2016 Top Healthy Chef Program Evaluation

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Above: The Winning Top Healthy Chef Snack Competition Team

Above: Students from Bednarcik Junior High Preparing Their Snack

Acknowledgements

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Abstract

This study evaluates the 2016 Top Healthy Chef program. The Top Healthy Chef program incorporates both educational and hands on approaches to teach youth in Aurora, IL about nutrition. The Top Healthy Chef program has taken place annually for the past four years. Every year a new aspect of nutrition is presented to the youth. This year, youth from four Aurora middle schools received a presentation from VNA Health Care (VNA) in Aurora about the health benefits of eating fruits and vegetables of various colors. Paired-samples t-tests were used to determine if there was a significant change in the student's choices of healthy snacks during pre- and post-test and if the students' knowledge of nutrition had grown upon program completion. Results from these tests did not reach the level of statistical significance. An exact McNemar's test determined that there was a statistically significant difference ($p = .003$) at post-test to the question asking whether or not dark, leafy greens are considered a Superfood (true).

Combatting Obesity in Adolescence

Obesity is an increasing concern among adolescents, as approximately 17% of youth in the United States are overweight [6]. Obesity is associated with a number of health risks, and diseases once considered to have onset in adulthood are affecting youth at rising rates. Two such diseases, cardiovascular disease and type II diabetes, have dramatically increased among youth as a result of the rising obesity rates [2]. Obesity can cause a lifetime of poor health for youth; therefore, tackling obesity early on can help move youth toward a healthier adulthood.

Obesity affects youth across all backgrounds; however, rates are higher among minorities and families living in poverty [7]. Behavioral factors also play a significant role in influencing obesity in middle school age children [1] and these behaviors include dietary habits, physical exercise, and sedentary time [1,5]. Poor nutrition, coupled with declining physical activity, has contributed to the growing rate of overweight and obese middle school-aged children [5]. Targeting middle school students' behaviors, attitudes, and knowledge about nutrition is critical to combatting the rising rates of youth who are overweight and obese. Interventions teaching about nutrition and the importance of eating fruits and vegetables are beneficial for adolescents. Studies have shown that students make improved dietary choices and increase their intake of fruits and vegetables when they receive nutrition education interventions [3].

Since adolescents spend the majority of their time in school, implementing programs in schools is an effective way to provide nutrition education to adolescents [3]. Intervening in schools has shown success as it allows for more youth to be reached [2, 3, 6] and for unhealthy behaviors to be targeted before adulthood [3]. Working with youth who are already considered overweight or obese is important, but prevention efforts are significantly important to decrease the rising rates of obesity. The Top Healthy Chef Program aims to intervene with youth in the school setting.

The Top Healthy Chef Program

The purpose of implementing the Top Healthy Chef is to combat the rising rate of obesity among youth living in Aurora, IL by facilitating long-term changes in youths' eating behaviors. Each year the Top Healthy Chef Program randomly selects four Aurora middle schools to participate in the program. This year, students participating in after-school programming at Jefferson Middle School, Simmons Middle School, Still Middle School, and Bednarcik Junior High were selected to participate.

Many of the students participating in-the Top Healthy Chef Program are from low-income families. According to the Illinois State report card, 84.4% of students from Jefferson Middle School, 83.7% of students from Simmons Middle School, 19.5% of students from Still Middle School, and 18.2% of students from Bednarcik Junior High come from low income families [4]. By targeting middle school-aged, and low-income students, the Top Healthy Chef program aims to affect positive nutritional changes among at risk youth.

The Top Healthy Chef program incorporates instructive and hands on approaches to teach youth to make healthy eating choices and to improve the nutritional habits of middle school students. This year's program included an educational nutrition presentation and a snack making competition. The goals of the educational presentation and snack competition were to increase students' knowledge of the health benefits of making nutritional choices, to impact students' future snacking choices, and to provide students with a platform to apply the information they learned to the creation of a healthy snack.

A registered dietician from VNA Health Care (VNA) coordinated and presented the nutrition education presentation of the 2016 Top Healthy Chef program to students from three of the four selected middle schools. An intern with the VNA assisted with teaching the middle-school students about incorporating fruits and vegetables of various colors into their snacks and meals. After the presentation, students had the opportunity to apply to take part in a team snack-making competition that would allow them to practice incorporating the fruits and vegetables of various colors into a healthy snack.

Aim: The purpose of this evaluation is to determine whether participation in the 2016 Top Healthy Chef nutritional education intervention increased the middle school students' knowledge of the health benefits of fruits and vegetables and resulted in reported changes in snacking behavior.

Objectives of the 2016 Top Healthy Chef Program were to:

- Provide students with an educational nutrition presentation regarding eating a variety of colorful fruits and vegetables;
- Allow students to practice incorporating colorful fruits and vegetables into their diets by hosting a snack competition;
- Encourage students to make healthy snack choices by having teams compete to create a healthy snack using mystery fruits and vegetables;
- Reward student efforts and involvement with announcements, certificates, and the opportunity to be a part of the winning team;
- Administer pre and post-tests to determine whether students increased in nutritional knowledge and to determine reported changes in snacking behavior as a result of the program.

Methodology

In order to determine the outcome of the 2016 Top Healthy Chef program, this evaluation combined both qualitative and quantitative analysis using a pre and post-test design. Students completed pre-tests, participated in the nutrition presentation, completed post-tests after the presentation, and then a portion of the students participated in a team snack making competition for which outcomes were not assessed as part of this evaluation.

The nutrition education portion of the Top Healthy Chef program was evaluated using pre and post-test questionnaires that were reviewed and approved by the Top Healthy Chef committee and by the Aurora University IRB prior to administration. Students completed the questionnaires online using Survey Monkey. Pre-tests were given to students during their after school programming prior to attending the nutritional presentation. Students

completed the pre-test without any introduction to the topic to determine their baseline knowledge and behaviors. The post-test questionnaires were completed by students at their individual after-school program sites after attending the presentation.

The pre and post-tests contained two parts. The first part was created to measure changes in students' knowledge about fruits and vegetables and the second part was created to determine whether students' snacking behaviors changed after the provided educational presentation. The questions on both the pre and post-tests were identical with the exception of three additional questions only asked on the post-test.

The three additional questions consisted of one multiple-choice question and two open ended questions. The multiple choice question asked students whether they thought they would change their eating habits as a result of the Top Healthy Chef program and the two open ended questions asked students what they learned and for feedback about the Top Healthy Chef Program.

The Nutrition Presentation

Three of the four middle schools participated in the nutrition portion of the Top Healthy Chef program as intended. 12 students from Still, 37 students from Jefferson, and 34 students from Simmons middle schools were bussed to the Prisco Community Center in Aurora, IL where they attended a 20 minute presentation by VNA Health Care on the topic "Eating the Rainbow". The presentation taught students information about what color category certain fruits and vegetables belong to and what the health benefits are for each color category. For example, students learned that orange fruits and vegetables are good for eyesight and fighting illness whereas purple fruits and vegetables are good for your heart and blood pressure. Foods with such health benefits were referred to as "Superfoods".

At the end of the nutrition presentation students were given the opportunity to enter a drawing to take part in a team snack making competition. Interested students submitted

their applications and six applications from each school were randomly drawn to form the school's team prior to leaving the Prisco Community Center.

The Snack Competition

The competition portion of the program was intended to give students an opportunity to apply the knowledge they received during the "Eating the Rainbow" presentation to the creation of a healthy snack. The four teams took part in a snack making competition nine days after receiving the nutrition presentation at the Prisco Community Center.

The competition took place at Aurora University (AU) and the teams were bussed to AU at the end of the school day to participate. At this competition, students worked as a team to create the top healthy snack using mystery ingredients. The teams also had access to a pantry containing other food items that they could utilize while making their snacks. AU kitchen staff was also available to assist students with cutting food items and using the kitchen equipment.

At the competition, students were vying to win the Top Healthy Chef Award. The Top Healthy Chef Award was awarded to the student team based on the overall taste, presentation and nutritional properties of the prepared snack. Student teams were also able to win three secondary awards, which included an award for Chef's Choice, Best Presentation, and Best Tasting.

Recipients of the Top Healthy Chef Award, the award for Best Taste, and the award for Best Presentation were determined by a panel of judges. The Chef's Choice Award recipient was determined by Chef Mike Berris from Aurora University. During the competition, the team's school affiliation remained hidden from the judges and Chef Mike Berris, by assigning schools a number of 1, 2, 3 and 4 and by allowing them to create a team name. The judging was "blind" so that snacks would be evaluated based on their incorporation of healthy fruits and vegetables and by taste of the winning snack.

Results, Student Feedback, and Discussion

Results

It should be noted that the program and the evaluation was not entirely carried out as intended. Still Middle School students did not complete the provided pre-test and students from Bednarcik Junior High did not attend the nutrition presentation due to transportation issues. Given that these students were unable to participate in the evaluation as intended, data from these sites are not included in this report.

Students from Jefferson Middle School and Simmons Middle School attended the nutrition presentation by the VNA and completed both pre- and post-tests as intended. A total of 41 pre-tests and 25 post-test results were collected from Jefferson, and 24 pre-tests and 32 post-test results were collected from Simmons. Paired-samples analyses were conducted on all closed-ended test items for the group of Jefferson and Simmons students who took both the pre-test and the post-test.

Part I of the pre and post-tests contained six multiple-choice questions asking students about their knowledge of fruits and vegetables.

Only one question, whether dark, leafy greens were an example of a Superfood (true), had statistically significant improvements at post-test. An exact McNemar's test determined that there was a statistically significant improvement (p = .003) on this item.

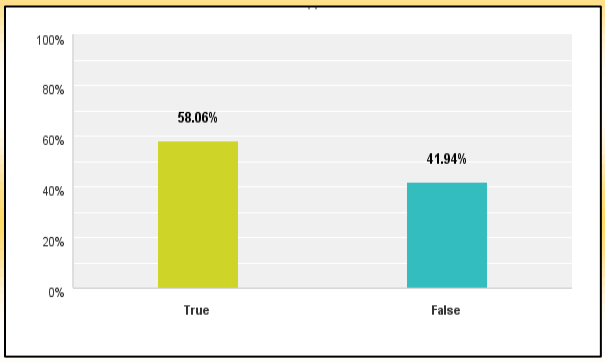

Figure 1. Jefferson and Simmons' students pre-test response rates to Question 12. 58.06% of students responded "True" and 41.94% responded "False".

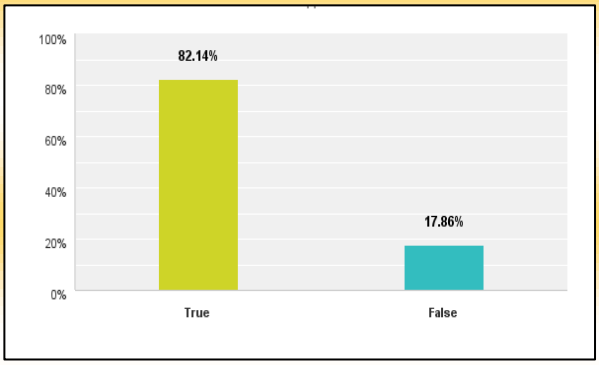

Figure 2. Jefferson and Simmons' students post-test response rates to Question 12. 82.14% of students responded "True" and 17.86% responded "False".

Additionally, students were asked to identify other vegetables and Superfoods, and to identify the health benefits of eating Superfoods. Though these responses were not statistically significant there was a slight tendency to correctly identify Superfoods and their health benefits in the post-test. For example, although not to the level of statistical significance, post-test results found there was an increase in the number of students correctly indicating that peppers were also considered a Superfood.

Part II of the questionnaire contained multiple choice and open-ended questions asking students about their snacking behaviors.

Students were asked to list one way they use Superfoods in their daily routine. The most common response on both the pre and post-tests was that students "eat them" and students listed a variety of ways to eat or incorporate these foods into their lifestyle. There was also a 4% decrease in students indicating "they did not know" how they used Superfoods between pre and post-tests.

Students were also asked to name and rank their top five snack food choices. The responses to this question fell into the following categories: Fruit (apples, strawberries, grapes, etc.), Hot Prepared Foods (tacos, tamales, pizza, etc.) and Chips/Candy (Hot Cheetos, Takis, chips, Gummy Worms, etc.).

Students' preferred snack foods had a tendency to be slightly healthier on the post-test. 11 students listed Fruit as their preferred snack choice on the pre-test and 23 listed this as their preferred choice at post-test, indicating an 11.6% increase at post-test. 9 pre-test responses listed Hot Prepared Foods as their preferred snack choice compared to 8 at post-test.

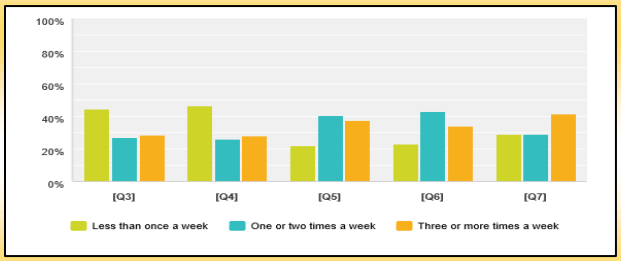

Figure 3. Pre-test for Jefferson and Simmons.
Q 3 = first choice snack, Q7 = fifth choice.

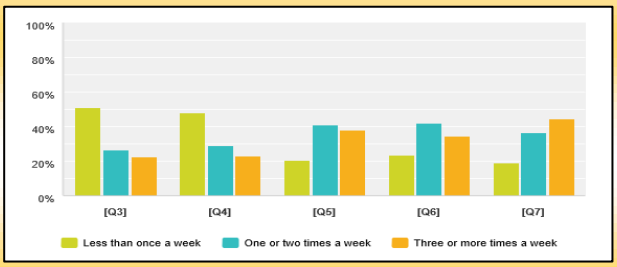

Figure 3. Post-test for Jefferson and Simmons
Q 3 = first choice snack, Q7 = fifth choice

Changes in the frequency of students' fruit and vegetable consumption suggest improvements in reported snacking behaviors between pre and post-tests. The number of students reporting they ate fresh fruits and vegetables less than once a week decreased at post-test while the number of students reporting they eat fresh fruits or vegetables 1-2 times per week or more than 3 times per week increased at post-test.

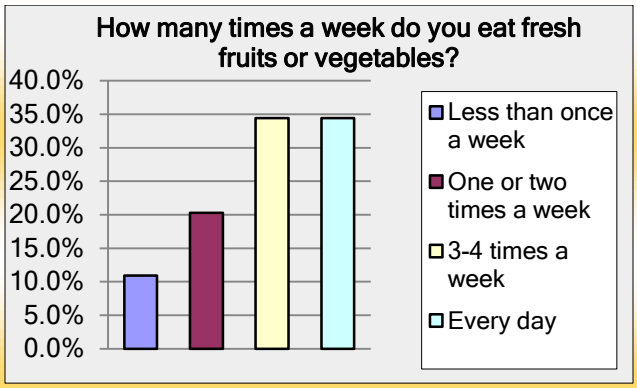

Figure 3. Pretest Responses

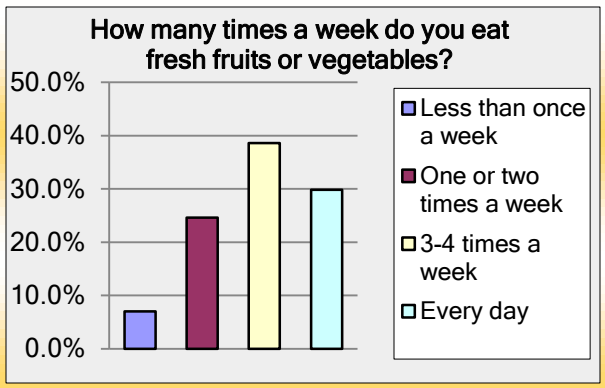

Figure 4. Posttest Responses

Additionally, students were asked to list the five vegetables as well as the five fruits they eat most often. In both pre and post-tests, broccoli and carrots were among the most commonly identified vegetables consumed, and apples and oranges were the most commonly identified fruits consumed. Students were also asked about their potato chips, cookies, and prepared food consumption in a week. Students indicated a decrease in the number of times they eat potato chips, cookies, or prepared foods in a week.

Student Feedback

On the post-test, students were given an opportunity to provide feedback about the Healthy Chef Program. As students from Still Middle School were able to attend the nutrition education presentation, their responses to the feedback questions have been included. Students were asked the following three questions:

1. Because of the Healthy Chef presentation, I will change my eating habits.

2. Name something you would like to do next time at the Healthy Chef program.

3. Name one thing you learned at the Healthy Chef Program.

62 of the 83 students who attended the nutrition presentation answered the open-ended questions on the post-test questionnaire. Approximately 56 % of students from Still, Jefferson, and Simmons reported that the Healthy Chef presentation will cause them to change their eating habits “A Little/Somewhat” or “A lot/Very Much”.

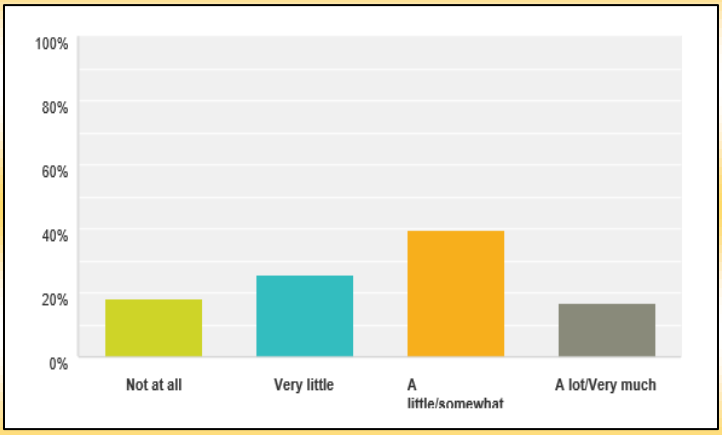

Figure 5. Student responses from Jefferson, Simmons and Still.

The comments suggested that some students would like more hands on activities, including being able to sample the healthy foods during the next Healthy Chef Program (N=13) and making food (N=8). Students most frequently reported they learned about the health benefits of eating fruits and vegetables of a variety of colors during the presentation (N=20). Student responses and the frequencies for all identified items are included in the charts below:

Suggestion For Next Time	**Occurrence**
Eating	13
Making the food	8
Learn about the consequences of eating poorly and benefits of eating healthy	10
Taught how to prepare food	3
Nothing	17
Other	20

Table I: *Suggestions For Future Programming*

Learned	**Occurrence**
Different color categories of fruits and vegetables	18
Health Benefits of fruits and vegetables	20
Need to change eating behaviors	10
Nothing	13
Other	11

Table 2: *What Students Learned*

Discussion

Although not to a statistically significant degree, students demonstrated a slight increase in knowledge about colorful fruits and vegetables from pre-test to post-test. Students responded to open-ended questions regarding anticipated behavioral change or knowledge gained from the nutritional presentation with comments such as "I should exercise, sleep, and decrease my amount of junk-food eaten" and "it's very important for me to start eating healthy now and maybe those habits will help me live longer". These comments suggest a change in students' awareness of the need to make healthier eating choices and the need to change their eating habits as a result of the Top Healthy Chef Program. Based on the findings and the student feedback, participants appeared to benefit from the program.

Limitations

There are several limitations regarding the present study. Students from Still Middle School, though given access to them, did not complete pre-test questionnaires prior to the presentation. As previously mentioned, Bednarcik Junior High's responses were omitted from the data analysis as they did not receive the nutritional presentation due to transportation issues. Finally, due to the small sample size, the ability generalize findings is limited.

Recommendations

Given that the nutritional presentation was only a single 20-minute intervention, it is difficult to determine whether the presentation will make a lasting impact on students' eating behaviors. Research has shown that successful programs teach nutritional material to students over multiple sessions [3]. Future programs would benefit from incorporating nutritional content continually during the after-school programs, providing opportunities for content to be reviewed and solidified.

Using hands on approach with all students, and not just those participating in the competition, in future programming may be beneficial. Many students indicated that they would like to be more hands on during the next Healthy Chef presentation and it was observed that the snack-making component engaged the students.

Conclusion

The Top Healthy Chef program aims to combat the rising rate of obesity among youth living in Aurora, IL by affecting changes in youths' eating behaviors. This year's program aimed to help students increase their awareness of the need to make healthier food choices through nutritional education and a food competition. Students appeared to enjoy and be engaged in the program as demonstrated by students laughing, smiling, actively participating in question and answer opportunities, and by their overall attentiveness to the instructional program. Future recommendations include teaching students nutritional content using hands on strategies and providing on-going education or booster sessions throughout the school year.

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