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Community Partnership to Address Snack Quality and Cost in Afterschool Programs

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Abstract

Background—Policies call on afterschool programs (ASPs) to serve more nutritious snacks. A major barrier for improving snack quality is cost. This study describes the impact on snack quality and expenditures from a community-partnership between ASPs and local grocery stores.

Methods—Four large-scale ASPs (serving ~500 children aged 6-12 years each day) and a single local grocery store chain participated in the study. The nutritional quality of snacks served was recorded pre-intervention (18 weeks spring/fall 2011) and post-intervention (7 weeks spring 2012) via direct observation, along with cost/child/snack/day.

Results—Pre-intervention snacks were low-nutrient-density salty snacks (eg, chips, 3.0 servings/week), sugar-sweetened beverages (eg, powdered-lemonade, 1.9 servings/week), and desserts (eg, cookies, 2.1 servings/week), with only 0.4 servings/week of fruits and no vegetables. By post-intervention, fruits (3.5 servings/week) and vegetables (1.2 servings/week) increased, while sugar-sweetened beverages and desserts were eliminated. Snack expenditures were \$0.26 versus \$0.24 from pre-intervention to post-intervention. Partnership savings versus purchasing snacks at full retail cost was 24.5% or \$0.25/serving versus \$0.34/serving.

Conclusions—This innovative partnership can serve as a model in communities where ASPs seek to identify low-cost alternatives to providing nutritious snacks.

Keywords

cost-effectiveness; nutrition; community-based programs; children; school

Afterschool programs¹ (ASPs) serve over 8 million youth nationwide. The majority of children attending are of elementary age (K-5th grade) and from low income households.² These programs operate directly after the school day and typically last until 6:00 pm. Afterschool programs consist of scheduled activities including academics, physical activity, and enrichment. In addition to these activities, most ASPs offer foods daily, in the form of a snack, to those children attending.¹ The snack ASPs serve represents an important addition to a child's overall dietary intake and is offered at a critical time in a child's daily schedule - between school lunch and dinner at home. Further, the snack provided is seen as a “teachable moment” where offering healthy items, such as fruits and vegetables, has the potential to directly influence a child's dietary intake by exposing them to foods they may not regularly consume outside the ASP.

To ensure ASPs offer children nutritious foods, state and national organizations developed guidelines for the type of foods ASPs should serve as well as those they should limit or remove altogether.³ Guidelines range from serving fruits and vegetables a minimum 2 times per week to serving them every day, eliminating sugar sweetened beverages and foods with added sugars, serving more whole grains, and limiting the total fat and calories, as well as the percentage of calories from added sugars.³ Despite the existence of these guidelines, evidence indicates ASPs are falling well short of these goals.³ Studies report the snacks served in ASPs contain more calories than recommended, with the majority having added sugars, such as cookies, or high in salt content, such as chips.⁴⁻⁶ Conversely, recommended “healthful” foods are almost absent, with fruits and vegetables offered less than once per week.⁴⁻⁶

Several interventions have evaluated strategies to address the low nutritional quality of snacks served in ASPs. These include policy and organizational change,^{4,6,7} and working with food service personnel initiatives.^{7,8} Of these, increases in fruits and vegetables were observed when interventions focused on policy level initiatives, such as identifying specific standards for the number of weekly servings of fruits and vegetables while also reducing or eliminating servings of salty snacks and desserts.^{4,6} Giles et al⁷ focused on serving water and found that working with school food services resulted in an increase in water served. Thus, policy level approaches appear to be a promising and impactful strategy ASPs can employ to improve the nutritional content of snacks.⁹

Although serving more nutritious snacks is an important goal and policies appear to play a major role in achieving this, there is more to improving snacks than simply adopting a policy.⁹ The costs associated with reaching goals for healthful snack policies have yet to be fully addressed.⁹ Price is cited as one of the major barriers to consuming healthier foods¹⁰ and is a recognized barrier to achieving existing ASP nutrition policy recommendations.^{11,12} Studies^{4,6,8} conducted to date have not reported information on costs associated with

improving the nutritional content of snacks served and only a single study¹¹ has evaluated costs associated with serving healthful vs. less healthful snacks. This study¹¹ found that healthier snacks, such as fruit, are typically more expensive than less healthful options. Whereas short-term changes in nutritional content of snacks have been observed, it is unclear whether policies can be sustained in the long term due to the costs associated with purchasing healthier items. At present ASPs have few options when it comes to providing healthier foods at the same or reduced price.⁹ Therefore, the purpose of this study is two-fold: (1) describe an innovative partnership between 4 large scale ASPs and a local grocery store chain; and (2) evaluate changes in the nutritional content of the snacks served as well as changes in the costs associated with purchasing snacks.

Methods

Participants

The participating ASPs were part of a large-scale community based organization serving youth. The organization was taking part in a 2-year policy level intervention focused on physical activity and nutrition, and is founded in the principles of community based participatory research.¹³ The information presented in this paper focuses solely on the changes in snack cost and quality during the first year. The ASPs served approximately 500 children each day (aged 5 to 12 years, range of 60 to 180 per site), took place immediately after school (~3pm) and lasted approximately 3 hours (~6pm). All children arrived at the same time and were allowed to leave from the ASP any time in the company of a parent or guardian. All ASPs had a similar schedule, each beginning with a snack followed by homework, enrichment, and physical activity. Each ASP purchased their snacks individually. None of the ASPs were receiving federal reimbursement for snacks or had any policies in place specifying the nutritional content of the snacks served.

Intervention

Nutrition policy goals—The overall goal of the policy level intervention was to improve the nutritional content of the snacks served in the organization's ASPs while maintaining current expenditure on snacks. To accomplish this, in the Fall of 2011 leaders within the organization, that included business managers, site directors, childcare directors, program leaders, convened four meetings to identify and adopt policies to guide the nutritional content of the snacks served. These meetings focused on reviewing existing policies developed by state or national organizations,³ and selecting those policies determined to be the most appropriate for their setting, while also considering those that would result in the greatest impact on the snacks currently offered. The result of these meetings led to the adoption of the nutrition policies presented in Table 1.¹⁴ These policies were used to guide all snack purchasing decisions implemented in January 2012, as well as the development of the community partnership described below. Although the policy calls for serving fruits and vegetables 5 days per week, the ASPs determined that by the end of the first year, they would set a goal of serving a minimum of 3 fruits/vegetables per week with the intent to reach 5 servings per week by the second year. This was decided based on program leaders' desire for a gradual transition to snacks of higher quality, rather than an abrupt change to minimize child and parent resistance.

Community partnership—One of the primary concerns for the ASPs when establishing nutrition policies for their snacks was the cost associated with serving fruits and vegetables on a daily basis. To address this concern, the ASPs and university staff approached a local grocery store chain about a partnership to provide nutritious snacks to ASPs. The partnership, referred to as “Healthy Snacks • Healthy Kids,” was based on a systems framework conceptual model for translating policy into practice in ASPs⁹ and was integrated with a newly developed model describing business partnerships to promote healthy behaviors – Profitable Partnerships for Promotion and Prevention (4P).

A key feature of the systems framework⁹ is the identification of outside organizations with expertise and resources that can be leveraged to build the capacity of ASPs to meet policy goals. The principles underlying this partnership were to establish a network of local food sellers that can be easily accessed by ASPs dispersed geographically across 2 counties - convenient to access based on proximity for ASPs to grocery stores, where ASPs can purchase snacks that conform to the established set of policy guidelines and results in either maintaining or reducing current snack expenditures.

The underlying premise of the 4P model is that businesses can partner with community based programs for the promotion of healthy or the prevention of unhealthy behaviors while simultaneously having this partnership lead to additional “for profit” revenue. In the current context, the local grocery stores provided “healthful” snack menu items, which consist of fruits, vegetables, whole grains, at cost to the ASPs. In return, the ASPs offered the grocers exposure to the parents of children attending the ASPs through the distribution of coupons and promotional materials in the monthly newsletters sent home to parents. This provided a potential “return on investment” where the coupon and promotion materials serve as a driver of business back to the grocery store by parents that may not have shopped there before.

Instruments - Classification of Nutrition Quality of Snacks

The ASP staff recorded their snack offerings daily and saved a sample container of snack waste/wrappings from each snack served in a plastic sealable bag. On each Friday, a member of the research team would collect the records and sample snack waste of the previous week for data entry. Each food/beverage item was classified according to existing categories for snacks and included beverages:^{3,6} sugar sweetened beverages - soda, powered drink mixed, sport drinks, dairy - milk, string cheese; low nutrient density salty snacks - pretzels, chips; low nutrient density desserts - cookies; low nutrient density sweeteners - candy, frozen treats; non-fruit fruit -fruit roll ups; fruit leather; prepackaged fruit - applesauce, fruit in syrup; whole grains - 3 grams for fiber per serving, and fruits and vegetables either fresh, frozen, dried. A total of 42 unannounced weekly visits to each ASP were conducted to confirm, via direct observation, the accuracy of reported snack offerings. No evidence of inaccurate reporting was detected. Data were collected for 9 weeks during the Spring and Fall 2011, represents baseline snacks, and for 7 weeks in April and May 2012 post initiative after the changes in snacks were implemented across the 4 ASPs. Discounted snack prices were provided by the local grocery store, while the full retail price of the same items from the bulk warehouse club were retrieved via online and from store visits. Serving

sizes of each snack are based on existing guidelines for the amount of food or beverage to be served for snacks.³

Data Analysis

The reliable change index (RC) was calculated for each snack category using the number of times a snack category was served each week by the following formula: $RC = x_2 - x_1 / S_{diff}$, where x_2 and x_1 represent the baseline (Spring 2011) and post initiative (Spring 2012) servings/week, respectively, and S_{diff} represents the standard error of difference between 2 test scores.¹⁵ The S_{diff} is equal to the: $\sqrt{2(S_E)^2}$. The S_E (standard error of measurement) was calculated by: $S_E = s_1 \sqrt{1 - r_{xx}}$, where s_1 is the standard deviation of the Spring 2011 servings per week and r_{xx} is the reliability coefficient of the measure. For our analysis, we used .90 reliability coefficient. A reliable change index equal to or greater than 1.96 indicates significant changes occurred in the number of servings per week for each snack category. For snack categories where zero servings were observed at either measurement period of Spring 2011 or 2012, no analyses were computed. Cost estimates in cost/serving/child/day were calculated by adding all snack expenditures from August/December 2011 (pre intervention) and January/May 2012 (post intervention) and dividing them by the average number of children attending the ASPs during each time period and dividing this by the number of days snack was served. Additionally, cost comparisons were made between full retail price from the bulk warehouse club, the location where the programs were purchasing snacks prior to the initiative, and discounted price provided by the local grocery store.

Results

At pre-intervention (Fall 2011) a total of 90 operation days occurred where snack was served to approximately 461 children. This increased to 104 operation days at post-intervention where snack was served to 514 children (Spring 2012). Prior to the partnership, the ASPs purchased snacks from a single large-scale bulk warehouse club retail chain. To purchase snacks, the ASPs visited the warehouse club once or twice per month, traveling an average of 39 miles round trip (~50 minutes driving) for a single visit, based on Google Maps. The partnership with the grocery store reduced this distance to less than 13 miles round trip, ~24 minutes driving. However, because of the difference in shelf life between healthier snacks and those purchased prior to the Healthy Kids Healthy Snacks partnership, an average of 2 trips per month were made to purchase snacks. As part of the purchase, items were preordered approximately one week ahead of in store pickup. Despite the increase in trips to the grocery store, the overall amount of time and travel distance was reduced, with a single site at pre-initiative purchasing snacks from the warehouse club ~75 miles round-trip, whereas at post-initiative travel was reduced to ~16 miles round-trip.

The snacks served during Spring 2011, Fall 2011, and Spring 2012 are presented in Table 2. None of the sites at baseline or post initiative served milk or 100% juice. At baseline (Spring/Fall 2011) the ASPs were serving <0.7 servings/week of dairy, fruits, and no vegetables or whole grains. Conversely, the ASPs were serving 1.7 servings/week of sugar sweetened beverages, salty snacks, and desserts. By post-initiative, desserts, non-fruit fruit,

prepackaged fruits, and sugar sweetened beverages were eliminated, whereas salty snacks and sweeteners were substantially reduced. Additionally, increases were seen in dairy, fruits, vegetables, and whole grains, with the number of servings for fruit reaching the goal set forth by the ASP collaborative of offering 3 servings of fruit per week by the end of the first year.

At baseline, the ASPs spent approximately \$0.26 on each snack per child per day. The average cost of a snack per child per day decreased to \$0.24 using the grocery store partner. This translated into a \$1,069.12 savings for the same 104-day period. Cost comparisons were also made between the price per item based on the discount provided by the local grocery store and the cost per the same item based on the bulk warehouse club retail price. Cost per snack per child per day estimates were made based on an average 5 day/week snack schedule where a ASP served whole pieces of fruit each day, as indicated by the *Healthy Eating Standards*. The menu included apples on 3 days and bananas on 2 days. The average cost of a snack/child/day at local grocery store discounted price was \$0.25 (range \$0.23 for whole bananas to \$0.31 for whole apples) versus \$0.34 (range \$0.20 to \$0.44) from the warehouse club. Using a 180 operating day calendar (total number of days snack was served during Fall 2011 and Spring 2012) and serving ~500 children each day across the four ASPs, the total cost of snacks based on the discount price was \$22,860.00 versus \$30,285.00 if the same snacks were purchased at the warehouse club. This represents a 24.5% savings or a reduction in price of approximately \$7,425.00 during the same 180-day period.

Discussion

This study demonstrated that engaging community grocery stores in a collaborative partnership to provide discounted prices on healthful snacks can result in sizable price reductions for fruits and vegetables. This reduction, in turn, was associated with ASPs serving more fruits and vegetables daily. Importantly, the partnership has the potential for long-term sustainability, where ASPs can purchase healthful items on a regular basis from the local grocery store. Thus, not only can changes in the quality of snacks be achieved, but through such partnerships the price barrier for purchasing these snacks can be removed.

Prior studies^{4-6,16} indicate that the nutritional quality of the snacks served in ASPs do not meet existing nutrition policies. Interventions targeting the improvement in snack quality have been successful; yet, they have failed to address price barriers associated with the purchase of fruits and vegetables.^{4,6} Thus, whereas effective in the short term, the improvements observed in these studies are unlikely to be sustainable.

The findings from this study have important implications for snack policies in ASPs and for ASP leaders across the nation. Partnerships, such as the one described herein, should be sought with local and/or national grocery store chain, with the result of a perceptible and meaningful impact on the types of foods served to children attending ASPs. Programs are encouraged to begin conversations with grocery stores to identify ways in which this type of partnership can be made. These partnerships could take the form of customer loyalty programs, where ASPs are provided a “discount card” that is swiped upon checkout.⁹ The associated discounts could be for pre-approved items only that meet existing nutrition policy

for ASPs.³ Such partnerships would have an immediate impact on the millions of children attending ASPs nationwide.²

Community partnerships with grocers also have the potential to be more effective than other cost saving strategies employed by afterschool ASPs, such as buying on sale, in season, value size. Buying items on sale is labor intensive, sale prices and in-season items must be sought out, and inconsistent - an item may be on sale one week and not the next. Further, buying in bulk is often not a feasible option because of the storage limitations that these ASPs encounter, such as limited shelf life of perishable items. Therefore, creating a partnership like the one presented in this paper may be the most successful strategy for reducing the cost barrier for ASPs.

When attempting to create these partnerships ASPs should highlight 3 benefits to the grocer. Afterschool programs should emphasize both increased guaranteed revenue that the grocers will gain from the partnership, and the potential tax benefits that grocer will enjoy - reductions in cost for groceries can be classified as in-kind donations to non-profit organizations. By partnering with other ASP sites to purchase snacks together ASPs could also increase their buying power making partnerships more attractive.⁹ Further, ASPs can emphasize the exposure to potential new customers - children and their parents - that they can provide by distributing exclusive coupons to parents, displaying signage in the ASP and providing information in parent newsletters about the partnership. Providing coupons to parents represents a low cost approach to increasing the grocery store's return on investment by potentially driving new customers back to the store to purchase food items.

An important finding was the elimination of several unhealthy food categories from the snacks served during the post-initiative. These included not serving any desserts, sweeteners, non-fruit fruit and prepackaged fruit, and sugar-sweetened beverages – items routinely served prior to the adoption of the nutrition policies. The elimination of these food items directly corresponded with a substitution of fruits and vegetables. The beverages previously served were substituted with water, which was made available during each snack through water fountains, as well as available throughout the duration of the ASPs when children were thirsty. This is consistent with current recommendations for water availability in ASPs receiving federal reimbursement for snacks¹⁷ and recently published guidelines.³ Our findings differ from a prior study⁷ that reported an increase in water availability, yet did not report a reduction in other beverages served (ie, 100% juice or milk). Thus, by specifying an elimination of all flavored and/or sugar-sweetened beverages, a reduction in overall snack cost and snack cost per child can be made along with a reduction in empty calories served.

Strengths of this study include the collaborative partnership between the community and university, the detailed collection of the types of foods/beverages served using direct observation and confirmation of snacks and their associated cost, and the implementation of the initiative in existing community based ASPs.

Limitations

Several limitations need to be addressed. First, only 4 locations participated in this pilot initiative. At this time, it is unclear if similar changes in snacks and costs would be observed in a larger sample of ASPs. Other studies ⁶ have reported improvements in the nutritional quality of snacks across a large number of ASPs. Thus, we believe if the initiative were scaled up to a larger number of ASPs the impact on foods/beverages would be similar.^{4,6} Also, price is intricately associated with the types of foods/beverages served. If changes in the snacks served are achieved, reductions in costs based on a standard price reduction as negotiated by the grocery store should result in savings.

Conclusion

In conclusion, the preliminary findings from this study indicate that community partnerships among ASPs and grocery stores can result in improvements in the nutritional quality of snacks served and, importantly, in the reduction of costs associated with serving healthier snacks. Additional work that evaluates this type of partnership on a larger scale is necessary.

Implications for School Health

National policies and standards call upon ASPs to improve the nutritional quality of snacks served to the children attending.⁹ However, cost is cited as a major barrier to achieve these policy/standards' goals.¹² This study demonstrates that innovative partnerships with local food sellers can result in, not only improved snack quality, such as increases in fruits/vegetables and elimination of sugar-based foods/drinks, but that these changes can be achieved without increasing total snack expenditures. Afterschool programs, therefore, should seek out community partners, such as grocery stores, and negotiate price discounts for items that meet the Healthy Eating Standards.

Human Subjects Approval Statement

All methods described herein were approved by the University of South Carolina Institutional Review Board.

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Table 1
Nutrition Policies for Snacks Served in Afterschool Programs

The program serves a fruit or vegetable 3 times per week (fresh, frozen, canned or dried without added sugar) with intent to reach 5 times per week by March 2013

Has water accessible at all times

Only serves foods made without trans fat

Serves (ASP) beverages that are not made with caloric sweeteners. Beverages made with caloric sweeteners include but are not limited to sodas, juices, juice drinks/ades, sports drinks or iced teas.

Serves no candy or other foods that are primarily sugar-based

Note: These policies were modeled from the National AfterSchool Association standards for out-of-school time programs.

Table 2
Average Servings for Snacks at Baseline (Spring/Fall 2011) and Post-Initiative (Spring 2012)

Snack Food/Beverage Category	Servings per Week						Reliable Change Index ^a
	Spring 2011		Fall 2011		Spring 2012		
	M	SD	M	SD	M	SD	
Dairy (eg, yogurt, cheese)	0.1	±0.2	0.2	±0.4	1.0	±0.5	8.90
Fruits (eg, fresh, frozen, dried)	0.1	±0.5	0.7	±1.5	3.5	±1.5	15.20
Vegetables	0.0	±0.0	0.0	±0.0	1.2	±1.0	--- ^b
Whole Grains	0.0	±0.0	0.0	±0.0	0.2	±0.1	--- ^b
Desserts (eg, cookies, pies, snack cakes, cereal bars, granola bars)	2.0	±1.4	2.3	±1.8	0.0	±0.0	--- ^b
Salty snacks (eg, pretzels, crackers, tortilla chips, snack mixes)	3.1	±1.6	2.8	±1.6	0.8	±1.0	3.21
Sweeteners (eg, candy, flavored ice pops, jam)	0.2	±0.5	0.2	±0.5	0.0	±0.2	0.89
Non-fruit fruit (eg, fruit snacks, leather)	0.7	±1.1	0.3	±0.8	0.0	±0.0	--- ^b
Sugar-sweetened beverages (eg, non-100% juices, powdered drink mixes, punch)	1.7	±2.0	2.1	±2.0	0.0	±0.0	--- ^b
Pre-packaged fruit (eg, sugar-added apple sauce, fruit in syrup)	0.6	±1.0	0.1	±0.4	0.0	±0.0	--- ^b
Number of weeks of snack information per site	9		9		9		7

^aReliable Change Index comparing differences in servings/week from Spring 2011 vs. Spring 2012. Values above 1.96 are statistically significant.

^bNo analyses were performed due to the complete absence of the snack type (ie, zero) from either the Spring 2011 or Spring 2012 measurement period