

Original article

## To What Extent Have High Schools in California Been Able to Implement State-Mandated Nutrition Standards?

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Manuscript received December 17, 2008; manuscript accepted March 19, 2009

### Abstract

**Purpose:** To determine extent and factors associated with implementation of California's school nutrition standards 1 year after standards became active.

**Methods:** Information on competitive foods and beverages available in schools was collected from a representative sample of 56 public high schools in California. Adherence to nutrition standards was calculated for each item and summarized for each school by venue. The association between schools' sociodemographic characteristics and adherence to standards was determined by multivariate analysis.

**Results:** The majority of schools were adhering to the required beverage standards. None of the schools selling competitive foods were 100% adherent to the food standards. Adherence to both standards tended to be highest in food service venues. In univariate analyses, percent nonwhite enrollment, population density, percent free/reduced-price (FRP) meal eligibility, and school size were significantly correlated with the beverage adherence rate. Percent nonwhite enrollment and population density remained significant in the multivariate regression model. Percent nonwhite enrollment and percent FRP meal eligibility were significantly correlated with the food adherence rate in univariate analysis, but neither remained significant in the multiple regression model.

**Conclusions:** California high schools are making progress toward implementation of the state nutrition standards. Beverage standards appear easier to achieve than nutrient-based food standards. Additional support is needed to provide schools with resources to implement and monitor these policies. Simpler standards and/or a reduction in the foods and beverages sold could better enable schools to achieve and monitor adherence. © 2009 Society for Adolescent Medicine. All rights reserved.

### Keywords:

Adolescents; Nutrition policy; Obesity; Overweight; School lunch; Policy adherence; Policy compliance; Competitive foods; Competitive beverages; High school

During the last three decades the prevalence of obesity among children in the United States has risen dramatically [1]. Easy access to unhealthy foods at school may contribute to current rates of childhood obesity [2,3]. Although foods and beverages available through the U.S. Department of Agriculture (USDA) federally reimbursable school breakfast and lunch programs must meet nutrition standards for schools to receive federal subsidies, the same is not true for

competitive foods that are available in vending machines, student stores, and à la carte in cafeterias. Competitive foods represent a considerable portion of the foods students purchase while on campus [4] and often are high in calories, fat, and sugar and low in nutrient density [4–9]. (It should be noted that the USDA regulations state that Foods of Minimal Nutritional Value [FMNV] cannot be sold where USDA school meals are served or eaten [i.e., cafeterias] during meal periods. FMNV include carbonated beverages, water ices [without any amount of fruit/fruit juice], certain candies, and chewing gum. [Foods of Minimal Nutritional Value. [fns.usda.gov](http://fns.usda.gov). Accessed 4/18/008].)

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Health and education leaders have agreed that a crucial step to improving children's eating habits is to establish policies and programs that increase access to healthy foods and beverages at school [10,11], while at the same time limiting access to unhealthy foods and beverages. School interventions that change the school food environment by increasing the availability of healthy foods can have a significant impact on student food choices [4–7,12–14]. One school intervention to improve foods and beverages in 10 schools in the Mid-Atlantic region of the United States reported a 50% reduction in the incidence of overweight compared with control schools [8].

Realizing the potential impact that improving school food environments can have on children's health, states and school districts across the country are developing and implementing school nutrition standards that set standards for competitive foods sold on school campuses [15]. As of November 2007, 30 states (including the District of Columbia) had adopted school competitive food standards [16], and 12 of these states had set comprehensive nutrition standards covering all grades for the entire school day and all areas of the school campus [16].

In 2005, California passed Senate Bills 12 and 965 calling for the implementation of nutrition standards to regulate competitive foods and beverages in all K-12 schools. California's legislation is among the most stringent, comprehensive, and specific plan in the nation aimed at changing the school food and beverage environment. The laws regulate the amount of fat, sugar, and calories contained in competitive foods (SB 12) and phase out the sale of sodas and other sweetened beverages (SB 965) (Table 1). Food standards at high schools were to be fully implemented by summer 2007, whereas the implementation target for beverage standards was 50% adherence by summer 2007. Beverages are

slated for full adherence by July 2009. Concerns exist, however, regarding the extent to which schools will be able to adhere to the new regulations, the financial impact on school programs, and the student and adult stakeholder responses to these mandated changes [17]. Questions relate to the capacity of school personnel to manage enforcement of standards based upon detailed knowledge of the nutrient content of a myriad and constantly evolving array of food products. Competing demands upon personnel time may also limit schools' ability to implement complex new standards.

To date, no study has been published regarding the evaluation of the impact of the new comprehensive nutrition standards at the high school level [18]. This study evaluated the effect of new food and beverage standards in California during the first year of implementation, and correlates program adherence with demographic characteristics of school populations including percent nonwhite enrollment, population density of the community, percent free/reduced-price meal eligibility, and school size.

## Methods

### Data collection

A total of 56 schools participated in the study. Of these schools, 50 were selected from a randomized list of all public high schools in California that met the following criteria: had at least 35 students enrolled in each of the four grade levels 9–12, had no enrollment in any other grade levels, offered reimbursable meals to students, and had conducted the California Healthy Kids Survey in the 2005–2006 school year. Charter, continuation, and college preparatory schools were excluded. Two additional schools were randomly selected from a list of

Table 1

California legislation: SB 12 (food standards) and SB 965 (beverage standards)

California Senate Bill 965 expands previous legislation describing the type of beverages that can be sold in elementary and middle schools to include all K-12 pupils. The following describes SB 965 as it applies to high schools. Elementary middle schools were required to obtain 100% compliance by July 1, 2007.

- Starting July 1, 2007, 50% of the beverages sold to pupils from one-half hour before the start of the school day until one-half hour after the school day must be from the following list:
  - o Fruit-based and vegetable-based drinks that are at least 50% fruit juice without added sweeteners
  - o Drinking water without added sweeteners
  - o Milk products (including 2% fat, 1% fat, nonfat, soy, rice, and other similar nondairy milk)
  - o Electrolyte replacement beverages (containing no more than 42 grams of added sweetener per 20-oz serving)
- Starting July 1, 2009, ALL beverages sold to pupils from one-half hour before the start of the school day until one-half hour after the school day must be from the above list.

California Senate Bill 12 requires that all public schools in California implement the following food standards as of July 1, 2007:

- An individually sold snack may have no more than:
  - o 35% of its calories from fat (excluding legumes, nuts, nut butters, seeds, eggs, vegetables that have not been deep-fried, and cheese packaged for individual sale)
  - o 10% of its calories from saturated fat (excluding eggs and cheese packaged for individual sale)
  - o 35% sugar by weight (excluding fruits and vegetables)
  - o 175 calories (elementary schools); and 250 calories (middle and high schools)
  - o in an individually sold entree, no more than 36% of its calories from fat; 400 calories, and must qualify under the federal meal program.
- Nutrition standards apply only to the sale of items to pupils and do not apply to foods brought from home.

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