

Food, Fun and Reading: Pilot Study of Updated and Expanded Preschool Curriculum

Food, Fun and Reading is a curriculum for early education children. Originally developed by University of Vermont Extension, Utah SNAP-Ed gained permission to update it to reflect 2015 - 2020 USDA Dietary Guidelines. Food, Fun and Reading was pilot tested in eight Utah counties. Based on feedback from nutrition educators who taught the lessons, changes were made following the pilot. After completing the lessons, parents reported their children talking about and eating more healthy foods. Parents also reported preparing a greater number of healthy foods. Using insight gained through pilot testing Food, Fun and Reading was finalized and implemented statewide.

BEST PRACTICES

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According to the National Institutes of Health (2018) the comparison of food intake among U.S. children ages 4–8 years old with the 2010 Dietary Guidelines for Americans indicates that many children are not meeting daily serving recommendations of fruits (39.6% of males; 41.5% of females); vegetables (94.5% of males; 94.8% of females); or whole grains (99.0% of males; 99.7% of females). Children from lower-income families who receive Supplemental Nutrition Assistance Program (SNAP) benefits may have less healthy dietary patterns than children from higher socioeconomic households (Andreyeva, Tripp, & Schwartz,



2015). Evidence suggests that eating patterns remain somewhat consistent between childhood and adolescence, lending support for the need to promote healthy eating patterns early in life (Ambrosini et al, 2014).

Murimi et al. (2018) found that nutrition education programs for youth of all ages may be more effective when they include developmentally appropriate activities and hands-on learning components. This format may be even more important for interventions targeting preschool students. Hands-on activities that reinforce nutrition education

lessons for preschool students may include reading stories, acting out plays or skits, providing sensory experiences such as taste tests, and playing interactive games.

Reading illustrated stories to preschool-aged children can help focus their attention and prompt better retention of the information presented (Greenhoot et al, 14). Gripshover & Markman (2013) found that using storybooks and age-appropriate activities resulted in an increase in the child's knowledge of nutrition and their intake of vegetables at snack time.

The purpose of the study reported here was to pilot test the effectiveness and feasibility of an updated and revised nutrition and physical activity education curriculum which uses children's books to teach about healthy eating and nutrition. A pilot study was conducted to evaluate changes in children's knowledge of the MyPlate food groups and eating behavior following program participation. Additionally, nutrition educators who taught the program provided qualitative feedback regarding program feasibility.

OBJECTIVE

Food, Fun and Reading was originally developed in 1998 by the University of Vermont Extension. With permission, Utah State University Extension expanded upon and updated the program to reflect the 2015 - 2020 USDA Dietary Guidelines. Pilot testing allowed for the study of program effectiveness and feasibility of the curriculum. Limiting the number of counties that taught Food, Fun and Reading in the pilot phase allowed for the opportunity to evaluate survey instruments as well as program delivery options before implementing

on a larger statewide scale. The pilot study also provided the opportunity to evaluate changes in children’s knowledge of the MyPlate food groups, and their eating behaviors following program participation. Another objective of pilot testing was to gain insight and feedback from nutrition educators regarding program content, delivery method and survey instrument dissemination prior to finalizing the Food, Fun and Reading curriculum. The parent and child surveys were approved by Utah State University’s Internal Review Board.

BACKGROUND

Eight counties pilot tested the *Food, Fun and Reading* program. Some counties taught the program more than once. Paraprofessional nutrition educators taught 13 program series with an estimated 452 youth who participated during a three-month pilot period. Six lessons were taught as a series. Lessons included MyPlate, Grains, Dairy, Fruits, Vegetables, and Protein. Using USDA MyPlate guidelines, the lessons were taught by 1) reading a related children’s storybook, 2) talking about MyPlate food groups in an interactive way, 3) making a healthy snack, and 4) doing a fun physical activity. For example, the Grains lesson starts with 1) reading *The Little Red Hen*; 2) talking about whole grains using a large interactive board that has bran and grain parts that can be removed and replaced; 3) dancing the *The Little Red Hen* chicken dance with chicken dance music and large poster with pictures of children showing the steps and 4) making and enjoying either a whole grains snack mix or whole wheat tortillas.

Handouts reinforcing the nutrition concepts for each lesson were sent home with children. These included:

- a letter describing what the child learned in class
- USDA 10 Tips information sheet (related to food group covered)
- activity sheet for the child to complete at home
- recipe card incorporating ingredients from the food group for parents to try at home.

The target audience included children in preschool through first grade in areas where SNAP-eligible participants resided, or at least 50% of the population was at or below 185% of the federal poverty level. Program locations included public libraries, community and recreation centers, and county Extension offices. Parents had the option of staying for lessons in some

locations.

Parents were asked to complete a retrospective post-then-pre survey after their child finished the sixth class, either via a paper-based or an online survey. In this optional survey, parents were asked to rate how often their child talked about and ate healthy foods from the MyPlate food groups and how often they prepared healthy foods prior to and after their child attended the program. Participants responded to the retrospective post-then-pre questions using a 5-point Likert scale ranging from 1 (never) to 5 (always). The parent survey also asked parents to provide demographic information about their child and to answer questions about the food security status of the household. Additionally, pre/post surveys were distributed to children for them to complete at the first and last sessions. Using pictures as a guide, children were asked to identify which foods fit into certain food groups.

FINDINGS

NUTRITION EDUCATOR FEEDBACK

The primary purpose of the pilot study was to test the usefulness and effectiveness of the updated and expanded curriculum. Qualitative feedback from nutrition educators who taught the lessons was essential. Giving those who are “on the front line” a chance to give suggestions and advice was not only helpful in program design and delivery, but it also gave nutrition educators ownership and buy-in to the curriculum they were teaching. One nutrition educator wrote in her end-of-year review “Thank you for giving me the chance to tell you what worked and what didn’t with Food, Fun and Reading. Knowing you care about me and that if I think a lesson is good makes me feel important.”

Nutrition educator feedback generally indicated that lessons were feasible to implement at various teaching locations and the cost of snack foods and materials was within the provided SNAP-Ed budget. Feedback regarding the children’s books indicated that some books were too long for a young child’s attention span. Several nutrition educators provided suggestions on how to engage children while reading such as adding motions to go with the story or asking children to name their favorite foods from the food group highlighted in the story.

Regarding the nutrition education lesson content,

nutrition educators indicated that some of the concepts included in lessons were too advanced for young students. For other lessons, it was reported that the lessons were too short, and more nutrition education content needed to be included. Specifically, nutrition educators requested content that includes a hands-on component, such as a matching game, to reinforce concepts.

Nutrition educators indicated that some of the physical activities were too advanced for children in this age range, particularly competing in a relay game or performing certain physical activity motions in response to verbal or written prompts.

As a result of feedback gathered from nutrition educators, the authors revised and updated the curriculum. Based on comments regarding the children's books, a section was added in the curriculum entitled "Tips to Engage Children While Reading," incorporating suggestions to engage youth. For certain books, suggestions of pages to skip without diminishing the content of the story were provided. The nutrition education portion of certain lessons was also updated based on nutrition educator feedback. For example, a more straightforward visual of whole grain with removable parts was created. Additional content and visuals were added to reinforce nutrition concepts in the vegetable group and fruit group, which nutrition educators commented were too short, such as a rainbow with color-coordinating vegetables to represent choosing a variety of colors from this food group. Suggestions were added to certain lessons of how to modify physical activities for younger children, such as directing children to hold an item rather than try to balance it during a relay and prompting them to do circular arm motions rather than jumping jacks. As a result of feedback on the difficulty of recipe preparation for a snack in the protein lesson, a third recipe option of turkey and cheese stacks was included.

YOUTH SURVEYS

The original *Food, Fun and Reading* curriculum developed by the University of Vermont Extension included pre/post surveys distributed to children. However, a key finding of the Utah State University pilot study was that surveying children was difficult, and the results were inaccurate. Children seemed too young to conceptualize the task. In some instances, parents assisted youth in completing surveys, which resulted in invalidating results. Additionally, it was difficult to do pre/post tests with the same children during a six-week program because attendance varied from week to week.



Nutrition educators described the task as cumbersome and frustrating. Although nutrition educators are aware of the mandatory research component of SNAP-Ed and are used to delivering adult surveys, they reported that youth surveying was not effective. Due to these challenges and the ineffectiveness of the youth survey, it was removed from the Food, Fun and Reading program.

PARENT SURVEYS

Parent surveys proved more effective and useful than youth surveys. Individual retrospective post-then-pre-parent answers were compared using a Wilcoxon Signed Rank Test. As shown in Table 1, the majority of parental responses came from parents of white female children who were from 3-4 years of age. Nearly one-third of parents indicated that they worried or stressed about having enough money for nutritious meals either some of the months or all the months in the past 12 months. As shown in Table 2, results indicated a statistically significant increase in the frequency of children talking about healthy foods from the MyPlate food groups and in the consumption of vegetables, whole grains, and lean protein after participating in the program lessons ($p < 0.05$). There was also a statistically significant increase in parents preparing healthy foods from the MyPlate food groups after program participation ($p < 0.05$). Table 2 includes the medians, means, and p-values for the seven post-then-pre-questions from the parent survey.

SUMMARY

The pilot study proved to be a necessary step and a valuable way to gather insight into the effectiveness and age-appropriateness of the program curriculum prior to implementing it statewide. Specifically, the ineffectiveness of youth surveys resulted in the removal of that evaluation tool. Being able to do so prior to statewide programming eliminated possible frustration by nutrition paraprofessionals attempting to collect pre-posttests. The pilot study identified the difficulty in distributing and collecting youth surveys as well as indicating the results were not usable. The pilot study results were promising yet the small sample size (31) of parent surveys is a limitation. Research through parent surveys will continue with a larger sample size as the Food, Fun and Reading program continues statewide in Utah.

Food, Fun and Reading is available free of charge at www.foodfunreading.usu.edu. Each lesson includes 1) lesson guide; 2) parent letter; 3) parent handout; 4) recipe card; 5) kids take-home activity sheet; 6) additional posters or activity cards.



You may click here to access the references, tables, and graphs for this article.



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References

- Ambrosini, G. L., Emmett, P. M., Northstone, K., & Jebb, S. A. (2014). Tracking a dietary pattern associated with increased adiposity in childhood and adolescence. *Obesity (Silver Spring)*, *22*(2), 458–465. doi:10.1002/oby.20542
- Andreyeva, T., Tripp, A. S., & Schwartz, M. B. (2015). Dietary quality of Americans by Supplemental Nutrition Assistance Program participation status a systematic review. *American Journal of Preventive Medicine*, *49*(4), 594–504. doi:10.1016/j.amepre.2015.04.035
- Greenhoot, A. F., Beyer, A. M., & Curtis, J. (2014). More than pretty pictures? How illustrations affect parent-child story reading and children's story recall. *Frontiers in Psychology*, *5*, 738. doi:10.3389/fpsyg.2014.00738
- Gripshover, S. J., & Markman, E. M. (2013). Teaching young children a theory of nutrition: Conceptual change and the potential for increased vegetable consumption. *Psychological Science (0956-7976)*, *24*(8), 1541–1553. doi:10.1177/095679761247482
- Murimi, M. W., Moyeda-Carabaza, A. F., Nguyen, B., Saha, S., Amin, R., & Njike, V. (2018). Factors that contribute to effective nutrition education interventions in children: A systematic review. *Nutrition Reviews*, *76*(8), 553–580. doi:10.1093/nutrit/nuy020
- National Institutes of Health, National Cancer Institute, Division of Cancer Control and Population Sciences (2018). *Usual dietary intakes: Food intakes, U.S. population, 2007–10*. Retrieved from <https://epi.grants.cancer.gov/diet/usualintakes/pop/2007-10/>

Demographic Characteristics of Fun & Reading Parent Survey

Table 1.

Demographics	Parent Responses as a Percentage of the Sample (n = 31)
<hr/>	
Gender of Child	
Female	61
Male	39
Age of Child	
Less than 3 years old	24
3–4 years old	34
5–6 years old	24
7 years old	17
Not reported	1
Race of Child	3
American Indian/Alaska Native	7
Asian	0
Black/African American	0
Native Hawaiian or Pacific Islander	0
White	90
Ethnicity of Child	
Non-Hispanic	74
Income Indicators	
Worried or stressed about having enough money for nutritious meals in the past 12 months	
All Months	4
Some Months	32
Never	61
Not reported	3
Received benefits from federal food assistance program in the past 12 months	
All Months	14
Some Months	7
Never	79

Changes in Nutrition-Related Behaviors in Child and Adult Participants

Table 2.

Table 2 Summary: Statistically significant increase in the frequency of children talking about healthy foods and in the consumption of vegetables, whole grains, and lean protein after participating in the program lessons. There was also a statistically significant increase in parents preparing healthy foods from the MyPlate food groups after program participation.

Retrospective Pre/Post Parent Survey	n	Pretest		Posttest		P-Value
		Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	
Questions^a						
How often has your child talked about healthy foods?	29 31 30	2.77 (1.07)	3.00 (2, 3.25)	3.70 (0.98)	4.00 (3,4)	<.000
How often has your child eaten the following healthy foods?	28 30	3.71 (1.04)	4.00 (3,5)			
	30	4.43 (0.57)	4.00 (4,5)			
		4.03 (0.89)	4.00 (3.75,5)			
Vegetables.....	24	4.21 (0.79)	4.00 (4,5)	4.13 (0.76)	5.00 (4,5)	0.002
Fruits.....		4.53 (.629)	5.00 (4,5)	4.52 (0.57)	5.00 (4,5)	0.180
Whole grains.....				4.32 (0.65)	4.00 (4,5)	0.014
Lean protein.....		4.00 (.659)	4.00 (4,4)	4.42 (0.67)	5.00 (4,5)	0.035
Dairy.....				4.61 (0.50)	5.00 (4,5)	0.180
I prepare healthy foods for meals and snacks.				4.33 (.482)	4.00 (4,5)	0.005

Healthy foods in the questions refer to fruits, vegetables, whole grains, lean protein, and dairy.

P < 0.05 is considered significant; SD is standard deviation; IQR is interquartile range.

^aValues are mean and standard deviation from a Likert scale (1 = *never*, 2 = *seldom*, 3 = *sometimes*, 4 = *usually*, 5 = *always*). Comparisons performed using a Wilcoxon Signed Rank Test.