

Short Communication

A healthy trend: less food used in fundraising and as rewards and incentives in Minnesota middle and high schools

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Submitted 20 October 2011: Final revision received 28 February 2012: Accepted 9 May 2012: First published online 4 July 2012

Abstract

Objective: To assess change in the 4-year prevalence (2006–2009) of the use of food in school fundraising and as rewards and incentives for students, following implementation of federal legislation in the USA in 2006.

Design: Serial cross-sectional design using trend analysis to assess school-level data collected over four consecutive years from 2006/2007 to 2009/2010.

Setting: Minneapolis/St. Paul, MN.

Subjects: Convenience sample of middle and high schools participating in two longitudinal, aetiological studies that examined youth, their environment and obesity-related factors.

Results: A significant and sustained decrease was demonstrated in the use of low-nutrient, energy-dense foods in school fundraising activities and the use of food and food coupons as rewards and incentives by teachers and school staff.

Conclusions: Results support the utility of policy and legislative action as a tool for creating healthy, sustainable environmental change.

Keywords

Food policy
School food practices
Low-nutrient energy-dense foods

In the USA, a growing body of empirical research suggests that recently enacted federal, state and local policies, as well as legislative action, have contributed to decreased availability of low-nutrient, energy-dense (LNE) foods in the school setting and possible improvement in student's dietary behaviours and obesity rates^(1–5). In US schools, food is readily available from a variety of venues that extend well beyond the federally regulated school meal programme^(6,7). Most studies have examined LNE foods offered for sale to students in vending machines, à la carte programmes and school stores. Less attention has been given to foods used in school fundraising activities and as rewards and incentives by teachers and school staff, which are also common venues for LNE foods that typically include chocolate, candy and high-fat baked goods^(6–9). In the USA, selling food at school to raise money is a common practice for clubs, sports teams and parent-teacher associations, with many schools permitting fundraising activities before, during and after school and during lunch periods^(6,7,9). It is also common practice for teachers and school staff to use food and food coupons as a reward for good behaviour or academic performance, with only 17% of all US schools prohibiting this practice^(6,8).

As efforts to reform the school food environment continue in the USA, it is important to consider the range of food venues that contribute to food choice at school and the role policy and legislative action may play over time in the prevalence of food practices linked to LNE foods. Therefore, the aims of the current study were (i) to assess the 4-year prevalence (2006–2009) of food fundraising practices and the practice of using food and food coupons as rewards and incentives in a convenience sample of middle and high schools following enactment in the USA of the Child Nutrition and WIC Reauthorization Act of 2004 and (ii) to determine whether a trend suggestive of a sustainable and healthy shift in practices occurred over time. The 2004 federal legislation required all US school districts receiving funding for federal meal programming to institute policies that included nutrition guidelines for all foods and beverages offered at school by the beginning of the 2006/2007 school year⁽¹⁰⁾. Because most schools in the USA participate in the federal meal programme⁽¹¹⁾, the 2006/2007 implementation date provides a reasonable benchmark from which to assess change in food policy and practice in US schools.

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Methods

The present study used a serial cross-sectional design and assessed school-level data collected as part of two longitudinal, aetiological studies that examined youth, their environment and obesity-related factors. The Identifying Determinants of Eating and Activity (IDEA) study and the Etiology of Childhood Obesity (ECHO) study were conducted in Minneapolis/St. Paul, MN, with data collection occurring over four consecutive years from 2006/2007 to 2009/2010⁽¹²⁾.

A convenience sample of youth aged 10–17 years ($n = 723$) were recruited from four sources that included: (i) an existing cohort that was participating in the Minnesota Adolescent Community Cohort Tobacco Study⁽¹³⁾; (ii) a Minnesota Department of Motor Vehicle listing of 14- to 17-year-olds who applied for a learner's permit or driver's license; (iii) a convenience sample of community-residing adolescents; and (iv) adolescents who were current members, along with a parent, of a local health plan serving a seven-county metropolitan area of Minneapolis, St. Paul, MN between June 2007 and March 2008⁽¹⁴⁾. Youth who agreed to study participation identified the school they would attend during the year they were enrolled into their respective study. District and school-level administrative staff were then contacted and invited to participate in the study, which included completion of self-administered surveys by the principal (or designee) and coordinators of nutrition services and physical education and permitting visits by research staff to record foods and beverages offered for sale to students in vending, à la carte and school stores. Study measurement for the IDEA study occurred in 2006/2007 and 2008/2009 and for the ECHO study in 2007/2008 and 2009/2010. A total of 244 schools participated in the studies, 109 schools were measured once, eighty-nine contributed to two measurement periods, twenty-three were measured three times and twenty-three were measured annually. Data collection procedures were standardized across studies. The present research used data from the principal's survey. The human subjects committee at the University of Minnesota approved the studies.

School fundraising practices and the practice of using food and food coupons as rewards and incentives were assessed with the following questions adapted from other studies^(15,16): 'Which of the following practices (what students and staff are allowed to do on a regular basis) does your school allow? 1. Teachers and other school staff: (i) use food as rewards or incentives for students and (ii) use food coupons as rewards or incentives for students? 2. Chocolate, candy and high-fat baked goods are used in: (i) classroom fundraising, (ii) school-wide fundraising and (iii) fundraising by school sports teams and/or clubs'. Responses for each item were yes/no.

School characteristics were obtained from the Minnesota Department of Education website.

Random coefficient models were used to examine the change in practice prevalence over time. These models can estimate linear trend over time regardless of the number of observations each school contributes while also accounting for correlated data due to repeat observations within school⁽¹⁷⁾. In each model, time is coded as 0, 1, 2 and 3 to represent each subsequent measurement period and modelled as a linear term. The slope estimates the rate of change across measurement periods and the models assess whether the slope over time is different from zero. The coefficient for time (slope, β) is the change in the outcome per unit increase in time. Since variation in slopes may relate to school characteristics, the adjusted results are presented. Analyses were performed in 2011 using the SAS statistical software package version 9.2 (SAS Institute Inc.).

Results

Most schools were public, suburban and enrolled mostly white students. With the exception of 2007/2008, most were high schools. Average school enrolment ranged from 819 to 1346. Participation in the federal free/reduced-price lunch programme ranged from 18% to 30% (see Table 1).

Over four years, the prevalence of food and food coupons used as rewards and incentives by teachers and school staff decreased from 66% to 41% ($\beta = -8.1$; $P < 0.001$) and from 48% to 22% ($\beta = -8.7$; $P < 0.001$), respectively, representing a significant decrease per year of approximately 8%. In 2006/2007, about one-third of all schools reported the use of LNEED foods for classroom and school-wide fundraising. By 2009/2010, prevalence of these practices had declined significantly to about 20%, with a more rapid and somewhat larger decline in school-wide ($\beta = -6.7$; $P < 0.001$) *v.* classroom fundraising ($\beta = -3.4$; $P = 0.04$). Use of LNEED foods in sports team/club fundraising was the most prevalent fundraising practice at baseline, demonstrating a gradual but highly significant decrease in prevalence over the 4-year period, from 60% to 37% ($\beta = -0.1$; $P < 0.001$; see Tables 1 and 2).

Discussion

The present study is among the first to demonstrate a significant and sustained decrease in the use of LNEED foods in school fundraising activities and the use of food and food coupons as rewards and incentives by teachers and school staff four years post-implementation in the USA of the Child Nutrition and WIC Reauthorization Act of 2004. Findings are consistent with results from other studies reporting decreased availability of LNEED foods in school vending machines, à la carte and school stores^(1–5), and lend further support to the utility of policy and legislative action as a tool for creating healthy, sustainable environmental change. However, despite these impressive gains, about 40% of schools continued to use food as

Table 1 School characteristics and prevalence of selected food practices in middle and high schools, Minneapolis/St. Paul, MN, 2006–2009

School year School sample	2006/2007 (<i>n</i> 116)		2007/2008 (<i>n</i> 123)		2008/2009 (<i>n</i> 78)		2009/2010 (<i>n</i> 102)	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Public	92	79	93	76	65	83	83	81
Private	24	21	30	24	13	17	19	19
High school	71	61	45	37	57	73	65	64
Middle school	45	39	78	63	21	27	37	36
Urban	19	16	43	35	15	19	41	40
Suburban	97	84	80	65	63	81	61	60
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
% Free/reduced-price lunch	19	18	27	26	20	18	30	30
% White	78	20	68	27	78	16	63	30
School enrolment	1210	719	819	622	1346	762	984	703
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Teachers and other school staff use...								
Food as rewards/incentives	76	66	69	56	35	45	42	41
Food coupons as rewards/incentives	56	48	40	33	23	30	22	22
Chocolate, candy and high-fat baked goods are used in...								
Classroom fundraising	37	32	23	19	15	19	22	22
School-wide fundraising	42	36	37	30	16	21	19	19
Sports teams/clubs fundraising	69	60	44	36	37	47	38	37

Table 2 Linear trend slopes for selected food practices in middle and high schools (*n* 244), Minneapolis/St. Paul, MN, 2006–2009*

	β	SE	<i>P</i> value
Teachers and other school staff use...			
Food as rewards/incentives	−8.1	1.9	<0.001
Food coupons as rewards/incentives	−8.7	1.9	<0.001
Chocolate, candy and high-fat baked goods are used in...			
Classroom fundraising	−3.4	1.7	0.04
School-wide fundraising	−6.7	1.7	<0.001
Sports teams/clubs fundraising	−0.1	0.02	<0.001

*Adjusted for school characteristics including public/private, high/middle school, urban/suburban, % free/reduced-price lunch and school enrolment.

rewards and incentives and to sell LNEF foods for sports team/club fundraising, suggesting a need for continued close monitoring and dynamic, meaningful policy and legislative support at local, state and national levels.

Reports from outside the USA that describe the school food environment reveal similar concern about student access to LNEF foods during the school day. Studies from the UK and Belgium indicate vending and school stores (or tuck shops) offering LNEF foods are not uncommon, particularly in secondary schools^(18,19). Other studies from New Zealand and Australia, and school policy reports from Manitoba and the Ontario Ministry of Education in Canada, suggest that the use of LNEF foods as student rewards and incentives and for school fundraising is also a growing concern^(20–24). Globalization and rapidly increasing interconnectivity across countries and cultures via a plethora of social media likely contribute to school food environments looking more rather than less similar. The current study supports the need for a holistic assessment of the school food environment

that includes both ‘well-known’ venues for LNEF foods, such as vending and school stores/tuck shops, but also less well-known practices that may also be common, such as fundraising and the use of food as incentives and rewards.

The present study has several strengths, which include the use of trend analysis to examine prevalence over time of common school food practices that have received less attention from researchers and policy makers. The study also provides an assessment of food practices (what students and staff are allowed to do on a regular basis) *v.* food policy (written procedures or guidelines shared with students and staff). Study limitations include the use of a convenience sample of schools in one geographic locale in the USA, thus limiting generalizability. Self-report data from principals/designees are subject to social desirability bias. However, in the USA, the principal survey is a common method for ascertaining the prevalence of school food policy and practices that are outside the purview of the school food service^(6,7).

Conclusions

Food used in school fundraising and as rewards and incentives by teachers and school staff are prevalent food practices in US middle and high schools and require consideration when addressing the health of the school food environment. The current study suggests that policy and legislative action may foster a positive and sustainable shift in practice prevalence. However, careful and continued monitoring and advocacy on the part of policy makers is required if a levelling off or reversal of gains is to be prevented.

Acknowledgements

This work was supported by the National Cancer Institute as part of its Transdisciplinary Research on Energetics and Cancer (TREC) initiative (U54CA116849) and the National Heart, Lung, and Blood Institute (R01 HL085978). The authors declare that there are no conflicts of interest. M.Y.K. originated the study, participated in interpretation of findings and led the writing and editing of the article. K.F. conducted the data analysis, participated in interpretation of findings and reviewed drafts of the article. L.A.L. contributed to interpretation and discussion of results and critically reviewed drafts of the article.

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