Impact of the MyPyramid Color-bar Signage System on fruit and vegetable choices and consumption among Kindergarteners

Kavanagh K1, Greer B2, Perry-Burst C3, Spence M4. 1Department of Nutrition, The University of Tennessee, Knoxville; 2Family and Consumer Science, The University of Tennessee, Knoxville; 3Knox County School System, Knoxville, TN

Abstract

The purpose of this study was to evaluate the impact of the MyPyramid Color-bar Signage System, which is a unique, targeted environmental change for school cafeterias paired with nutrition education, designed to increase fruit and vegetable consumption among Kindergarteners in an inner city school. The color-bar system is an educational tool to assist pre-readers with choosing a variety of colors at their meals. A nutrition education lesson designed to teach students about MyPyramid and the signage system was introduced to students in the intervention school Kindergarten classrooms during the week that the signage system was implemented in the cafeteria. A second school served as the control. Students’ food selection was assessed using photographs of student trays. Post-consumption trays were collected and food was measured to assess plate waste and calculate consumption.

Methods

MyPyramid and how to use the MyPyramid Color-bar Signage System was introduced to students in the intervention school cafeteria during the education and signage was always paired and this project evaluated the entire exposure. An example of a cafeteria poster is shown in Figure 1.

Assessment of Consumption

Photographs of trays (See Figure 2)

- Disposable trays were pre-labeled with numbered, removable stickers
- After trays were purchased, children to a small table where a digital camera was mounted
- Research assistants removed the numbered sticker, and placed the sticker on either a pink or a blue card to identify the child’s gender
- This card was placed beside the tray and a photograph was taken

Test meals

- At both schools, 3 samples of each offered food was collected, weighed, and a mean weight (in grams) calculated

Creation of Consumption Variables

- Upon completion of the meal, a team of research assistants collected, carefully wrapped, and labeled the trays
- Wrapped trays were transported to a university laboratory where individual foods were measured (in grams) and recorded
- Each photograph was independently assessed by two research assistants and a “tray” created on a spreadsheet
- Average weights of test foods were used for the weight of food selected
- Visual representation of food groups
- Consumption was created from the difference between these two variables
- If this variable was negative, it was critically assessed and removed from analysis if greater than 110% of the food served
- If less than 110% of food served, then this variable was considered to be zero, or nothing consumed
- For each food group, the weights of individual foods were summed, allowing an overall food group consumption variable

These data were collected at baseline (October) and at follow-up (January)

Institutional Review Board approval was received for this project, with the following constraints: in the event that a child’s face was captured in the photograph, the data would not be used.

Results

Baseline (Figure 3) - 48 trays from the control school and 46 trays from the intervention school were available for baseline data analysis. T-tests revealed that vegetable intake was significantly higher in the control school compared to the intervention school (58.5 vs 35.1 g; p=0.0014), though this was driven by fried potato consumption. Of the fried potatoes that were removed from the analysis, vegetable consumption was not different between schools (9.2 g vs 2.9 g; control vs. intervention; p=0.088). However, intakes of vegetables decreased dramatically upon removal of fried potatoes.

Follow-up (Figure 4) - At follow-up, 72 trays from the control school and 44 trays from the intervention school were available. The intervention school consumed significantly more vegetables than the intervention school (92.8 g (SD 43.2) vs 31.1 g (SD26.8), respectively; p<0.0001). However, analysis of vegetable intake with fried potatoes removed was not possible, as the intake was negligible at both schools. Fruit intake was significantly higher in the intervention school compared to the control school (.32 g (SD 4.86) vs 28.5 g (SD 34.6), respectively; p<0.0001) and this was also significantly higher than baseline (data not shown). Students in the intervention school had food weights of remaining foods were not different between schools (2.9 g vs 2.9 g; control vs. intervention; p=0.088). However, intakes of vegetables decreased dramatically upon removal of fried potatoes.

Conclusion

Based on results of this pilot study, it is apparent that increased fruit intake among Kindergarteners, using the MyPyramid Color-bar Signage System, seems to be achievable. Analysis of vegetable intake revealed that Kindergarteners are overwhelmingly choosing fried potatoes, which is not surprising. However, if these are being selected over other, healthier options, it is likely that future interventions should target improving the nutrient profile of this popular selects, while further increasing the visibility and appeal of more nutrient-dense vegetables. Therefore future interventions designed to increase intake of nutrient-dense vegetables among Kindergarteners should incorporate these strategies in addition to use of the MyPyramid Color-bar Signage System of environmental change and classroom nutrition education.

References