# Increasing portion sizes in American diets: More calories, more obesity

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Obesity (including overweight) is the principal public health nutrition problem in the United States, largely because of its ability to increase chronic disease risk and its increasing prevalence among adults and children. The rapidity of the increase is startling. The prevalence has increased sharply just within the past decade, and the increase is occurring so quickly that statewide changes can be mapped from one year to the next (1). We know that the cause is excess energy (calories) consumed over energy expended in daily activities, and that to lose weight, people must consume fewer calories or expend more. Levels of physical activity do not seem to have declined during the past decade, which means that the obesity epidemic must be caused by increased caloric intake (2).

At issue is the cause of this increase. Most commentators attribute the change to lifestyle patterns (women working outside of the home, longer working hours, need for convenience) or to personal dietary preferences for foods high in fat, sugar, and salt. Only recently have investigators focused attention on changes in the food system—production, marketing, and government policies—that might promote excessive energy consumption. They point out that one result of our overabundant (and, therefore, overmarketed) food supply is an increase in the amounts of food sold and consumed at any one time (3). Larger portions have more calories, and people tend to eat more when confronted with large amounts of food. But are portions really getting larger, or is that idea just an impression fostered by articles in the popular press?

Such questions prompted Lisa Young, PhD, RD, to measure the actual size of food portions sold as single servings in convenience stores, fast food establishments, and chain restaurants as part of her doctoral research. Her findings clearly showed that portion sizes of many such foods increased since the mid-1980s and, consequently, increased in calories (4). In this issue of the *Journal,* Smiciklas-Wright and colleagues extend these findings in a systematic comparison of the results of the 1989-1991 and 1994-1996 Continuing Surveys of Food Intakes by Individuals (CSFII). These US Department of Agriculture (USDA) surveys collected 24-hour recall lists from more than 11,000 individuals on three separate days. Respondents reported consuming larger portions of nearly one third of the 107 foods examined, just within this 5-year interval. They reported increases in the portion sizes of bread, crackers, cookies, cereals, pasta, french fries, beer, wine, fruit juices and drinks, and, not least, soft drinks. In contrast, they reported other food portions as having decreased: rice, macaroni and cheese, pizza, carrots, bacon, chicken, margarine, and mayonnaise (5).

How are we to interpret such results? The investigators point out that the methods used to collect data in the two CSFII surveys differed and that all such methods are "difficult and subject to inaccuracies." This understates the problem; respondents to dietary surveys tend to underreport foods they think are bad and overreport foods they think are good. The decline in portion size for pizza, for example, could reflect underreporting, because it is inconsistent with measured increases in the sizes of marketplace pizza slices; and many people think of pizza as a fattening food. Although the investigators find sharp increases in the sizes of beverage portions, the increasing size of soft drink serving cups suggests that these results also could be underestimates (4).

From the data in this article and in standard food composition tables, I estimate that CSFII respondents reported increases in the portion sizes of orange juice by about 1 ounce (15 kcal), of soft drinks by 2 ounces (25 kcal), of fruit drinks by 2 ounces (30 kcal), of wine by about 1.5 ounces (30 kcal), and of beer by an astounding 8 ounces (96 kcal). Although these numbers are not large (except for beer), an increase of 25 kcal/day from soft drinks alone comes to more than 9,000 kcal per year—an amount approaching a 3-pound weight gain. Even if the decreases reported for some foods are correct, they are more than offset by the larger number of portions reported as having expanded in that 5-year period.

The factors driving increasing portion size are not difficult to understand. From the consumer's perspective, larger portions are bargains. What may not be so obvious is that they also are bargains for their manufacturers and purveyors. As a result of government policies that support corporate farming (witness

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the recently passed $190 billion in price supports), just 19 cents of every dollar spent on food goes to its producer. The remaining 81 cents pays for labor, packaging, advertising, and other such methods for adding value (6). In practice, this means that the marginal cost of the corn sweeteners, flavors, and water in a supersized soft drink is much lower than can be charged for it. Such federal policies encourage the use of larger portion sizes, the food and restaurant industries enjoy the benefits of those policies, and food marketers use larger portions as a way to draw in customers, regardless of the effects of the added calories on body weights. Thus, food marketers are acutely sensitive to trends in eating patterns. Smiciklas-Wright and colleagues report a nearly 10% decline in the size of french fry portions among 2- to 5- year-old children. The impetus to reverse this trend explains the otherwise baffling creation of a line of prepackaged french fries—blue, chocolate-covered, or coated with cinnamon and sugar—seemingly targeted to that age group (7). Such products entice children to consume more calories, not fewer.

I emphasize calories (rather than fat or sugar) because in my dealings with students, colleagues, the public, and the press about the obesity epidemic, I encounter a surprising conceptual gap: a virtual absence of intuitive understanding that larger portions contribute more calories. Most people seem to view a soft drink as a soft drink, no matter how big it is. When I explain that a 64-ounce soft drink container could provide as much as 800 kcal, audiences gasp. If we want to reverse the obesity epidemic, we must get this point across—perhaps, as suggested by the Center for Science in the Public Interest, by demanding visible calorie labeling in restaurants and fast food establishments, and other policies that address the environment of food choice (8).

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As for the significance of this study for dietitians, Smiciklas-Wright and colleagues tell us, "Researchers often use the nationwide data as default values for portion sizes when amounts are unknown or are not reported by respondents" (5). By this, they mean that researchers can fail to recognize that the amounts people consume can be larger—sometimes much larger—than the portion sizes indicated on food labels, dietary guidance materials, or food frequency questionnaires. Dietitians must be wary not to make the same mistake. When a client reports consuming a soft drink, cookie, french fries, or a glass of wine with dinner, an assumption that its calorie contribution is that of a standard portion is likely to be wrong. *Larger portions mean more calories*. Overlooking this critical concept will almost certainly contribute to underestimating caloric intake, and will confuse people about what they need to do to lose weight: eat less (and, of course, move more).

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