Community Preventive Services Task Force

Obesity Prevention and Control: Increasing Water Access Combined with Physical Activity Interventions in Schools

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Finding and Rationale Statement
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CPSTF Finding and Rationale Statement

Context

Consuming a healthy diet and participating in regular physical activity can build stronger bones and muscles, help control weight, and reduce the risk of developing health conditions such as heart disease, type 2 diabetes, high blood pressure, and osteoporosis (U.S. Department of Health and Human Services and U.S. Department of Agriculture 2015; 2018 Physical Activity Guidelines Advisory Committee, 2018). In the United States, the percentage of children and adolescents affected by obesity has more than tripled in the past 40 years (Fryar et al., 2014). Data from 2015-2016 show that nearly 1 in 5 school age children and adolescents (6 to 19 years) in the United States has obesity (Hales et al., 2017).

Consuming more energy than the body needs for healthy functioning and growth can lead to excess weight gain (Hill et al., 2012). Many factors contribute to excess weight gain such as high-calorie, low-nutrient foods and beverages, inadequate physical activity, short sleep duration, genetics, and metabolism (U.S. Department of Health and Human Services 2016, U.S. Department of Health and Human Services 2018a). When addressing obesity, a comprehensive approach should be considered such as the Whole School, Whole Community, Whole Child (WSCC) model, which involves schools, parents, caregivers, community organizations, and health care providers (U.S. Department of Health and Human Services 2018b; U.S. Department of Health and Human Services 2018c).

Schools can play an important role in supporting a healthy diet and physical activity. Most U.S. children ages 5 to 18 years attend school for an average of six to seven hours a day during the school year (National Center for Education Statistics, 2010). Schools can provide students nutritious and appealing foods and beverages, including water that is safe to drink.

The 2015-2020 Dietary Guidelines for Americans recommends choosing beverages with no added sugars, such as water, instead of sugar-sweetened beverages (U.S. Department of Health and Human Services and U.S. Department of Agriculture, 2015). Access to free drinking water at school provides children with a healthier option, which may increase water consumption and potentially reduce energy intake (Kaushik et al. 2007; Muckelbaur et al. 2009). Schools can also provide opportunities for physical activity to help students accumulate the recommended 60 minutes of physical activity per day (CDC 2011; 2018 Physical Activity Guidelines Advisory Committee). To facilitate water consumption, schools can provide accessible water fountains and good quality water to help maintain hydration after physical activity (Chen, et al. 2017).

Intervention Definition

School-based water access interventions plus physical activity interventions aim to improve student health by combining (1) interventions to increase water access, with (2) physical activity interventions.

1) **Water access interventions** ensure students have access to safe, free drinking water during the school day. Interventions must include one or more of the following components:
   - Procedures to ensure water fountains are clean and maintained
   - Availability of water fountains and hydration stations throughout the school
   - Policies that allow students to have water bottles in class

2) **Physical activity interventions** engage students in physical activity each day. Interventions must include one or more of the following components:
   - Physical education classes that engage students in physical activity
   - School policies or practices that provide opportunities for physical activity during the school day (i.e., organized times and physical activities for students such as classroom breaks for PA)
   - Large-scale environmental changes that provide or improve space, facilities, or equipment to make physical activity easy and appealing (e.g., renovating a school playground)

School-based water access interventions plus physical activity interventions also may include one or more of the following:

- Healthy food and beverage marketing strategies to promote water consumption and decrease sugar-sweetened beverage consumption
- Educational programs that address nutrition or build knowledge and skills needed to maintain physically active lifestyles
- Addition of small-scale equipment to promote physical activity (e.g., jump ropes, balls, cones, team vests, pedometers)
- Staff involvement
- Family and community engagement

*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.

CPSTF Finding (April 2018)

The CPSTF finds insufficient evidence to determine the effectiveness of school-based interventions to increase water access combined with physical activity interventions because there were too few studies.

The CPSTF previously found insufficient evidence for Increasing Water Access in Schools [https://www.thecommunityguide.org/findings/obesity-increasing-water-access-schools]. *Results of this review should not be compared with results from the previous review because they included different studies.*

Rationale

Basis of Finding

The CPSTF finding is based on evidence from one study that was identified from a systematic search (search period 1990–July 19, 2017). The study used a group randomized controlled trial to evaluate the effects of a water campaign on sugar-sweetened beverage (SSB) consumption and combined prevalence of overweight and obesity (i.e., percent of students with BMI-for-age and sex > 85th percentile). Results from this review are presented in the Table.

Table. Intervention Effects on Weight-related and Diet-related Outcomes

Outcome	Summary Effects
Sugar-sweetened beverage consumption	Significant decrease in consumption
Combined prevalence of overweight and obesity	Adjusted Odds Ratio: 1.27 (95% Confidence Interval: 0.78 to 2.08)

Applicability and Generalizability Issues

Applicability was not assessed because the CPSTF did not have enough information to determine if the intervention works.

Data Quality Issues

Dietary outcomes were based on parent- and child-reported data. Common limitations of self-reported dietary data included participants forgetting about consumption of specific foods or beverages, inaccurately estimating portion sizes, and inadvertently or intentionally failing to report specific items (Grandjean, 2012). In the included study, trained staff measured height and weight, which was used to calculate weight status.

Other Benefits and Harms

One postulated benefit is student enjoyment of the intervention. While no potential harms of the intervention were identified within the included study, the CPSTF postulates harms could include overexertion from physical activity.

Economic Evidence

An economic review was not done for this intervention because the CPSTF did not have enough information to determine if the intervention works.

Other Considerations

Programmers or educators looking to implement combined water access and physical activity interventions should consider efforts to promote adoption, training of appropriate staff, and necessary funding. Some groups may resist program implementation including teachers, staff, parents, or students.

Decisions to implement combined water access and physical activity interventions may be made at various levels from classrooms to states, and community engagement may be especially useful. In the one included study, community organizations provided students with free water bottles during summer activities. To ensure interventions are high-quality, implementers should closely align them with national recommendations that are current and evidence-based.

The Centers for Disease Control and Prevention promotes Increasing Access to Drinking Water in Schools Tool Kit [https://www.cdc.gov/healthyschools/npao/pdf/water_access_in_schools_tool_kit_slides_508.pdf] to provide step by step guidance and the Comprehensive School Physical Activity Program Framework [https://www.cdc.gov/healthyschools/physicalactivity/pdf/17_278143-A_PE-PA-Framework_508.pdf].

Evidence Gaps

School-based interventions that include water access and physical activity is an emerging area of research. This review highlights the need for continued research in this field to answer the following questions and fill existing gaps in the evidence base.

- Are these interventions effective? Literature in this field should be monitored to determine when enough studies have been published to warrant further review.
- How effective are the different approaches to increasing water access (e.g., ensuring water fountains are clean and properly maintained, adding water fountains, making water available during meal periods, allowing water bottles in class)?
- Do school-based interventions that increase water consumption also decrease sugar-sweetened beverage consumption?
- What other physical activity opportunities such as recess and classroom physical activity could be combined with water interventions?

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Disclaimer

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