Sports Sponsorships of Food and Nonalcoholic Beverages

Marie A. Bragg, PhD,[a,b] Alyssa N. Miller, MPH,[a] Christina A. Roberto, PhD,[c] Rachel Sam, MPH,[d] Vishnudas Sarda, MBBS, MPH,[e] Jennifer L. Harris, PhD, MBA,[f] Kelly D. Brownell, PhD[g]

abstract

BACKGROUND: Food and nonalcoholic beverage companies spend millions of dollars on professional sports sponsorships, yet this form of marketing is understudied. These sponsorships are valuable marketing tools but prompt concerns when unhealthy products are associated with popular sports organizations, especially those viewed by youth.

METHODS: This descriptive study used Nielsen audience data to select 10 sports organizations with the most 2–17 year old viewers of 2015 televised events. Sponsors of these organizations were identified and assigned to product categories. We identified advertisements promoting food and/or nonalcoholic beverage sponsorships on television, YouTube, and sports organization Web sites from 2006 to 2016, and the number of YouTube advertisement views. The nutritional quality of advertised products was assessed.

RESULTS: Youth watched telecasts associated with these sports organizations over 412 million times. These organizations had 44 food and/or nonalcoholic beverage sponsors (18.8% of sponsors), second to automotive sponsors (n = 46). The National Football League had the most food and/or nonalcoholic beverage sponsors (n = 10), followed by the National Hockey League (n = 7) and Little League (n = 7). We identified 273 advertisements that featured food and/or nonalcoholic beverage products 328 times and product logos 83 times (some advertisements showed multiple products). Seventy-six percent (n = 132) of foods had unhealthy nutrition scores, and 52.4% (n = 111) of nonalcoholic beverages were sugar-sweetened. YouTube sponsorship advertisements totaled 195.6 million views.

CONCLUSIONS: Sports sponsorships are commonly used to market unhealthy food and nonalcoholic beverages, exposing millions of consumers to these advertisements.

FREE NIH

[a]*Department of Population Health, School of Medicine, and* [b]*College of Global Public Health, New York University, New York, New York;* [c]*Department of Medical Ethics & Health Policy, Perelman School of Medicine, University of Pennsylvania, Philadelphia, Pennsylvania;* [d]*Harvard Business School, Harvard University, Boston, Massachusetts;* [e]*Division of Adolescent Medicine, Boston Children's Hospital, Boston, Massachusetts;* [f]*Rudd Center for Food Policy and Obesity, University of Connecticut, Hartford, Connecticut; and* [g]*Sanford School of Public Policy, Duke University, Durham, North Carolina*

Dr Bragg originated the study idea and design, helped with data acquisition and analyses, led the writing of the manuscript, had full access to all of the data in the study, and takes responsibility for the integrity of the data and accuracy of the analysis; Ms Miller helped with the data acquisition and analysis and helped draft the manuscript; Drs Roberto, Harris, and Brownell helped interpret the results and provided critical feedback on drafts of the manuscript; Ms Sam and Mr Sarda helped with the data acquisition and analysis and provided feedback on the manuscript; and all authors approved the final manuscript as submitted and agree to be accountable for all aspects of the work.

DOI: https://doi.org/10.1542/peds.2017-2822

Accepted for publication Jan 16, 2018

WHAT'S KNOWN ON THIS SUBJECT: Food and beverage companies spend millions of dollars annually on sports sponsorships to use their logos, brand names, and products in sports venues and advertisements. The public health community has raised concerns about unhealthy food and beverage promotion through sponsorships.

WHAT THIS STUDY ADDS: The study provides the first comprehensive analysis of food and beverage sponsorships of US sports organizations. Food and beverage companies were the second largest category of sponsors, and the majority of food and beverages in sponsorship commercials were unhealthy.

To cite: Bragg MA, Miller AN, Roberto CA, et al. Sports Sponsorships of Food and Nonalcoholic Beverages. *Pediatrics.* 2018;141(4):e20172822

Poor diet is a significant driver of childhood obesity and is associated with a number of serious illnesses.[1,2] Food marketing is 1 factor that contributes to poor diet among youth. Exposure to food advertisements can influence children's food preferences and purchase requests and can lead to increased short-term food consumption,[3–7] even for foods that are not shown in the advertisement.[8] Public health experts and government agencies are calling for policies that limit the marketing of unhealthy foods and encourage the promotion of healthy messages.[1,9–12]

Sponsorship is 1 form of marketing, defined as "the provision of assistance, either financial or in-kind, to an activity by a commercial organization for the purpose of achieving commercial objectives."[13] The high financial cost of sports sponsorship contracts reveals that companies find immense value in these marketing opportunities, with global expenditures totaling $57.5 billion in 2015.[14] In 2011, PepsiCo agreed to pay $90 million per year during their 10-year sponsorship renewal contact with the National Football League (NFL).[15] In exchange for an estimated $20 million per Olympic Games, sponsors like Coca-Cola, McDonald's, and Visa were granted a variety of marketing privileges, including the use of Olympic rings in advertisements.[16] In fact, Coca-Cola has sponsored every Olympic Games since 1928, making it the longest continuous partner.[17]

Sponsorships are valuable for several reasons. First, brand awareness increases as a result of sponsorship.[18–21] Specifically, Americans who viewed the 2008 Olympic Games on television and the Internet had higher brand awareness for companies that spent the most on sponsorship (ie, Coca-Cola, McDonald's, Visa) compared with other sponsors.[22] Sponsorship may also lead to brand image transfer, or the transfer of positive associations with the sponsored entity (ie, sports organization) to the sponsor (ie, food and/or beverage brand).[23–25] For example, feelings of excitement and accomplishment associated with the Olympics may transfer to excitement and a positive self-image when consuming products of an Olympic sponsor, such as Coca-Cola. Companies have also attributed sales growth to sports sponsorship activities.[26–32]

Studies examining the influence of food sponsorship on consumers have revealed high levels of recall and preference for food sponsors. The authors of 1 study showed that 68% of children ages 10 to 14 years could recall an average of 2 sponsors associated with their own youth sports team (including 1 food sponsor); children ages 10 to 11 years were more likely than older children to state that they thought about sponsors when making food or beverage purchases and that they should return the favor of sponsorship by purchasing the sponsor's products.[33] In addition, 4 of the 10 "most-liked" commercials during the 2010 Olympics were McDonald's and Coca-Cola sponsorship commercials.[34] The possibility of brand image transfer between unhealthy food brands and sports organizations is concerning if consumers inaccurately associate unhealthy food products with health and fitness.[35]

Although the use of sports sponsorships by food companies has been criticized by public health experts,[10,12,33] there are scant data in the United States on its scope and the types of foods promoted. The authors of 1 study found that 9% of sports sponsors in Australia were food companies, and 63% of those sponsors promoted unhealthy products.[36] Another Australian study revealed that 70% of parents surveyed supported limiting unhealthy food sponsors in children's sports.[37] The authors of 1 systematic review on food marketing and sports sponsorship noted that just 13 studies exist, with 10 taking place in Australia.[38] Digital (ie, Internet-based) marketing is 1 platform used in sponsorship, yet this form of advertising is understudied. Because digital marketing is a newer and growing frontier, it is critical for public health researchers to examine the types of products promoted on these platforms and the scope of this form of advertising. In 2006, YouTube was the fastest growing Web brand, increasing its monthly audience from 4.9 million to 19.6 million in 5 months.[39] Recent Nielsen[40] data reveal that the YouTube mobile application was ranked as the third most frequently used smartphone application.

Public health advocates cited concerns about the effects of unhealthy sports sponsorships during growing criticism of the partnership between McDonald's and the Olympics.[41–43] In 2017, McDonald's prematurely ended their 41-year Olympics sponsorship, although the company reported that the decision reflected a need to "focus on other priorities."[44] Despite McDonald's visible presence as a sponsor that terminated its partnership amid such public criticism, no study authors have quantified the extent of sponsorship as a food marketing tactic among a variety of professional sports organizations and food and beverage companies in the United States, nor have any quantified exposure to these commercials via newer media channels such as YouTube. In the current study, we aimed to (1) determine the prevalence of food and nonalcoholic beverage company sponsorships among professional sports organizations popular among youth ages 2 to 17 years in the United States, (2) assess the nutritional quality of products featured in advertisements promoting these sponsorships, and (3) assess

the number of times food and nonalcoholic beverage sponsorship commercials were viewed on YouTube.

METHODS

We used Nielsen's[45] television ratings for sports programs shown during 2015 to identify the 10 organizations whose televised events were most frequently watched by youth (2–17 years) in the United States. First, all televised sports programs were ranked according to the number of youth viewers. To identify the 10 sports organizations (eg, NFL, National Basketball Association [NBA]) with the most youth viewers, we identified the 500 individual sports programs with the most youth viewers and then identified the total number of youth viewers for all programs from the same sports organization.

Sponsorship Identification

For each of the 10 sports organizations identified above, we compiled a list of all sponsors using publicly available information. Sponsorship was defined as an instance when an official sports organization logo or name (eg, NFL) was shown with an official company name, product, and/or logo (eg, McDonald's). To identify sponsorship instances, we used the following search terms: "official sponsor," "official partner," "corporate sponsor," "sponsor," and the sports organization name, and we then searched the following outlets: (1) official sports organization and food company Web sites, (2) news media announcements identified with Google searches, (3) commercials on YouTube from 2006 to 2016, (4) advertisements on the Kantar Media AdScope database from 2006 to 2016 (includes advertisements appearing in television, print, radio, and magazines),[46] and (5) the International Events Group (IEG), a sponsorship industry organization that "has shaped and defined sponsorship for over 3 decades."[47] Most sports organizations listed sponsors on their official Web site, but sponsor information for 3 organizations was only available through IEG.

A research assistant blind to the purpose of the study sorted all sponsors into the following 11 categories: food and/or nonalcoholic beverages, automotive, consumer goods (eg, makeup, headphones), communications (eg, cell phone companies), finance (eg, credit cards), sports (eg, Nike), retail (eg, Lowe's Home Improvement), tobacco and/or alcohol, services (eg, Google), airlines, and other. These categories were based on sponsorship categories created by IEG.[47] The "other" category was created to capture military sponsors (eg, the US Air Force), which did not fit in any other category.

Nutritional Analysis

After developing a list of sponsors, 2 researchers reviewed each food and/or nonalcoholic beverage sponsorship advertisement identified above, removed duplicates, and coded the food and/or beverage brand or product appearing in the advertisement as follows: (1) name of the beverage product (eg, Coke Zero), (2) name of the food product (eg, M&Ms Regular), or (3) name of food or beverage logo if food products were not shown or if the type of food shown was unclear (eg, type of wings present in Buffalo Wild Wings advertisement).

Researchers then gathered nutrition information for all products shown in sponsorship advertisements by searching official food and nonalcoholic beverage companies' Web sites between January and March of 2016. The nutrition information for each food product was evaluated by using the Nutrient Profile Model, a nutrition profiling system used to identify nutritious products that can be advertised to children in the United Kingdom and Australia.[48–50] The model uses the numerical nutrition information (eg, number of calories, grams of fiber, etc) from the Nutrition Facts Panel to generate an objective numerical nutrition score.[48,49,51] A score of 64 or higher identifies food products as "nutritious." A nutrition score was generated for each endorsed food product, and an average Nutrient Profile Index (NPI) score for all food products endorsed by each sports organization was determined (Table 1). For advertisements that only showed a logo, members of the study team randomly selected 5 products from the company Web sites and averaged the NPI scores of the selected products to generate an average NPI brand score. Oreo and Ritz snacks advertisements were included in the nutritional analyses because they appeared in advertisements on the National Association for Stock Car Auto Racing (NASCAR) cars, although they were not listed as official sponsors of NASCAR in 2015. Advertisements featuring generic products unassociated with the advertised brand (eg, unlabeled juice in a Quaker Oatmeal advertisement) were left uncategorized because they were not part of the brand being advertised. Overall, NPI scores were determined by using nutritional information of food products from 34 brands. When brands featured multiple products in their advertisements, NPI scores were averaged.

This nutrition profiling tool codes many sugary beverages similarly because sugar is the only ingredient. To further differentiate the sugar-sweetened beverages (SSBs), we sorted nonalcoholic drinks into sugary drink outlined in the Rudd Center's Sugary Drink Food Advertising to Children and Teens Score Report[52] (Table 2). We also added a category for plain coffee

TABLE 1 Viewership Ranked by Televised Sports Events in 2015 and YouTube Views

Sports Organization	Average No. Television Impressions for Viewers Ages 2–17 y[a]	YouTube Views for Sports Organization's Sponsorship Advertisements through 2016[b]	No. YouTube and AdScope Advertisements Associated With Sponsor (Date of Earliest Post for Advertisements)
NFL	244 260 000	93 208 599	153 (2006)
NCAA	64 919 000	398 104	15 (2009)
NBA	36 711 000	80 009 245	22 (2007)
FIFA	33 655 000	4 177 442	11 (2010)
MLB	14 721 000	4 651 487	33 (2007)
NASCAR	7 586 000	6 922 475	24 (2008)
NHL	5 931 000	2 006 194	14 (2010)
PGA[c]	2 927 000	—	11 (2010)
Little League	829 000	4 222 473	13 (2009)
UFC[c]	545 000	—	—
Total	412 084 000	195 596 019	272

FIFA, Fédération Internationale de Football Association; MLB, Major League Baseball; NCAA, National Collegiate Athletic Association; —, not applicable.

[a] This No. represents the average No. of viewers for any given program. For example, on average, 244 260 000 children watched any given televised NFL program during 2009.

[b] YouTube does not provide public data on repeat viewers or the demographic characteristics of viewers.

[c] No commercials associated with this organization were found on YouTube.

beverages: "no added sugars, no calorie coffee drink."

Marketing Analyses

Finally, we quantified the total number of food and/or nonalcoholic beverage sponsorship advertisements that were identified during the search process described above (ie, 2 research assistants independently searched YouTube for food and nonalcoholic beverage advertisements using the following search terms: official sponsor, official partner, corporate sponsor, sponsor, and the sports organization name). The researchers recorded the total number of food and/or nonalcoholic beverage sponsorship commercials that were uploaded to YouTube from 2006 to 2016 and the number of views associated with each commercial. Capturing a 10-year period of endorsements allowed us to create a more comprehensive profile of sponsorship. The data on viewership for YouTube videos represent the total number of views as of August 2016.

RESULTS

Nielsen audience viewership data revealed that more than 412 million youth ages 2 to 17 years viewed sports programs associated with these 10 sports organizations during 2015 (Table 1).[45] Overall, 234 sponsors were associated with the 10 sports organizations linked to the 500 most-watched sports telecasts from which these 10 sports organizations were identified. Food and/or nonalcoholic beverage was the second most common sponsor category (n = 44, 18.8%), exceeded only by automotive brands (n = 46, 19.7%). These 44 food and/or nonalcoholic beverage brand sponsors belonged to 18 parent companies. In some cases, multiple brands within the same company were listed as official sponsors. For example, the Professional Golfers' Association (PGA) official Web site lists 4 PepsiCo brands: Aquafina, Gatorade, Pepsi, and Lipton. The NFL had the highest number of food and/or nonalcoholic beverage sponsors, followed by the National Hockey League (NHL) and Little League Baseball (Table 2).

Nutritional Quality of Sponsors' Products

Two hundred seventy-three sponsorship advertisements were identified from searching AdScope, YouTube, and official company and sports organization Web sites. Advertisements included television commercials and still advertisements (eg, images featured on sports organization Web sites). Within the 273 unique advertisements in the sample, there were 83 instances within advertisements in which only a logo was shown (ie, no actual food or nonalcoholic beverage products were shown, so the instance was coded as the hallmark product) and 196 instances in which 1 or more food or nonalcoholic beverage products were shown. Because more than 1 food or nonalcoholic beverage product was shown in 58 advertisements, the total number of nonalcoholic beverage products shown in the sample of advertisements was 155 and the total number of food products shown was 173. Nutter Butter, Buffalo Wild Wings, and Cracker Barrel food and nonalcoholic beverage products were excluded from nutrition analyses because complete nutrition information was unavailable.

There were 212 instances in which nonalcoholic beverage products were promoted in sponsorship advertisements, including 57 (26.9%) instances in which only the nonalcoholic beverage logo was shown, without showing a specific product (Table 3). Out of the 155 instances in which a nonalcoholic beverage product was shown, 111 (52.4%) advertised SSBs, and 51 (20.8%) advertised non-SSBs (eg, unsweetened teas, diet sodas, water, etc). Full-calorie, regular soft drinks were the largest category of nonalcoholic beverages shown (N = 68, 43.9%), followed by diet soft drinks (N = 31, 20.0%) and sports drinks (N = 19, 12.3%). Plain water was featured 6 times (3.9%), no-calorie coffee was featured 3 times (1.9%), and milk was featured 3 times (1.9%). PepsiCo products were featured most frequently (N = 111, 69.0%),

whereas its products' logos were featured 48 times.

Out of the 173 instances in which food products or brand logos were shown, 132 (76.3%) promoted foods with NPI scores lower than 64, indicating that they were energy-dense, nutrient-poor products (Table 4). The PGA had the worst overall NPI average (NPI = 18.0) because the only product they featured in a food sponsor advertisement was a high-sugar Gatorade Protein Bar.

TABLE 2 Sports Organization 2015 Sponsorship Profiles

Sports Organization	Official Sponsor of the Sports Organization for 2015	Actual Brands Featured in Advertisements Between 2006 and 2016	No. Food and Beverage Sponsors	Percentage of Sponsors That Are Food and/or Beverage Companies	Mean NPI Score for Food Products[a]
NFL	Campbell Soup Company	Campbell's Soup	10	27.0	44.0
	Dairy Management Inc	Got Milk?[b]			
	PepsiCo	Pepsi			
	Frito-Lay	Diet Pepsi			
	Gatorade	Pepsi Max			
	Quaker	Pepsi Next			
	Mars Snackfood	Lay's			
	Papa John's	Doritos			
	The Dannon Company	Sunchips			
	McDonald's	Fritos			
		Rold Gold			
		Cracker Jack			
		Ruffles			
		Gatorade			
		M&M's Crispy			
		M&M's Peanut			
		Skittles			
		Snickers			
		Papa John's			
		Danimals			
		Oikos Yogurt			
		McDonald's			
		Quaker			
NHL	Kraft Heinz Company	Heinz Ketchup	7	20.6	39.0
	PepsiCo	Lay's			
	McDonald's	Gatorade			
	Kellogg Company	McDonald's			
	The Hershey Company	Tim Horton's			
	Tim Horton's	Frosted Flakes			
	Mondelez[a]	Hershey's Milk Chocolate			
		Maxwell House			
Little League	PepsiCo	Gatorade	6	35.3	44.9
	Kraft Heinz Company	Heinz Ketchup			
	Kellogg Company	Kellogg's Frosted Flakes			
	Lance Snack Foods Inc	ToastChee Crackers			
	Synder's-Lance	Subway			
	Subway	The Original Bomb Pop			
MLB	Pepsi	Aquafina	4	18.2	42.6
	Frito-Lay	Gatorade			
	Aquafina	Cracker Jack			
	Gatorade				

Sponsorship Commercial Viewership

A total of 195 596 019 YouTube views were associated with food and nonalcoholic beverage sports sponsorship advertisements in the sample of commercials posted between 2006 and 2016 (Table 1). Pepsi (including Pepsi Regular, Pepsi Max, etc) sponsorship advertisements had the most views on YouTube (N = 132 351 532), followed by Gatorade (N = 24 728 056).

DISCUSSION

This study reveals the high prevalence of partnerships between sports organizations and food and/or nonalcoholic beverage company sponsors. The NFL had the most food and/or nonalcoholic beverage sponsors, and the organization's telecast also had the most youth in the audience (totaling 244 million youth viewers in 2015). National Little League had the third highest number of food and/or nonalcoholic beverage sponsors, suggesting that sponsorships of children's sports organizations are highly valued by food and beverage companies. Only 1 organization, the Ultimate Fighting Championship (UFC), did not have any food and/or nonalcoholic beverage sponsors.

The vast majority of food and nonalcoholic beverage products advertised in association with the other 9 sports organizations did not qualify as nutritious. Full-calorie, regular sodas were the most frequently appearing nonalcoholic beverages in advertisements in the sample, followed by diet soda and sports drinks. In contrast, plain water was only featured 6 times, and low-fat milk appeared once within the

TABLE 2 Continued

Sports Organization	Official Sponsor of the Sports Organization for 2015	Actual Brands Featured in Advertisements Between 2006 and 2016	No. Food and Beverage Sponsors	Percentage of Sponsors That Are Food and/or Beverage Companies	Mean NPI Score for Food Products[a]
NCAA	The Coca-Cola Company	Coca-Cola	4	23.5	37.6
	Buffalo Wild Wings[a]	Coke Zero			
	Reese's	Buffalo Wild Wings[a]			
	Nabisco	Reese's Peanut Butter Cups			
		Ritz			
		Oreo			
		Triscuit			
		Wheat Thins			
		Nutter Butter[a]			
PGA	Pepsi	Aquafina	4	12.1	18
	Gatorade	Brisk			
	Aquafina	Gatorade			
	Lipton Iced Tea	Lipton			
		Brisk			
NASCAR	The Coca-Cola Company	Coca-Cola	4	10.3	31
	M&M Candy (Mars Snackfood)	Coke Zero			
	Nabisco/Kraft	Oreo			
	Unilever (Hellman's Mayonnaise)	Ritz			
		M&M's Crispy			
		M&M's Peanut Butter			
NBA	PepsiCo	Pepsi	4	13.6	18
	The Coca-Cola Company	Pepsi Max			
	Taco Bell	Mountain Dew			
	Nabisco/Kraft	Mountain Dew Kickstart			
		Gatorade			
		Sprite[c]			
		Taco Bell			
		Handi Snacks			
FIFA	The Coca-Cola Company	Coca-Cola	1	20.0	—
UFC	—	—	0	—	—
Total	—	—	44	18.4	34.39

FIFA, Fédération Internationale de Football Association; MLB, Major League Baseball; NCAA, National Collegiate Athletic Association; —, not applicable.

[a] Lower scores (<64) represent less healthy foods. Scores are based on products shown in sponsorship commercials.

[b] Complete nutrition information was unavailable for this company, so it was excluded from analyses.

[c] PepsiCo replaced Coca-Cola in 2015 as an NBA sponsor. Sprite is associated with Coca-Cola, which is not a sponsor of the NBA. However, Sprite sponsors the NBA Slam Dunk Contest.

273 advertisements in our sample. These findings are consistent with those within previous research revealing that the majority of food products promoted through sports sponsorships are unhealthy.[53–58] The promotion of unhealthy foods and beverages during sports is especially concerning because study authors have shown that up to 76% of children surveyed can recall at least 1 food company that sponsors a sports organization.[59,60] In addition, the authors of 1 study conducted in Australia estimated that 80% of children play organized sports, and up to 75% of their youth sports clubs maintain food sponsorships.[61]

Television program viewer data reveal that millions of youth tune into sports programs each year. The general viewership data available for the 228 YouTube food and/or nonalcoholic beverage sponsorship commercials in our sample reveal how broadly these commercials are viewed (195 596 019 views). Newer media outlets such as YouTube provide companies with new ways of reaching consumers and potentially broadening consumers' exposure to advertisements, in part because YouTube is easily available. Sports organizations in this sample clearly provide tremendous opportunities for food sponsors interested in marketing to youth, and the paradox of using sports to promote unhealthy products is alarming, especially given the large number of youth who watch televised sports. In addition, the authors of 1 study showed that food sponsor logos were visible during 44% to 74% of 3 televised cricket games,[62] suggesting a need for more research on how exposure to advertisements during televised games affects dietary behaviors.

Because of these results, concerns about partnerships between sports organizations and food and nonalcoholic beverage companies are reinforced. Four of the 10 sports organizations evaluated in our study did not have policies on child-directed marketing.[63] Furthermore, 10 of 18 companies involved in the Children's Food and Beverage Advertising Initiative (CFBAI) industry self-regulatory program are sponsors of at least 1 sports organization in this sample.[64] The initiative is a voluntary industry-led pledge in which food and beverage companies publicly commit to refraining from advertising unhealthy products to children <12 years of age. Despite the fact that sports programming does not explicitly target children younger than 12 years

TABLE 3 Nutritional Quality of Beverages Featured in Sports Sponsorship Commercials

Drink Category	Company	Brand	Sports Organizations That Featured This Beverage	No. Instances This Beverage Was Shown Within the 273 Advertisements
Regular soda, full calories	PepsiCo	Pepsi	NFL, MLB, PGA	30
Regular soda, full calories	Coca-Cola	Coca-Cola	FIFA, NASCAR, NCAA, NFL	26
Sports drink, full calories	PepsiCo	Gatorade	PGA, MLB, Little League, NHL, NFL	20
Other, diet drink (soda)	PepsiCo	Pepsi Max	NFL, NBA, MLB	12
Other, diet drink	Coca-Cola	Coke Zero	NCAA, NASCAR	10
Other, diet drink (soda)	PepsiCo	Diet Pepsi	NFL, MLB	9
Regular soda, full calories	PepsiCo	Mountain Dew	NFL, NBA	8
Plain water	PepsiCo	Aquafina	PGA, MLB, NFL	7
Fruit drink, full calories	PepsiCo	Mountain Dew Kickstart	NBA	4
Sports drink, full calories	PepsiCo	Gatorade Recover Protein Shake	NFL, NBA, MLB	3
Sports drink, full calories	PepsiCo	Gatorade Whey Protein Powder	NFL, NBA, MLB	3
Regular soda, reduced calories	PepsiCo	Pepsi Next	NFL	2
Regular soda, full calories	Dr Pepper Snapple Group	Dr Pepper	NFL	1
Sports drink, no calories	PepsiCo	Propel	PGA	1
Regular soda, full calories	PepsiCo	Sierra Mist	NFL	1
Coffee drink, no calories	Kraft Heinz Company	Maxwell House	NHL	1
Total, *n*	—	16	—	138

FIFA, Fédération Internationale de Football Association; MLB, Major League Baseball; NCAA, National Collegiate Athletic Association; —, not applicable.

of age, these children are a large segment of the audience viewing such programs. If these sponsorship commercials are showing during televised sports programs, these data reveal that sports sponsorships enable food and nonalcoholic beverage companies that made CFBAI pledges to expose children to unhealthy products while ostensibly complying with their pledge.

This study has several limitations. First, we did not quantify sponsorship appearances within games on the sidelines or sponsor brand mentions made by announcers during televised games. Furthermore, YouTube does not distinguish between unique versus repeated views. Some sponsorship advertisements may have accrued more views than others simply because of sponsorship duration. Future study authors could examine the nutritional quality of products shown during broadcasts of sports events and assess the influence of exposure on consumers' food and beverage preferences. However, the strengths of the study include the large number of sports organizations and advertisements evaluated, the inclusion of 2 viewership data sources (eg, YouTube, Nielsen), and the objective nutrition scoring procedure. Future researchers should examine the influence of sports sponsorships' social media advertisements on adolescent perceptions and food intake.

CONCLUSIONS

With the results of this study, we generate several implications. First, sports organizations could develop more health-conscious policies that prohibit partnerships with companies primarily promoting unhealthy products or limit food marketing to the company's healthiest products. Voluntary food marketing pledges like CFBAI should be expanded to include adolescents, which is consistent with recommendations from the Robert Wood Johnson Foundation's Healthy Eating Research program[65] and the American Academy of Pediatrics, which encourages pediatricians to support efforts to reduce food marketing while also educating patients on the importance of limiting screen time.[66] Finally, grassroots efforts through public involvement and media attention could help shift current sponsorship practices. McDonald's decision to end their Olympic sponsorship after mounting criticism from public health advocates suggests that other sports organizations could capitalize on the public pressure to improve the healthfulness of sponsors. In summary, our results reveal that numerous food and beverage companies promote unhealthy products through sponsorship of a variety of professional sports, millions of youth view sports programs associated with unhealthy sponsors, and food and beverage sponsorship advertisements reach millions of viewers on YouTube. These findings support the need to expand criteria of voluntary food marketing pledges.

TABLE 4 Twenty-Five Brands or Products With the Worst NPI Scores

Brand or Product	Sports Organization	NPI Score for Food Products[a]
Gatorade Protein Bars	NBA, PGA	18.0
Reese's Peanut Butter Cups	NCAA	22.0
Snickers	NFL	22.0
Peanut M&Ms	NFL	26.0
Oreos	NASCAR	28.0
Ritz Crackers	NHL	30.0
Skittles	NFL	32.0
Handi Snacks[b]	NHL, NBA	33.0
Kraft Dinner	NHL	35.1
Philadelphia Cream Cheese	NHL	36.0
Hershey's	NHL	36.8
Heinz Ketchup	Little League	38.0
Lance Toast Peanut Butter Crackers	Little League	38.0
Cracker Jack	MLB	38.0
Fritos	NFL, MLB	38.8
Lay's	NFL, MLB	39.6
Frosted Flakes cereal	NHL, Little League	40.0
Ruffles	NFL, MLB	40.4
Papa John's Pizza	NFL	43.1
Doritos	NFL	45.2
Rold Gold pretzels	NFL, MLB	47.3
McDonald's	NFL, NHL	48.0
Sun Chips	NFL, MLB	49.2
Tostitos Chips	NFL	50.8
The Original Bomb Pop	Little League	62.0

MLB, Major League Baseball; NCAA, National Collegiate Athletic Association.

[a] Lower scores (<64) represent less healthy foods. Scores are based on products shown in sponsorship commercials.

[b] Handi Snacks is a snack food product line sold by Mondelez International, which has a sports sponsorship affiliation with the NHL.

ACKNOWLEDGMENTS

We thank Willie Frazier from the Rudd Center for Food Policy and Obesity for compiling the Nielsen data. We also thank the following research assistants and staff from the New York University SeedProgram for their contributions in collecting data: Yrvane Pageot, Ryan Hand, Alicia Korda, Margaret Eby, Christina Marini, Alex Bragg, Maimuna Marenah, Greg Vann, Anna Davies, Alex Harvey, Tenay Greene, Sally Slingerland, Susan Stork, and Udit Modi.

ABBREVIATIONS

CFBAI: Children's Food and Beverage Advertising Initiative
IEG: International Events Group
NASCAR: National Association for Stock Car Auto Racing
NBA: National Basketball Association
NFL: National Football League
NHL: National Hockey League
NPI: Nutrient Profile Index
PGA: Professional Golfers' Association
SSB: sugar-sweetened beverage
UFC: Ultimate Fighting Championship

Address correspondence to Marie A. Bragg, PhD, Department of Population Health, New York University School of Medicine, 227 East 30th St, Room 622, New York, NY 10016. E-mail: marie.bragg@nyumc.org

PEDIATRICS (ISSN Numbers: Print, 0031-4005; Online, 1098-4275).

Copyright © 2018 by the American Academy of Pediatrics

FINANCIAL DISCLOSURE: The authors have indicated they have no financial relationships relevant to this article to disclose.

FUNDING: Supported in part by the Robert Wood Johnson Foundation (Dr Harris). The views expressed here do not necessarily reflect the views of the Robert Wood Johnson Foundation. This project was also supported by the Rudd Foundation and Dr Bragg's National Institutes of Health (NIH) Early Independence Award (DP5OD021373-01) from the NIH Office of the Director, P60MD000538. Dr Roberto is supported by the National Institute on Aging of the NIH under award P30AG034546. The content of this article is solely the responsibility of the authors and does not necessarily represent the official views of NIH. Funded by the National Institutes of Health (NIH).

POTENTIAL CONFLICT OF INTEREST: The authors have indicated they have no potential conflicts of interest to disclose.

REFERENCES

1. World Health Organization. Diet and physical activity: a public health priority. 2017. Available at: www.who.int/dietphysicalactivity/en/index.html. Accessed August 11, 2017
2. Ogden CL, Carroll MD, Kit BK, Flegal KM. Prevalence of obesity in the United States, 2009-2010. *NCHS Data Brief*. 2012;(82):1–8
3. Institute of Medicine, Board on Children, Youth, and Families, Food and Nutrition Board, Committee on Food Marketing and the Diets of Children and Youth; McGinnis JM, Gootman JA, Kraak VI, eds. *Food Marketing to Children and Youth: Threat or Opportunity?* Washington, DC: National Academies Press; 2006
4. Hastings G, Stead M, McDermott L, et al. *Review of Research on the Effects of Food Promotion to Children*. London,

United Kingdom: Food Standards Agency; 2003. Available at: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.134.1856&rep=rep1&type=pdf. Accessed February 20, 2011

5. Halford JC, Boyland EJ, Hughes G, Oliveira LP, Dovey TM. Beyond-brand effect of television (TV) food advertisements/commercials on caloric intake and food choice of 5-7-year-old children. *Appetite*. 2007;49(1):263–267
6. Halford JC, Gillespie J, Brown V, Pontin EE, Dovey TM. Effect of television advertisements for foods on food consumption in children. *Appetite*. 2004;42(2):221–225
7. Harris JL, Bargh JA, Brownell KD. Priming effects of television food advertising on eating behavior. *Health Psychol*. 2009;28(4):404–413
8. Boyland EJ, Halford JC. Television advertising and branding. Effects on eating behaviour and food preferences in children. *Appetite*. 2013;62:236–241
9. Federal Trade Commission. Perspectives on marketing, self-regulation, and childhood obesity. 2008. Available at: https://www.ftc.gov/sites/default/files/documents/reports/perspectives-marketing-self-regulation-childhood-obesity-report-joint-workshop-federal-trade/perspectivesonmarketingself-regulationchildhoodobesityftcandhhsreportonjointworkshop.pdf. Accessed February 4, 2010
10. Brownell KD, Horgen KB. *Food Fight: The Inside Story of the Food Industry, America's Obesity Crisis, and What We Can Do About It*. Chicago, IL: Contemporary Books; 2004
11. Lobstein T, Parn T, Aikenhead A. *A Junk Free Childhood: Responsible Standards for Marketing Foods and Beverages to Children*. London, United Kingdom: International Association for the Study of Obesity; 2011
12. Nestle M. Food marketing and childhood obesity–a matter of policy. *N Engl J Med*. 2006;354(24):2527–2529
13. Meenaghan JA. Commercial sponsorship. *Eur J Mark*. 1983;17(7):5–73
14. International Events Group. ESP guide to sponsorship. Expenditures in 2015. Available at: www.sponsorship.com/Publications/IEG-s-Guide-to-Sponsorship.aspx. Accessed May 14, 2016
15. Associated Press. PepsiCo, NFL renew long-term sponsorship deal. 2011. Available at: http://espn.go.com/nfl/story/_/id/6935541/pepsico-nfl-renew-long-term-sponsorship-deal. Accessed August 11, 2017
16. Berkes H. Olympic sponsors go for the golden image. 2012. Available at: www.npr.org/templates/story/story.php?storyId=124068024. Accessed January 3, 2017
17. International Olympic Committee. Marketing fact file. 2004. Available at: https://www.olympic.org/news/marketing-fact-file-facts-and-figures. Accessed December 21, 2016
18. Cuneen J, Hannan MJ. Intermediate measures and recognition testing of sponsorship advertising at an LPGA tournament. *Sport Mark Q*. 1993;2(1):47–56
19. Hastings GB. Sponsorship works differently from advertising. *Int J Advert*. 1984;3(2):171–176
20. Rajaretnam J. The long-term effects of sponsorship on corporate and product image: Findings of a unique experiment. *Mark Res Today*. 1994;22(1):62–74
21. Sandler DM, Shani D. Olympic sponsorship vs ambush marketing-who gets the gold. *J Advert Res*. 1989;29(4):9–14
22. International Events Group. Consumer study reveals who won Olympic awareness games. Available at: http://www.sponsorship.com/iegsr/2010/03/15/Consumer-Study-Reveals-Who-Won-Olympic-Awareness-G.aspx. Accessed April 14, 2015
23. Gwinner KP, Eaton J. Building brand image through event sponsorship: the role of image transfer. *J Advert*. 1999;28(4):47–57
24. Keller KL. Conceptualizing, measuring, and managing customer-based brand equity. *J Mark*. 1993;57(1):1–22
25. Smith G. Brand image transfer through sponsorship: a consumer learning perspective. *J Mark Manage*. 2004;20(3–4):457–474
26. International Events Group. NASCAR sponsorship delivers ROI for sprint. Available at: http://www.sponsorship.com/iegsr/2011/03/07/NASCAR-Sponsorship-Delivers-ROI-For-Sprint.aspx. Accessed May 5, 2016
27. International Events Group. Packaged food marketer sees success from NASCAR program. 2011. Available at: http://www.sponsorship.com/iegsr/2011/02/14/Packaged-Food-Marketer-Sees-Success-From-NASCAR-Pr.aspx. Accessed April 1, 2015
28. Cousens L, Slack T. Using sport sponsorship to penetrate local markets: the case of the fast food industry. *J Sport Manage*. 1996;10(2):169–187
29. Pringle H, Binet L. How marketers can use celebrities to sell more effectively. *J Consum Behav*. 2005;4(3):201–214
30. Plewa C, Quester PG. Sponsorship and CSR: is there a link? A conceptual framework. *Int J Sports Mark Spons*. 2011;12(4):22–38
31. Jensen JA, Hsu A. Does sponsorship pay off? An examination of the relationship between investment in sponsorship and business performance. *Int J Sports Mark Spons*. 2011;12(4):72–84
32. Jensen JA, Cobbs JB. Predicting return on investment in sport sponsorship. *J Advert Res*. 2014;54(4):435–447
33. Kelly B, Baur LA, Bauman AE, King L, Chapman K, Smith BJ. "Food company sponsors are kind, generous and cool": (mis)conceptions of junior sports players. *Int J Behav Nutr Phys Act*. 2011;8:95
34. Nielsen. Viewers give high marks to ads featuring Olympic themes. 2010. Available at: http://blog.nielsen.com/nielsenwire/media_entertainment/viewers-give-high-marks-to-ads-featuring-olympic-themes/. Accessed August 2, 2017
35. Malhotra A, Noakes T, Phinney S. It is time to bust the myth of physical inactivity and obesity: you cannot outrun a bad diet. *Br J Sports Med*. 2015;49(15):967–968

36. Kelly B, Baur LA, Bauman AE, et al. Role modelling unhealthy behaviours: food and drink sponsorship of peak sporting organisations. *Health Promot J Austr*. 2011;22(1):72–75

37. Kelly B, Baur LA, Bauman AE, King L, Chapman K, Smith BJ. Restricting unhealthy food sponsorship: attitudes of the sporting community. *Health Policy*. 2012;104(3):288–295

38. Carter M-A, Edwards R, Signal L, Hoek J. Availability and marketing of food and beverages to children through sports settings: a systematic review. *Public Health Nutr*. 2012;15(8):1373–1379

39. Nielsen. Web traffic grows 75 percent week over week, according to Nielsen// NetRatings. 2006. Available at: www.nielsen-online.com/pr/pr_060721_2.pdf. Accessed August 1, 2017

40. Nielsen. Tops of 2016: digital. 2016. Available at: www.nielsen.com/us/en/insights/news/2016/tops-of-2016-digital.html. Accessed August 5, 2017

41. Smithers R. Olympics attacked for fast food and fizzy drink links. *The Guardian*. July 25, 2012. Available at: www.theguardian.com/lifeandstyle/2012/jul/26/olympics-attacked-fast-food-fizzy-drink-links. Accessed August 11, 2017

42. Van Glider Cooke S. Do the Olympics need fast food sponsors. *Time*. July 30, 2012. Available at: http://olympics.time.com/2012/07/30/does-the-olympics-need-fast-food-sponsors/. Accessed November 27, 2017

43. Bond A. Olympics officials question if McDonald's should continue sponsoring the games due to obesity concerns. *Daily Mail*. July 9, 2012. Available at: www.dailymail.co.uk/news/article-2170810/Olympics-officials-question-McDonalds-continue-sponsoring-Games-obesity-concerns.html. Accessed August 5, 2017

44. Kamm N.. McDonald's ends Olympics sponsorship deal three years early. *CNBC*. June 16, 2017. Available at: https://www.cnbc.com/2017/06/16/mcdonalds-ends-olympics-sponsorship-deal-early.html. Accessed August 10, 2017

45. Nielsen. 2015 television program rankings among ages 2-11, 12-17, and 18-49 years. 2015. Available at: www.nielsen.com/. Accessed March 14, 2016

46. Kantar Media. AdScope intelligence. Available at: https://www.kantarmedia.com/us. Accessed June 23, 2017

47. International Events Group. IEG's guide to why companies sponsor. Available at: www.sponsorship.com/Resources/What-Companies-Sponsor.aspx. Accessed December 22, 2015

48. Scarborough P, Boxer A, Rayner M, Stockley L. Testing nutrient profile models using data from a survey of nutrition professionals. *Public Health Nutr*. 2007;10(4):337–345

49. Rayner M, Scarborough P, Boxer A. Nutrient profiles: development of final model. 2005. Available at: www.food.gov.uk/multimedia/pdfs/nutprofr.pdf. Accessed February 4, 2014

50. Lobstein T, Davies S. Defining and labelling 'healthy' and 'unhealthy' food. *Public Health Nutr*. 2009;12(3):331–340

51. Harris JL, Schwartz MB, Munsell CR, et al. *Fast Food FACTS 2013: Measuring Progress in Nutrition and Marketing to Children and Teens*. New Haven, CT: Yale Rudd Center for Food Policy and Obesity; 2013. Available at: https://www.rwjf.org/content/dam/farm/reports/reports/2013/rwjf408549

52. Harris JL, Schwartz MB, Brownell KD, et al. Fast food FACTS 2013: Measuring progress in nutrition and marketing to children and teens. Yale Rudd Center for Food Policy and Obesity. 2013. Available at: http://www.sugarydrinkfacts.org/resources/sugarydrinkfacts_report.pdf. Accessed March 10, 2011

53. Kumar G, Onufrak S, Zytnick D, Kingsley B, Park S. Self-reported advertising exposure to sugar-sweetened beverages among US youth. *Public Health Nutr*. 2015;18(7):1173–1179

54. Scully M, Wakefield M, Niven P, et al; NaSSDA Study Team. Association between food marketing exposure and adolescents' food choices and eating behaviors. *Appetite*. 2012;58(1):1–5

55. Powell LM, Harris JL, Fox T. Food marketing expenditures aimed at youth: putting the numbers in context. *Am J Prev Med*. 2013;45(4):453–461

56. Macniven R, Kelly B, King L. Unhealthy product sponsorship of Australian national and state sports organisations. *Health Promot J Austr*. 2015;26(1):52–56

57. Kelly B, Baur LA, Bauman AE, King L, Chapman K, Smith BJ. Food and drink sponsorship of children's sport in Australia: who pays? *Health Promot Int*. 2011;26(2):188–195

58. Lydecker JA, Izzo A, Spielberger G, Grilo CM. "I only watch for the commercials": messages about weight, eating and race in Super Bowl advertisements. *Int J Clin Pract*. 2017;71(11)

59. Bestman A, Thomas SL, Randle M, Thomas SDM. Children's implicit recall of junk food, alcohol and gambling sponsorship in Australian sport. *BMC Public Health*. 2015;15:1022

60. Pettigrew S, Rosenberg M, Ferguson R, Houghton S, Wood L. Game on: do children absorb sports sponsorship messages? *Public Health Nutr*. 2013;16(12):2197–2204

61. Kelly B, Bauman AE, Baur LA. Population estimates of Australian children's exposure to food and beverage sponsorship of sports clubs. *J Sci Med Sport*. 2014;17(4):394–398

62. Sherriff J, Griffiths D, Daube M. Cricket: notching up runs for food and alcohol companies? *Aust N Z J Public Health*. 2010;34(1):19–23

63. Center for Science in the Public Interest. Report card on food-marketing policies: An analysis of food and entertainment company policies regarding food and beverage marketing to children. 2010. Available at: http://cspinet.org/new/pdf/marketingreportcard.pdf. Accessed August 1, 2017

64. Children's Food and Beverage Advertising Initiative; Council of Better Business Bureaus. About CFBAI. Available at: www.bbb.org/council/the-national-partner-program/national-advertising-review-services/childrens-food-and-beverage-advertising-initiative/about-the-initiative/. Accessed March 2016

65. Robert Wood Johnson Foundation Healthy Eating Research Program. Recommendations for responsible

food marketing to children. 2015. Available at: http://healthyeatingresearch.org/?p=3108. Accessed August 1, 2016

66. Strasburger VC; Committee on Communications, American Academy of Pediatrics. Children, adolescents, and advertising [published correction appears in *Pediatrics*. 2007;119(2):424]. *Pediatrics*. 2006;118(6):2563–2569