Portion Sizes and Obesity: Responses of Fast-Food Companies

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ABSTRACT

Because the sizes of food portions, especially of fast food, have increased in parallel with rising rates of overweight, health authorities have called on fast-food chains to decrease the sizes of menu items. From 2002 to 2006, we examined responses of fast-food chains to such calls by determining the current sizes of sodas, French fries, and hamburgers at three leading chains and comparing them to sizes observed in 1998 and 2002. Although McDonald's recently phased out its largest offerings, current items are similar to 1998 sizes and greatly exceed those offered when the company opened in 1955. Burger King and Wendy's have increased portion sizes, even while health authorities are calling for portion size reductions. Fast-food portions in the United States are larger than in Europe. These observations suggest that voluntary efforts by fast-food companies to reduce portion sizes are unlikely to be effective, and that policy approaches are needed to reduce energy intake from fast food.

Journal of Public Health Policy (2007) **28**, 238–248.
doi:10.1057/palgrave.jphp.3200127

Keywords: overweight, obesity, portion sizes, serving sizes, fast food, calories

INTRODUCTION

Overweight and obesity have increased sharply since the early 1980s in the United States (1–4) and worldwide (5,6). As weight gains show no signs of abating, these conditions constitute a major public health concern (1), as they raise risks for a variety of medical conditions including type 2 diabetes, hyperlipidemia, hypertension, coronary heart disease, and certain cancers (7), as well as for premature death (8,9).

Since the early 1980s, increases in the portion sizes of foods commonly eaten away from home have occurred in parallel with

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  0197-5897/07 $30.00
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increases in body weights, and constitute an important contributing factor to rising rates of obesity (10,11). Portion sizes offered by fast-food chains are often two to five times larger than when first introduced (12). Large portions contribute to overweight in three ways: they provide more calories, than smaller portions (10,12), encourage people to consume significantly more calories and to greatly underestimate those calories (13–16).

The United States food supply (food produced, less exports, plus imports) currently provides 3,900 kcal/day, a per capita increase of 700 kcal/day since the early 1980s (17), whereas dietary intake surveys report only an additional 200–300 kcal/day (18). Although the precise size of the increase in caloric intake is uncertain, data from many sources suggest that people are consuming more calories than they did in the 1980s (19,20).

Americans spend nearly half of their food budget on foods prepared outside of the home and consume about one-third of daily calories from outside sources, much of it from fast food (21,22). Concerns about the effect on body weight of calories from restaurant foods in general, and from fast foods in particular, make sense; regular fast-food consumption is associated with weight gain and obesity in both adults (23,24) and children (25).

In 2001, the US Surgeon General's *Call to Action* to prevent obesity challenged health professionals, communities, and the food industry to confront portion size as a factor in weight control, provide foods in more appropriate amounts, and raise consumer awareness of appropriate portion sizes (26). In 2004, the filmmaker, Morgan Spurlock, released *Super Size Me!*, a documentary account of his 25-pound weight gain from consuming all meals at McDonald's for just 1 month. Perhaps in response, McDonald's announced plans to phase out its Supersize menu items (27). No agency, however, holds fast-food companies accountable for responding to calls for decreases in portion sizes. Here, we report recent trends in the portion sizes of commonly consumed menu items from leading fast-food chains.

METHODS

In 1998 (28) and 2002 (10,12), we reported the increasing sizes of fast-food portions from leading chains. For the present study, we

examined subsequent changes through 2006, a 4-year period in which calls for methods to address and prevent childhood obesity have become much more pronounced (21,29). To assess the response of fast-food companies, we compared current portion sizes to earlier ones. Because consumption of soft drinks is associated with weight gain and obesity (30,31), and French fries and hamburgers are the most popular foods consumed in fast-food restaurants (32), we examined the sizes of these items at McDonald's, Burger King, and Wendy's, the chains ranked highest in sales of such foods (33).

We obtained information about portion weights, volumes, and calorie contents from nutrition information provided in company brochures and Websites. To observe how companies are marketing newly introduced portion sizes, we also examined newspaper accounts, promotional advertisements, brochures, materials provided by manufacturers in trade publications, and marketing materials.

RESULTS

Table 1 compares the portion sizes of fountain soda, French fries, and hamburgers served at McDonald's, Burger King, and Wendy's in 1998, 2002, and 2006.

Sodas

As promised, McDonald's phased out its 42-oz Supersize soda; its largest size is now a 32-oz Large. In 1998, the largest size soda at Burger King was 32 oz. In 2002, however, the chain increased the largest size to 42 oz. At Wendy's, a Medium soda was 22 oz in 1998 and the largest soda was a 32-oz Biggie. In 2002, Wendy's reduced the Medium to 20 oz, but increased the size to 32 oz in 2006. Also in 2006, this company introduced a new 42-oz size. Wendy's accompanied these additions with some name changes. The former 32-oz Biggie is now called Medium, and the new 42-oz soda is called Large.

French fries

McDonald's offered French fries in three sizes in 1998: Small (2.4 oz), Large (5.3 oz), and Supersize (6.3 oz). In 2002, it increased the Supersize to 7.1 oz, and renamed the other three sizes Small, Medium, and Large. Following the release of *Super Size Me!*, McDonald's

Table 1: Portion sizes of soda, French fries, and hamburgers available at three of the largest fast-food establishments in the U.S in 1998, 2002, and 2006

	Size 1998 (oz or fl oz)	*Size 2002 (oz or fl oz)*	*Size 2006 (oz or fl oz)*
Fountain soda			
McDonald's	12 Child	12 Child	12 Child
	16 Small	16 Small	16 Small
	21 Medium	21 Medium	21 Medium
	32 Large	32 Large	32 Large
		42 Supersize	
Burger King	12 Kiddie	12 Kiddie	No change
	16 Small	16 Small	
	21 Medium	21 Medium	
	32 Large	32 Large	
		42 King	
Wendy's	12 Kid	12 Kid	12 Kid
	16 Small	16 Small	**20 Small**
	22 Medium	**20 Medium**	**32 Medium**
	32 Biggie	32 Biggie	**42 Large**
French fries			
McDonald's	2.4 Small	2.4 Small	2.4 Small
	5.3 Large	5.3 Medium	**4.0 Medium**
	6.3 Supersize	6.3 Large	**6.0 Large**
		7.1 Supersize	
Burger King	2.6 Small	2.6 Small	No change
	4.1 Medium	4.1 Medium	
	6.1 Large	**5.7 Large**	
		6.9 King	
Wendy's	3.2 Small	3.2 Kids' meal	3.2 Kids' meal
	4.6 Medium	**5.0 Medium**	**5.0 Small**
	5.6 Biggie	5.6 Biggie	**5.6 Medium**
	6.7 Great Biggie	6.7 Great Biggie	**6.7 Large**

Table 1 *(continued)*

	Size 1998 (oz or fl oz)	*Size 2002 (oz or fl oz)*	*Size 2006 (oz or fl oz)*
Hamburger, beef only (Precooked wt)			
McDonald's	1.6	No change	No change
	3.2		
	4.0		
	8.0		
Burger King	1.9	No change	1.9
	3.8		3.8
	4.0		4.0
	8.0		8.0
			12.0
Wendy's	2.0	No change	No change
	4.0		
	8.0		
	12.0		

New introductions indicated in bold face.

eliminated the Supersize and reduced the sizes of the Large and Medium. The 2006 Large was just slightly smaller (6.0 oz) than the 1998 Supersize (6.3 oz). In 2002, Burger King introduced a new larger French fries, called King, a size that the company still sells. Wendy's discontinued the terms Biggie and Great Biggie to describe French fries in 2006, replacing them with Medium and Large, but its portion sizes remain the same as they were 4 years earlier.

Hamburgers

McDonald's and Wendy's still offer the same size hamburger patties as they did in 1998, but Burger King has introduced a larger, 12 oz (precooked) hamburger. The sizes of the largest hamburgers at all three chains now exceed the amount recommended by the USDA for an entire day – 5.5 oz for someone consuming 2,000 kcal/day (34). The largest meat portion at McDonald's is 8 oz. The 12-oz portions at Burger King and Wendy's constitute 2 days' recommended portions of meat.

Table 2 highlights recent events in the history of portion sizes at these chains. In the last several years, McDonald's discontinued its Supersize French fries and sodas, but both Burger King and Wendy's introduced new portions in larger sizes. Burger King has also introduced several large specialty hamburgers.

Table 2: Selected events in the history of portion sizes from McDonald's, Burger King, and Wendy's, 2002–2006

2002	Burger King introduces the Meaty-Cheesy-Bacony-X-treme Whopper (940 kcal) with an advertising campaign featuring basketball player Shaquille O'Neal; adds 42-oz King soda (390 kcal).
	Wendy's introduces Classic Triple with Everything (14.5 oz, 1030 kcal).
2004	McDonald's discontinues Supersize sodas and French fries.
2005	Burger King introduces Triple Whopper (17 oz, 1230 kcal); adds King Kong-themed Triple Whopper (1320 kcal); introduces Enormous Omelet sandwich (9.5 oz, 730 kcal) and Pounder'Normous (10.5 oz, 770 kcal) with slogan: "a full pound of sausage, bacon, and ham. Have a meaty morning."
2006	Burger King advertising campaign features Texas Whopper (12.2 oz, 820 kcal), Double Whopper (15.1 oz, 1050 kcal), and Triple Whopper (18.1 oz, 1290 kcal), with mob of men waving signs saying "Eat This Meat" and singing "I am Man, I am incorrigible, and I am way too hungry to settle for chick food"; also introduces BK Stacker sandwiches in four sizes: Single, Double, Triple and Quad; Quad size has 4 beef patties, weighs 11.1 oz and contains 1000 kcal, Slogan: "It's the flame-broiled meat lover's burger and it's here to stay – no veggies allowed."
	Wendy's drops the terms Biggie and Great Biggie to describe soda and French fries and instead adopts the terms Small, Medium, and Large; changes 32-ounce Biggie to Medium; adds Large 42-oz soda (advertised as "a whole river of icy cold refreshment"); changes Medium French fries to Small, Biggie to Medium, and Great Biggie to Large.

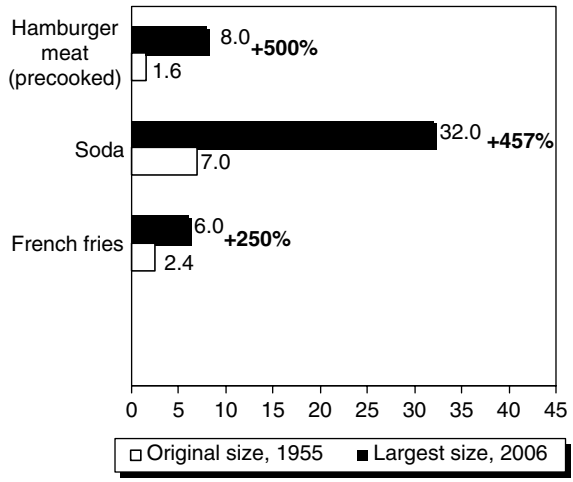

Figure 1
Actual difference (oz or fluid oz) and percent difference between the largest size currently available and the original size of selected foods at McDonald's.

Despite McDonald's steps to reduce the sizes of its largest items, its current portions remain much larger than they were in 1955 when first introduced (see Figure 1). In 1955, for example, the company's only hamburger meat weighed 1.6 oz; today's largest portion weighs 8.0 oz and is 500% larger. Its largest soda was 7.0 fl oz in comparison to today's 32.0 fl oz size, and 457% larger. And today's largest portion of French fries weighs 6.0 oz and is 250% larger than the 2.4 oz size in 1955.

DISCUSSION

Our observations indicate that fast-food chains have responded little or not at all to calls to reduce the portion sizes of soda, French fries, and hamburgers. McDonald's has made the most progress in reducing its portion sizes, but its sizes greatly exceed those offered in 1955. As indicated in Tables 1 and 2, Burger King and Wendy's have added larger sized sodas, and Burger King has introduced several larger hamburgers. Other US chains have followed suit (35). In 2003, for example, Hardee's introduced the "Monster Thickburger" with 12 oz beef and 1,420 calories – two-thirds of the calories recommended for an entire day for certain segments of the population.

Rather than reducing portion sizes, the top fast-food chains are engaged in sleight of name. McDonald's and Wendy's have dropped descriptors such as Supersize, Biggie, and Great Biggie and replaced them with Medium or Large. Name changes, however, are unlikely to help with weight maintenance as they may induce people to believe they are eating smaller amounts of food (35).

Our observations also indicate that the portion sizes of these items offered in the United States exceed those available in Europe. The largest orders of French fries and soda at McDonald's in the United States contain about 100 calories more than the largest sizes offered in Sweden, for example. The largest portion of French fries available at US Burger Kings is nearly 2 oz larger – and contains 250 calories more – than the largest size offered in the United Kingdom (UK). The US Burger King offers a Triple Whopper, but the largest size available in the UK is a Double Whopper.

Nevertheless, fast-food portions in Europe also are larger today than they were in 1998. Today's largest soda at Burger King in the UK is 10 oz larger than in 1998. Also since 1998, McDonald's added double cheeseburgers to UK menus.

Thus, fast-food chains have not responded to any great extent to the 2001 Surgeon General's *Call to Action* (26) or to more recent calls on restaurants to reduce portion sizes (21,29) nor are they likely to do so voluntarily. Because portion size has such a large effect on caloric intake and balance, public health efforts to explain and act on the relationship between portion sizes, calorie intake, and weight gain are urgently needed. The New York City Health Department recently approved regulations to require fast-food chains to post the calorie counts of foods directly on menu boards (36). This and other policies to make it easier to reduce energy intake deserve serious consideration by any government agency concerned about the effects of obesity on public health.

Acknowledgment: We thank Somantha Peterson for technical assistance.

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