groups. For example, African American and Mexican American women are more likely to be obese than are non-Hispanic white women (Chang and Lauderdale 2005; Ogden et al. 2007), but the men in these groups do not differ from one another (Ogden et al. 2007).

The relationship between SES and weight in adulthood reflects the impact of socioeconomic conditions on weight and vice versa. As we will discuss in this article, social disadvantage encourages weight gain. At the same time, the stigmatization of the obese may diminish their occupational, educational, and social opportunities. Obese individuals report experiencing discrimination based on their weight in the workplace, health care and educational institutions, and relationships with family and friends (Andreyeva, Puhl, and Brownell 2008). Institutional and interpersonal discrimination based on weight has been shown in some cases to be more prevalent than discrimination related to gender or race (Puhl, Andreyeva, and Brownell 2008). The bidirectional association between SES and weight may be especially strong for females, and the greater prevalence of obesity among both low-SES adolescent white girls and black adolescent girls at all SES levels bodes ill for their socioeconomic success in adulthood (Wang and Beydoun 2007; Wang and Zhang 2006).

The associations of obesity with age, ethnicity, gender, and socioeconomic status are complex and have changed over time (Wang and

Beydoun 2007). Although obesity is generally more common among lower-SES individuals, there is some evidence that in specific groups, this association has changed. SES was consistently inversely related to obesity for white women and unrelated for white men in NHANES samples from 1971 to 2002. Over this period, the income gradient for obesity became shallower for black women and became positive for black men. However, examining change within the same individuals, Lewis and colleagues (2005) did not find differences between black and white women aged forty-two to fifty-two in weight change over four years. Both groups showed weight gain at all educational levels. BMI did not differ by educational level among black women but showed an inverse association for white women. Although white and black women with a high school education or less were of similar weight, among women with more education, black women had higher BMIs than did whites.

Over the last three decades, the disparity in obesity across SES has narrowed (Zhang and Wang 2004). Although the reasons for this change are not clear, one possibility is that low-SES individuals were the “first responders” to adverse environmental forces conducive to weight gain. As these forces, described later (e.g., marketing by the food industry, ubiquitous low-cost energy-dense food, more hours spent at sedentary work and commuting, and greater dependence on fast food), have grown more dominant, it may have become more difficult for people at all SES levels to resist them. Nonetheless, these forces still fall most heavily on those of lower SES and among ethnic groups that, similarly, may be more vulnerable to these factors.

Explanatory Models

Policies and interventions to reduce obesity are informed by our understanding of its causes. The two predominant models used to explain the occurrence of obesity—and of health more generally—are the medical model and the public health model. These models are based on different assumptions, derive from different intellectual traditions, and have very different implications for policy and intervention.

A major characteristic differentiating the models is that the medical model focuses on curing disease, whereas the public health model concentrates on preventing disease (Satcher and Higginbotham 2008). In addition, the medical model centers on the individual patient and

his or her characteristics, whereas the public health model looks at a population's risk factors and the context in which they emerge. We next describe each model and discuss, as the best intervention for obesity, an integrated approach that incorporates both perspectives.

The Medical Model

At a recent meeting at our institution, which is a health sciences university, a group of administrators were asked for their explanations of the obesity epidemic. Reflecting the prevailing culture, the two most common explanations were obese persons' genetics and their poor choices of diet. Both these explanations are based on the individual's personal risk factors—his or her genetic makeup and particular behavior. Accordingly, the medical model's solutions to obesity are derived from this view. To date, we have no way of changing genetic vulnerability, and genetic solutions are proving elusive, since only a few single genes linked to obesity have been identified. Although complex combinations of genes may contribute to obesity, "each of the obesity genes likely makes only a small contribution to overweight" (Lyon and Hirschhorn 2005, p. 215S). This leaves behavioral choices as the main target of intervention.

Long-term weight loss has proved difficult to achieve through the usual approaches to diet and exercise (Garner and Wooley 1991; Wilding 2007). Currently, the most effective treatment for long-term weight loss in severely obese individuals is bariatric surgery (Buchwald and Williams 2004). But surgery is expensive and carries risks. In addition, even with surgery, patients must limit their caloric intake and be active in order to maintain their initial weight loss. Thus, the primary clinical approach to reducing overweight and obesity is to change the person's eating and activity patterns.

Limited Treatment. Despite the need to prevent and reverse obesity, our current health care does not treat all those at risk. More than a third of obese people report that they were never told by a health care provider that they were "overweight," with obese men less likely than obese women to report their provider's raising the issue (Ogden et al. 2007). In part, the reason for this omission is that little time in a primary care visit is devoted to issues of prevention (Zyzanski et al. 1998). Consequently, although some patients may have forgotten what their providers actually told them, these data suggest that many of

those who are already obese are not receiving counseling or treatment. Furthermore, the issue of weight management undoubtedly is raised even less often among those who are overweight but not yet obese.

Many of the two-thirds of obese patients whose health care providers have raised the issue will simply be told of their risk status. Although some will be given additional information about diet and exercise, such information may have only a limited impact. Even though efforts that target specific behaviors appear to be more successful than more general approaches, educational interventions alone are relatively ineffective (Jeffery and French 1999). In fact, most people do not get help controlling their weight from their health care providers but from reading diet books, interpersonal contacts, and weight management groups (e.g., Weight Watchers). A recent scientific statement from the American Heart Association regarding our current approach to obesity notes the “limited ability to deliver enough treatment to enough people” (Kumanyika et al. 2008, p. 430) and argues for more broadly based prevention strategies at the population level.

Focus on the Individual. Biomedicine dominates U.S. health care, and its focus on the individual patient resonates with core American values of individuality, autonomy, and responsibility. The medical model views individuals as responsible agents, capable of acting in their own behalf. The main purpose of interventions regarding overweight and obesity, along with other behavioral risk factors, is providing information so that people can make more informed behavioral choices. The medical model’s characterization of individuals as active, responsible agents reflects our historical emphasis on individual choice and autonomy and the individual maximization of outcomes in a free market. The idea of an active agent is a central tenet of the dominant economic models, which assume that people act rationally and make economic choices in their own best interest. Rational choice also is at the heart of widely used theoretical models of decision making and behavior in the behavioral sciences, such as the theory of reasoned action, the theory of planned behavior (Ajzen and Fishbein 1980; Fishbein and Ajzen 1975; Sheppard, Hartwick, and Warshaw 1988) and the health belief model (Becker 1974; Janz and Becker 1984).

A positive aspect of this focus on the patient’s choice is his or her potential empowerment. This underlying philosophy of free choice highlights the need for individual action and encourages people to take action. Even those patients choosing a surgical approach to reduce obesity, an

apparently passive “cure,” are often required to lose a set number of pounds before undergoing surgery. Doing so demonstrates the patient’s capacity to regulate his or her weight, which will be necessary after surgery to maintain the gains produced by the procedure. This combination of surgical intervention and proven capacity for behavioral change may explain why bariatric surgery has the greatest relative success of long-term weight loss.

Although some individuals are able to make and maintain change, the medical model largely ignores the forces contributing to the development and maintenance of obesity. Patients walk out of the health care provider’s office only to reenter the same environment that led to their weight gain in the first place. The commercial and structural forces in their environment still are powerful. These people thus may be caught in “vicious cycles” of “accelerators” of the obesity epidemic (Swinburn and Egger 2004, p. 736) resulting from the interaction of an increasingly obese individual with an “obesogenic environment” that encourages an overconsumption of food and discourages physical activity (French, Story, and Jeffery 2001; Swinburn and Egger 2002). One such vicious cycle results when heavier people perform fewer energy-demanding activities, thereby making them more susceptible to an energy imbalance. Unless they are given new skills and resources to resist the obesogenic environment, it will be difficult for them to act on their own to change their behaviors. This environment, which the medical model ignores, is, in contrast, the major focus of the public health model.

The Public Health Model

The public health model differs from the medical model not only in its emphasis on prevention but also in its consideration of a wider range of causative factors. A key step in addressing health problems in a public health model is identifying and modifying disease vectors. The first model for this approach was John Snow’s identification in 1849 of contaminated well water as the source of cholera infection and his removal of the pump handle to prevent its further spread. Until recent years, the identified disease vectors were toxins and pathogens carried in water, air, and food, and biological and physical sciences and epidemiology provided the scientific underpinning for identifying these vectors. Now the growth of social epidemiology has extended this focus

to factors in the social environment that influence disease risk (Berkman and Kawachi 2000), thereby expanding the public health science base to include the social and behavioral sciences.

Focus on the Environment. The public health perspective assigns responsibility for the obesity epidemic not primarily to individuals who eat too much and move too little but to the “obesogenic environment.” Social and economic conditions have been linked to the prevalence of obesity and its recent increase through their impact on the expenditure versus the intake of energy. Environmental influences have increasingly made unhealthy choices the default, or easiest, choice, which has affected both sides of the equation.

Among the factors that may affect the expenditure of energy are technological advances, work patterns, and transportation. In a review of economic changes that might explain the growing rates of obesity, Finkelstein, Ruhm, and Kosa (2005) point to the impact of energy-saving technologies and the decline in manual labor. In the United States, these conditions are coupled with longer workweeks and commute times. Americans now work longer days than Europeans do. For example, in the 1970s, the workweek was shorter in the United States than in France, but now the American workweek is about 50 percent longer (Prescott and Carey 2004). Longer workweeks and commute times leave less time for leisure activities and lead to more meals not eaten at home.

The built environment also affects physical activity. Current urban design and transport systems favor automobile use over walking (Ewing, Pendell, and Chen 2002) and also limit the opportunities for physical activity (Dannenberg et al. 2003; Frumkin 2003). For example, in California those who spend more time in motor vehicles are more apt to be obese (Frank, Andresen, and Schmid 2004; Lopez-Zetina, Lee, and Friis 2006).

Neighborhood characteristics also affect the ease or difficulty of physical activity. Walkability is determined by the physical and built environment (e.g., sidewalks and greenery) as well as the social environment (e.g., crime rates, norms regarding control of dogs and their waste). People living in places that are safe or are perceived to be safe and that offer convenient places to walk are more active (Giles-Corti and Donovan 2002; Powell, Martin, and Chowdhury 2003; Sallis et al. 2007). Likewise, residents of low-walkability neighborhoods have higher BMIs and are more likely to be classified as overweight (Doyle et al. 2006; Saelens et al. 2003).

The public health model also looks at environmental conditions that contribute to the obesity epidemic through their effects on food consumption. The pervasive and powerful marketing of energy-dense foods has come under increasing scrutiny. This marketing includes advertising and the design and presentation of the food itself. The supersizing of cheap sources of energy-dense food and the proliferation of fast-food outlets pit healthy food choices against convenience and getting “the most bang for your buck.” The food industry’s marketing of foods that exploit evolutionarily programmed human preferences for sugar and fat affects food preferences and their associated caloric intake. As Nestle (2003, p. 781) observed, market forces “turn people with expendable income into consumers of aggressively marketed foods that are high in energy but low in nutritional value, and of cars, television sets, and computers that promote sedentary behavior.” There is particular concern about the marketing of food like sweetened cereals, beverages, and snack foods to children (Koplan, Liverman, and Kraak 2005; Kumanyika and Grier 2006).

While public health approaches to obesity include health education aimed at changing individual behavior, public health solutions are increasingly looking to the epidemic’s environmental drivers (Kahn et al. 2002; Kumanyika et al. 2008). These approaches include legislative and regulatory means to remove obstacles to healthy eating and activity habits and/or to create incentives to support them. Examples are nutrition standards for school lunch programs; bans on sugar-sweetened beverages in schools’ vending machines; requirements for physical education in schools; requirements for developers of residential subdivisions to include bicycle paths, sidewalks, and parks; and zoning regulations for fast-food outlets.

Complementary Models

We need both the medical and the public health models, as each has been criticized as incomplete and/or inefficient. Critics of the public health model question the effectiveness of prevention, noting that few preventive efforts have been cost effective, either because of the intervention’s lack of success or the inefficiency of intervening for the whole population when only a subset will develop disease without preventive actions. Critics of the medical model point out that if cases are

treated only when they develop, the need for services will never end. Even if clinical interventions are successful for each person treated, new people at risk will require treatment (Syme 2004). The comparative efficiency of the approaches depends on the relative cost and effectiveness of the interventions and on the proportion of individuals who, in the absence of intervention, will develop disease and need treatment. Indeed, Kumanyika and colleagues (2008) argue that the high prevalence of obesity results in lower per capita costs associated with population-based approaches than with clinical approaches.

The medical and public health models have complementary strengths and limitations associated with their underlying perspectives. By framing health-damaging behaviors in terms of choice, the medical model resonates with American cultural and political beliefs stressing personal responsibility and individual action. The concept of the person as an active agent is appealing, and this framing of causality can give people a greater sense of control over their own health. Among the weaknesses of the medical model is its narrow focus on treating those who already are obese rather than on prevention (Satcher and Higginbotham 2008). People seem to have more difficulty losing weight once they are obese than avoiding becoming obese in the first place. That is, they need to eat fewer calories and expend more energy to lose weight than to maintain weight, and being overweight in itself makes losing weight more difficult. A second weakness is the model's failure to account for the epidemic's environmental drivers.

The public health model complements these limitations by focusing on prevention and a wide range of environmental factors. Although addressing environmental features that affect diet and exercise is necessary, doing so is not enough to eliminate obesity. Successful interventions at the population level for other health problems have worked by making the healthier behavior the "default" behavior. For example, providing clean water has proved over time to be more effective and efficient than requiring individuals to boil water before using it. More recently, in regard to preventing vehicular injuries, rather than convincing people to make an active choice to fasten their seatbelts, sensors and alarms make it unpleasant not to do so, and air bags provide passive protection. In the case of weight management, however, the relevant behaviors cannot be addressed without the individual's active and ongoing involvement. Avoiding excess calories and engaging in adequate physical activity are not single or contained actions. Instead, through behaviors that involve

many choices each day, people determine what and how much they eat and how active they are.

Social and environmental interventions alone will not resolve the obesity epidemic unless they are combined with interventions that help people take advantage of environmental resources. Even in environments that provide ample opportunities for choosing and eating lower-calorie, nutritious foods and for engaging in physical activity, some persons will not do so. Conversely, in environments hostile to such behaviors, some people are nonetheless able to maintain a healthy weight. This variation points to the need to understand individual differences, as this may reveal vulnerabilities and strengths and allow us to tailor interventions to each person's characteristics. Specific types of interventions could be targeted to those at greatest risk of becoming obese and/or maintaining their overweight. Just as "personalized medicine" holds the promise of more effective drug therapies by tailoring a regimen to a person's particular genetic profile (Katsanis, Javitt, and Hudson 2008; Lesko 2007), interventions that take into account the circumstances and characteristics of those in the affected populations should be more likely to succeed. This approach would combine "selective prevention" in which high-risk groups are the focus of population-based efforts and "targeted prevention" in which high-risk individuals are offered services (Kumanyika et al. 2008). In brief, when combined, the two models can develop interventions that address individual behavior change in environments that encourage healthy behaviors.

Conflict between Choice and Stigma

Although complementary, the models' views of choice and responsibility conflict with each other (Schwartz and Brownell 2007). The principle of free choice inherent in the medical model implies personal responsibility. If individuals are capable of choosing to engage in a health-promoting or health-damaging behavior, aren't they responsible for the consequences? If they are told the risks of being overweight and given information about how to reduce their weight, isn't the rest up to them? This reasoning assumes that the deck is not stacked against healthier choices for individuals.

Those operating from a public health perspective question the extent to which choice is "free" if the incentives are heavily weighted toward

some options and against others. In the case of food, both the hedonic cues and the pricing and availability of unhealthy foods make it more difficult for people to behave in healthier ways. More problematically, the medical model assumes a level playing field for the populations making these choices. As we discuss later, those with fewer socioeconomic resources face far more obstacles to making healthy “choices” than do those who are better off.

The contrasting critique of the public health approach is that it fails to honor individual autonomy and undervalues personal responsibility. Suggestions that the consumption of high-calorie, high-fat foods with little nutritional value could be discouraged by the imposition of a tax have been met with derision by some. It is belittled as a “fat tax” undermining individuals’ rights to choose what they eat (Gostin 2007). An ordinance recently passed by the Los Angeles City Council banning the construction of new fast-food restaurants in a 32-square-mile area inhabited by 500,000 low-income people was criticized as limiting food choice and “depicting poor people, like children, as less capable of free choice” (Saletan 2008).

Viewing behaviors as freely chosen, as opposed to environmentally constrained, colors the interpretation of responsibility and fault. It is reasonable to hold individuals accountable for behaviors (and their associated outcomes) that they can control. Social sanctions for negative behaviors can be a powerful impetus to modify those behaviors and was one of the reasons for the substantial drop in smoking rates. Smokers’ efforts to quit were increasingly encouraged and supported by restrictive environmental “levers,” including higher taxes to increase prices, advertising bans, and smoking bans in public places. Support for these policies reflected changes in social attitudes toward smoking and reinforced those changes. A turning point in public opinion was the surgeon general’s report on smoking, which spelled out not only the personal cost of tobacco use to smokers but also the danger to others from secondhand smoke (U.S. Department of Health and Human Services 1986).

Although social norms and social disapproval of health-damaging behaviors can facilitate behavior change, they can also lead to the stigmatization of those who engage in those behaviors, as in the stigmatization of smokers. While disapproval of smoking has helped reduce its prevalence, those who continue to smoke in the face of increasing social sanctions have become socially marginalized (Christakis and Fowler 2008).

The obese already are a stigmatized group, and they may become even more stigmatized unless the public understands and accepts that people need adequate resources (e.g., affordable healthy food and the absence of advertising of unhealthy choices) to engage in health-promoting behaviors. Otherwise, well-meaning efforts to help individuals reduce their weight can devolve into blaming the obese for failing to achieve that goal. Although obesity is not the equivalent of secondhand smoke, as the costs to society associated with greater obesity mount, there may be greater public disapproval of overweight. The question is whether this will take the form of aversive social pressure on the obese to reduce their weight and further stigmatization of those who remain obese, or whether it will increase support for policies to modify our obesogenic environment and thus make it easier for individuals to control their weight.

Behavioral Justice: A Resolution?

Can we resolve the conflict between the medical model's focus on the individual and its associated risk of "blaming the victim" and the public health model's focus on the obesogenic environment and its associated risk of ignoring individual choice? One way to resolve this conflict is to view obesity from a social justice perspective. If we accept that it is unjust to hold people accountable for things over which they have little control, then they should be held responsible for engaging in healthy behaviors only when they have full access to the conditions that enable those behaviors. This places the primary responsibility on society to provide equal opportunities for all people to be able to make the healthier choices, and it reframes the discussion as one of justice rather than blame.

Social Patterning of Environmental Risk Factors

Assuming a justice perspective will help us understand both group differences in obesity and individual risk. As we pointed out, rates of obesity are higher among disadvantaged racial/ethnic and socioeconomic groups. This disparity is unlikely to be due to differences in genetic

vulnerabilities or “will power.” Rather, these groups are more likely to be exposed to environmental forces that promote obesity and to encounter more obstacles to engaging in healthy behaviors. Low-income and ethnic minority youth and adults are disproportionately exposed to food-related marketing (Kumanyika and Grier 2006) through greater exposure to television (Roberts, Foehr, and Rideout 1999). In addition, the neighborhoods in which they live pose more challenges to engaging in healthy behaviors, including fewer food choices and fewer opportunities for exercise.

In the United States, although not in some other countries, socioeconomic status is associated with the availability of supermarkets (Cummins and Macintyre 2005). Low-income and minority neighborhoods in the United States have fewer chain supermarkets and produce stores and more small grocery and meat and fish markets (Moore and Diez Roux 2006; Morland et al. 2002; Powell 2007). The result is less variety and poorer quality of healthy foods in poorer neighborhoods and those with more residents of color (Sloane et al. 2003). Healthy food is relatively more expensive than energy-dense food, especially in disadvantaged neighborhoods (Troutt 1993).

Although much attention has been paid to the problems of fast food, its association with disparities in obesity is less clear. The higher consumption of fast foods is associated with a decrease in nutrient intake and diet quality and an increase in energy intake, weight gain, and insulin resistance (Drewnowski and Specter 2004; Pereira et al. 2005; Prentice and Jebb 2003). Even so, proximity to fast food has not yet been empirically linked to diet and weight, and studies examining the concentration of fast-food establishments in relation to a neighborhood’s socioeconomic status and racial/ethnic composition have shown mixed results (Block, Scribner, and DeSalvo 2004; Morland et al. 2002).

Energy expenditure is the other important element affecting weight, and environmental features can either encourage or discourage physical activity. Minority and lower-SES populations have less access to facilities and resources for physical exercise, particularly those not charging a fee for use (Estabrooks, Lee, and Gyurcsik 2003; Popkin, Duffey, and Gordon-Larsen 2005). After adjusting for potential confounders, Diez Roux and colleagues (2007) found that people living in areas with the highest density of recreational resources within one to five miles reported engaging in more physical activity than did those in areas with the lowest density. These associations were slightly stronger among low-income

and minority residents, indicating that such resources may be more relevant to disadvantaged groups. Even though exercise is possible without specific recreational facilities (e.g., walking, jogging), drawbacks such as traffic and safety may impede such activities. Neighborhood safety appears to be most closely tied to physical inactivity for those with less education, people older than sixty-five, and people of color (CDC 1999).

“Behavioral Justice”

A justice perspective does not absolve individuals of responsibility but highlights the need to provide resources to enable free choice. A focus on the just distribution of resources for healthy behaviors has its parallel in the environmental justice movement. This movement has raised the public’s awareness of the unfairness of disadvantaged communities’ differential exposure to toxins and carcinogens in the soil, air, and water. The U.S. Environmental Protection Agency endorsed environmental justice with the statement that “no group of people, including racial, ethnic or socioeconomic groups should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal environmental programs, and policies” (U.S. EPA 1998, pp. 7–8).

Disadvantaged groups are exposed not only to more pollution and toxic substances but also to environments in which it is harder to engage in health-promoting behaviors (Greenberg and Renne 2005; Taylor et al. 2007). “Behavioral justice” argues that no group should bear a disproportionate share of health problems resulting from inadequate resources for engaging in healthy behaviors. If the environment is dominated by energy-dense, low-cost food outlets, a lack of supermarkets, a scarcity of affordable and appealing fresh fruits and vegetables, and unsafe and uninviting community conditions that restrict activity, the odds will be stacked against the inhabitants of those communities being healthy, just as if their community were dominated by a toxic industrial site. The ordinance in Los Angeles to suspend the construction of fast-food establishments in a low-income neighborhood is an example of “behavioral justice,” and it could be extended to include an incentive program to attract businesses (e.g., supermarkets, restaurants) that offer nutritious, attractive, and affordable food to the low-income residents.

Conclusion

As obesity has shifted from being strongly socially patterned to becoming a more pervasive epidemic, we have seen the power of the environment to overwhelm individual control. Even so, the environmental constraints on healthy behavior still are greater among disadvantaged populations. The inequality of opportunity for healthy behavior makes obesity and other behaviorally mediated health problems a social justice issue. A behavioral justice perspective can maintain the principle of individual control and responsibility but one that is conditioned on adequate resources. Given that health behaviors are estimated to account for approximately 40 percent of premature mortality, versus 5 percent attributable to environmental exposures associated with air and water pollution (McGinnis, Williams-Russo, and Knickman 2002), behavioral justice may be even more important to health than environmental justice is.

A variety of policies and interventions can promote an environment that is more conducive to better weight management. The behaviors associated with weight gain are not easy to modify, however, and will require attention to individuals, their motivations, and their specific behaviors, which in turn will require a synthesis of both the medical model and the public health model. Changing environments so that they support people in making healthy diet and activity choices recognizes that personal choice is only as good as the choices available.

References

- Ajzen, I., and M. Fishbein. 1980. *Understanding Attitudes and Predicting Social Behavior*. Englewood Cliffs, N.J.: Prentice-Hall.
- Andreyeva, T., R.M. Puhl, and K.D. Brownell. 2008. Changes in Perceived Weight Discrimination among Americans, 1995–1996 through 2004–2006. *Obesity* 16(5):1129–34.
- Becker, M.H., ed. 1974. The Health Belief Model and Personal Health Behavior. *Health Education Monograph* 2:324–508.
- Berkman, L.F., and I. Kawachi. 2000. *Social Epidemiology*. New York: Oxford University Press.
- Block, J.P., R.A. Scribner, and K.B. DeSalvo. 2004. Fast Food, Race/Ethnicity, and Income. *American Journal of Preventive Medicine* 27(3):211–17.

- Buchwald, H., and S.E. Williams. 2004. Bariatric Surgery Worldwide. 2003. *Obesity Surgery* 14:1157–64.
- Centers for Disease Control and Prevention (CDC). 1999. Neighborhood Safety and the Prevalence of Physical Inactivity—Selected States, 1996. *Journal of the American Medical Association* 281(15):1373.
- Chang, V.W., and D.S. Lauderdale. 2005. Income Disparities in Body Mass Index and Obesity in the United States, 1971–2002. *Archives of Internal Medicine* 165:2122–26.
- Christakis, N.A., and J.H. Fowler. 2008. The Collective Dynamics of Smoking in a Large Social Network. *New England Journal of Medicine* 358:2249–58.
- Cummins, S., and S. Macintyre. 2005. Food Environments and Obesity—Neighbourhood or Nation? *International Journal of Epidemiology* 35(1):100–104.
- Dannenberg, A.L., R.J. Jackson, H. Frumkin, R.A. Schieber, M. Pratt, C. Kochtitzky, and H.H. Tilson. 2003. The Impact of Community Design and Land-Use Choices on Public Health: A Scientific Research Agenda. *American Journal of Public Health* 93(9):1500–1508.
- Diez Roux, A., K.R. Evenson, A.P. McGinn, D.G. Brown, L. Moore, S. Brines, and D.R. Jacobs. 2007. Availability of Recreational Resources and Physical Activity in Adults. *American Journal of Public Health* 97(3):493–99.
- Doyle, S., A. Kelly-Schwartz, M. Schlossberg, and J. Stockard. 2006. The Relationship of Walkable and Safe Communities to Individual Health. *Journal of American Planning Association* 72(1):19–31.
- Drewnowski, A., and S.E. Specter. 2004. Poverty and Obesity: The Role of Energy Density and Energy Costs. *American Journal of Clinical Nutrition* 79:6–16.
- Estabrooks, P.A., R.E. Lee, and N.C. Gyurcsik. 2003. Resources for Physical Activity Participation: Does Availability and Accessibility Differ by Neighborhood Socioeconomic Status? *Annals of Behavioral Medicine* 25(2):100–104.
- Ewing, R., R. Pendell, and D. Chen. 2002. *Measuring Sprawl and Its Impact*. Smart Growth America. Available at <http://www.smartgrowthamerica.org/sprawindex/sprawreport.html> (accessed September 13, 2008).
- Finkelstein, E.A., C.J. Ruhm, and K.M. Kosa. 2005. Economic Causes and Consequences of Obesity. *Annual Review of Public Health* 26:239–57.
- Fishbein, M., and I. Ajzen. 1975. *Belief, Attitude, Interaction and Behavior: An Introduction to Theory and Research*. Reading, Mass.: Addison-Wesley.

- Frank, L.D., M.A. Andresen, and T.L. Schmid. 2004. Obesity Relationships with Community Design, Physical Activity, and Time Spent in Cars. *American Journal of Preventive Medicine* 27(2):87–96.
- French, S., M. Story, and R.W. Jeffery. 2001. Environment Influence on Eating and Physical Activity. *Annual Review of Public Health* 22:309–35.
- Frumkin, H. 2003. Healthy Places: Exploring the Evidence. *American Journal of Public Health* 93(9):1451–56.
- Garner, D.M., and S.C. Wooley. 1991. Confronting the Failure of Behavioral and Dietary Treatments for Obesity. *Clinical Psychology Review* 11(6):729–80.
- Giles-Corti, B., and R.J. Donovan. 2002. Socioeconomic Status Differences in Recreational Physical Activity Levels and Real and Perceived Access to a Supportive Physical Environment. *Preventive Medicine* 25:601–11.
- Gostin, L.O. 2007. Law as a Tool to Facilitate Healthier Lifestyles and Prevent Obesity. *Journal of the American Medical Association* 297(1):87–90.
- Greenberg, M.R., and J. Renne. 2005. Where Does Walkability Matter the Most? An Environmental Justice Interpretation of New Jersey Data. *Journal of Urban Health* 82(1):90–100.
- Janz, N., and M. Becker. 1984. The Health Belief Model: A Decade Later. *Health Education and Behavior* 11(1):1–47.
- Jeffery, R.W., and S.A. French. 1999. Preventing Weight Gain in Adults: The Pound of Prevention Study. *American Journal of Public Health* 89:747–51.
- Kahn, E.B., L.T. Ramsey, R.C. Brownson, G.W. Heath, E.H. Howze, K.E. Powell, E.J. Stone, M.W. Rajab, P. Corso, and the Task Force on Community Preventive Services. 2002. The Effectiveness of Interventions to Increase Physical Activity: A Systematic Review. *American Journal of Preventive Medicine* 22(4S):73–107.
- Katsanis, S.H., G. Javitt, and K. Hudson. 2008. A Case Study of Personalized Medicine. *Science* 320(5872):53–54.
- Koplan, J.P., C.T. Liverman, and V.I. Kraak, eds. 2005. *Preventing Childhood Obesity: Health in the Balance*. Washington, D.C.: National Academies Press.
- Kumanyika, S.K., and S. Grier. 2006. Targeting Interventions for Ethnic Minority and Low-Income Populations. *The Future of Children* 16(1):187–207.
- Kumanyika, S.K., E. Obarzanek, N. Stettler, R. Bell, A.E. Field, S.P. Fortmann, B.A. Franklin, et al. 2008. Population-Based Prevention of Obesity: The Need for Comprehensive Promotion of Healthful Eating, Physical Activity, and Energy Balance: A Scientific

- Statement from the American Heart Association Council on Epidemiology and Prevention, Interdisciplinary Committee for Prevention (formerly the Expert Panel on Population and Prevention Science). *Circulation* 118(4):428–64.
- Lesko, L.J. 2007. Personalized Medicine: Elusive Dream or Imminent Reality? *Clinical Pharmacology and Therapeutics* 81(6):807–16.
- Lewis, T.T., S.A. Everson-Rose, B. Sternfeld, K. Karavolos, D. Wesley, and L.H. Powell. 2005. Race, Education, and Weight Change in a Biracial Sample of Women in Midlife. *Archives of Internal Medicine* 165:545–51.
- Lopez-Zetina, J., H. Lee, and R. Friis. 2006. The Link between Obesity and the Built Environment. Evidence from an Ecological Analysis of Obesity and Vehicle Miles of Travel in California. *Health & Place* 12(4):656–64.
- Lyon, H.N., and J.N. Hirschhorn. 2005. Genetics of Common Forms of Obesity: A Brief Overview. *American Journal of Clinical Nutrition* 82(1):215S–17S.
- Manson, J.E., S.S. Bassuk, F.B. Hu, M.J. Stampfer, G.A. Colditz, and W.C. Willett. 2007. Estimating the Number of Deaths Due to Obesity: Can the Divergent Findings Be Reconciled? *Journal of Woman's Health* 16(2):168–76.
- McGinnis, J.M., P. Williams-Russo, and J.R. Knickman. 2002. The Case for More Active Policy Attention to Health Promotion. *Health Affairs* 21(2):78–93.
- McTigue, K., J.C. Larson, A. Valoski, G. Burke, J. Kotchen, C.E. Lewis, M.L. Stefanick, L. Van Horn, and L. Kuller. 2006. Mortality and Cardiac and Vascular Outcomes in Extremely Obese Women. *Journal of the American Medical Association* 296(1):79–86.
- Moghaddam, A.A., M. Woodward, and R. Huxley. 2007. Obesity and Risk of Colorectal Cancer: A Meta-Analysis of 31 Studies with 70,000 Events. *Cancer Epidemiology Biomarkers and Prevention* 16(12):2533–47.
- Mokdad, A.H., B.A. Bowman, E.S. Ford, F. Vinicor, J.S. Marks, and J.P. Koplan. 2001. The Continuing Epidemics of Obesity and Diabetes in the United States. *Journal of the American Medical Association* 286(10):1195–1200.
- Moore, L.V., and A.V. Diez Roux. 2006. Associations of Neighborhood Characteristics with the Location and Type of Food Stores. *American Journal of Public Health* 96(2):325–31.
- Morland, K., S. Wing, A. Diez Roux, and C. Poole. 2002. Neighborhood Characteristics Associated with the Location of Food Stores and Food Service Places. *American Journal of Preventive Medicine* 22(1):23–29.

- Must, A., J. Spadano, E.H. Coakley, A.E. Field, G. Colditz, and W.H. Dietz. 1999. The Disease Burden Associated with Overweight and Obesity. *Journal of the American Medical Association* 282(16):1523–29.
- Nestle, M. 2003. The Ironic Politics of Obesity. *Science* 299(5608):781. Available at www.sciencemag.org/cgi/content/short/299/5608/781 (accessed September 13, 2008).
- Ogden, C.L., M.D. Carroll, M.A. McDowell, and K.M. Flegel. 2007. *Obesity among Adults in the United States—No Change since 2003–2004*. NCHS data brief no. 1. Hyattsville, Md.: National Center for Health Statistics.
- Olshansky, S.J. 2005. Projecting the Future of U.S. Health and Longevity. *Health Affairs* 24(suppl. 2):W5R86–89.
- Pereira, M.A., A.I. Kartashov, C.B. Ebbeling, L. Van Horn, M. Slattery, D. Jacobs Jr., and D. Ludwig. 2005. Fast-Food Habits, Weight Gain, and Insulin Resistance (The CARDIA Study): 15-Year Prospective Analysis. *Lancet* 365:36–42.
- Popkin, B.M., K. Duffey, and P. Gordon-Larsen. 2005. Environmental Influences of Food Choice, Physical Activity and Energy Balance. *Physiology and Behavior* 86:603–13.
- Powell, K.E., L.M. Martin, and P.P. Chowdhury. 2003. Places to Walk: Convenience and Regular Physical Activity. *American Journal of Public Health* 93:1519–21.
- Powell, L.M. 2007. Food Store Availability and Neighborhood Characteristics in the United States. *Preventive Medicine* 44:189–95.
- Prentice, A.M., and S.A. Jebb. 2003. Fast Foods, Energy Density and Obesity: A Possible Mechanism Link. *Obesity Reviews* 4:187–94.
- Prescott, E.C., and W.P. Carey. 2004. Why Do Americans Work So Much More Than Europeans? *Federal Reserve Bank of Minneapolis Quarterly Review* 28(1):2–13.
- Puhl, R.M., T. Andreyeva, and K.D. Brownell. 2008. Perceptions of Weight Discrimination: Prevalence and Comparison to Race and Gender Discrimination in America. *International Journal of Obesity* 32:992–1000.
- Rhoades, J.A., B.M. Altman, and L.J. Cornelius. 2004. *Trends in Adult Obesity in the United States, 1987 and 2001: Estimates for the Non-Institutionalized Population, Age 20 to 64*. Statistical Brief no. 37. Available at www.meps.ahrq.gov/mepsweb/data_files/publications/st37/stat37.pdf (accessed June 10, 2008).
- Roberts, D.F., U.G. Foehr, and V.J. Rideout. 1999. *Kids and Media at the New Millennium*. Menlo Park, Calif.: Kaiser Family Foundation.
- Saelens, B.E., J.F. Sallis, J.B. Black, and D. Chen. 2003. Neighborhood-Based Differences in Physical Activity: An Environment Scale Evaluation. *American Journal of Public Health* 93(9):1552–58.

- Saletan, W. 2008. *Food Apartheid: Banning Fast Food in Neighborhoods*. Available at www.slate.com/id/2196397 (accessed August 26, 2008).
- Sallis, J.F., A.C. King, J.R. Sirard, and C.L. Albright. 2007. Perceived Environmental Predictors of Physical Activity over 6 Months in Adults: Activity Counseling Trial. *Health Psychology* 26(6):701–9.
- Satcher, D., and E.F. Higginbotham. 2008. The Public Health Approach to Eliminating Disparities in Health. *American Journal of Public Health* 98(3):400–403.
- Schwartz, M.B., and K.D. Brownell. 2007. Actions Necessary to Prevent Childhood Obesity: Creating the Climate for Change. *Childhood Obesity* 35(1):78–89.
- Sheppard, B.H., J. Hartwick, and P.R. Warshaw. 1988. The Theory of Reasoned Action: A Meta-Analysis of Past Research with Recommendations for Modifications and Future Research. *Journal of Consumer Research* 15(3):325–43.
- Sloane, D.C., A.L. Diamant, L.B. Lewis, A.K. Yancey, G. Flynn, L.M. Nascimento, W.J. McCarthy, J.J. Guinyard, and M.R. Cousineau for the REACH Coalition of the African American Building a Legacy of Health Project. 2003. Improving the Nutritional Resource Environment for Healthy Living through Community-Based Participatory Research. *Journal of General Internal Medicine* 18:568–75.
- Swinburn, B., and G. Egger. 2002. Preventive Strategies against Weight Gain and Obesity. *Obesity Review* 3:289–301.
- Swinburn, B., and G. Egger. 2004. The Runaway Weight Gain Train: Too Many Accelerators, Not Enough Breaks. *British Medical Journal* 329:736–39.
- Syme, S.L. 2004. Social Determinants of Health: The Community as an Empowered Partner. *Preventing Chronic Disease* 1:1–5.
- Taylor, W.C., M.F. Floyd, M.C. Whitt-Glover, and J. Brooks. 2007. Environmental Justice: A Framework for Collaboration between the Public Health and Parks and Recreation Fields to Study Disparities in Physical Activity. *Journal of Physical Activity and Health* 4(suppl. 1):S50–S63.
- Troutt, D.D. 1993. *The Thin Red Line: How the Poor Still Pay More*. San Francisco: Consumers Union of U.S., West Coast Regional Office.
- U.S. Department of Health and Human Services. 1986. *The Health Consequences of Involuntary Smoking: A Report of the Surgeon General*. Washington, D.C.: U.S. Government Printing Office.
- U.S. Department of Health and Human Services. 2000. *Healthy People 2010*. 2nd ed. Washington, D.C.
- U.S. Environmental Protection Agency (EPA). 1998. *Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance*

- Analyses*. Washington, D.C.: Office of Federal Activities, U.S. Environmental Protection Agency.
- Wang, Y., and M.A. Beydoun. 2007. The Obesity Epidemic in the United States—Gender, Age, Socioeconomic, Racial/Ethnic, and Geographic Characteristics: A Systematic Review and Meta-Regression Analysis. *Epidemiologic Reviews* 29:6–28.
- Wang, Y., and Q. Zhang. 2006. Are American Children and Adolescents of Low Socioeconomic Status at Increased Risk of Obesity? Changes in the Association between Overweight and Family Income between 1971 and 2002. *American Journal of Clinical Nutrition* 84:707–16.
- Wilding, J.P.H. 2007. Treatment Strategies for Obesity. *Obesity Reviews* 8(suppl. 1):137–44.
- Zhang, Q., and Y. Wang. 2004. Trends in the Association between Obesity and Socioeconomic Status in U.S. Adults: 1971 to 2000. *Obesity Research* 12(10):1622–32.
- Zyzanski, S.J., K.C. Stange, D. Langa, and S.A. Flocke. 1998. Trade-offs in High-Volume Primary Care Practice. *Journal of Family Practice* 46(5):397–402.

Acknowledgments: We acknowledge the support of the John D. and Catherine T. MacArthur Foundation Research Network in SES and Health. This article is based on a talk presented at the Siciliano Forum at the University of Utah in October 2007.