

The Global Epidemic of Obesity

An Interview with William Dietz

Obesity is an epidemic in nearly every country in the world. The most likely explanation for the spread of this health problem is substantial lifestyle changes—from more reliance on automobiles and less on everyday physical activity to the increasing availability of processed foods.



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The prevalence of obesity among children and adolescents around the world is growing at an alarming rate. This epidemic—some call it a pandemic—has causes and possibly cures. In this interview, obesity and nutrition expert Dr. William Dietz from the Centers for Disease Control and Prevention (CDC) in Atlanta, Georgia, discusses the reasons for this escalating problem and what can be done to prevent it. Dr. Dietz's work includes the first study to demonstrate the relationship between television viewing and obesity (1985), the earliest report that overweight was increasing among children and adolescents in the United States (1987), and the first suggestion that children and adolescents have critical periods for becoming overweight (1994). Dr. Dietz talked with *Global Issues* science writer Cheryl Pellerin.

Question: How do you define obesity?

Dietz: In the United States, obesity in adults is defined as a body mass index (BMI) greater than or equal to 30. Body mass index is defined as weight in kilograms, divided by height in meters, squared. This definition identifies people at significant risk of diseases related to obesity, such as type 2 diabetes, cardiovascular disease, and cancer.

[Type 1 diabetes is usually diagnosed in children and young adults and used to be called juvenile diabetes. In type 1, the body does not produce insulin. The body needs insulin so it can use sugar, the basic fuel for cells in the body. Type 2 diabetes is the most common form of diabetes. In type 2 diabetes, the body produces insulin at high levels, but the levels are not adequate to allow the body to process sugar properly.]

The definition of obesity in children and adolescents corresponds to a BMI of 30 in a young adult, but because children and adolescents are growing, their BMIs change throughout childhood and adolescence until growth is complete. So instead of using a BMI of 30 to define obesity, we use a BMI greater than or equal to the 95th percentile in CDC growth charts [<http://www.cdc.gov/growthcharts/>] that are specific for the U.S. population.

We know that adolescents who have a BMI greater than or equal to 30 have biochemical evidence of risk factors that predict type 2 diabetes and cardiovascular disease in adulthood. Risk factors for those diseases are already present in 5- and 10-year-olds. More than 60 percent have at least one additional cardiovascular disease risk factor, such as elevated blood pressure, elevated insulin or glucose levels, or elevated lipid levels (low HDL or elevated LDL cholesterol).

Type 2 diabetes, which was rare in children and adolescents 20 years ago, is seen with greater frequency. In some communities, type 2 diabetes now accounts for almost 50 percent of all new cases of childhood diabetes. We also know that overweight in an adolescent is likely to persist into adulthood and seems to be associated with more severe obesity in adulthood than adult-onset obesity.

In 2000, international growth charts were released by the International Task Force on Obesity and were published as a study in the *British Medical Journal*.¹ The study aimed to develop an internationally acceptable definition of child overweight and obesity, and it used data from six large nationally representative cross-sectional growth studies from Brazil, Great Britain, Hong Kong, the Netherlands, Singapore, and the United States.

Q: Why do we say that obesity is epidemic?

Dietz: Obesity is epidemic because of how rapidly it has increased and how many people are affected. Between 1980 and 2000, there was a two-fold increase in the prevalence of overweight 6- to 11-year-old children in the United States, and a three-fold increase in the prevalence of overweight adolescents. Internationally, in every place where longitudinal [over time] data have been collected, there has been an increase in the prevalence of overweight. An international epidemic is called a pandemic, and that term has been used to describe what is going on internationally. I don't have good comparative data on children, but a couple of years ago I looked at changes in the prevalence of obesity in British women compared to U.S. women, and the rate of increase was exactly the same.

Q: Why is there an obesity epidemic?

Dietz: The most likely explanation is because of very substantial environmental changes. In the United States, reliance on fast food, soft drink consumption, and variety in the food supply have increased, and family meals and physical activity as part of everyday life have declined.

Fewer children walk to school, and there is more reliance on cars to get from one place to another or do errands because of the way communities are designed, particularly in the Southeast and Southwest. You can't do errands by walking because the communities are not walkable—they lack sidewalks. Even if they had sidewalks, they would lack schools and shopping facilities that you could walk to. Similar things seem to be happening in new communities elsewhere. The food supply has also changed internationally as urbanization has progressed. I think that obesity is associated with substantial dietary changes elsewhere in the world because people are moving from a diet that was largely plant-based and one that they grew themselves to a diet of primarily processed, higher-fat food.

Q: Are there countries around the world that don't have an obesity problem?

Dietz: Not that I am aware of. The prevalence differs a lot from country to country. Even countries like China and Japan, which have not had this problem in the past, are increasingly concerned about it.

Q: What can be done about obesity?

Dietz: This problem requires both medical and community-based approaches. Medical approaches are essential for the more severely affected individuals. Community approaches are those that are implemented in schools and communities. For example, daily physical education at school is a recommended strategy to increase physical activity.

I think it's important to recognize that at some level physical activity will prevent the development of obesity, but its most important effect is that it reduces the consequences associated with obesity. Physical activity should be fun and something that adolescents want to do.

The Centers for Disease Control and Prevention is promoting six strategies for fighting obesity in children, and physical activity is one of them. The first three are strategies for which we think there's relative scientific certainty. The other three strategies are promising strategies.

As I mentioned, physical activity is a crucial strategy for reducing the risk of diseases associated with obesity. The *Guide for Community Preventive Services*,² published by the Task Force on Community Preventive Services, provides evidence-based approaches to increasing physical activity. Physical education in schools is one of those recommended strategies.

For early prevention of obesity, breastfeeding seems to be an effective strategy. We don't know why it's effective, but I think it has to do with the fact that when a mother is nursing her infant, the infant's cues help tell her the infant has had enough. There's no way of knowing that other than by seeing the infant's cues. In contrast, in bottle-fed babies, the tendency is to look at the bottle, not at the infant, and use that as a gauge as to whether the infant has had enough or not.

There are data that suggest that the more parents try to control children's food intake, the less capable children are at controlling food intake themselves. That's been shown in cross-sectional [one point in time] studies, but it's not clear in those cross-sectional studies whether parents try to control children's food intake because they recognize that the child is incapable of doing so, or whether the child is less capable of controlling their food intake because the parents are controlling it. It's an external versus an internal control.

Control of television time is another important factor. In this country, the average household has more than three television sets. Twenty-five percent of children younger than two years of age have a television in their room, and 65 percent of all children have a television set in their room.

In the United States, children often eat while watching television, and they tend to eat the foods advertised on television, which tend to be high-caloric-density foods. One effect of controlling TV time is to reduce children's eating episodes. Increasingly, the Internet is a source of food advertising. If you go on the Internet and look up some foods children eat, those Web sites have games that children can play, and the games have frequent mention of those products. It's another food-promotion source.

Fruit and vegetable intake. Fruits and vegetables are things that all people should be eating as much of as they can get. People don't eat calories. Fullness is determined by the volume of food they eat. Therefore, foods that are of low-caloric density—meaning they have a high water content and fewer calories per gram—are more filling and provide fewer calories than calorically dense food. For example, if you start a meal with a salad, you'll have less room for other high-calorie foods. The same is true for soups. The gap is that we don't really know whether

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people who eat lots of fruits and vegetables are at lower risk for obesity.

Soft drink consumption. There's a growing body of data that suggests that increased soft drink intake may be associated with excess weight and that reducing soft drink intake may be an effective way to control weight. For the average adolescent in the United States, soft drinks, which include both soda and 10-percent juice, account for 13 percent of the average adolescent's daily caloric intake. Substituting a lower-calorie choice like water or diet soft drinks is a good strategy for

reducing calorie intake from soft drinks.

Portion size. The larger the portion an individual is presented with, the more of that portion they're likely to eat. But we don't have good data that link portion size to obesity, and I'm not sure we're going to get it because it's hard to measure portion size. The strategy is to serve a small portion first and let people go back for second helpings if they want them, rather than loading up plates with large portions to begin with.

Q: What is important for adolescents to know about obesity?

Dietz: I think that adolescents should be encouraged to be active and to do things with their friends. Seventh and eighth graders don't think watching television is fun; it's a default activity they do when they don't have anything better to do. Another strategy is to think of things that are fun to do in place of watching television, like spending time with friends or doing active things with friends. Teenagers should be encouraged to drink water when they are thirsty and to start meals with soup or a salad.

Q: Is obesity as serious a problem in its magnitude and consequences as malnutrition and undernutrition?

Dietz: Malnutrition covers a broad waterfront. The way the term is broadly used, malnutrition means both obesity and undernutrition. The problem is that micronutrient malnutrition—that is, vitamin and mineral deficiency—is still a major problem worldwide, particularly iodine, iron, and vitamin A deficiencies.

If you look strictly at morbidity [the burden of disease], micronutrient malnutrition is still a bigger problem than

obesity. But in many countries in the developing world, there is a growing problem with children who are stunted and overfat. Stunted means they're short, and that's a consequence of chronic undernutrition. Now we're adding obesity to this problem, so they're suffering from a double problem.

I think it's fair to say that in countries in nutritional transition—that is, the transition from a traditional agriculturally or plant-based diet to a more processed diet—that stunted people seem to be at double risk because of their history of stunting and overweight. It's happened in a couple of places. The data I'm most familiar with came from Brazil and Peru.

Q: What is a good way to increase physical activity among adolescents?

Dietz: School-based approaches offer a good example. As I mentioned earlier, daily physical education classes are a recommended strategy for increasing physical activity. That recommendation comes from the Task Force on Community Preventive Services.²

Walk-to-school programs are a strategy for restoring physical activity to everyday life. The problem is that only one-third of U.S. children who live within a mile of school walk to school, partly because the schools are not accessible and partly because the neighborhoods are not safe. Another strategy is TV turnoffs. Controlling television time in school-based interventions is an effective way to reduce weight gain or obesity. A couple of years ago, libraries initiated a TV Turnoff Week. Now there is a national TV Turnoff Week program.

Another strategy is to make it easier for children to eat healthful foods at school. "Competitive foods" are foods like ice cream and cookies that are served in the lunch line as a profit-maker for schools. Schools do this to raise money. "Pouring contracts" are contracts schools sign with soft drink vending machine companies to sell those products in schools. Many schools depend on this revenue.

At CDC, we're trying to create a revenue-neutral situation—to allow schools to make the same amount of money but help increase consumption of healthful items. One strategy is to increase the prices of less healthful items and use that income to subsidize more healthful items that you sell at a lower price. It appears that children are price-sensitive, and when you raise the prices of less healthful foods and lower the prices of more healthful foods, it is revenue-neutral for the school and consumption changes in the right direction.

Comprehensive school-based interventions are another strategy. A really good program in Massachusetts called Planet Health [http://www.hsph.harvard.edu/prc/proj_planet.html] combined four strategies—a low-fat diet, more fruits and vegetables, less television time, and more physical activity. The program showed a significant reduction in overweight among middle-school girls. The study³ was published in 1999, and the program is now being expanded to the Boston school system.

Q: How does the health care system deal with obesity?

Dietz: The kind of care delivery system necessary for chronic diseases like obesity is different from the traditional patient-provider relationship. So many patients in this country are overweight that the one-to-one provider-patient relationship is probably archaic. It's based on an acute-care model—our medical system has evolved to treat infectious diseases or injuries. It didn't evolve to treat chronic diseases, and it didn't evolve around prevention. Providers are not financially rewarded when they prevent disease; they're rewarded when patients get sick or need hospitalization.

In an ideal system for treating overweight and obesity, we need better strategies that are of proven effectiveness. Physicians will oversee care, but people other than physicians, like nutritionists or nurse practitioners, will likely deliver the care. Self-management has to be the cornerstone of therapy. The notion that providers manage problems for patients is archaic; patients manage problems for themselves. The role of the provider should be to help patients solve problems, or to help patients identify the problem and its priority and help them solve problems that make it difficult for them to deal with it.

That such changes are needed is increasingly widely recognized, but it's not clear how to solve the problem because it goes to the heart of the medical-care delivery system. ■

The CDC National Center for Disease Prevention and Health Promotion homepage is located at <http://www.cdc.gov/nccdphp/>.

1. Cole TJ, Bellizzi MC, Flegal KM, Dietz WH. Establishing a standard definition for child overweight and obesity worldwide: international survey. *2000*;320(7244):1240.

2. Centers for Disease Control and Prevention. Increasing physical activity: a report on recommendations of the Task Force on Community Preventive Services. *MMWR* 2001;50(No. RR-18).

3. Gortmaker SL, et al. Reducing obesity via a school-based interdisciplinary intervention among youth. *Archives of Pediatrics and Adolescent Medicine*.