



Impact of the Out-of-School Nutrition and Physical Activity (OSNAP) Group Randomized Controlled Trial on Children's Food, Beverage, and Calorie Consumption among Snacks Served



Rebekka M. Lee, ScD; Catherine M. Giles, MPH; Angie L. Cradock, ScD; Karen M. Emmons, PhD; Cassandra Okechukwu, ScD; Erica L. Kenney, ScD; J. Thayer, MS, MPH; Steven L. Gortmaker, PhD

ARTICLE INFORMATION

Article history:

Submitted 3 November 2017
Accepted 15 April 2018

Keywords:

Afterschool
Childhood obesity
Group randomized trial
Nutrition
Snack

2212-2672/Copyright © 2018 by the Academy of Nutrition and Dietetics.
<https://doi.org/10.1016/j.jand.2018.04.011>

ABSTRACT

Background Afterschool interventions have been found to improve the nutritional quality of snacks served. However, there is limited evidence on how these interventions affect children's snacking behaviors.

Objective Our aim was to determine the impact of an afterschool intervention focused at the school district, site, family, and child levels on dietary consumption of foods and beverages served at snack.

Design This was a secondary analysis of a group-randomized controlled trial.

Participants/setting Data were collected from 400 children at 20 afterschool sites in Boston, MA before (fall 2010) and after (spring 2011) intervention implementation.

Intervention The Out-of-School Nutrition and Physical Activity intervention aimed to promote fruits, vegetables, whole grains, and water, while limiting sugary drinks and *trans* fats. Researchers worked with district foodservice staff to change snack foods and beverages. Teams of afterschool staff participated in three 3-hour learning collaborative sessions to build skills and created action plans for changing site practices. The intervention included family and child nutrition education.

Main outcome measures Research assistants observed dietary snack consumption using a validated measure on 2 days per site at baseline and follow-up.

Statistical analyses performed This study used multivariable regression models, accounting for clustering of observations, to assess the intervention effect, and conducted post-hoc stratified analyses by foodservice type.

Results Children in intervention sites had greater decreases in consumption of juice (−0.61 oz/snack, 95% CI −1.11 to −0.12), beverage calories (−29.1 kcal/snack, 95% CI −40.2 to 18.0), foods with *trans* fats (−0.12 servings/snack, 95% CI −0.19 to −0.04), total calories (−47.7 kcal/snack, 95% CI −68.2 to −27.2), and increases in consumption of whole grains (0.10 servings/snack, 95% CI 0.02 to 0.18) compared to controls. In post-hoc analyses, sites with on-site foodservice had significant improvements for all outcomes ($P < 0.001$), with no effect for sites with satellite foodservice.

Conclusions Results demonstrate that an afterschool intervention can improve children's dietary snack consumption, particularly at sites with on-site foodservice.

J Acad Nutr Diet. 2018;118(8):1425-1437.

The Continuing Professional Education (CPE) quiz for this article is available for free to Academy members through the MyCDRGo app (available for iOS and Android devices) and through www.jandonline.org (click on "CPE" in the menu and then "Academy Journal CPE Articles"). Log in with your Academy of Nutrition and Dietetics or Commission on Dietetic Registration username and password, click "Journal Article Quiz" on the next page, then click the "Additional Journal CPE quizzes" button to view a list of available quizzes. Non-members may take CPE quizzes by sending a request to journal@eatright.org. There is a fee of \$45 per quiz (includes quiz and copy of article) for non-member Journal CPE. CPE quizzes are valid for 1 year after the issue date in which the articles are published.

ADDRESSING OBESITY PREVENTION IN COMMUNITY settings early in life is an essential strategy for population impact, given that obesity prevalence in the United States has increased steadily over the past 2 decades. Today, obesity affects more than one-third of children and youth, and disproportionately impacts minority and economically disadvantaged children.¹⁻³ Dietary intake has been strongly linked to childhood obesity via caloric imbalance,⁴ particularly due to excess calories from sugary beverages.⁵⁻⁷ The American Academy of Pediatrics and 2015-2020 Dietary Guidelines for Americans suggest that children

limit consumption of sugar-sweetened drinks and 100% juice; eat a diet rich in fruits, vegetables, calcium, and fiber; limit consumption of energy-dense foods; and limit portion size.^{8,9}

Afterschool sites are an important community setting for addressing childhood obesity prevention.¹⁰⁻¹² The Afterschool Alliance estimates that 10.2 million US children are enrolled in afterschool programming,¹³ and 46% of school foodservice directors report their district provides afterschool snacks for students.¹⁴ In addition, afterschool settings have the potential to address racial/ethnic and socioeconomic disparities; the highest participation rates in US afterschool programming are among low-income, black/African-American, and Hispanic/Latino children.¹⁵

Improving children's snacking behaviors is a relatively unexplored area of intervention; however, evidence suggests that investments in this area are worthwhile. Foods and drinks that children consume outside of traditional meals make up >25% of their daily consumption,¹⁶ and the nutritional quality of snacks children consume has declined over the past 3 decades.¹⁷ In afterschool settings more specifically, recent evidence has documented that snacks do not meet the National Afterschool Association Healthy Eating Standards.¹⁸ The majority of sites served sugar-sweetened foods and beverages, and fruits and vegetables were served infrequently.¹² Even given these needs for improvement, afterschool program-provided snacks have been shown to be of higher quality than snacks from home,¹⁹ and changes to afterschool sites have potentially greater reach than working with individual families.

Although a number of obesity prevention studies have been situated in afterschool settings, many of these interventions have been limited in duration and scope or focused exclusively on individual behavior and attitude change (eg, increasing children's nutrition knowledge) rather than environmental approaches (eg, improving the healthfulness of foods and beverages served on site).²⁰⁻²² Some promising interventions have taken a more comprehensive approach via changes to foods and beverages served in afterschool sites over a longer time course, but these studies have not measured changes in foods and beverages consumed.²³⁻²⁸ Prior studies found that weekly servings of fruits, vegetables, and water increased and foods with added sugars and *trans* fats decreased after afterschool sites participated in a YMCA-driven learning collaborative.²⁹ There is also prior evidence of high fruit and vegetable consumption after an afterschool/grocery store partnership intervention.³⁰ This current study fills a gap in the research by determining whether afterschool interventions that rely on foodservice operators and vendors, rather than independent program purchasing or grocery store partnerships, are similarly effective.

The Out-of-School Nutrition and Physical Activity (OSNAP) intervention is a community-based participatory research study aimed at the school district, afterschool, family, and child levels designed to identify and support sustainable policy and environmental strategies that promote increased access to and consumption of healthy snacks and physical activity in afterschool settings.³¹ This study is the first of its kind to examine the impact of an intervention in afterschool settings on children's dietary intake when snacks are served. Our hypothesis was that

RESEARCH SNAPSHOT

Research Question: What is the impact of an afterschool intervention on children's snack consumption?

Key Findings: The group randomized controlled trial found that children in intervention sites had significantly greater decreases in consumption of juice (−0.61 ounces/snack), beverage calories (−29.1 calories/snack), foods with *trans* fats (−0.12 servings/snack), and total calories (−47.7 calories/snack), and greater increases in consumption of whole grains (0.10 servings/snack) compared to controls.

children who attended intervention sites would have greater increases in fruit and vegetable and whole-grain consumption and greater decreases in juice, beverage calories, foods with *trans* fats, and total calories than children who attended control sites. Secondly, post-hoc stratified analyses were conducted to determine whether the type of foodservice operations used for afterschool snack influenced changes in snack consumption.

MATERIALS AND METHODS

Design

The study was a group-randomized controlled trial in 20 afterschool sites in Boston, MA. The flow diagram in [Figure 1](#) shows details on enrollment. Eligible sites enrolled at least 39 children, served elementary grades, and ran throughout the school year. The study team designated 10 matched pairs, matching sites first on sponsoring agency (eg, YMCA), then on size, and finally on foodservice type (eg, on site, satellite, independent) and physical activity facilities (eg, gym, playground, pool). With only 10 pairs, matching was imperfect, but it was used to improve the chance of well-balanced intervention and control groups. One site from each matched pair was randomized to the intervention condition by someone not involved in the study using a computer-based random-number generator after baseline data collection was complete. Researchers were not blinded to intervention status; data collectors conducting observations were blinded. OSNAP was implemented in 10 intervention sites during the 2010-2011 school year, and 10 sites served as controls. The control group was offered a similar intervention during the subsequent 2011-2012 school year. The trial was powered with the primary outcome of increased moderate and vigorous physical activity,³¹ with secondary outcomes of improved quality of food and beverage consumption. All human subjects study protocols were approved by the Harvard T.H. Chan School of Public Health Office of Human Research Administration (trial registration: [ClinicalTrials.gov ID: NCT01396473](https://clinicaltrials.gov/ct2/show/study/NCT01396473)).

Study Population

All children 5 years and older attending the 20 afterschool sites were eligible to participate in a direct observation protocol to evaluate the intervention impact on dietary intake. At baseline, trained research assistants obtained parents' or guardians' written informed consent and verbal child assent for participating in dietary intake observations. Parental consent was obtained for 52% (n=596) of

Download English Version:

<https://daneshyari.com/en/article/8571392>

Download Persian Version:

<https://daneshyari.com/article/8571392>

[Daneshyari.com](https://daneshyari.com)