

Nutrition Pathfinders

Formative evaluation results of fourth grade students participating in a nutrition education program.

Introduction

Obesity rates have remained steady at nearly 17 percent based on NHANES survey data for children aged 2-19 years since the 1999-2000 survey to the 2009-2010 survey. About 32% of U.S. children and adolescents between the ages of 2 and 19 are overweight, and about 17% of those children are considered obese¹.

Healthy People 2010 goals aimed for childhood obesity rates of just five percent. More emphasis on childhood health in schools could have a moderate impact on public health and research indicates that improving dietary habits may positively influence childhood obesity. Schools provide access to a large number of children and families. Nutrition education programs for students have been developed and widely used as they can improve not only student health but also student academic success. Dairy Council of California has provided nutrition education lessons to schools since 1919 and is committed to providing high quality classroom programs that are easy for teachers to implement and can improve behavior. *Nutrition Pathfinders* seeks to achieve behavior change through a series of seven classroom lessons. The focus of the lessons is on small, sustainable improvements, especially related to the foods that students choose to eat at each meal. With the release of *Nutrition Pathfinders* for fourth-grade classrooms, the next step was to identify the effectiveness of this nutrition program to enhance its effectiveness and influence on students.



Study Design

During the 2012-13 school year a summative mixed-methods design was conducted, comparing students in intervention schools to students in a control group. Thirty-three teachers participated in the intervention group and twenty participated in the control group. The teachers worked at schools located throughout California that had a student population representative of the state as a whole. Almost 1400 students completed a survey at each administration. Overall, 862 students completed each survey and are included in this analysis. This included 545 intervention students and 317 control students.

Data analyzed included both quantitative surveys and qualitative input:

- (1) student pre-, post-, and three-month follow-up surveys
- (2) teacher surveys
- (3) parent pre- and post-surveys
- (4) observations of lessons
- (5) teacher focus groups



Results

Teachers were very satisfied with the NP materials

Based on data from 62 classroom observations, focus groups and teacher survey results, *Nutrition Pathfinders* was implemented with a high degree of fidelity. Teachers were very satisfied with the materials and found the lessons easy to use, engaging and enjoyable. Teachers felt the lessons met their objectives, students were actively engaged in the NP lessons and activities and that family homework was fairly well received by students and their parents.

Teachers reported that they liked the activities that were interactive—particularly the games or where students were asked to create something such as a poster—as well as when students worked in teams. Observers had similar reactions as teachers noting that the students liked the lessons, particularly the games and other interactive activities.

Students’ significantly increased nutrition knowledge

According to student surveys and teacher reports, treatment group students demonstrated significant improvement in their knowledge of nutrition information. Students who received the nutrition lessons (treatment group) outperformed control group students at both the post-test as well as the three-month follow-up in questions about food knowledge indicating longer-term retention. Across all 17 questions, treatment students had a higher percentage of correct answers than did control students (Table 1). Students scored significantly higher after learning about nutrition compared to students in the control group at post- and three-month follow-up showing that knowledge was retained. Teachers also reported that their students were more knowledgeable about nutrition as a result of the *Nutrition Pathfinders* lessons.

Table 1:

	Pre-survey	Post-survey	Follow-up
Treatment	40	60	47
Control	37	40	37
Significance	$p < .01$	$p < .001$	$p < .001$

SOURCE: Student Pre-, Post-, and Follow-up Surveys.

Students’ improved their food choices

Childhood health is often improved by applying healthy eating strategies such as those based on the USDA’s most recent Dietary Guidelines. This nutrition program aligns with the guidelines with a focus on teaching students to choose foods from the five food groups. This positive approach to healthy eating using balance as a motivation naturally limits discretionary calorie foods called “extras” in the lessons. Student self-reports can be less accurate yet offer a snapshot of food intake which may be more accurate after education. Surveys found that after learning about nutrition, students reported eating fewer “extra” foods, such as soda and French fries. Treatment group students were more likely to eat grains and meat at the post test time, and less likely to eat foods from the “extras” food group, than were control students. At the 3 month follow-up, treatment students reported a higher intake of meat at post but not follow-up. Their grain intake remained steady while the control group significantly dropped in their intake.

“Your teacher guide is awesome! It is scripted and easy to follow. My students looked forward to nutrition lessons every day. They loved the lesson games. I was so happy I was given the opportunity to teach *Nutrition Pathfinders* because just like my students I learned too.”

4th grade teacher at Audubon K-8 San Diego USD

“The impact on the students has been very apparent with their conversations, birthday party food selections, and recess snacks. Their working knowledge is more well-rounded with regards to how much and what food is best for them and their families.”

4th grade teacher at Newcastle Elementary

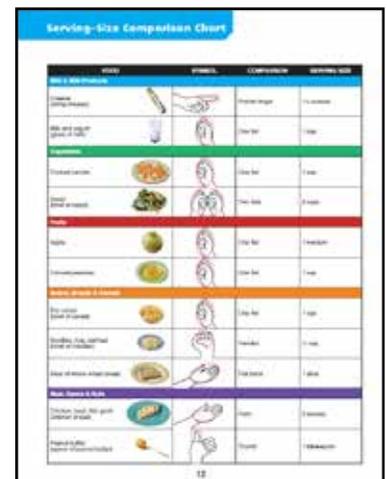
What I Learned

You always give information on your restaurant’s menu so that your guests have all of the facts they need in order to make healthy choices.

Directions:

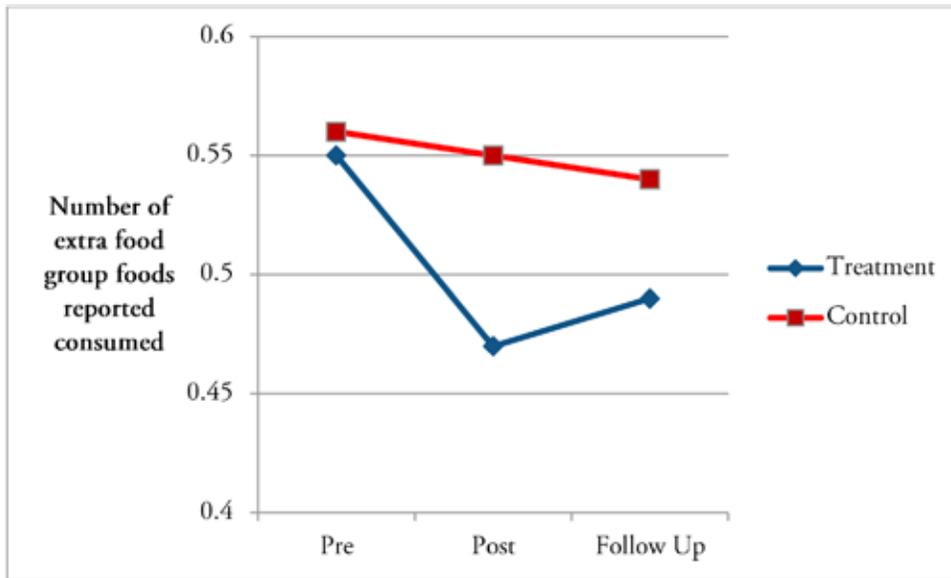
1. Explain to your guests why your new dinner special on page 19 should be a part of your guests’ choice. Be sure to include why it is important to eat a balanced dinner.

The dinner I picked was balance because it had the 5 groups. Some thing that I had was cheese, tomato, lettuce, Bread, ham, watermelon, water this things are good.



While the significant difference in “extras” food group food consumption was only statistically significant at the post-test, there was still a strong difference in that students in the treatment group ate fewer foods from that group, as seen in Figure 1.

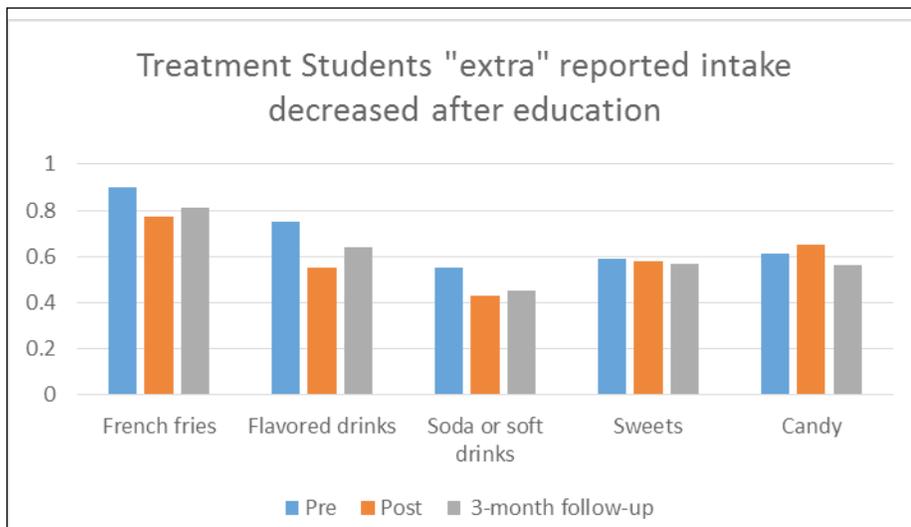
Figure 1: Change in amount of ““extras”” foods items consumed by students in treatment and control groups



SOURCE: Student Pre-, Post-, and Follow-up Surveys.

Figure 2 shows the change in the number of times that treatment group students reporting eating specific “extras” foods. Students ate significantly less in 3 of the 5 “extras” foods at post-survey time, and in 2 of the food items at follow-up. The overall drop in “extras” is consistent in that students showed a decrease in consumption across each of the individual “extras” foods they were asked about. Students’ sport drink/ flavored drink intake was higher than soft drink intake. It is promising that sport drink/flavored drink intake dropped substantially. This could be a result of education efforts to reduce soft drink intake is already in the schools and general communities while there is little emphasis on reducing sports drink consumption. This is an important message since sports beverages can replace more nutritious beverages like milk, water and small amounts of 100% fruit juices.

Figure 2: Change in amount of ““extras”” foods by items consumed by students in treatment group



Parents reported slight increases in the amount of time they spoke with their children about food and nutrition. Students who completed the nutrition lessons also brought home family activities to build upon classroom nutrition concepts such as breakfast, reading a nutrition label and planning a balanced meal. These parents reported slight increases in the amount of time they spoke with their children about food and nutrition. The biggest difference between the groups was that 81 percent of treatment parents reported that their child could read a food label and they were more likely to discuss what was on a food label with their child.

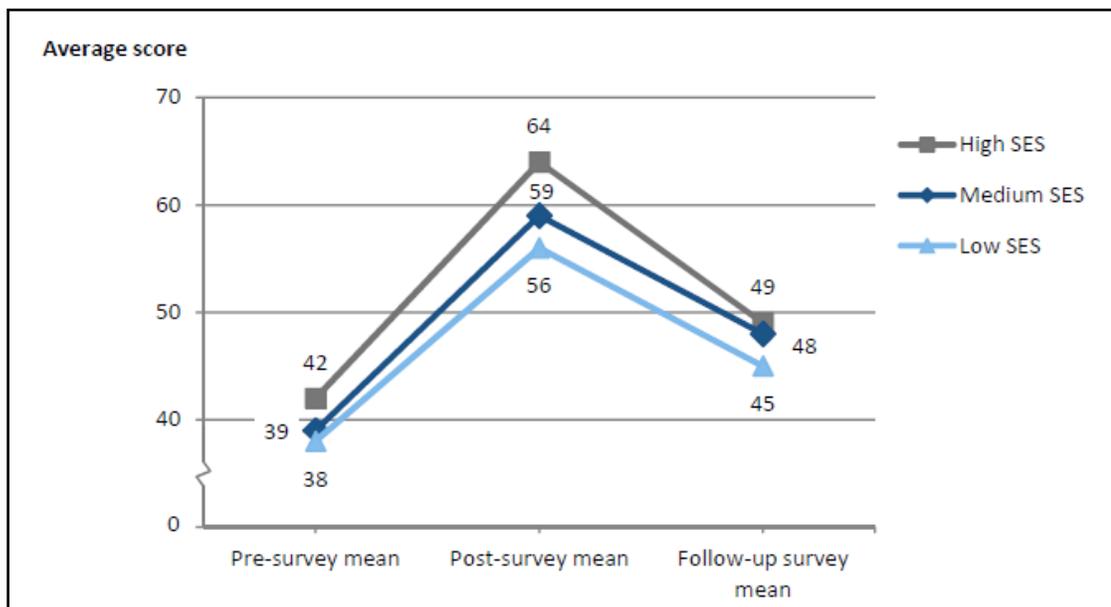
“They were looking at the nutrition labels and trying to apply knowledge towards whether or not these food items were healthy choices. Overall, I think this program is great!”

4th grade teacher at K.R. Smith Elementary School

Does income level make a difference?

A secondary analysis revealed that students at schools of different SES levels showed a similar pattern: A large increase in the percent of questions they answered correctly at the post-test and then a drop-off at follow-up, but they still answered a greater percentage of questions correctly at follow-up than they did at the pre-test (Figure 11). Students in high SES schools scored higher at each test administration and students at low SES scored the lowest at each test administration. This supports that students at all income levels benefit from the *Nutrition Pathfinders* lessons and that more research should be considered to ascertain the implications of including reinforcing activities throughout the year that may further enhance retention.

Figure 3: Pre-, post-, and follow up survey percent correct on nutrition knowledge questions by school socio-economic status



SOURCE: Student Pre-, Post-, and Follow up Surveys.

Students Attitudes Improved with Nutrition Education

Students from the treatment group showed an increased understanding of the nutritional outcomes of their food choices. As a group, these students greatly improved their belief that they would see health benefits by changing their behavior in three of the four areas:

1. balanced meals are good for their body
2. meat gives them strong muscles
3. skipping meals would make them tired

Treatment group students differed significantly from control group students at the post test in believing they were more likely to “eat breakfasts that have at least three different types of foods”.

Conclusions

Nutrition education is a key element to promoting lifelong healthy eating and schools offer a way to reach a large group of children. Increasing student skills and reinforcing concepts in the home environment through the family homework may be a contributor to children's improved food choices. The results of this fourth-grade summative evaluation suggest that the *Nutrition Pathfinders* program positively affects students' knowledge and behaviors compared to the control group. Retention of knowledge was high and statistically significant compared to the control group, indicating the teachers reinforce the information throughout the school year.

Dairy Council of California could not conduct such a large scale project without the passionate support of the 53 teachers that participated along with their students and families.

This research brief document findings are from the *Nutrition Pathfinders* 4th Grade Summative Evaluation by RTI International funded by Dairy Council of California.

¹Ogden CL, Carroll MD, Kit BK, Flegal KM. Prevalence of Obesity and Trends in Body Mass Index Among US Children and Adolescents, 1999-2010. *JAMA*. 2012;307(5):483-490. doi:10.1001/jama.2012.40.

See the fourth or fifth grade Nutrition Pathfinders program materials at HealthyEating.org/NP4.

The graphic is titled "Classroom Programs K-5" in a blue banner. It lists four programs: "Building A Healthy Me!" for Kindergarten, "HEALTHY CHOICES HEALTHY ME!" for 1st or 2nd grade, "Shaping Up My Choices" for 3rd grade, and "NUTRITION PATHFINDERS" for 4th or 5th grade. Each program has a corresponding logo. To the left, it says "FREE* PROGRAM INCLUDES:" followed by a list: "Teacher Guide", "Student Workbooks", and "Supportive Materials".

Classroom Programs K-5

FREE*
PROGRAM INCLUDES:

- * Teacher Guide
- * Student Workbooks
- * Supportive Materials

Kindergarten
Building A Healthy Me!

1st or 2nd grade
HEALTHY CHOICES
HEALTHY ME!

3rd grade
Shaping Up My Choices

4th or 5th grade
NUTRITION PATHFINDERS

*FREE to California teachers only.

