



Implementation of Competitive Food and Beverage Standards in a Sample of Massachusetts Schools: The NOURISH Study (Nutrition Opportunities to Understand Reforms Involving Student Health)



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Table 1 is available online at www.andjrn.org.

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ABSTRACT

Background During 2012, Massachusetts adopted comprehensive school competitive food and beverage standards that closely align with Institute of Medicine recommendations and Smart Snacks in School national standards.

Objective We examined the extent to which a sample of Massachusetts middle schools and high schools sold foods and beverages that were compliant with the state competitive food and beverage standards after the first year of implementation, and complied with four additional aspects of the regulations.

Design Observational cohort study with data collected before implementation (Spring 2012) and 1 year after implementation (Spring 2013).

Participants/setting School districts (N=37) with at least one middle school and one high school participated.

Main outcome measures Percent of competitive foods and beverages that were compliant with Massachusetts standards and compliance with four additional aspects of the regulations. Data were collected via school site visits and a foodservice director questionnaire.

Statistical analyses performed Multilevel models were used to examine change in food and beverage compliance over time.

Results More products were available in high schools than middle schools at both time points. The number of competitive beverages and several categories of competitive food products sold in the sample of Massachusetts schools decreased following the implementation of the standards. Multilevel models demonstrated a 47-percentage-point increase in food and 46-percentage-point increase in beverage compliance in Massachusetts schools from 2012 to 2013. Overall, total compliance was higher for beverages than foods.

Conclusions This study of a group of Massachusetts schools demonstrated the feasibility of schools making substantial changes in response to requirements for healthier competitive foods, even in the first year of implementation.

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COMPETITIVE FOODS ARE FOODS AND BEVERAGES sold in vending machines, à la carte cafeteria lines, school stores, and fundraisers that often “compete” with school meals and are widely available in most schools throughout the United States.¹ These foods are commonly nutrient poor, calorically dense, and high in saturated fat and added sugar.²⁻⁷ About 40% of US schoolchildren consume competitive foods, which accounts for approximately 200 additional calories per student daily.⁵ Students who eat competitive foods consume more saturated fat and added sugar daily and are less likely to consume healthier foods such as fruit, vegetables, and milk.^{8,9}

Changing the school food environment provides an important opportunity to improve children's diets and health. There is resistance to set nutrition standards due to fears that schools will lose money¹⁰ and students will simply consume unhealthy food elsewhere.¹¹ However, research indicates that schools implementing healthier competitive food policies generally do not experience financial losses,¹⁰ in part because students are more likely to purchase school meals,¹² and students do not compensate by consuming more energy-dense foods at home.¹¹

Whereas school meals must meet nutrition standards to receive federal subsidies,¹³ national standards for competitive

foods were not required until the start of the 2014–2015 school year (Table 1, available online at andjrn.org). States and local school districts have been setting competitive food policies independently for the past decade.^{11,14–23} A national analysis of competitive food policies found that while 39 states had enacted policies as of 2010, they were not well-aligned with the science-based recommendations of the Institute of Medicine (IOM), and no state policy met all of the IOM recommendations.²³

Massachusetts enacted a statewide school nutrition bill in 2010 (105 CMR 225.000) that required the Massachusetts Departments of Public Health and Elementary and Secondary Education to develop new nutrition standards for all competitive foods served in Massachusetts schools, effective August 1, 2012. There were no statewide competitive food and beverage standards in Massachusetts before the bill. The Massachusetts standards are closely aligned with IOM recommendations and the national standards (see Table 1, available online at www.andjrn.org).^{23–25} The Massachusetts law limits the calories, portion sizes, saturated and *trans* fats, sugar (including sugar-sweetened beverages), and sodium of competitive foods while emphasizing water without additives, nonfat and low-fat milk, fruits, vegetables, and whole grains. Massachusetts standards apply to all public elementary, middle, and high schools and to all competitive foods sold or made available to students.²⁶ The Massachusetts standards include four additional components: access to free drinking water throughout the day, access to nutrition information on non-prepackaged competitive foods and beverages sold in the cafeteria, the sale of fresh fruits and nonfried vegetables at locations where food is sold, and prohibiting the use of fryolators (an appliance used for deep frying).

Multiple methods were employed by the State to facilitate implementation of the standards, including development of a guidance document that was disseminated to all schools, presentations at professional state school associations and at a summer institute for school foodservice directors (FSDs), informative exhibits displayed at school conferences and professional associations, nutrition education classes for school foodservice personnel, and technical assistance for districts.

The Nutrition Opportunities to Understand Reforms Involving Student Health (NOURISH) study examined middle schools' and high schools' compliance with the Massachusetts standards, children's food consumption patterns throughout the day, effects of the standards on school food revenue, and strategies that foster successful implementation and prevent revenue loss. The purpose of this first NOURISH analysis was to understand the extent to which Massachusetts schools sell foods and beverages that are compliant with the state competitive food and beverage standards after the first year of implementation. It was hypothesized that Massachusetts schools would sell more competitive foods and beverages that were consistent with the standards after implementation (Spring 2013) relative to before implementation (Spring 2012). It was also hypothesized that Massachusetts schools would be more consistent in implementing the four additional components of the regulations (ie, availability of free water, fruits and vegetables, and nutrition information and eliminating the use of fryolators) after implementation relative to before implementation.

METHODS

Participants and Setting

During 2012, the sample included 74 middle schools (usually grades 6 through 8) and high schools (grades 9 through 12) across 37 school districts in Massachusetts. School districts were eligible for participation if they had at least one middle school and one high school in the district. Recruitment procedures are described in Figure 1. Briefly, randomly selected principals from one high school and one middle school at 136 eligible districts in Massachusetts received an introductory letter about the NOURISH study. A follow-up e-mail invitation to the study with an attached informed consent form was sent to middle and high school principals and the district FSD; if informed consent was provided, FSDs were e-mailed a link to the NOURISH Nutrition Services Survey and a site visit was scheduled. If there was no response, a research assistant followed-up with a telephone call to the FSD. Recruitment procedures yielded a 27% participation rate. FSDs were provided a \$50 incentive for participation. The main reasons for nonparticipation in 2012 were the timing of the contact with FSDs at the end of the school year and a lack of interest in the study. During 2013, 29 school districts (81%) continued participation. The main reason FSDs declined participation in 2013 was a lack of time.

Measures and Data Collection Procedures

School sociodemographic data were obtained electronically from the Massachusetts Department of Elementary and Secondary Education.²⁷ The variable called percent of racial/ethnic minority students included students who were African American, Asian, Hispanic, Native American, and multiracial. School site visits were conducted at baseline (Spring 2012) and 1-year after implementation (Spring 2013) to obtain detailed observational data regarding the competitive foods sold in all vending machines, à la carte lines, and school stores in the participating schools. Research assistants took digital photographs of every food and beverage product sold in each location. Only prepackaged products that were not part of the school meals and frozen cookies that were baked at the school were included in the study. Food and beverage items were photographed so that the entire product name and package size could be viewed clearly. The decision to only include prepackaged items and frozen cookies baked at the school was made so that it was possible to make accurate determinations regarding whether or not products were consistent with the standards. The product name, size, location, and price of each photographed item were entered into a database. Information about whether the item was included on the John Stalker Institute A-list²⁸ in 2012 and 2013 was also recorded. The A-list is a comprehensive list of food and beverage products that is updated weekly and is a living document including only those items that meet the Massachusetts nutrition standards.

The primary dependent variables were percent compliant foods and percent compliant beverages. A measure of compliance with state food and beverage guidelines was created: number compliant products/total number of products in the school. Compliance was calculated separately in 2012 and 2013, and separately for competitive foods (chips/salty snacks, sweet snacks, ice cream/frozen treats, and yogurt/cheese) and beverages. To assess reliability, a second research assistant

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