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Short Communication

The use of sports references in marketing of food and beverage products in supermarkets

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Abstract

Objective: Food marketing has been identified as a significant driver of the childhood obesity epidemic. The purpose of the present study was to (i) conduct a content analysis of the types of sports references that appear on supermarket food and beverage products and (ii) assess each product's nutritional and marketing profile.

Design: This was a descriptive study. Every product featuring sports references on the packaging was purchased in two major supermarkets during 2010. A content analysis was conducted and nutritional evaluations were made based on the Nutrient Profile Model, a validated nutrition model. Marketing data were obtained from The Nielsen Company.

Setting: Two major supermarkets in Connecticut, USA.

Subjects: Food and beverage products (*n* 102) were selected from two supermarkets.

Results: The 102 products (fifty-three foods and forty-nine beverages) had sports references as part of their packaging: 72·5 % featured a character exercising, 42·2 % were endorsed by a professional sports entity and 34·0 % were child-targeted. The median nutrition score for food products was 36 (1 = unhealthiest and 100 = healthiest; scores of ≥63 are considered healthy according to this model). More than two-thirds of beverages (69·4 %) were 100 % sugar-sweetened. Children saw significantly more commercials for these products than adults.

Conclusions: Companies place sports figures on food and beverage products that are child-targeted and unhealthy.

Keywords
Food marketing
Sports
Obesity

Poor diet is a significant public health concern[1,2]. One factor that contributes to poor diet among children and adolescents is food marketing[3,4]. Exposure to food advertisements can lead to increased food consumption among young people[5–7] and consumers are influenced by advertising and labels on product packaging. For example, health claims on packaging can promote overestimation of a product's healthfulness[8] as well as increased consumption of the product[9]. Children think identical foods taste better when a licensed character[10] or the McDonald's logo[11] appears on the packaging.

The food industry has responded to criticism of their marketing practices in several ways, one of which involves emphasizing sports and physical activity[12–14]. This message appears in various forms of marketing including professional athlete endorsement[15,16] and sports organization sponsorships[17–20]. While the industry's emphasis on physical activity messages could be helpful, the effects may be negative if the companies associate health messages with unhealthy products. In fact, the tobacco industry was criticized for using sports to promote its products, including product placement in child-targeted sports video games[21,22] as well as sports sponsorships and athlete endorsements[23].

There is little documentation of the extent and impact of physical activity and sports being used to market food. A recent study indicated that celebrity athlete endorsements led parents to perceive food products as healthier than the same products without celebrity athlete endorsements[24]. One report examined the use of sports in food marketing as part of a larger study evaluating the nutritional and marketing profiles of child-targeted cereals[25]. One of the sixteen cereal websites promoted its product by focusing on physical activity and another

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promoted NASCAR, the National Association for Stock Car Auto Racing. Three of the websites encouraged children to exercise.

The current study aimed to: (i) identify the types of sports references used on supermarket food packages; (ii) examine the nutritional quality of these products; and (iii) compare how often children and teens see advertisements for these brands as compared with adults.

Methods

Two researchers visited two supermarkets from two different supermarket chains in two cities in Connecticut, USA, during 2010 to purchase products featuring sports references. All aisles of the supermarket were examined by researchers, and all products with sports references were purchased and coded by researchers. Sports references were defined as any image or text relating to professional sports organizations, professional athletes, professional sports teams, youth sports organizations, people/characters engaging in physical activity, and sports equipment/environments. Packages were analysed using a content analysis codebook that was developed based on the guidelines of Lombard *et al.*[26,27]. Ten per cent of the total sample of products was selected at random to be coded to determine inter-coder reliability. Acceptable levels of reliability were Krippendorf's alpha coefficient of 0·70 or higher, or inter-coder agreement levels of 90 % or higher[27]. Because all four coders rated the same random 10 % of the total sample to establish reliability, four sets of potential codes were available for those 10 % of products. To ensure that a representative sample of these four sets of codes was integrated into the final data set, codes were randomly selected from these four sets. Thus, 10 % of the final data set was made up of a random selection of codes from the reliability coding and the remaining 90 % of products were divided among four researchers and coded individually.

Nutrition information was evaluated using the Nutrient Profile Model (NPM)[25,28–31]. The NPM score was converted to a Nutrient Profile Index (NPI) where 1 is the worst score and 100 is the best score[25]. Scores of ≥63 are considered healthy based on UK standards for child-targeted food advertisements and scores of ≤62 are considered less healthy. Beverages were coded as unhealthy if 100 % of kilojoules came from added sugar.

A data set from The Nielsen Company was used to determine television commercial exposure levels associated with products in the sample[32]. Comparisons were made between the number of television commercials seen during 2009 by children aged 2–11 years, teens aged 12–17 years and adults aged 18–49 years. The Nielsen data indicated how many television commercials for one product (e.g. Oreos) were seen by various demographic groups. Specifically, comparisons were made between the number of commercials seen by children, teens and adults on broadcast, cable, syndicated and spot television programmes. Nielsen data quantify television commercial exposure based on gross rating points (GRP), which measure the total audience delivered by a brand's media schedule. GRP represent the percentage of the population that is exposed to each commercial over a given time period across all types of television programmes. In the present study, GRP were used to measure the number of commercials seen by children compared with teenagers as compared with adults. For example, if a brand had 2000 GRP in 2009 for children aged 2–11 years and 1000 GRP for adults aged 18–49 years it is permissible to conclude children saw twice as many commercials for that brand in 2009 as compared with adults. One hundred GRP represents one commercial per individual, meaning if a brand had 2000 GRP for children aged 2–11 years during 2009, each child in that age group saw twenty commercials for that brand that year.

Inter-coder reliability was calculated and the percentages of different forms of advertising techniques were compared. Acceptable levels of reliability were Krippendorf's alpha coefficient of 0·70 or higher, or inter-coder agreement levels of 90 % or higher[27]. All variables that were coded by researchers met acceptable levels of reliability except 'Does the product have a written tip about engaging in physical activity', so this variable was excluded from analyses. A univariate ANOVA was conducted to determine whether the television commercial exposure rates for these products differed among children, teens and adults. Finally, planned *post hoc* comparisons were conducted to determine whether children and teens saw more commercials for brands in our sample than adults. All tests were based on a 0·05 significance level.

Results

A total of 154 products were identified in the two supermarkets, but fifty-two of the products appeared in both supermarkets and thus were not coded twice, leaving a total of 102 unique products. Inter-coder reliability was acceptable for nearly all variables. Two variables were unreliable and were excluded from analyses.

Of the 102 unique products assessed, 42·2 % were endorsed by at least one professional athlete, sports organization or sports team. Three-quarters (75·5 %) featured at least one type of sports equipment and 72·5 % featured a person/character exercising. Thirty per cent of products featured promotions, which was defined as either a 'prize give-away' or a chance to enter a competition and win a prize. Nine per cent (8·8 %) of products were shaped like sports equipment (e.g. football-shaped Oreos). Finally, 34·0 % of products were child-targeted, meaning the package featured a cartoon character or word synonymous with 'child'. Table 1 presents a list of

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Table 1 Rankings of companies, professional athletes, sports organizations and sports teams by the number of products with sports references: 102 food and beverage products selected from two supermarkets, Connecticut, USA, 2010

	Number of products with at least one sports reference
Parent company	
Kraft Foods	19
Kellogg Co.	10
PepsiCo	9
OBeverages	8
Clif Bar & Co.	5
AriZona Tea	5
General Mills	5
Coca-Cola	4
Mars, Inc.	3
Hood, Inc.	3
Product category	
Beverages	49
Snacks	23
Cereal	13
Dessert	8
Condiments	3
Bread	2
Dairy	2
Meat	2
Professional athlete	
Arnold Palmer (golf)	5
Peyton Manning (football)	4
Kevin Garnett (basketball)	4
Ryan Newman (NASCAR)	4
Albert Pujols (baseball)	3
Kirk Herbstreit (football)	3
Tony Stewart (NASCAR)	3
Brian Vickers (NASCAR)	3
Paul Azinger (golf)	2
David Ortiz (baseball)	1
Sports organization	
NASCAR (National Association for Stock Car Auto Racing)	4
ESPN (Entertainment and Sports Programming Network)	4
MLB (Major League Baseball)	3
NBA (National Basketball Association)	2
NCAA (National Collegiate Athletic Association)	2
Olympics	2
Little League Baseball (a nationwide youth sports organization)	2
Pop Warner Football (a nationwide youth sports organization)	2
NFL (National Football League)	1
Sports team	
Boston Red Sox (MLB)	3
U Connecticut Huskies (NCAA)	3
Los Angeles Lakers (NBA)	1
New York Yankees (MLB)	1

the food companies and food categories most often associated with products in the sample, as well as the most-referenced professional athletes, sports organizations and sports teams.

NPI scores for the fifty-three food products ranged from 22 to 72 (mean 56·1, SD 14·67) with a median of 36. Nearly all (88·7 %) did not meet the cut-off for healthy foods, which is a score of ≥63. Of the forty-nine beverages assessed 69·4 % were 100 % sugar-sweetened beverages, meaning all of the kilojoules came from added sugars. Table 2 presents the thirty least healthy products ranked according to NPI score, the presence of child-targeted material on the packaging and the presence of endorsement by a professional athlete or sports organization.

The number of commercials viewed by the average child, teen and adult during 2009 differed significantly for products in our sample ($F(2,96) = 3{\cdot}6$, $P < 0{\cdot}05$). Because the homogeneity of variances assumption was violated, the Welch–Swattherwaite test is reported. Tukey *post hoc* comparisons indicated that children (mean 11·7 ads/year, 95 % CI 7·0, 16·4) saw significantly more commercials for products in our sample than adults (mean 5·6 ads/year, 95 % CI 3·9, 7·4; $P = 0{\cdot}022$; Cohen's $d = 0{\cdot}46$). There was no significant difference between the number of commercials seen by teens (mean 8·2 ads/year, 95 % CI 5·8, 10·6) as compared with children ($P = 0{\cdot}268$). Additionally, there was no significant difference between the number of commercials seen by teens as compared with adults ($P = 0{\cdot}505$). Seventy-seven per cent (n 47) of the fifty-four products with television commercial data available from Nielsen were unhealthy foods or beverages.

Conclusions

Results indicate that sports references are used to market supermarket food products through: (i) professional athlete and sports organization endorsements; (ii) images of characters exercising; (iii) images of sports equipment; and (iv) sports equipment-shaped products. Furthermore, one of every three products in the sample featured a promotion that offered a prize or chance to win a prize. Most of the products evaluated were unhealthy. Children saw significantly more television advertisements for brands in this sample than did teens and adults.

These findings indicate that companies actively target children through the use of sports images on packaging, including portrayals of cartoon characters engaging in physical activity. Companies associated with brands in this sample also target children through television commercials. This is particularly concerning because young children are especially vulnerable to food marketing[3,4,33]. Tactics such as cartoon characters with high appeal to young children are problematic because these children cannot understand the persuasive intent of advertising and view it as just another source of information. Unfortunately, most sports organizations and food companies do not have adequate policies that protect children from food marketing[34]. More research is needed to examine how young children's perception, purchase requests and consumption are affected by sports images on supermarket food products.

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Table 2 Ranking of products by Nutrient Profile Index (NPI) score, presence of child-targeted material on packaging and sports endorsement: the thirty least healthy products of 102 food and beverage products selected from two supermarkets, Connecticut, USA, 2010

Product name	NPI*	Child-targeted	Sports endorsement
Kraft Velveeta Cheese	22		
Mars Snickers Minis	24		X
Nabisco Football Ritz Crackers	26		
PepsiCo Frito-Lay Crunchy Cheetos	28		
McKee Sunbelt Chocolate Chip Chewy Granola Bars	28	X	X
Nabisco Mini Nilla Wafers	28		X
McKee Sunbelt Oats and Honey Chewy Granola Bars	30	X	X
Nabisco Football Oreo	32		X
Jolly Time Blast O Butter Ultimate Theatre Style Popcorn	34	X	
Big Y Ice Cream Bars	34	X	
Hood Boston Red Sox Ice Cream Cones	34		X
Entenmann's Little Bites Blueberry Muffins	36	X	
Nabisco Nutter Butter Cookies	36		X
Nabisco Nutter Butter Crème Patties	36		X
Carvel Game Ball Football Ice Cream Cake	36		
Keebler Town House Original Crackers	36		X
Sunshine Cheez-It White Cheddar Crackers	38		X
Hood Boston Red Sox Green Monster Ice Cream	38		X
Carvel Snickers Football Ice Cream Cake	38		
Gatorade Powder Lemon Lime	40		X
Kellogg's Frosted Flakes	42	X	X
Stop & Shop Frosted Flakes	42		
Keebler Town House Flipsides Pretzel Crackers	42		X
Big League Chew Bubble Gum Original	42	X	
Sunshine Cheez-It Original Snack Crackers	42		
Arizona Arnold Palmer Iced Tea Lemonade Stix	44		X
Kellogg's Apple Jacks	44	X	
Pepperidge Farm Goldfish Crackers	46	X	
Clif Kid Organic ZBar Peanut Butter	46	X	
Clif Kid Organic ZBar Chocolate Brownie	46	X	

*NPI is based on a 100-point scale where 1 = unhealthiest and 100 = healthiest, and ≥63 or higher is considered healthy.

The current study is limited by the possibility that the researchers missed products with sports references. Furthermore, products were selected from only two supermarkets. Future research should examine how sports references on food and beverages impact young people's food choices and consumption and whether children perceive these products as healthier or more desirable than other products.

These results can be used to guide the development of policies to address the use of sports in food marketing. Policy makers could consider prohibiting sports references from unhealthy products that are child-targeted. Sports organizations could avoid partnering with companies that market unhealthy products. Paediatricians, parents and public health experts should encourage these policy changes to assist in curbing food marketing to children.

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