

Healthier Food and Beverage Interventions in Schools: Recommendation of the Community Preventive Services Task Force



Community Preventive Services Task Force

COMMUNITY PREVENTIVE SERVICES TASK FORCE FINDINGS

The Community Preventive Services Task Force (CPSTF) issued separate findings for the 4 interventions to increase the availability of healthier meals, snacks, and beverages in schools.

The CPSTF recommends meal interventions and fruit and vegetable snack interventions to increase the availability of healthier foods and beverages provided by schools based on sufficient evidence of effectiveness for increasing fruit and vegetable consumption and reducing or not changing the prevalence of obesity or overweight. Evidence was favorable for fruit and vegetable consumption primarily owing to fruit and vegetable programs. Economic evidence shows that meal interventions and fruit and vegetable snack interventions are cost effective.

The CPSTF finds insufficient evidence to determine the effectiveness of interventions supporting healthier snack foods and beverages sold or offered as a reward in schools. Evidence is considered insufficient based on inconsistent findings for sugar-sweetened beverage (SSB) consumption outcomes and too few studies for weight and other dietary outcomes.

The CPSTF recommends multicomponent interventions to increase availability of healthier foods and beverages in schools (i.e., meal interventions and fruit and vegetable snack interventions in combination with healthier snack foods and beverages) given sufficient evidence of effectiveness for reducing or not changing the prevalence of obesity or overweight.

The CPSTF finds insufficient evidence to determine the effectiveness of interventions to increase water access in schools. Evidence is considered insufficient because there were too few studies.

DEFINITIONS

These interventions aim to provide healthier foods and beverages that are appealing to students, limit access

to less healthy foods and beverages, or both. Healthier foods and beverages include fruits; vegetables; whole grains; low-fat or fat-free dairy; lean meats; beans; eggs; nuts; and items that are low in saturated fats, salt, and added sugars and have no trans fats. Less healthy foods and beverages include those with more added sugars, fats, and sodium. Approaches to support healthier foods and beverages in schools must include one of those described in the following reviews.

Review 1

The first approach is meal or fruit and vegetable snack interventions to increase the availability of healthier foods and beverages provided by schools. These interventions must include 1 of the following components: (1) school meal policies that ensure school breakfasts or lunches meet specific nutrition requirements (e.g., School Breakfast Program and National School Lunch Program) and (2) fresh fruit and vegetable programs that provide fresh fruits and vegetables to students during lunch or snack.

Review 2

The second type of intervention supports healthier snack foods and beverages sold or offered as a reward in schools. These food and beverage policies require that foods and beverages sold during the school day, outside of school meal programs, meet established nutritional standards or guidelines. These foods and beverages are often referred to as competitive foods and beverages, as they are sold in competition with school meal programs,

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and include in-school fundraisers, a la carte foods, vending machines, school stores, and snack bars. These interventions can also include celebration and reward rules or policies that encourage healthy foods and beverages to be served during classroom celebrations, parties, and special events or encourage reward of nonfood items for academic achievement.

Review 3

The third approach includes multicomponent interventions to increase availability of healthier foods and beverages in schools. These must include 1 component from each of the aforementioned interventions (meal or fruit and vegetable snack interventions in combination with healthier snack foods and beverages).

Review 4

The fourth type of intervention aims to increase water access in schools and ensure students have access to safe, free drinking water during the school day. Interventions may include 1 or more of the following components aimed at increasing students' water intake: (1) procedures to ensure water fountains are clean and maintained, (2) availability of water fountains and hydration stations throughout the school, and (3) policies allowing students to have water bottles in class.

Each intervention may also include 1 or more of the following strategies. The first is healthy food and beverage marketing strategies, such as placing healthier foods and beverages where they are easy for students to select, pricing healthier foods and beverages at a lower cost, setting up attractive displays of fruits and vegetables, offering taste tests of new menu items, and posting signs or verbal prompts to promote healthier foods and beverages and new menu items. The second strategy includes healthy eating learning opportunities such as nutrition education and other initiatives that give children knowledge and skills to help choose and consume healthier foods and beverages.

BASIS OF FINDING

In 2013, the Agency for Healthcare Research and Quality conducted a meta-analysis on the effectiveness of childhood obesity prevention programs implemented in 6 intervention settings and reported moderate evidence of effectiveness in school settings.¹ The CPSTF findings are based on a subset of studies from the Agency for Healthcare Research and Quality review that focused on dietary-only approaches in schools¹ (15 studies, search period through August 2012) combined with more recent evidence (20 additional studies, search period August 2012–January 4, 2017). The 4 intervention approaches in this

review align with the Centers for Disease Control and Prevention's Comprehensive Framework for Addressing the School Nutrition Environment and Services²: meal or fruit and vegetable snack interventions to increase the availability of healthier foods and beverages provided by schools (27 studies), interventions supporting healthier snack foods and beverages sold or offered as a reward in schools (13 studies), multicomponent interventions to increase availability of healthier foods and beverages in schools (i.e., meal or fruit and vegetable snack interventions in combination with healthier snack foods and beverages; 12 studies), and interventions to increase water access in schools (2 studies).

Dietary outcomes relevant to the interventions include intake of fruits and vegetables and SSBs. Increases in fruits and vegetables were considered favorable, whereas decreases in SSBs were considered favorable.

Weight outcomes were assessed by overweight/obesity prevalence and BMI z-score. If a study did not have a control group, then no change in weight outcomes was considered favorable, as this demonstrated potential for a decreased rate of change in obesity prevalence. Select outcomes for each review are described subsequently.

Review 1: Meal and Fruit and Vegetable Snack Interventions to Increase the Availability of Healthier Foods and Beverages Provided by Schools

A total of 9 studies demonstrated a median relative increase of 20% (interquartile interval=4.3%, 38.5%) for fruit and vegetable intake for the total day. Additional studies that could not be combined were generally favorable for fruit and vegetable consumption. A total of 5 studies with a baseline median overweight and obesity combined prevalence of 32.9% reported a decrease of 9.6 percentage points (interquartile interval=−10.7, −1.6).

Review 2: Interventions Supporting Healthier Snack Foods and Beverages Sold or Offered as a Reward in Schools

Evidence was considered insufficient for dietary and weight outcomes.

Review 3: Multicomponent Interventions to Increase Availability of Healthier Foods and Beverages in Schools

Studies were favorable for fruit and vegetable (relative increase of 15%, range=1.0%–45.0%, 4 studies) and SSB intake (2 studies demonstrated favorable reductions). Studies that reported weight-related outcomes could not be combined for a summary effect estimate, but they were generally in the favorable direction.

Review 4: Interventions to Increase Water Access in Schools

Evidence was insufficient owing to too few studies meeting inclusion criteria.

APPLICABILITY AND GENERALIZABILITY CONSIDERATIONS

Applicability and generalizability are only described for the 2 recommended interventions. Applicability is not assessed for the 2 interventions with insufficient evidence because the CPSTF did not have enough information to determine if the interventions work.

Meal or Fruit and Vegetable Snack Interventions to Increase the Availability of Healthier Foods and Beverages Provided by Schools

Most included studies were conducted in the U.S., with others conducted in Canada, Norway, the United Kingdom, the Netherlands, Spain, Australia, Denmark, Taiwan, and Greece. Most studies were conducted in schools alone. Studies were of mixed population density.

Interventions were effective among elementary and middle school students. A total of 2 studies represented high school students only. All studies demonstrated effectiveness among male and female students; included studies had roughly equal numbers of male and female students.

A total of 12 studies that reported racial and ethnic distributions demonstrated intervention effectiveness across reported groups. Populations were composed of students in the following reported groups: white (median=49%), black (median=2.1%), and Hispanic (median=28.6%), and 2 studies were conducted among First Nation populations. One study conducted in the Netherlands examined the effectiveness of interventions by race/ethnicity and reported that the intervention significantly increased fruit intake among ethnically Dutch children and significantly increased vegetable intake among non-Western children.

Interventions were effective among primarily low-income populations or when targeted to low-income First Nation children. One study of a program to increase fruit and vegetable intake reported that parental education level was related to effectiveness, finding that students from the low parental educational group consumed more soda, candy, and chips than did students in the high parental education group.

Multicomponent Interventions to Increase Availability of Healthier Foods and Beverages in Schools

Most included studies were conducted in the U.S., with additional studies conducted in Canada and the United

Kingdom, and most studies were conducted in schools alone. Studies were of mixed population density.

Interventions were found to be effective among elementary and middle school students, whereas no studies represented high school students only. All studies demonstrated effectiveness among male and female students, and included studies had roughly equal numbers of male and female students.

Studies that reported racial and ethnic distributions showed intervention effectiveness across reported groups. Populations were composed of students in the following reported groups: white (median=19%), black (median=19.0%), Hispanic (median=55.0%), and other (median=10%). One study showed an intervention effect in low-income populations.

CONSIDERATIONS FOR IMPLEMENTATION

Important considerations include the different possible combinations of components, the levels at which changes are made (i.e., federal, state or provincial, district, or school), and the school capacity for implementing the intervention(s). Some intervention components (e.g., implementing National School Lunch Program guidelines) may be required if a school is participating in the National School Lunch Program; other components may be selected. There was not enough evidence from the included studies to evaluate the different combinations of components.

Intervention success is likely to vary based on school characteristics and intervention components. Schools with greater resources are better able to implement interventions with fidelity than schools with fewer resources. Some school communities may be resistant to change. In addition, for interventions with an educational component, competing demands to meet education requirements during the school day is a consideration.

EVIDENCE GAPS

Additional research and evaluation are needed to answer the following questions and fill existing gaps in the evidence base. Evidence gaps are split into 3 groups: (1) evidence gaps for reviews where a recommendation was made, (2) evidence gaps related to reviews for which there was an insufficient evidence finding, and (3) cross-cutting evidence gaps related to all 4 intervention approaches.

Evidence Gaps for Recommended Interventions

Meal or snack interventions to increase the availability of healthier foods and beverages provided by schools.

Questions that remain include the following: Are interventions effective among high school-aged students?

Would additional studies consistently demonstrate intervention effectiveness in the U.S.? Answering these questions would further strengthen the evidence base for U.S. students because most of the studies were conducted outside the U.S.

Multicomponent interventions combining meal and snack interventions to increase availability of healthier foods and beverages in schools. The question in this approach is, which combinations of components are most effective and which components are critical to success?

Evidence Gaps for Interventions with an Insufficient Evidence Finding

Additional research is needed to move these interventions from an insufficient evidence finding to a recommendation for or against. Literature in this field should be monitored to determine when enough studies have been published to warrant further review.

Interventions supporting healthier snack foods and beverages sold or rewarded in schools. Future research should examine fidelity of implementation of these types of interventions when implemented alone and if existing standards are effective.

Interventions to increase water access in schools. Future research should examine different ways to increase access to water (e.g., adding water fountains and allowing water bottles in class) and determine which are more effective.

Cross-Cutting Evidence Gaps Related to All Intervention Approaches

The questions that remain are the following: Do children act as agents of change by discussing changes in the school environment with parents and, consequently, do parents incorporate healthier dietary habits at home? Do schools implement interventions with fidelity? What amount of training is needed for faculty for intervention effectiveness? Are interventions applicable to various age groups and among high school students in particular? Which are more effective, national, state, or local policies? Are effects of adding intervention components cumulative or is a single component equally effective? Do these interventions lead to other health benefits such as improvements in cholesterol or blood pressure?

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