

Preventing Childhood Diabetes: The Need for Public Health Intervention

I first heard about type 2 diabetes mellitus in young children in the early 1980s from a pediatrician working in a low-income area in Orange County, Calif. Her patients were largely Hispanic. Among them, more and more children, some as young as 8 years—all of them overweight—were turning up with the kind of insulin-resistant diabetes she had previously seen only in middle-aged adults. How was she to treat these children? What diet should she recommend? How would she intervene to prevent this condition in her community?

Twenty years later, such questions have gone mainstream. Unless current trends reverse, it seems likely that one third of all children born today—and even higher proportions of Hispanic and Black children¹—will develop type 2 diabetes during their lifetimes and can expect a shortened life expectancy because of it.² Such alarming estimates are based on the demonstrated connection between overweight and the type 2 form of diabetes, which comprises as much as 95% of diabetes cases. Among adults with diabetes, about 85% are overweight and 55% obese (as defined by body mass index cutpoints of 25.0 and 30.0 kg/m², respectively).³ Diabetes is the sixth leading cause of death nationally, but the fourth in New York City, largely because of high rates of obesity among Hispanic and Black residents.⁴ Prevalence rates in children may appear low, but diabetes is routinely underdiagnosed in this popula-

tion, and the prevalence rises in proportion to the degree of overweight.

CAUSATION: A MATTER OF SOCIETAL CHANGES

Debates about the precise numbers of obese individuals with or without diabetes miss the point.⁵ Obesity is *causally* related to type 2 diabetes, and this disease is not something you would wish on any child. It not only raises risks for heart disease, stroke, kidney failure, blindness, and neurological problems but also requires management of insulin resistance through medication, diet, and physical activity—not easy to accomplish in adults, let alone children.⁶ When critics complain that the risks of obesity are exaggerated,⁷ they too miss the point: type 2 diabetes is a disease that is almost entirely preventable. Regardless of how obesity causes diabetes, prevention is simple, at least in theory^{8,9}: prevention means balancing food consumption against physical activity. Treatment means reducing energy intake, increasing energy expenditure, or doing both.

At issue is how to put theory into practice, especially among children. Rising rates of obesity and diabetes did not occur by accident during the past 20 years, they resulted from profound changes in society that began or accelerated during this period (Table 1). These societal changes affected the structure of families, schools, neighborhoods, consumer demands, agricultural

production, business practices, and technology. All promoted eating more food, more often, in more places, and in greater quantities—as well as promoting inactivity.

I am old enough to have experienced such changes personally. As grammar school students in post–World War II Manhattan, my friends and I had the run of the city. We walked to school, went to after-school lessons, biked, roller-skated, played ball, and took subways on our own. In that pretelevision and precomputer era, we were too busy playing to be overweight. Today, a parent allowing that kind of freedom to a young child would risk arrest for child abuse. Working families, unsafe neighborhoods, and lack of after-school supervision do not allow children to play freely. Schools cannot be expected to fill the gap. Most lack funding for supervised in- or after-school games, and some forbid children to play at school at all in fear of lawsuit-generating injuries.

On the food side of energy balance, children of my era did not have access to large amounts of high-calorie foods with minimal nutritional value (junk foods), which are now considered normal fare. It is now *normal* for children to spend their free time at home watching televised commercials for such foods or using computers to view clever food advertisements disguised as games. It is now *normal* for children to expect to eat foods marketed in these ways. Social expectations have changed, and recently.

TABLE 1—Some Recent Societal Changes That Affect Children's Diet and Activity Patterns

Change	Consequence
More families with working parents	Parents unable to supervise children's meals and active play
Neighborhoods and parks perceived as increasingly unsafe	Children unable to play outside without supervision
Reduced tax revenues for schools	Introduction of soft drink contracts, vending machines, fast food, and food advertising in schools
Limits on school physical education	Less play during and after school
Increased agricultural production	Increased competition for market share; promotion of more junk food directly to children
Increased demand for convenience foods	More eating occasions; more calories consumed
Greater consumption of food prepared outside the home	Larger portions; more calories consumed
Business deregulation	Unrestricted marketing to children
Television deregulation	More commercials for junk foods during children's programming
Increased use of computers	Food marketing on the Internet; more sedentary behavior
Increased media consolidation	Alliances with food companies to market to children
Increased Wall Street expectations for corporate growth	Expansion of fast food chains, food products, and marketing to children

COLLATERAL DAMAGE FROM BUSINESS PRACTICES

Some of these changes are because of the increasing competitiveness of the food industry. These occurred as a result of the Reagan administration's deregulatory policies, among them removal of restrictions on agricultural production. In 1980, the US food supply (production plus imports minus exports) provided 3300 kcal (13.8 MJ) per day per capita; by 2000 the supply had grown to 3900 kcal (16.3 MJ) per day. Even with wastage, this amount greatly exceeds the caloric needs of most adults and virtually all children.¹⁰ One effect of caloric overabundance is fierce industry competition to sell those calories. Wall Street requires companies to demonstrate growth every quarter. In this investment environment, food companies have 2 choices: they can entice people to buy their products instead of anyone else's, or they can encourage people to buy more food in general. In an economy of overabundance, obe-

sity and diabetes are just collateral damage.

From a business perspective, social norms that encourage people to eat more food make perfect sense. If you are in the food business, you want people to snack instead of eating regular meals. You are happy to serve larger portions: food is cheap, relative to labor costs, and customers love bargains. You want people to eat frequently throughout the day, drink sodas instead of water, and eat in formerly food-free places (e.g., clothing stores, bookstores, and libraries). You want it to be socially acceptable for children to bring snacks to school, have access to vending machines, and eat branded drinks, snacks, and fast foods during school hours.

Marketing to children also makes good business sense. It establishes brand loyalty early in life, encourages children to pester their parents to buy specific products, and undermines parental authority about food issues.¹¹ It teaches children to believe that they are supposed to eat packaged foods designed es-

pecially for them. Food marketers want children to demand food that is sweet, candied, oddly shaped, amusingly colored, and in packages illustrated with cartoons. They want children to influence family food purchases, which is why McDonald's spent more than \$1.2 billion on US media advertising, PepsiCo spent \$211 million on advertising soft drinks, and Kraft Foods spent \$20 million on Kool-Aid ads and \$25 million on Lunchables ads in 2004.¹²

TIME FOR SOME STRAIGHTFORWARD ADVICE

Such expenditures might not matter if advertised products promoted children's health. But they do not. Children as well as adults who habitually consume soft drinks and fast food take in more energy, weigh more, have poorer diets,^{13,14} and are more likely to develop type 2 diabetes than people who consume less of these foods.^{15,16} These connections provide good evidence for restricting such foods to occa-

sional treats. But this advice runs counter to the interests of food producers, and federal health officials are loath to suggest eating less of specific foods or food groups. Instead, they resort to euphemisms—"Choose lean" or "Consume moderately," rather than "Eat less" or "Avoid"—and they express guidelines in terms of nutrients rather than the foods that contain them.¹⁷

The most recent federal dietary advice continues this tradition. The US Department of Agriculture (USDA) and the US Department of Health and Human Services have jointly issued a set of dietary guidelines at 5-year intervals since 1980. Although the guidelines began as public health advice for the general public, they have evolved to become increasingly complex and individualized. The earliest versions were small pamphlets outlining 7 simple precepts, but the 2005 edition contains 41 recommendations—23 for the general population and 18 for specific population groups, such as overweight children or adults.¹⁸

The increasing complexity of the guidelines is illustrated by the advice on sugar consumption. In 1980, it was "Avoid too much sugar." In 2005, it is "Choose and prepare foods and beverages with little added sugars or caloric sweeteners, such as amounts suggested by the USDA Food Guide and the DASH [Dietary Approaches to Stop Hypertension] Eating Plan." (The USDA Food Guide lists servings in 11 food groups at 12 levels of energy intake; the DASH Eating Plan lists servings in 8 groups at 4 levels of intake.) Buried within this 70-page document is excellent advice for individuals on managing overweight, but there is also

much contradictory and confusing information about specific foods. With respect to sugars, for example, the guidelines recommend “decreased intake of . . . beverages with caloric sweeteners,” but they also say that adding sugars increases the palatability of “nutrient-dense foods . . . thus improving nutrient intake.” The guidelines say nothing about changes in the social environment that would make it easier for individuals to eat more healthfully. Similarly, the USDA’s Web-based, individualized food guidance system (available at: <http://www.mypyramid.gov>) is tailored to personal choice rather than to public health.

But advice focused on individuals has not succeeded in reversing current health trends. Food companies cannot be expected to take actions contrary to their own economic interests. Government agencies cannot easily act in the public interest if doing so runs contrary to the interests of food companies. Public health approaches to preventing diabetes must address the societal changes that have led to the current predicament. As the Institute of Medicine eloquently argues, prevention of obesity in children must become a national priority for government, the food industry, and health professionals, and pursuit of this goal must involve strong leadership with accountability for an action plan that involves the industry, schools, and communities.¹⁹ The prevalence of type 2 diabetes among children and the personal and economic costs of this condition for everyone concerned are reason enough to demand societal changes that promote public health. ■

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