

## Perspectives in Practice

# Nine out of 10 Food Advertisements Shown During Saturday Morning Children's Television Programming Are for Foods High in Fat, Sodium, or Added Sugars, or Low in Nutrients

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**ABSTRACT**

A 2005 review by the Institute of Medicine of the National Academies concluded that food marketing influences children's food preferences, consumption, and health. Given the powerful influence of marketing on children's diets, this cross-sectional study examined the types of foods, the nutritional quality of those foods, and the marketing techniques and messages used in food advertising during Saturday morning children's television programming. During 27.5 hours of programming in May 2005, 49% of advertisements shown were for food (281 food advertisements out of 572 total advertisements). The most commonly advertised food categories were ready-to-eat breakfast cereal and cereal bars (27% of all food advertisements), restaurants (19% of food advertisements), and snack foods (18% of food advertisements). Ninety-one percent of food advertisements were for foods or beverages high in fat, sodium, or added sugars or were low in nutrients. Cartoon characters were used in 74% of food advertisements, and toy or other giveaways were used in 26% of food advertisements. About half of food advertisements contained health/nutrition or physical activity messages and 86% of food advertisements contained emotional appeals. This study provides food and nutrition professionals with information about the amount and types of food children are encouraged to eat during Sat-

urday morning television programming. The findings can help food and nutrition professionals counsel children about healthful eating and/or develop programs or policies to balance those advertisements with healthful eating messages.

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Only 2% of children (aged 2 to 19 years) eat a diet consistent with key US Department of Agriculture guidelines (1). Children consume more fat, saturated fat, sodium, and added sugars, and fewer whole grains, fruits, vegetables, and low-fat dairy products than is recommended (2,3). In addition, childhood obesity rates have tripled during the past 2 decades, and one third of children are either overweight or obese (4). Although numerous factors influence children's diets, one that has received increasing attention is food marketing. The Institute of Medicine of the National Academies found that food marketing influences children's food preferences, consumption, and health, and linked television advertising to obesity (5). In addition, the Federal Trade Commission and US Department of Health and Human Services concluded that food marketers have a role to play in improving children's diets and addressing childhood obesity (6). Children aged 2 to 11 years spend on average 3 hours a day watching television—more time than with any other medium—and children see about 5,500 food advertisements per year (7,8). Past studies have found that about half of all advertisements during children's programming are for food (9-11), and the majority of advertised products are for fast food, sugary cereals, and other foods high in fat, sugars, or sodium or low in nutritional value (12-14).

Saturday morning has long been a popular time slot for children's programming (15). The most recent study we know of that assessed the nutritional value of foods advertised to children during Saturday morning television programming was conducted in the early 1990s (12). Other studies of food advertising during children's programming looked at advertised foods and beverages by product category (10), food group (12), or nutrition information found on Nutrition Facts labels (11). Our study assessed the state of food advertisements shown during children's television programming in 2005, specifically the proportion of advertisements that are for food; the types of foods advertised; the proportion of foods that

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**Table 1.** Television networks, times, and number of hours of children's television programming taped on Saturday, May 7, 2005, unless otherwise indicated, to determine the types of foods, the nutritional quality of those foods, and the marketing techniques and messages used in food advertising during Saturday morning children's television programming

Network	Times taped	Hours taped
ABC	8:00 AM-11:00 AM	3
Cartoon Network <sup>a</sup>	7:00 AM-12:00 PM	5
CBS	10:00 AM-12:00 PM	2
FOX	8:00 AM-11:30 AM	3.5
Nickelodeon	7:00 AM-12:00 PM	5
Toon Disney	7:00 AM-12:00 PM	5
WB <sup>b</sup> (Sat 6/11/05)	8:00 AM-12:00 PM	4
<b>Total</b>		<b>27.5</b>

<sup>a</sup>Programming was taped Saturday, May 21, 2005.  
<sup>b</sup>Programming taped Saturday, June 11, 2005.

exceed recommendations for fat, added sugars, or sodium, or were low in nutrients; and the marketing techniques used (eg, giveaways, contests, and Web sites, and health, physical activity, and other messages) in a cross-sectional sample of Saturday morning children's television programming. Based on previous research, our hypothesis was that the majority (more than half) of foods marketed to children would be for cereals, restaurants, and snack foods, and that most of the foods would be high in fat, sugars, or sodium, or low in nutrients.

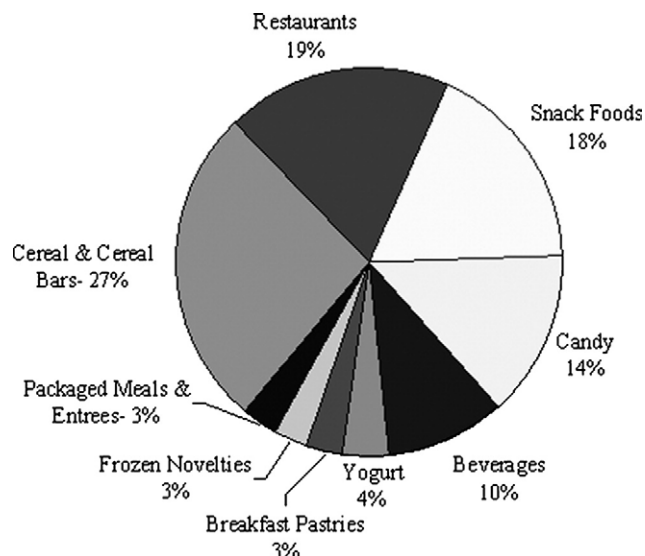
## METHODS

A total of 27.5 hours of Saturday morning children's television programming was taped and analyzed for this cross-sectional study. The sample included shows aimed at preschool- and elementary school-aged children on the major broadcast and cable networks that had Saturday morning programming. All programming was taped in Washington, DC, on the same day in May 2005, with the exception of two channels that had to be retaped on other days due to technical difficulties. Hours taped were from 7:00 AM to 12:00 PM unless the length of the children's television block was shorter. Table 1 lists the networks, dates, and times taped. Promotions for other programs on the channels were not included in the advertisement totals.

The data for each advertisement were recorded on an instrument adapted from Kotz and Story (14) to include newer marketing techniques (Figure 1) (16,17) and *trans* fat. The instrument was two pages in length and included fields for information about the advertisement placement (ie, time aired, channel, and length of advertisement), the product(s) or brand promoted by the advertisement, marketing techniques used, and nutrition information for the advertised product.

## Food Advertisements

We evaluated the nutritional quality of each advertised food based on a set of nutrition standards for food mar-



**Figure 1.** Pie chart showing proportions of food types advertised on Saturday morning television programming targeted at children.

keting to children developed by a panel of nutrition and health experts (18) and adapted from the National Alliance for Nutrition and Activity's Model Local School Wellness Policies on Physical Activity and Nutrition (19). The National Alliance for Nutrition and Activity's school wellness policy nutrition standards are supported by more than 50 health, nutrition, and education organizations, including the American Dietetic Association. The standards are based on key nutrition recommendations from the Dietary Guidelines for Americans (20). Foods were assessed according to whether or not they exceeded the standards for total fat, saturated and *trans* fats, added sugars, and sodium, and whether or not they met at least one of the nutrient content standards for either whole grains, fruit or vegetables, or vitamins or minerals as outlined in Table 2. Beverages were assessed according to beverage type (Table 2). The nutrition standards used for this study are similar to the nutrition standards used in the policies for food marketing to children of Kraft Foods (Northfield, IL) (24), the Disney Company (Burbank, CA) (25), and Kellogg Company (Battle Creek, MI) (26), and the nutrition standards for the sale of school foods established by the Institute of Medicine (27) and the Alliance for a Healthier Generation (28).

Nutrition information for the advertised products was obtained from food company Web sites. When information was not available on the Internet, it was obtained from food labels in grocery stores or by calling the companies. Some nutrition information was not readily available from these sources. For example, added sugars in advertised foods exclude naturally occurring sugars from fruit, vegetable, and dairy ingredients. In some cases, estimating the amount of added sugars was not possible from food labels, and in those cases (such as for fruit snacks) total sugars was used. In addition, it was difficult to determine the whole-grain content of many foods. Foods were considered to meet the whole-grain content requirement if the first ingredient listed was a whole grain, such as whole oats, whole wheat, whole corn, or brown rice.

**Table 2.** Food marketing nutrition standards developed by a panel of nutrition and health experts<sup>a</sup> and used in policies for food marketing to children

Item	Standard
<b>Foods</b>	
Fat	No more than 35% of energy, <sup>b</sup> excluding nuts, seeds, and peanut or other nut butters
Saturated plus <i>trans</i> fat	No more than 10% of energy <sup>b</sup>
Added sugars	No more than 35% added sugars by weight <sup>c</sup> (added sugars exclude naturally occurring sugars from fruit, vegetable, and dairy ingredients <sup>d</sup> )
Sodium	No more than 230 mg/serving of chips, crackers, cheeses, baked goods, french fries, and other snack items <sup>e</sup> No more than 480 mg/serving for soups, cereal, pastas, and meats <sup>f</sup> No more than 600 mg for pizza, sandwiches, and main dishes <sup>f</sup> No more than 770 mg for meals <sup>g</sup>
Nutrient content	Contains one or more of the following: 10% of the Daily Value (naturally or from fortification) of vitamins A or C, calcium, iron, or fiber; half a serving of fruit or vegetable; or 51% or more (by weight) whole-grain ingredients
<b>Beverages</b>	
	Beverages assessed as being high in fat, sugars, or sodium or low in nutrients: Soft drinks, sports drinks, and sweetened iced teas Fruit-based drinks that contain <50% real fruit juice or that contain added sweeteners Beverages containing caffeine, excluding low-fat or fat-free chocolate milk (which contain trivial amounts of caffeine) High-fat (whole or 2%) milk

<sup>a</sup>Guidelines for Responsible Food Marketing to Children (18), which are based on the Dietary Guidelines for Americans, 2005 (20).

<sup>b</sup>Based on the Dietary Guidelines for Americans, 2005 (20).

<sup>c</sup>Based on Healthier US School Challenge (21).

<sup>d</sup>Used total sugars if added sugars could not be determined.

<sup>e</sup>Based on one tenth of Dietary Reference Intakes Tolerable Upper Intake Level for sodium (22).

<sup>f</sup>Based on Food and Drug Administration definition of "healthy" for food Nutrition Facts labels (23).

<sup>g</sup>Based on one third of Dietary Reference Intakes Tolerable Upper Intake Level for sodium (22).

For advertisements for foods that did not feature a particular flavor/variety of the product, the average nutritional content across all flavors was calculated and assessed. For advertisements that depicted an entire meal, the nutrition information for the whole meal was assessed; meals were considered high in fat, sugars, or sodium, or low in nutrients if the featured beverage did not meet the nutrition standards. For advertisements

that pictured several different products (that were not shown together as a meal), the nutrition content of each product was assessed separately. For restaurant advertisements that promoted a company brand rather than a specific product (ie, no particular meal or menu item was prominently featured in the advertisements), the nutritional quality of all available children's meals or items from the children's menu from that restaurant was assessed. If more than 50% of children's meals/menu items were high in fat, sugars, or sodium, or low in nutrients, then the advertisement was considered to promote high in fat, sugars, or sodium, or low in nutrients foods. Although the marketing nutrition standards also include portion size limits, this criterion was omitted for the purpose of this study. Because many of the foods were depicted as cartoon images, assessing portion sizes was too subjective.

### Marketing Techniques and Messages

The marketing techniques assessed for each food advertisement included use of movie, cartoon, animated, or costumed characters; animation; a Web site or e-mail address; television show or movie cross promotions; premiums or giveaways; kids' club promotions; contests; celebrities or athletes; and ties to school marketing. Advertisements were also assessed on whether or not they contained explicit (verbal or written) or implicit (inferred from scenario or visuals) messages relating to health/nutrition, physical activity, or emotions. For example, an advertisement containing a spoken message, "part of a nutritious breakfast," was coded as having an explicit message about health/nutrition. An advertisement that showed children dressed in soccer uniforms was coded as having an implicit physical activity message.

### Data Coding and Reliability

One research assistant, who was familiar with the constructs before viewing the advertisements, entered the data on all of the food advertisements. A second research assistant, trained by the first research assistant, coded and entered data for 177 food advertisements (63% of food advertisements). Inter-coder reliability was calculated on all of the dichotomous variables. For multicategory responses, reliability was based on agreement within each category. Reliability was calculated using the following formula:

$$\frac{\text{No. of agreements} \times 100}{\text{No. of agreements} + \text{No. of disagreements}}$$

The inter-coder reliability ranged from 79% to 100% and the overall reliability was 94%. Once inter-coder reliability was calculated, the coders discussed discrepant variables, sometimes reviewed the taped ad, and came to agreement on those variables before further analysis. All data were entered and analyzed in Excel (2003, Microsoft Corp, Redmond, WA). Frequencies of advertised food types and brands, foods that exceed limits for nutrients of interest, and containing specific marketing techniques, were obtained in the analysis. This research was exempt from Institutional Review Board approval.

**Table 3.** Proportion of food advertisements taped during Saturday morning children's television programming that did not meet the nutrition standards used for policies for food marketing to children by specific standard and by number of standards not met

Advertisement	n	%
<b>Nutrition standard not met (n=215<sup>a</sup>)</b>		
Total fat	40	19
Saturated and <i>trans</i> fats	36	17
Added sugars	127	59
Sodium	38	18
<b>Nutrient content standard met (n=215<sup>a</sup>)</b>		
Vitamins and minerals	167	78
Fruit or vegetables	15	7
Whole grains	25	12
Any nutrient	48	22
<b>No. standards not met (n=215<sup>a</sup>)</b>		
0 (no standards not met)	26	12
1	108	50
2	61	28
3 or more	20	9
<b>For foods high in fat, added sugars, or sodium, or low in nutrients (n=281<sup>b</sup>)</b>		
	255	91

<sup>a</sup>Excludes beverage and restaurant advertisements (n=66). Beverage advertisements were evaluated based on beverage type and not specific nutrient criteria. Ads for restaurant brands were evaluated using the proportion of children's meals/items that did not meet the criteria. Also excludes ads for Checker's Double Pepper Jack Cheese Burger (Checkers/Rally's Restaurants, Tampa, FL) for which nutrition information was not available from the company. Includes specific restaurant or other meals (Burger King kids meal [Miami, FL] and Lunchables [Oscar Mayer/Kraft Foods, Inc, Northfield, IL]).

<sup>b</sup>Includes all advertisements for foods, beverages, and restaurants.

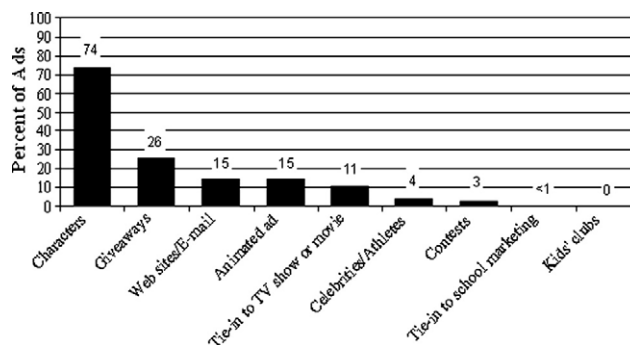
## RESULTS

The 27.5 hours of children's Saturday morning television programming contained 4.08 hours of advertising; promotions for the channel's own programming were not included in the totals for commercial advertising. The commercial advertising included 1.99 hours of food advertisements. Of 572 advertisements, 281 (49%) were for food. The most heavily marketed foods and beverages, by category, were ready-to-eat breakfast cereal and cereal bars (27% of food advertisements), restaurants (19%), snack foods (eg, cookies, chips, crackers, and fruit snacks) (18%), and candy (14%) (Figure 1).

The individual products advertised most frequently were McDonald's restaurants (Oak Brook, IL) (7% of food advertisements), Burger King restaurants (Miami, FL) (5%), and Skittles Smoothie Mix candy (Masterfoods Inc, Hackettstown, NJ) (4%). The cereals advertised most often were Kellogg's Frosted Flakes (22% of cereal advertisements), Kellogg's Apple Jacks (13%), Kellogg's Corn Pops (9%), and Cap'n Crunch Berries (9%) (PepsiCo Inc, Purchase, NY). The restaurants advertised most often were McDonald's (37% of restaurant advertisements); Burger King (25%); and Chuck E. Cheese's (Irving, TX) (21%).

### Nutritional Quality of Advertised Foods

Of the 281 food advertisements, 91% of the foods advertised were high in fat, added sugars, or sodium, or low in



**Figure 2.** Marketing techniques used in advertisements shown during Saturday morning television programming targeted at children.

nutrients according to the standards in Table 2. Table 3 lists the number of foods featured in advertisements that failed to meet each nutrition standard. More than half of foods in the advertisements (59%) exceeded the criterion for added sugars. About one in five foods advertised exceeded other guidelines, including for total fat (19%), saturated plus *trans* fat (17%), and sodium (18%). The majority of food in the advertisements (78%) met the criterion for vitamins and minerals—often as a result of fortification. Few advertisements were for foods that contained at least half a serving of fruits and vegetables (7%) or were whole grains (12%). All of the advertised whole-grain foods were breakfast cereals. Half of food advertisements (excluding beverage and restaurant/brand advertisements) were for foods that did not meet one of the nutrition standards (Table 3). Just more than one quarter of food advertisements were for foods that did not meet two of the standards and 9% of food advertisements were for foods that did not meet three or more of the standards.

One hundred percent of advertisements for snack foods, candy, restaurants, beverages, and breakfast pastries promoted high in fat, sugars, or sodium, or low in nutrients foods and beverages. Those foods together accounted for 63% of the food advertisements. None of the 27 beverage advertisements met the nutrition standards; they were either fruit-based drinks that contained <50% real fruit juice or added sweeteners (48% of advertised beverages), were sports drinks (29%), or contained or promoted the consumption of 2% or whole milk (22%), which are the largest sources of saturated fat in children's diets (29).

### Marketing Techniques

The most commonly used marketing techniques were movie, cartoon, animated, or costumed characters (used in 74% of food advertisements), giveaways (in 26% of food advertisements), use of Web sites/e-mail (15%), and animation (15%) (Figure 2). Among the marketing techniques assessed, the number of different techniques used in a single food advertisement ranged from zero to four, and the average number of marketing techniques used per advertisement was two. For example, one McDonald's advertisement featured cartoon characters from a videogame and featured a videogame giveaway with kids' meals.

Explicit and implicit messages regarding health/nutrition or physical activity were common in the Saturday morning food advertisements. Forty-two percent of food advertisements had an explicit or implicit health/nutrition message. Of those advertisements, 76% had explicit messages and 13% had implicit messages. Eleven percent of food advertisements had both explicit and implicit health/nutrition messages.

The most common explicit health/nutrition message was a variation on “part of a complete/balanced/nutritious breakfast.” Explicit health/nutrition messages were most common in cereal and cereal bar advertisements (100% of cereal and cereal bar advertisements had explicit nutrition/health messages). Almost half (47%) of food advertisements had an explicit or implicit physical activity message. Of those advertisements, 100% had implicit messages and 28% had both explicit and implicit physical activity messages. About 62% of food advertisements showed children eating or drinking and of those, 24% of the advertisements showed children engaged in another activity while eating or drinking, such as eating while dancing.

Emotional appeals, such as fun or being hip or cool, were common in the Saturday morning food advertisements. Eighty-six percent of advertisements had an emotional message. Of those advertisements, 5% had explicit messages, 62% had implicit messages, and 32% had both explicit and implicit emotional messages. Examples included “Made large for living large,” “The world champion of fun,” and “Fun anyone? Your wish is my command!”

## DISCUSSION

As was hypothesized, the majority of foods advertised to children on Saturday morning television programs exceeds recommended levels of fat, added sugars, or sodium, or are low in nutrients, and as such, are out of balance with the foods recommended in the Dietary Guidelines for Americans. Most advertised foods are high in added sugars (59% of food advertisements), total fat (19%), sodium (18%), and/or saturated and *trans* fats (17%). Moreover, few advertised foods are those that children should eat more often. Only 7% of food advertisements included products with a half a serving or more of fruits or vegetables. For example, Kid Cuisine All Star Chicken Breast Nuggets Meals (Conagra Foods, Omaha, NE) included corn and Burger King Kids Meal advertisements featured strawberry apple sauce. Whole grains were found in 12% of food advertisements—exclusively in cereal advertisements, such as Trix and Reese’s Puffs cereals (General Mills, Minneapolis, MN) and Kellogg’s Tiger Power. No food advertisements promoted low-fat dairy products. These findings are troubling given that research links children’s exposure to advertising with preference for, requests for, and consumption of advertised foods and beverages (5).

The categories of foods advertised on children’s television programming found in this study are consistent with previous research findings from the 1980s and 1990s, suggesting that nutrition-poor foods continue to dominate children’s television advertising (8-10). Although other authors have concluded that the foods marketed to children are generally of poor nutritional quality, this study

is among the first to assess the nutritional quality of foods using quantitative, nutrient-based standards.

We found wide discrepancies between what health experts recommend children eat and what marketing promotes as desirable to eat. Although parents can model and encourage healthful eating, companies have large advertising budgets, market research, cartoon characters, and sophisticated marketing techniques to influence children’s food choices and preferences. However, recently a number of companies have been making changes to their policies for marketing to children. One approach by food and entertainment companies is the application of nutrition standards to determine which foods it will market to children. For example, Kraft and PepsiCo have developed nutrition standards for their respective Sensible Solutions and Smart Spot labels. Those company standards are similar to those used in this study. Kraft, General Mills, Kellogg, and the Disney Company restrict certain children’s marketing to only those products that meet their nutrition standards. (Kraft, Kellogg, and General Mills also abstain from advertising to children younger than age 6 years.) Health advocates have been encouraging all food companies, restaurants, entertainment companies, and others that market food to children to adopt strong nutrition standards and apply them to all food marketing to children, including on television, on the Internet, in schools, and on packaging.

Another interesting finding of this study is that many Saturday-morning children’s television advertisements include health messages alongside foods that are high in fat, sugars, or sodium, or low in nutrients. Though almost all of the food advertisements were for foods high in fat, sugars, or sodium, or low in nutrients, 42% of the advertisements had a health/nutrition message. For example, an advertisement for Airhead Fruit Spinners fruit-flavored snacks (Perfetti Van Melle, Milano, Italy) contained the message, “with real fruit flavor and vitamin C charged crystals.” Forty-seven percent of food advertisements had a physical activity message, such as an advertisement depicting children wakeboarding after eating Cheetos (PepsiCo Inc, Purchase, NY). A recent study found that food advertisements depict children engaged in physical activity significantly more frequently than other advertisements aimed at children (30). Although several food companies and trade organizations have launched programs to promote more healthful lifestyles (6), when coupled with foods of poor nutritional quality, health/nutrition and physical activity messages are likely to be misleading and perhaps do more to promote unhealthful eating than to promote health.

This study has several limitations. First, complete nutrition information was lacking on some products, such as the percentage of sugars in fruit-flavored snacks that are naturally occurring vs added. Based on the ingredient list, it is unlikely that foods were miscategorized as a result of this missing information. Second, the cross-sectional sample of advertisements was taped in one city mostly on one Saturday and thus may not be representative of the entire country. However, the Federal Trade Commission estimates that 90% of food advertisements viewed by children are national advertisements (31). Third, the sample was collected during one block during one part of the week and thus the results are not gener-

alizable to all children's television programming. Fourth, the nutrition standards used for this study create dichotomous categories of nutritional quality (exceeds/meet) for the purpose of analyses. This categorization does not reflect the degrees to which certain foods exceed or meet dietary recommendations. However, this approach is similar to what is used by food and entertainment companies and what is recommended for school foods by the Institute of Medicine and other health authorities.

## CONCLUSIONS

The results of this study have implications for food and nutrition professionals and others who counsel families and work with youth. The findings indicate that the foods that food and nutrition professionals encourage children to eat more of, such as fruits, vegetables, low-fat dairy products, and whole grains, are seldom encouraged in advertisements shown during children's Saturday morning television programming. Instead, most advertisements promote high in fat, sugars, or sodium, or low in nutrients foods. Such advertising contrasts with food and nutrition professionals' promotion of healthful eating, making work to help balance the messages children receive about food from advertising very important.

Food and nutrition professionals and others concerned about child nutrition and health can advocate, both personally and within their professional capacities, for more responsible food marketing to children. With clients, food and nutrition professionals can reinforce the American Academy of Pediatrics' recommendation that families limit children's screen time (including television, movies, and Internet) to no more than 2 hours each day. In addition, to achieve a more healthful balance of food messages to children, food and nutrition professionals can join others to work to limit the marketing of nutrition-poor foods in schools, as the American Dietetic Association has supported through local school nutrition and physical activity wellness policies (17). Food and nutrition professionals also can urge food companies to stop marketing low-nutrition foods to children through television, food packaging, the Internet, and other approaches, and instead increase marketing of fruits, vegetables, whole grains, and other healthful foods that children are underconsuming.

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