Change in Nutrition and Physical Activity Behaviors Among SNAP-Eligible 4th and 5th Grade Students: A Multi-County Study

THE UNIVERSITY OF ARIZONA | COLLEGE OF AGRICULTURE AND LIFE SCIENCES

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Abstract

The purpose of this study was to measure change in nutrition and physical activity behaviors, through the Supplemental Nutrition Assistance Program-Education Program (SNAP-Ed) instruction, among 4th and 5th grade students. Demographic and pre and post test data were analyzed using descriptive statistics and paired t-tests. It was found that general nutrition education and physical activity efforts were associated with a significant increase in reported fruit, whole grain, and total beverage consumption, as well as a significant increase in during-school and after-school physical activity.

Objective

The objective in this study was to evaluate change in nutrition and physical activity behaviors through SNAP-Ed instruction among limited-income 4th and 5th grade students.

Hypothesis

It was hypothesized that nutrition education would result in improved nutrition and physical activity behaviors that align with the USDA recommendations for this 4th and 5th grade age group (ages 9-10 years).

Background

- In the US, 15% of children aged 6-11 years are overweight (95th percentile of gender-specific BMI for age) and another 30% are at risk for overweight (85th percentile of gender-specific BMI for age).
- The USDA recommendations for nutrition and physical activity behaviors that promote energy balance in children include:
  - Making half your grains whole.
  - Selecting low-fat or non-fat milk.
  - Eating or drinking 3 servings of dairy daily.
  - Consuming 1 ½ cups of fruit daily for boys and girls.
  - Eating 2 cups of vegetables for girls and 2 ½ cups for boys daily.
  - Participating in 60 minutes of physical activity per day.
- The *University of Arizona Nutrition Network* (UANN):
  - Is a statewide collaboration of nutrition and physical activity professionals that promote healthy lifestyles to prevent obesity.
  - Provides nutrition and physical activity education to people who receive and people who are eligible for the Supplemental Nutrition Education Program (SNAP*).

* SNAP was formerly known as *The Food Stamp Program*.

Methods

- Participating UANN Counties included: Cochise, Maricopa, Pima, Pinal, and Santa Cruz.
- Out of the 25% of the elementary classrooms randomly selected (minimum of 2 classrooms per UANN county unit), 11% participated (n=39 classrooms).
- Students surveyed Sept/Oct 2012 for pretest (N=854) and Apr/May 2013 for posttest (N=870).
- Demographics: 41% 4th grade/59% 5th grade; 51% female/49% male, mean age 9.82 years.
- Usual nutrition education was taught throughout the year.
- Survey instrument used questions adapted from School Physical Activity and Nutrition Survey and Day in the Life Questionnaire.
- The frequency of whole grains, fruit, vegetables, water, milk, and sugar-sweetened beverages intake was assessed.
- Physical activity during and after school was assessed.

Outcome Measures/Analysis

- Descriptive statistics included: demographics, consumption of whole grains, fruits, vegetables (**Table 1.**), milk, water, and sugary beverages (**Table 2.**), and active and passive times (**Table 3.**).
- Paired t-tests were used to compare Fall and Spring classroom averages, weighted by Fall classroom size.
- Questionnaires included in the analysis were at least 90% completed.

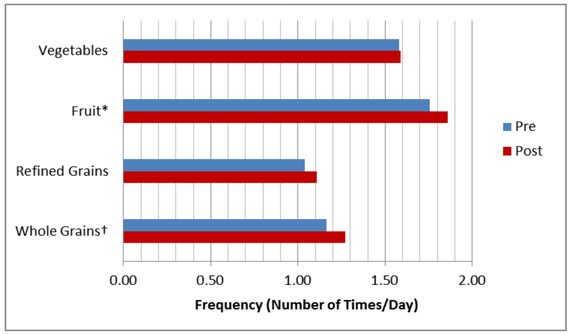
Results: Key Foods

Table 1. Key food consumption (times consumed).[a]

	Pre (Fall)		Post (Spring)				
	Mean	SD	Mean	SD	Change	% Change	p[b]
Whole Grains	1.16	0.32	1.27	0.37	0.11	9.00	0.056†
Refined Grains	1.04	0.29	1.11	0.28	0.07	7.00	0.142
Fruit	1.76	0.39	1.86	0.36	0.11	6.00	0.039*
Vegetables	1.58	0.43	1.59	0.42	0.01	1.00	0.426

a. Base unit is Classroom (n=39)
b. Paired T-Test. *Significant at p<0.05; **highly significant at p<0.01; †trend to significance .05<p<0.10

Figure 1. The reported frequency of consuming key foods on the previous day in the Fall and Spring.



Paired T-Test. *Significant at p<0.05; **highly significant at p<0.01; †trend to significance .05<p<0.10

Results: Beverages

Table 2. Beverage consumption (times consumed).[a]

	Pre (Fall)		Post (Spring)				
	Pre	SD	Post	SD	Change	% Change	p[b]
Water	4.95	0.74	4.97	0.74	0.02	0.37	0.590
Sugary Beverages	1.15	0.36	1.37	0.32	0.22	19.20	0.002**
Milk	1.83	0.27	1.86	0.38	0.03	1.62	0.669
Total Beverage Intake	7.93	0.95	8.20	1.05	0.27	3.41	0.045*

a. Base unit is Classroom (n=39)
b. Paired T-Test.
*Significant at p<0.05; **highly significant at p<0.01; †trend to significance .05<p<0.10

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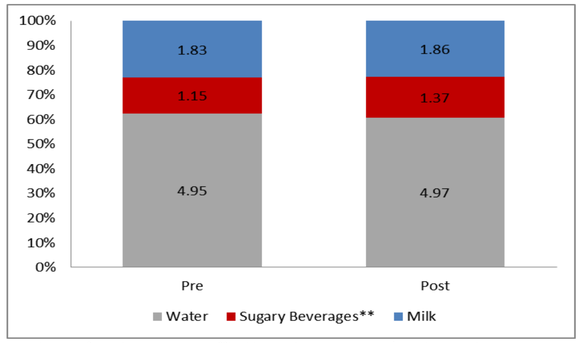


Paired T-Test. *Significant at p<0.05; **highly significant at p<0.01; †trend to significance .05<p<0.10

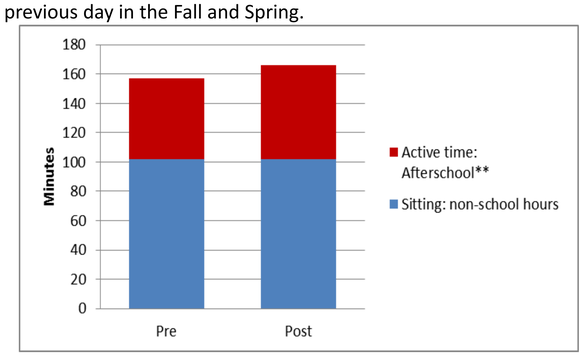
Results: Physical Activity

Table 3. Active and Passive Times (in minutes).

	Pre (Fall)		Post (Spring)				
	Pre	SD	Post	SD	Change	% Change	p[b]
Active time: Afterschool	54.99	12.51	64.31	10.31	9.32	16.95	<0.001**
Sitting: non-school hours	102.13	29.58	101.64	28.19	-0.49	-0.48	0.885
PE Activity	19.95	14.59	14.67	12.02	-5.28	-26.46	0.047*

a. Base unit is Classroom (n=39)
b. Paired T-Test. *Significant at p<0.05; **highly significant at p<0.01; †trend to significance .05<p<0.10

Figure 3. The reported minutes of active and passive times the previous day in the Fall and Spring.



Paired T-Test. *Significant at p<0.05; **highly significant at p<0.01; †trend to significance .05<p<0.10

Conclusion/Implications

- General nutrition education and physical activity efforts were significantly associated with an increase in reported whole grain, fruit, and total beverage consumption as well as increased lunch-break and after-school physical activity.
- Increases in total beverage consumption, driven by sugar-sweetened beverages, suggests the need for targeted nutrition education emphasizing the benefits of healthier beverage choices such as water and milk.
- Greater changes in all food and beverage consumption as well as increased physical activity behavior may be seen with a more targeted nutrition education and physical activity approach in schools.
- An area for future research would be to study the effects of increased levels of school-wide nutrition education and physical activity initiatives on changes in food and beverage consumption as well as physical activity behaviors.

Acknowledgments

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Courtesy of the SNAP Photo Gallery provided as a complimentary resource by the USDA's Food and Nutrition Service (FNS), Supplemental Nutrition Assistance Program (SNAP): http://snap.nal.usda.gov/photo-gallery

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