



Does District Policy Impact Food Advertising Practices in US Elementary Schools?

Lindsey Turner, Jamie F. Chriqui, Frank J. Chaloupka

University of Illinois (USA)

lindseyt@uic.edu

1. Introduction

Recent data indicate that in the United States (US), 32.6% of elementary-school-aged children—those ages 6 to 11 years old—are obese or overweight [1]. Schools play a key role in shaping children's dietary intake habits [2]. Children are particularly susceptible to food and beverage marketing—it affects their preferences, purchasing behaviors and consumption habits [3,4]. Because children spend so much time at school, it is important to consider the marketing influences in these settings. Food and beverage companies use a variety of strategies for marketing products in schools, such as posters or banners in gymnasiums and lunchrooms, vending machine displays, logos on scoreboards or in athletic facilities, and textbook covers [5].

In the US, the prestigious Institute of Medicine (IOM) has called for schools to promote healthy diets for children by marketing healthy products throughout the school environment and making healthier choices available on campus [4]. In December 2009, an interagency commission of the Centers for Disease Control (CDC), US Department of Agriculture (USDA), Food and Drug Administration (FDA) and the Federal Trade Commission (FTC) issued tentative proposed standards to limit the types of foods marketed to children under age 17 to those that meet certain nutritional criteria and make a meaningful contribution to a healthy diet [6].

Federal legislation in the US required all school districts participating in the National School Lunch Program and other meals programs (i.e., the vast majority of school districts) to adopt and implement a wellness policy by the first day of the 2006–07 school year. These policies were to include guidelines for all foods and beverages sold on campus, but details were left up to each district. Some school districts have started to address the marketing of foods and beverages in their wellness policies, but few have strong policies in place. At the beginning of the 2007–08 school year, only 9 percent of public elementary school students were enrolled in a district with a wellness policy that required the promotion of healthy foods and beverages throughout the school [7].

The purpose of the current study was to examine the types of advertising present in school lunchrooms (cafeterias) at public elementary schools, and to examine the association between school practices and corresponding district policies. It was hypothesized that advertising for healthy foods and beverages would be more common in schools where the district policy encouraged healthy marketing, and that advertising for unhealthy products would be less common in schools where the district policy prohibited unhealthy marketing.

2. Methods

2.1 Study Design

Data were gathered via a larger annual study on health-related practices in public elementary schools and districts. Analyses used cross-sectional survey data from nationally representative samples of public U.S. elementary schools during the 2006–07, 2007–08, 2008–09 and 2009–10 school years. All research protocols and survey materials were approved by the Institutional Review Board at the University of Illinois at Chicago.

2.2 School-Level Data Collection

Surveys were mailed to each school with a request that the survey be completed by the principal. Surveys were gathered during the second half of each school year, during January to June, with a small number of responses during the summer following each school year. A \$100 incentive was offered to the school or respondent. Surveys were processed and double-entered for quality assurance. Response rates and number of responding schools over the four years, respectively, were: 54.6% (578 schools); 70.6% (748 schools); 61.8% (641 schools); and 64.5% (680 schools).

Analyses used a series of survey items about advertising. The lead-in asked respondents to “Please indicate whether posters or any other advertisements for the following products are currently posted in the cafeteria...” Responses were made with a series of checkboxes, coded as checked = 1 (yes) and unchecked = 0 (no). Topics were: 1) milk; 2) fruit and/or vegetables (e.g., 5-a-day); and 3) soft drinks; fast food; candy (these were asked separately but combined into one variable for analysis).

2.3 Sampling and Weighting

The school samples were developed at based on datasets from the National Center for Education Statistics (NCES). Because elementary schools vary in grade composition (e.g., Kindergarten to third grade, second to fifth grade), all schools were required to include third grade. Public schools from all contiguous US states were eligible for sampling. School weights were adjusted for potential non-response bias by modeling every school's propensity to respond. Variables used to model these adjustments included: student enrollment; percent of Black, White, and Latino students; percent of students eligible for free/reduced lunch; US census region; and urbanicity. Data were weighted to provide inference to all public elementary schools in the US.



2.4 Contextual Factors

To control for school-level factors that could confound the association between district policies and school practices, data were obtained from the public-use NCES datasets for each survey year. Data were obtained on the total number of students in the school; the percentage of students eligible for free or reduced-price lunch; student race/ethnicity; U.S. census region; and locale.

2.5 District-Level Policy Collection

Formal policy documents (e.g., policy manuals and wellness policies as mandated by the *Child Nutrition and WIC Reauthorization Act of 2004, P.L. 108-265, Section 204*) were collected from the corresponding school district for each elementary school in the sample, for the corresponding year of data collection. Policies were gathered by trained research assistants using an established protocol via internet searches, with telephone calls and/or mailings to find policies that were unavailable online and to verify complete policy collection for policies that were available online.

All district policies were reviewed and double-coded and analyzed by two trained researchers using a previously-developed coding scheme [8,9]. For the current analyses, two policy provisions were examined. The first pertained to marketing (e.g., posters) to promote healthy choices, and was coded as “1” where the policy required or suggested such strategies versus “0” otherwise. A second dimension was whether the policy explicitly prohibited advertising of unhealthy items (e.g., junk foods), coded “1” where required or recommended, versus “0” otherwise.

2.6 Statistical Analysis

Analyses were conducted in STATA/SE v10.1 with the *svy* command, and the design statement accounted for sampling stratum and clustering of schools within districts.

Two multivariate logistic regression models were calculated. Outcomes were: 1) milk advertising; and 2) FV advertising. District policy promoting healthy choices was included as a predictor, along with year and demographic covariates. All variables were entered simultaneously into the regression models. A third logistic regression model was computed to predict advertising of unhealthy products, but the prevalence of those advertisements was very low, and none of the covariates were significant, nor was district policy regarding marketing of unhealthy items; thus, results of that regression model are not presented.

3. Results

As shown in Table 1, advertising for milk increased over time, from 72.8% to 82.5% of schools between 2006–07 and 2009–10 ($p < .01$). Advertising for FV did not change significantly over the four years (from 70.9% to 74.1%). Advertising for unhealthy items was rare (< 2% of schools).

Table 1. Prevalence of Advertising

	2006-07	2007-08	2008-09	2009-10
	% schools			
Advertisements for Soda, Fast Food, or Candy	1.8	0.8	1.6	1.7
Advertisements for Milk	72.8	79.3	83.4	82.5
Advertisements for Fruit and/or Vegetable	70.9	74.1	75.3	74.1

The percentages of districts with a policy encouraging or requiring marketing to promote healthy choices across the four years was, respectively, 23.7%, 25.9%, 28.2%, and 28.8% of districts; a chi-square test indicated that this did not differ significantly across time.

As shown in Table 2, milk advertising was more common where district policy recommended or required healthy marketing (Odds Ratio = 1.42, $p < .05$). Likewise, FV advertising was more common where district policy recommended or required healthy marketing (Odds Ratio = 1.33, $p < .05$). Milk advertisements were also more common in schools serving more low-income students (i.e., higher percentages of students eligible for free or reduced-price lunch).

Table 2. Results of Logistic Regressions to Predict Advertising in Elementary School Cafeterias

	Milk			Fruit and/or Vegetables		
	Odds Ratio	95% C.I.		Odds Ratio	95% C.I.	
District Policy	1.42*	1.07,	1.88	1.33*	1.00,	1.76
Year						
2006-07	ref			ref		
2007-08	1.42**	1.10,	1.83	1.19	0.91,	1.55
2008-09	1.92***	1.39,	2.65	1.22	0.90,	1.64
2009-10	1.75***	1.28,	2.39	1.15	0.85,	1.57
Locale						

City	ref			ref		
Suburb	0.92	0.70,	1.24	0.76	0.56,	1.02
Town	1.21	0.73,	2.01	1.00	0.64,	1.50
Rural	1.43	0.97,	2.11	0.63*	0.44,	0.90
Race/Ethnicity						
Majority White	ref			ref		
Majority Black	0.69	0.40,	1.20	1.16	0.69,	1.97
Majority Latino	0.67	0.44,	1.02	1.33	0.89,	1.97
Diverse	0.93	0.66,	1.29	0.95	0.69,	1.30
School Size						
Largest	ref			ref		
Medium	0.93	0.70,	1.24	0.93	0.71,	1.22
Smallest	0.88	0.63,	1.21	0.83	0.62,	1.09
SES						
Highest	ref			ref		
Medium	1.69**	1.22,	2.33	1.16	0.86,	1.56
Lowest	1.75*	1.12,	2.72	1.00	0.70,	1.43
Region						
South	ref			ref		
Northeast	0.98	0.66,	1.46	0.69	0.48,	1.00
Midwest	1.07	0.73,	1.57	0.46***	0.33,	0.64
West	0.67**	0.49,	0.90	0.52***	0.37,	0.73

* p < .05, ** p < .01, *** p < .001

4. Conclusions

Most US public elementary schools reported having advertising in the cafeteria for milk and FV; however, approximately one in five did not have milk advertising and one in four did not have FV advertising. Increasing the prevalence of healthy advertising may be useful as a way to reinforce nutrition education messages, to promote norms that support consumption of healthy foods and beverages, and to encourage children to make healthier choices. Encouragingly, rates of advertising for unhealthy foods and beverages in school cafeterias were extremely low.

Logistic regressions controlling for school characteristics and year of data collection showed that district policies were associated with school advertising, and that where the district encouraged or required school marketing in support of healthy choices, the schools were 42% more likely to have milk advertising and 33% more likely to have FV advertising. Because the data are cross-sectional, we cannot conclude that district policies caused the schools to have milk and FV advertising, only that the policies are associated with practice. However, these results do suggest that one potential strategy for changing school practices is to strengthen district policies. Assisting schools with policy implementation (e.g., providing technical assistance for creating a healthy school environment, and supplying advertising materials such as posters) will also be important for promoting healthy schools.

Strengths of this study include the large, nationally-representative sample in multiple years. However, there are also several limitations; as with all surveys, it is possible that estimates were biased (e.g., desirability bias, non-response bias), but the weights were adjusted to account for non-response.

References

- [1] Ogden CL, Carroll MD, Kit BK, Flegal KM. Prevalence of obesity and trends in body mass index among US children and adolescents, 1999-2010. *Journal of the American Medical Association*. 2012; online first. DOI: 10.1001/jama.2012.40.
- [2] Institute of Medicine, Committee on Prevention of Obesity in Children and Youth. *Childhood Obesity: Health in the Balance*. Washington, DC: National Academy of Sciences; 2005.
- [3] Harris JL, Pomeranz JL, Lobstein T, et al. A crisis in the marketplace: how food marketing contributes to childhood obesity and what can be done. *Annual Review of Public Health*, 30:211-225, 2009.
- [4] Institute of Medicine. *Food Marketing to Children and Youth: Threat or Opportunity?* Washington, D.C.: National Academies Press, 2006.
- [5] Story M, French S. Food advertising and marketing directed at children and adolescents in the U.S. *The International Journal of Behavioral Nutrition and Physical Activity*, 1(3):1-3, 2004.
- [6] Federal Trade Commission, Centers for Disease Control and Prevention, Food and Drug Administration, et al. *Interagency Working Group on Food Marketed to Children: Tentative Proposed Nutrition Standards*. December 2009.
- [7] Chriqui JF, Schneider L, Chaloupka FJ, et al. *Local Wellness Policies: Assessing School District Strategies for Improving Children's Health. School Years 2006-07 and 2007-08*. Chicago, IL: Bridging the Gap, Health Policy Center, Institute for Health Policy and Research, University of Illinois at Chicago, 2009
- [8] Schwartz M, Lund A, Grow H. A comprehensive coding system to measure the quality of school wellness policies. *Journal of the American Dietetic Association*, 109(7):1256-1262, 2009.
- [9] Chriqui JF, Schneider L, Ide K, Gourdet C, Bruursema A. *Bridging the Gap Program School District Wellness Policy Coding Tool, Version 2*. 2012. Available at <http://www.bridgingthegapresearch.org>