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Abstract

The Healthy, Hunger-Free Kids Act (HHFKA) of 2010 sets new nutrition standards for schools, requiring them to serve a greater variety and quantity of fruits and vegetables. Extension educators in New Jersey partnered with school nutrition professionals to implement a school wellness initiative that included taste-testing activities to support schools in achieving the milestones established by the HHFKA. Results indicated that "previewing" foods may influence students' interest in, and acceptance of, new foods, opening up outreach and partnership opportunities for Extension educators to consider when working to promote school wellness.

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Introduction

Childhood obesity rates, although leveling off, continue to be of concern. (Ogden, Carroll, Kit, & Flegal, 2012). At the same time, children's diets are deficient in one or more nutrients. According to the Centers for Disease Control and Prevention (2009), recommendations for children's fruit and vegetable intake are currently unmet. To address these concerns, the Healthy, Hunger Free Kids Act (HHFKA) of 2010 updated nutrition standards to school meals. One key change requires school nutrition professionals (SNP) to serve a greater variety and quantity of fruits and vegetables (United States Department of Agriculture, 2010).

Schools are an ideal setting to initiate change, and Extension educators are ideally positioned to

partner in this change process. Comprehensive, integrated nutrition services in schools can improve the nutritional status, health, and academic performance of children (American Dietetic Association, Society of Nutrition Education & School Nutrition Association, 2010). Research indicates that elementary SNP have a keen interest in expanding the use of the cafeteria for student/family education (Ritchie et al., 2009). Extension educators can play an integral role in supporting SNP by implementing nutrition education programs and taste-testing activities to increase students' acceptance of fruits and vegetables (Winter, Stluka, Wells, Wey, & Kemmer, 2012). Studies indicate that children's taste preferences may influence future fruit and vegetable intake (Lakkakula, Geaghan, Zanovec, Pierce, & Tuuri, 2010). Grow Healthy (GH), a statewide school wellness collaboration between SNP and Extension, paired nutrition lessons with taste-testing activities, aiming to demonstrate student acceptance of new fruits and vegetables in the classroom and cafeteria.

Project Overview

Funded through USDA Team Nutrition, GH features nutrition lessons, including a tasting component. Partnering with the Rutgers Department of Agriculture, the Family and Community Health Sciences Department (FCHS) of Rutgers Cooperative Extension collaborated with elementary schools to implement GH in 9 counties throughout New Jersey.

GH helped schools identify methods that link classroom education to foods served in the cafeteria and explore strategies to engage families and communities in school wellness. In the classroom, FCHS educators, schoolteachers, and trained volunteers delivered four-six nutrition lessons to students in grades K-6. Lessons presented basic nutrition concepts, with certain lessons including fruit/vegetable tastings.

Methods

During the 2011-2012 school year, two school-wide tastings were conducted at each of the nine pilot schools. Schools selected a variety of fruits and vegetables (Table 1) for students to taste that complemented the lesson and would help SNP support new HHFKA recommendations. Most schools selected new fruits and vegetables that could potentially be added to the menu. One school selected recently added menu items to promote student acceptance of those items.

In most schools (seven of nine) SNP prepared and assisted in serving the food, following food safety and food allergy protocols.

Table 1.

Fruits & Vegetables Offered in Taste-Testing Experiences

County of School	Taste-Testing #1	Taste-Testing #2
Atlantic	Raw Green Beans Served with Low-fat Ranch Dressing	Canned Chick Peas Tossed in a Light Vinaigrette
Burlington	Cooked Spaghetti Squash Served with a Light Amount of Pepper	Raw Sugar Snap Peas

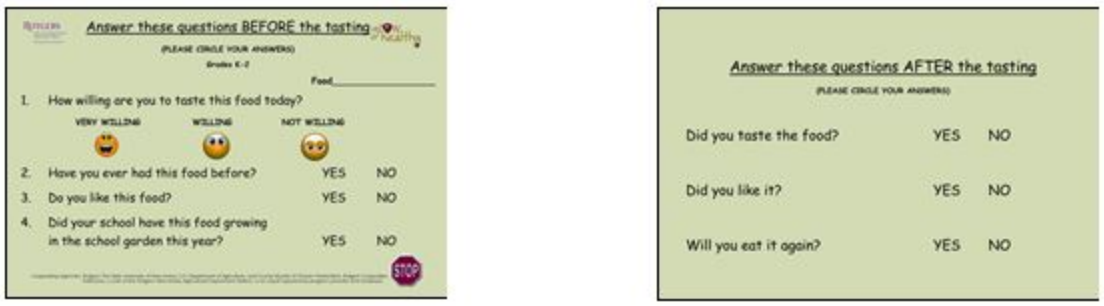
Cape May	Raw Baby Spinach Tossed Lightly in a Vinaigrette	Raw String Beans
Gloucester	Raw Baby Spinach Tossed Lightly in a Vinaigrette	Raw Sugar Snap Peas
Hunterdon	Roasted Zucchini and Summer Squash, Seasoned Lightly with Pepper	Raw Sugar Snap Peas
Mercer	Roasted Butternut Squash Seasoned with Salt and Pepper	Raw Sugar Snap Peas
Somerset	Roasted Sweet Potatoes	Raw Cantaloupe
Union	Roasted Sweet Potatoes	Raw Snow Peas
Warren	Raw Baby Spinach	Raw Sugar Snap Peas

Tasting cards (one for K-2 and one for 3-6), were developed and used to obtain tasting preference data (Figure 1.) Prior to each tasting, students received a tasting card and completed the front (pre-evaluation). After each tasting, they completed the back (post-evaluation).

Out of a total of 7,310 eligible students, 6,012 completed the cards (82%).

Figure 1.

Example of Front (on left) and Back (on right) of K-2 Tasting Cards for Grow Healthy Taste-Testing Activities



Results and Discussion

Data indicated that students were willing to participate in tastings in the classroom setting, and that the majority were willing to eat the foods again. Of the students who completed the tasting cards, 83% were either "willing" or "very willing" to taste the food and 62% were willing to eat the food again (Table 2.).

Table 2.

Tasting Card Results by Grade Subgroups and All Grades

Tasting Card Results	All Foods Tasted		Totals
	Grades K-2 n=2,898 %	Grades 3-6 n=3,114 %	All Grades n=6,012 %
Pre-Evaluation			
Very willing to taste	49	45	47
Willing to taste	29	43	36
Not willing to taste	22	12	17
Had the food before	46	56	51
Post-Evaluation			
Tasted food	83	93	88
Liked the food	62	65	63
Will eat food again	58	65	62

As a result of student responses to tastings, two schools added taste-tested produce to cafeteria menus: sugar snap peas as a side dish and spinach as a side dish, salad, and entrée. Anecdotal reports from those schools indicated increased sales of a la carte salads and reduced plate waste as a result of adding taste-tested foods to salads. The school that taste-tested recently added menu items reported increased student purchases of those foods after the taste-testing activities. One school reported feedback from parents, indicating that children were requesting the foods taste-tested and served at school to be served at home.

Conclusion

New school meal patterns and growing interest in school wellness offer opportunities for Extension to expand outreach and attract new audiences. Collaborations between Extension educators and SNP can result in valuable partnerships that provide opportunities for implementing new nutrition standards in schools, including serving a greater variety and quantity of fruits and vegetables.

For SNP, the data from the GH tastings and anecdotal reports suggest that tastings could be valuable tools to help meet new HHFKA recommendations. Given the new fruit and vegetable recommendations, SNP may be more willing to apply tools like tastings to meet these federal guidelines.

For students, the data suggest that "previewing" foods as part of classroom educational experiences may influence their interest in, and acceptance of, these foods. Anecdotal reports from SNP and families offer additional insights into the ability of such collaborations to influence the purchase and consumption of fruits and vegetables in the cafeteria and at home. Additional research is required to

confirm and evaluate these impacts.

While the study reported here suggests positive outcomes from implementing tastings, it included limitations. Schools that seek Extension support for collaborative school wellness projects like GH may be more likely to participate in health-focused activities such as tastings. Likewise, exposing students to peers and adults who are more likely to role model healthy behaviors (eating more fruits and vegetables) may increase their willingness to try new foods over schools where wellness is not so enthusiastically embraced. In addition, the level of SNP participation in GH taste-testing activities varied significantly. Some SNP were highly involved, while others had limited involvement due to time, budgetary, and other constraints. SNP with increased involvement seemed more aware of the benefits of utilizing tastings to increase healthful choices on the menu.

Despite the limitations, fruit and vegetable tastings proved to be a popular and valuable component of the GH initiative. They expanded Extension outreach opportunities to support new federal regulations, invited new collaborations, and generated an interest in and excitement about fruits and vegetables within participating schools.

Acknowledgments

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