HHS Public Access

Author manuscript

J Adolesc Health. Author manuscript; available in PMC 2018 May 01.

Published in final edited form as:

J Adolesc Health. 2017 May ; 60(5): 577–583. doi:10.1016/j.jadohealth.2016.11.021.

District Policies and Practices Vary in Their Association With Adolescents' Consumption of Milk and 100% Fruit Juice

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Abstract

Purpose—Researchers previously examined the relationship between school beverage policies and sugar-sweetened beverage (SSB) consumption. This study addressed a research gap by examining cross-sectional associations between district-level policies and practices and U.S. high school students' consumption of milk and 100% fruit juice.

Methods—Data from the 2012 School Health Policies and Practices Study and 2013 Youth Risk Behavior Surveillance System were linked for 12 large urban school districts. Outcome variables were daily milk consumption (≥1 glass/day) and 100% fruit juice consumption (≥1 time/day). Exposure variables were five district policies (i.e., restrict SSB sales, maintain closed campuses, offer/sell healthful alternatives, restrict promotional products, and require nutrition education). Logistic regression models estimated the odds of consuming milk or 100% fruit juice daily, conditional on the policies and adjusting for sex, race/ethnicity, grade level, weight status, and district free/reduced-price lunch eligibility (n = 23,173).

Results—Students in districts that required/recommended restricting the times of SSB sales had 55% higher (adjusted odds ratio [AOR], 1.55; 95% confidence interval [CI], 1.28–1.87) odds of consuming ≥1 glass/day of milk than students in districts without this policy. Closed campus policies were associated with lower odds of consuming milk (AOR, .72; 95% CI, .63–.82) and higher odds of consuming juice (AOR,1.27; 95% CI,1.07–1.50). Policies requiring/recommending

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Conflicts of Interest: The authors have no conflicts of interest to disclose.

Disclaimer: The findings and conclusions in this report are those of the authors and do not necessarily reflect the official position of the Centers for Disease Control and Prevention.

that districts offer/sell healthful alternatives were associated with lower odds of consuming 100% fruit juice daily.

Conclusions—Results suggest that restricting SSB sales may support adolescents' milk consumption. Future studies should assess whether the implementation of federal standards that further restrict SSB sales in school leads to increased milk consumption.

Keywords

School policies and practices; Urban; Adolescents; Diet quality; Milk; 100% Fruit juice

Schools are an important setting for influencing children's eating behaviors through policy and environmental approaches [1–3]. The school nutrition environment is inclusive of foods and beverages sold and served throughout the school day and messages about foods and beverages communicated through marketing and nutrition education [3]. The Healthy Hunger Free Kids Act (HHFKA) mandates nutrition standards for school meals (i.e., National School Lunch and School Breakfast Programs) and competitive foods (i.e., foods sold during the school day, on the school campus, outside school meals programs) [4,5]. The implementation of these standards (beginning in school year 2012–2013 for school lunch, 2013–2014 for school breakfast, and 2014–2015 for competitive foods) is expected to further restrict the sale of sugar-sweetened beverages (SSBs) in school settings [4,5]. The potential impact is broad: children spend many of their waking hours in school, and over 30 million students participate in the National School Lunch program each day [6]. Data from states and districts with policies that address the availability and sales of SSBs can yield relevant insights in advance of published evaluations of HHFKA.

Research describing the relationship between state- and district-level beverage policies and student-level beverage consumption has primarily evaluated the extent to which these policies contribute to lower SSB availability and consumption [7–9]. Studies have consistently found lower school-based access to SSBs in states and districts with policies that restricted the sales of such beverages [7]. This shift in availability may contribute to greater consumption of other beverages sold in schools. For example, significant increases in middle school students' milk consumption were documented following the introduction of the Texas State Nutrition Policy [10]. Alternately, students may react to restrictions on a palatable choice, such as SSBs, by consuming more of the "forbidden" item in other settings [11,12]. In this scenario, one would not expect to see greater consumption of milk or 100% fruit juice when SSBs are restricted. Researchers did not find evidence of such compensation following the implementation of nutrition standards that allowed only water and 100% fruit juice to be sold as competitive beverages in three middle schools in Connecticut [13]. In fact, after the beverage restrictions went into place, students' in-school consumption of restricted beverages declined and, in contrast to the students in comparison schools, at-home SSB consumption did not increase [13].

Another relevant question is whether policies that restrict the sales of SSBs are associated with greater consumption of other beverages sold in schools, such as milk or 100% fruit juice. These beverages can be included as part of a school breakfast or lunch that meets the HHFKA standards and, for these reasons, are likely to become more salient choices as SSBs

become less available. Describing the relationship between policies and practices that address beverage sales and students' consumption of milk and juice contributes to a more complete picture of how these policy and environmental factors can influence dietary intake.

The physical environment, which influences access to food, and the messaging environment, which influences demand for food, are among determinants of eating behaviors [2,14].

Accordingly, policies that impact students' access to food and beverages and their exposure to advertising may influence beverage intake. Previous research has shown that students in schools with closed campus policies consumed food from fast food restaurants and convenience stores less frequently than students who could leave campus at lunchtime [15]. Furthermore, some research has shown that fast food consumption is inversely associated with dairy consumption among adolescents [16]. By closing campuses, districts may help reduce students' access to less healthy foods and beverages and may contribute to greater consumption of beverages sold in schools, including milk and 100% juice. Policies that limit advertising of soft drinks and fast food restaurants or provide opportunities for students to learn about nutrition may increase demand for and consumption of milk and 100% fruit juice [8]. A focus on these beverages is relevant given their presence in school settings and potential impact on diet quality.

In children's diets, milk is a major source of calcium and vitamins A and D [17], which are underconsumed nutrients [18]. The 2015–2020 Dietary Guidelines for Americans note that a healthy diet can include fruit juice when consumed within recommended amounts [18]. The American Academy of Pediatrics committee on nutrition recommends that adolescents consume no more than 12 ounces of 100% fruit juice a day [19]. Average juice consumption falls within these limits [18]; however, greater consumption of 100% fruit juice is a possible unintended consequence of restricted access to SSBs if students seeking a sweet beverage drink more juice. Consumption in excess of American Academy of Pediatrics recommendations would be cause for concern as 100% fruit juice offers no benefits over whole fruit and contains no dietary fiber, another shortfall nutrient [19,20].

This cross-sectional study describes the relationship between district-level policies and practices related to the availability, sale, and promotion of soft drinks and the consumption of milk and 100% juice among U.S. high school students in large urban school districts. We hypothesize that these policies and practices will be positively associated with the consumption of milk and 100% juice.

Methods

Sample and survey administration

Data on district-level policies were obtained from the 2012 School Health Policies and Practices Study (SHPPS). SHPPS is a nationally representative cross-sectional study conducted periodically by the Centers for Disease Control and Prevention (CDC) among a representative sample of public school districts in the United States. In addition to the national sample, school districts funded by the CDC at the time of the study also were included in the sample with certainty, resulting in data from each of these districts. This

cross-sectional study analyzed 2012 SHPPS data from the 12 CDC-funded districts that also had district-representative student-level data in the 2013 Youth Risk Behavior Surveillance System (YRBSS), as described later.

SHPPS collected data through standardized questionnaires that were administered through Web-based surveys or self-administered paper copies. During recruitment, the superintendent or other district-level contact designated a respondent for each questionnaire that had primary responsibility for or was the most knowledgeable about the particular component of school health. For this study, data were drawn from three questionnaires: Nutrition Services, Health Education, and Healthy and Safe School Environment. An institutional review board at CDC reviewed SHPPS and determined it to be exempt. More detailed descriptions of the methods used in SHPPS 2012 are published elsewhere [21].

Student-level data were obtained from Youth Risk Behavior Surveys (YRBSs) conducted in 2013 among representative samples of high school students in large urban school districts funded by CDC that survey year. In each participating district, a two-stage sample design was used to produce a representative sample of students in grades 9 through 12 who attended public high schools in that district.

Student participation in the survey was anonymous and voluntary, and local institutional review board procedures were followed. Students completed the self-administered paper-and-pencil questionnaire during a regular class period and recorded their responses directly on a computer-scannable booklet or answer sheet. In the 2013 YRBSS, across the 12 districts included in this analysis, school response rates ranged from 89% to 100%, student response rates ranged from 71% to 90%, and overall response rates ranged from 71% to 90%. Student sample sizes ranged from 1,308 to 9,439. More detailed descriptions of YRBSS methods are published elsewhere [22]. Analyses applied the sampling weights from the individual YRBSs to adjust for school and student nonresponse and the distribution of students by grade, sex, and race/ethnicity in each district. Results can be considered representative of high school students in the 12 districts.

Variables

The outcomes of interest, student consumption of milk and 100% fruit juice, were each constructed from a single question on the YRBS questionnaire: “During the past 7 days, how many glasses of milk did you drink?” (I did not drink milk during the past 7 days, 1–3 glasses during the past 7 days, 4–6 glasses during the past 7 days, 1 glass per day, 2 glasses per day, 3 glasses per day, or ≥4 glasses per day) and “During the past 7 days, how many times did you drink 100% fruit juices such as orange juice, apple juice, or grape juice?” (I did not drink 100% fruit juice during the past 7 days, 1–3 times during the past 7 days, 4–6 times during the past 7 days, 1 time per day, 2 times per day, 3 times per day, or ≥4 times per day). A dichotomous variable was created for reported intakes of each beverage (<1 or ≥1 glass/day; <1 or ≥1 time/day).

The exposure variables were derived from five SHPPS questions about district-level policies related to access to healthful beverages, advertising, and nutrition education (Table 1). Some questions could be answered as “required,” “recommended,” or “neither” and others as

"yes" or "no." Given the response distribution (Table 1), the variables describing the sale of healthful beverages, distribution of promotional products, and restriction of SSB sales were dichotomized (1 = district "required" or "recommended" policy or practice; 0 = "neither required nor recommended" policy/practice).

Covariates from the YRBS included grade (9th, 10th, 11th, and 12th), sex, race/ethnicity (non-Hispanic [NH] white, NH black, Hispanic, NH Asian, and NH other), and weight status (underweight, normal weight, overweight, and obese) [23]. Body mass index percentile was calculated from self-reported height and weight, and four weight-status categories were developed using established cut-points based on expert committee recommendations [24]: underweight (<5%), normal weight (≥5% to <85%), overweight (≥85% to <95%), and obese (≥95%).

Districtwide eligibility for free or reduced-price lunch (FRPL) was categorized as tertiles based on the data distribution (range, 39%–77%). The mean of the lowest tertile was 57%, and the mean of the highest was 75%. These data were acquired by linking SHPPS to extant data from Market Data Retrieval [25].

Statistical analysis

The SHPPS files from 2012 were merged with the YRBS files from 2013 for 12 district data points, effectively linking district-level policies and practices (SHPPS) with 27,786 unique student observations (YRBS) in this sample. All analyses were performed in Stata (Version 14, Stata Corp) using complex survey (svy) commands and applying appropriate YRBS student-level weights per procedures for combining data from multiple sites [26]. Students who did not answer the outcome variable questions were excluded, resulting in a sample of 25,178 students. Logistic regression models were used to estimate the odds that students consumed milk or juice at least once a day conditional on the polices, adjusting for student sex, grade level, race/ethnicity, weight status, and the district percentage of students eligible to receive FRPL. Because the five policy variables were not highly correlated, they were simultaneously included as individual variables in the models. In the regression models, the sample size was further reduced to 23,173 students because of additional missing data from covariates. Descriptive statistics for the analytic sample were calculated to present the prevalence of the five policies and practices across districts (Table 1) and to describe student-level demographics (Table 2). Bivariate analyses with chi-square statistics were used to assess whether the proportions of students consuming ≥1 glass of milk/day and 100% juice ≥1 time/day differed by demographic characteristics. We set $\alpha = .05$ for significance testing.

Results

Summary statistics for the district policies are presented in Table 1, which is reproduced with permission [9]. Across the 12 districts, a majority (9 of 12) required that schools restrict the times SSBs can be sold in all venues and that schools maintain closed campuses (8 of 12). Fewer districts had policies in place to promote SSB alternatives: only one-third of these districts either required or recommended that schools make "healthful beverages such as plain water or low-fat milk" available to students when other beverages are offered or

sold. Two-thirds of these districts required or recommended that schools restrict the distribution of products that promoted fast food restaurants and less healthy foods. Most (10 of 12) had adopted a policy requiring high schools to teach about nutrition and dietary behavior. Two districts had just one policy in place; they required nutrition education. Across the 12 districts, an average of 64% of students (range, 39%–77%) were eligible for FRPL (data not shown).

Student demographic characteristics and reported consumption of milk and 100% juice are presented in Table 2. Overall, 30% of high school students reported drinking ≥1 glass of milk/day in the past week and 24% drank 100% fruit juice ≥1 time/day in the past week. Significantly larger proportions of male students consumed milk or juice at least once a day compared to female students. Daily milk, but not juice, consumption varied significantly by grade such that milk consumption was lower among students in higher grade levels. Milk and 100% juice consumption varied significantly by race/ethnicity. Milk consumption was higher among NH white and Hispanic students and lowest among NH black students. The daily consumption of 100% juice was highest among NH black students and lowest among NH Asian students. Daily milk consumption, but not juice consumption, varied significantly by weight status.

Adjusted odds ratios (AOR) for consuming milk or 100% juice at least once a day as a function of district-level policies and practices are presented in Table 3. Students in districts that required or recommended restricting the times at which SSBs were sold had 55% greater odds (AOR, 1.55; 95% confidence interval [CI], 1.28–1.87) of consuming ≥1 glass of milk/day than students in districts without this requirement or recommendation. Closed campus policies were inversely associated with students' milk consumption. Students in districts with closed campuses had 28% lower odds (AOR, .72; 95% CI, .63–.82) of drinking ≥1 glass of milk/day than students in districts without closed campuses. No significant associations were seen between students' milk consumption and policies that addressed nutrition education, making healthful beverages available whenever other beverages are offered or sold, or restricting the distribution of products promoting candy, fast food, or soft drinks. The only district policy that had a significant, positive, association with 100% juice consumption was having a closed campus (AOR, 1.27; 95% CI, 1.07–1.50). Requiring/recommending that healthful beverages be offered or sold at classroom or school stores whenever other beverages were sold was negatively associated with juice consumption (AOR, .48; 95% CI, .40–.57). Students in districts that adopted a policy requiring nutrition education had 23% lower odds of consuming juice ≥1 time/day.

Discussion

District policies that restricted students' access to the sale of SSBs at school were significantly and positively associated with students' daily milk consumption. This is encouraging as federal Smart Snacks in School regulations [5], which are being implemented nationwide as school year 2014–2015, limit the sale of all SSBs in elementary and middle schools and allow only low-calorie SSB options in high schools (e.g., ≤12-oz portions of beverages with ≤40 calories per 8 oz or ≤60 calories per 12 oz). We found no

evidence to suggest that policies that restrict the availability of SSBs on school grounds were associated with greater intakes of 100% juice.

In districts that required or recommended that “healthful beverages such as plain water or low-fat milk be served or sold alongside other beverages to students whenever other beverages are offered or sold, for example, at student parties or in school stores” had lower odds of 100% fruit juice consumption compared to districts without such a requirement or recommendation. This finding may indicate successful policy implementation, as the SHPPS question does not include 100% fruit juice among examples of “healthful beverages.” We found no association between this policy and milk consumption. Schools with this policy may have served only water or students may have chosen water over milk. Although closed campus policies could contribute to greater participation in school meal programs [27], which feature milk, students in those districts had lower odds of daily milk consumption and higher odds of daily juice consumption compared to students without closed campuses. Students in schools with closed campuses may be bringing juice from home or purchasing it at school.

Nutrition education was inversely associated with juice consumption. Although it is possible that students are learning about the benefits of consuming whole fruit over 100% juice and putting knowledge into practice, we are not able to examine this hypothesis. Milk consumption was not associated with policies that addressed information dissemination (i.e., nutrition education, restrictions on promotions). Knowledge and health concerns have been shown to fall behind taste preferences as determinants of food selections and intake [14,28,29] and specifically for adolescents’ dairy consumption [16]. Previous studies have reported that knowledge alone has limited influence on adolescents’ dietary intake [14,30,31]. Marketing can be a powerful influence on dietary behaviors [2]; however, policies restricting the promotion of candy, restaurant foods, and soft drinks in schools were not associated with the consumption of milk or juice. Limiting the promotion of less healthy foods differs from marketing healthier beverages, which has been encouraged by the Institute of Medicine [2,32], but is not assessed in SHPPS.

Strengths of this study include the policy relevance of the research question and the novel linkage of two surveillance systems. Merging SHPPS and YRBS data enabled us to estimate the association between student behavior and district-level policies using data that were representative at the district level.

This study also has several limitations. These data are cross sectional. We can neither make causal inferences nor determine whether students were replacing SSBs with milk or 100% juice. The sample comprised high school students from 12 large urban school districts. The results may not be generalizable to districts that differ in their urbanicity or socioeconomic and demographic characteristics. In addition, we are unable to adjust for some local and individual characteristics that may also be associated with beverage intake. Our use of the YRBS and SHPPS presents additional limitations.

The YRBS questions focus on overall consumption. Without information about where beverages are consumed or sourced, we are unable to estimate the relationship between

district-level policies and in-school consumption, a key pathway through which these policies may influence dietary intake. Not all SSB alternatives available in school settings were addressed; the 2013 YRBSs did not ask about drinking water intakes. Furthermore, the consumption data are self-reported so respondent bias and accuracy may be a concern. Researchers have found that, although intakes of 100% fruit juice and milk as measured by the YRBS questions were significantly correlated with average intakes derived from 24-hour dietary recall data ($r = .37$, milk; $r = .28$, 100% fruit juice), the YRBS reported intakes tend to overestimate consumption [33]. This overestimation, however, is unlikely to have affected the association between school policies and student consumption of these beverages, which was the focus of this study. SHPPS asks knowledgeable respondents to report on district policies and practices. There are some concerns about potential discrepancies between respondents' perceptions of district-level policies and written policy language [7]; however, a reliability and validity study conducted during the 2000 SHPPS found that the overall data quality was high [34]. In that study, some respondents experienced difficulty identifying policies [34]; the instructions preceding SHPPS modules were subsequently modified to define district "policy" in greater detail. (See, for example, the 2012 SHPPS Nutrition Services Module: http://www.cdc.gov/healthyyouth/shpps/2012/questionnaires/pdf/nutrd2012questionnaire.pdf.) SHPPS questions provide little information about districts' nutrition education curricula, which limits our ability to interpret related results. Finally, given the response distribution, we combined "recommend" and "require" responses. "Require" is a stronger policy formulation [35,36]. Combining the categories precluded the opportunity to look at differences by policy strength.

In summary, different district policies have varying associations with daily consumption of milk and 100% juice. Having district policies about closed campuses was inversely associated with consuming at least one glass of milk per day but positively associated with drinking juice at least once a day. District policies that restricted the hours of students' access to SSB sales were positively associated with consuming at least one glass of milk per day. National implementation of Smart Snacks in School regulations further restricts in-school availability of SSBs and presents a natural experiment with the potential to impact tens of millions of children. A repeat cross-sectional design that takes advantage of existing nationally representative surveillance systems, such as YRBSS, could be used to assess whether trends in adolescents' consumption of SSBs and SSB alternatives (e.g., 100% fruit juice, milk) shift significantly following Smart Snacks implementation.

Data from the 2015 YRBSS and future cycles will allow for analyses of self-reported water intake. This is relevant because emerging evidence suggests that low water intake is associated with higher SSB consumption [37]. Furthermore, consuming water instead of SSBs may contribute to lower caloric intakes [38], and substituting water or milk for SSBs may contribute to lower body fatness among children and adolescents [39,40]. Our results suggest that policies restricting SSB sales may be associated with additional nutritional benefits via greater milk consumption among adolescents. We did not find evidence to suggest that restrictions on SSB sales were associated with greater odds of consuming 100% fruit juice daily, which is encouraging given concerns about excess juice consumption.

Acknowledgments

Youth Risk Behavior Surveillance System data were used with written permission and were provided by the following districts, whom we thank for sharing their data: Charlotte-Mecklenburg, Chicago, Houston, Los Angeles, Memphis, Miami-Dade County, Milwaukee, New York City, Palm Beach County, San Diego, San Francisco, and Seattle. Any errors are the sole responsibility of the authors.

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IMPLICATIONS AND CONTRIBUTION

By considering the relationship between district policies and practices and students' consumption of SSB alternatives, milk and 100% juice, this study contributes new information. Restrictions on SSB sales were associated with greater milk consumption. Such polices have the potential to enhance students' diet quality by influencing beverage selection and consumption.

Table 1

Questions and variables describing district nutrition policies and practices related to beverage availability—12 large urban school districts, School Health Policies and Practices Study, 2012

Variable name	Question	No. of districts	% of districts
Restrict sale of sugar-sweetened beverages	Does your district require or recommend that schools restrict the times during the day that soda pop, sports drinks, or fruit drinks that are not 100% juice can be sold in any venue?		
	Require	9	75
	Recommend	1	8
	Neither	2	17
Closed campus	Has your district adopted a policy stating that high schools will maintain closed campuses, meaning that students are not allowed to leave school during the school day, including during lunchtime?		
	Yes	8	67
	No	4	33
Offer healthful alternatives	Does your district require or recommend that schools make healthful beverages such as plain water or low-fat milk available to students whenever other beverages are offered or sold, for example, at student parties or in school stores?		
	Require	1	8
	Recommend	3	25
	Neither	8	67
Restrict promotional products	Does your district require or recommend that schools restrict the distribution of products promoting candy, fast food restaurants, or soft drinks to students, for example, t-shirts, hats, or book covers?		
	Require	7	58
	Recommend	1	8
	Neither	4	33
Nutrition education	Has your district adopted a policy stating that high schools will teach about nutrition and dietary behavior?		
	Yes	10	83
	No	2	17

These districts were Charlotte-Mecklenburg, Chicago, Houston, Los Angeles, Memphis, Miami-Dade County, Milwaukee, New York City, Palm Beach County, San Diego, San Francisco, and Seattle.

Table 1 is modified with permission from the authors of an article that was developed using data from these same 12 districts [9].

Table 2

Demographic characteristics of high school students from 12 large urban school districts, Youth Risk Behavior Surveillance System, 2013 (N = 23,173)[a]

Participant characteristics	Overall respondents (%)	By beverage consumption (%)[b]					
		Milk ≥1 glass/day	Milk <1 glass/day	*p* value[c]	100% Juice ≥1 time/day	100% Juice <1 time/day	*p* value[c]
All respondents	100	30.1	69.9		23.7	76.3	
Sex				<.001			<.001
Female	50.2	23.7	76.3		21.1	78.9	
Male	49.8	36.5	63.5		26.4	73.6	
Grade				<.01			.68
9	27.5	32.5	67.5		24.2	75.8	
10	26.4	30.3	69.7		24.0	76.0	
11	23.2	29.6	70.4		23.8	76.2	
12	22.9	27.5	72.5		22.8	77.2	
Race/ethnicity				<.001			<.001
White, non-Hispanic	13.6	34.6	65.4		19.4	80.6	
Black, non-Hispanic	27.8	22.2	77.8		27.1	72.9	
Hispanic	47.1	33.3	66.7		24.3	75.7	
Asian, non-Hispanic	8.0	31.6	68.4		15.6	84.4	
Other, non-Hispanic	3.4	28.5	71.5		23.9	76.1	
Weight status				<.01			.42
Underweight	3.3	28.2	71.8		23.2	76.8	
Healthy weight	62.5	30.9	69.1		23.2	76.8	
Overweight	14.5	26.6	73.8		24.5	75.5	
Obese	19.7	30.6	69.4		24.7	75.3	

[a] Unweighted sample size.

[b] Weighted percentages may not equal 100% due to rounding.

[c] X^2 tests were used for each variable to examine differences across categories.

Table 3

District policies and practices related to beverage availability and the daily consumption of milk and 100% juice among high school students in 12 large urban school districts (n = 23,173)[a]

District policies	Model 1	Model 2
	Drinking milk ≥1 glass/day	Drinking 100% fruit juice ≥1 times/day
	Adjusted odds ratio[b] (95% confidence interval)	Adjusted odds ratio[b] (95% confidence interval)
Restrict sale of sugar-sweetened beverages		
Required/recommended	**1.55 (1.28–1.87)**	.95 (.75–1.21)
Neither	*Referent*	*Referent*
Closed campus		
Yes	**.72 (.63–0.82)**	**1.27 (1.07–1.50)**
No	*Referent*	*Referent*
Offer healthful alternatives		
Required/recommended	1.01 (.89–1.16)	**.48 (.40–0.57)**
Neither	*Referent*	*Referent*
Restrict promotional products		
Required/recommended	1.00 (.89–1.14)	.91 (.79–1.05)
Neither	*Referent*	*Referent*
Nutrition education		
Yes	1.01 (.89–1.16)	**.77 (.65–0.91)**
No	*Referent*	*Referent*
Covariates		
Sex		
Male	**1.84 (1.68–2.02)**	**1.36 (1.24–1.50)**
Female	*Referent*	*Referent*
Grade		
9th Grade	*Referent*	*Referent*
10th Grade	**.93 (.83–1.04)**	.99 (.89–1.11)
11th Grade	**.89 (.79–1.00)**	1.01 (.88–1.15)
12th Grade	**.80 (.72–0.89)**	.94 (.84–1.05)
Race/ethnicity		
White, non-Hispanic	*Referent*	*Referent*
Black, non-Hispanic	**.57 (.50–0.64)**	**1.68 (1.45–1.94)**
Hispanic	.95 (.83–1.08)	**1.46 (1.27–1.68)**
Asian, non-Hispanic	.97 (.80–1.17)	.83 (.67–1.02)
Other, non-Hispanic	**.68 (.57–0.82)**	**1.58 (1.24–2.02)**
Weight status		
Underweight	.83 (.67–1.03)	1.05 (.81–1.35)
Normal weight	Referent	Referent
Overweight	**.79 (.70–0.90)**	1.04 (.92–1.17)
Obese	.94 (.83–1.07)	1.00 (.90–1.12)

District policies	Model 1	Model 2
	Drinking milk ≥1 glass/day	Drinking 100% fruit juice ≥1 times/day
	Adjusted odds ratio[b] (95% confidence interval)	Adjusted odds ratio[b] (95% confidence interval)
Free/reduced priced lunch eligibility		
Lowest tertile	*Referent*	*Referent*
Middle tertile	**.72 (.63–0.84)**	1.89 (1.56–2.29)
Highest tertile	1.09 (.96–1.23)	**.79 (.70–0.89)**
Constant	**.41 (.34–0.51)**	**.26 (.20–0.33)**

[a] Unweighted sample size.

[b] Bolded font indicates statistically significant results, $p < .05$.