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Does the implementation of nutrition education improve habits and nutritional knowledge in elementary students?

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Abstract

Objective: Assess the effect of nutrition education on the knowledge and habits of elementary students in order to determine effective ways to improve healthy habits

Design: Quasi experimental design

Setting: Ossining Elementary School

Participants: Elementary students (n=18) ages from 9 to 10

Intervention: A one day nutrition education PowerPoint lesson on the five food groups/ vitamins and an activity. The effects were measure using a pre- and post- exam taken by each participant.

Results: The primary finding resulted the implementation did impact the student's nutrition knowledge positively.

Conclusion: The study can conclude the implementation of nutrition education did increase the elementary student's knowledge of the five food groups and vitamins.

INTRODUCTION

Currently there is an upward trend developing chronic diseases later in life like diabetes, obesity, heart disease, cancer, high blood pressure, high cholesterol, etc.⁴ These conditions are mainly caused by excessive consumption of foods that are high in fat, calories, and cholesterol.⁴ If one of any age consumes too much of these foods they are at risk for the development of these conditions.

According to the world health organization there are more than three-hundred and forty million children/adolescents who are overweight and obese.³ There are various reasons as to why there is an increase in the chronic conditions among young adolescents/children which can be related to knowledge deficits, genetics, inadequate physical activity, as well as many others.²

Within the United States children in all school districts are required to take English language arts, mathematics, science, health/physical education, social studies, etc. All of these classes are required in order to ensure students are “well-rounded”.¹ But, some classes like health education are typically only taken for a quarter during the school year. The limited health/nutrition education can reflect the overall health among students within the country.

Studies have shown by prioritizing educating students on the importance of consuming vegetables, fruits, lean protein, whole grains, increasing physical activity and decrease screen time it can help prevent these chronic conditions like obesity and diabetes. But unfortunately, it is not always that simple for children to consume these foods. One reason is they might be selective eaters, the second reason may be if the student’s parent/guardian provide their meals it may not give the student the opportunity to learn “good” foods and foods to limit. These are all components that must be considered when working with the population of children/adolescents because the information gathered through this study can better understand how to help the students with the resources they have.

Now, despite the wider prevalence of chronic disease among children there are limited evidence-based programs developed to help children improve their nutritional habits and their relationship with food. The relationship children have with food can be strongly influenced by media, social media, and peers. Social media have people who have nutrition misinformation which can cause an assortment of issues like disordered eating. The purpose of this study was to see if there was an improvement in nutritional knowledge after the implementation of nutrition education.

METHODS

Study Design: For this study, quasi experimental was the design which was used to help determine if the hypothesis was correct or incorrect. A pre-test and post-test were used to assess the

The goal was to assess their nutritional knowledge before and after providing a lesson to evaluate changes in participants' beliefs and knowledge. Each test was taken in person and had the same 10 questions regarding nutrition information ranging from the different vitamins and the five food groups. The study was approved by the SUNY Oneonta IRB.

Intervention: The intervention was conducted at Ossining Elementary School during the student's physical education class. All of the students were given consent and assent forms in order for the students to participate and use the data collected. The intervention was a group counseling with a total of 18 students; each student received a pre/posttest and sat for a quick presentation. Then the students went to play an activity which made them all stand in one area and when I asked a question relating to a food group the students ran to the designated areas. This was implemented in order for the students to remember the information that was being presented as well as keeping them active during their physical education class time. When the activities were completed, the students took the posttest in order to see if the students had an improvement from the test taken earlier in the period. The entire intervention took two days; one day for giving the consent and assent forms and the second day was completing the activities. The study determined whether there was an impact on the nutrition information given to the students who were assessed.

Participants: In the study the participants were recruited in designated physical education class determined by the teacher. Each class held about 20 students but only 18 participated; the students were told about the study and each student interested was set aside from the rest of the students that were not interested. Within the class the majority of the population were girls, ages 9-10, and primarily Latino population.

Tools: In this intervention there were three tools used: a presentation, pre/posttest, and a physical activity. The first tool used was the pre-test created by the experimenter. The students sat and answered all questions regarding general nutrition information of vitamins and the five food groups. Then, the PowerPoint began which reviewed the different types of vitamins and food groups. Once that was completed the students were positioned to standing the middle of the gymnasium, each corner was labeled with a food group (fruit, grains, dairy, protein, and vegetables). The students had to stand in the middle of the gym, I asked questions related to the information taught during the presentation. After the question was asked the student answered the question by walking/running to the designated food group in the gym. This activity was repeated five times in order for the students to understand majority of the information taught during the presentation. Once the students were done with the activity, they had to take the posttest. When all of the students were done, I reviewed if there was an improvement in scores based on the results of the pre/posttest.

Data Analysis: The participants were given a pre-posttest in order to see if there is a change in their responses due to the implementation of nutrition education. The data was divided into three sections; one for all of the questions, one for only the vitamins questions, and one for the questions regarding the five food groups. This was completed using a t-test⁴ on IBM SPSS software. The p-value deemed to be significant for this study is $p < 0.05$.

RESULTS

The participants (n=18) stated they had a positive experience learning about the various topics of nutrition-based information. This feedback was reflected based on the pre- and post- intervention results; this test was used to assess the participant's knowledge of vitamins and the five food groups. The students were graded based on the number of questions they answered correctly to the total number of questions which was 14. There were 10 nutrition-based questions on vitamins and the five foods groups as well as four questions regarding their thoughts about their overall experience throughout the study. The data indicated a significant difference in pretest to posttests overall scores ($P=0.001$) which is presented below in **figure 1**.

DATA ANALYSIS

Food groups

Breaking down the test by sections; there were questions based on the five food groups within the pre- and post- test in which had a total of four questions (#1, 4, 5, 12). These questions were designed to understand what the participants baseline understanding of the food groups prior to the intervention and then seeing the results after. Based on the data collected there was a significant improvement of the students understanding of the five food groups as seen in **figure 2**.

Vitamins

Similarly, the pre- and post- test had six questions (#2, 3, 6, 7, 8, 10) regarding different vitamins and where they are sourced from. Each question was used to determine their comprehension of the vitamins before and after the nutrition intervention. The mean scores were 2 of 6 questions corrects for the pretest whereas the posttest 4 of 6 questions were answered correctly by the participants. This is a (50%) increase in total scores after the implementation of the intervention which reflect a statistically significant result ($p=0.001^*$). **See figure 3**.

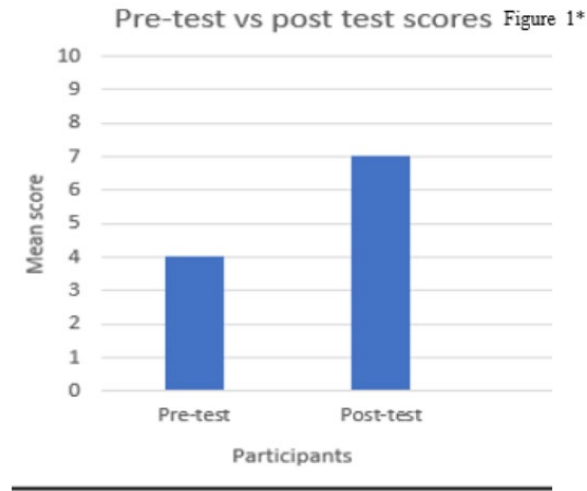


Figure 1. : The results from the pretest reflect the mean of the participants (n=18) answered 4 out of 10 questions correct regarding the nutrition information. Whereas after the intervention the mean results of the participants improved to getting a total of 7 out of 10 correct. The overall changes reflect a statistically significant change (P=0.001*). *= p<0.05

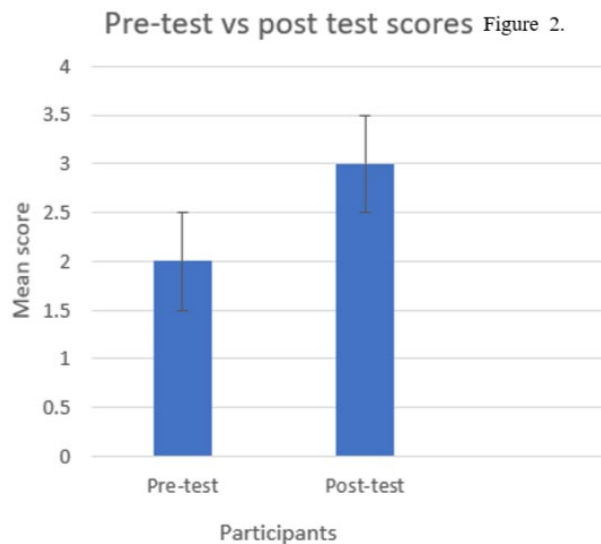


Figure 2: The results from the pretest reflect the mean of the participants (n=18) answered 2 out of 4 questions correct regarding the nutrition information on the five food groups. Whereas after

the intervention the mean results of the participants improved to getting a total of 3 out of 4 correct. The overall changes reflect an improvement but not statistically significant change ($P=0.001$).

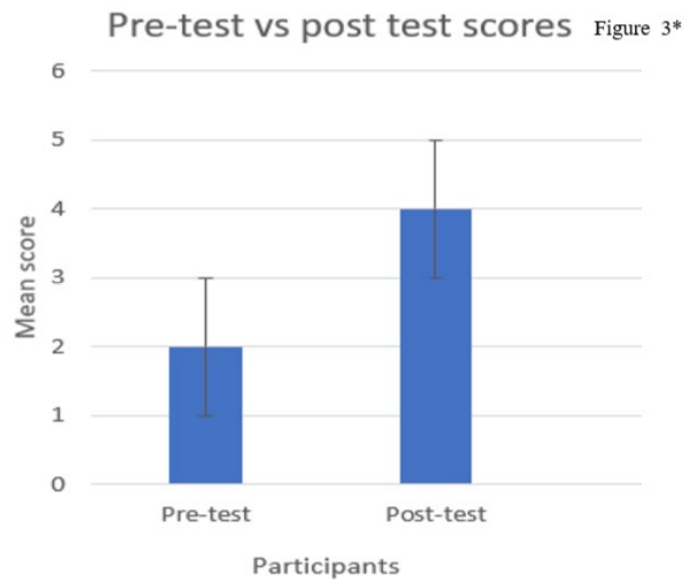


Figure 3: The results from the pretest reflect the mean of the participants ($n=18$) answered 2 of 6 questions correct regarding the nutrition information on Vitamins. Whereas after the intervention the mean results of the participants improved to getting a total of 4 out of 6 correct. The overall changes reflect a statistically significant change ($P=0.001$). $*= p<0.05$

DISSCUSION

This study supports the implementation of nutrition education had a positive effect on the participants of the study. This result was determined based on the data collected on the pre- and post- test; all sections within the test had a statistically significant ($P=0.001$) improvement among the results showing the effects of nutrition education among the population.

In comparison to other studies like “The effect of teacher-delivered education programs on elementary aged students” by Dudley et al.⁵ this study conducted a similar study with the result of improvement in nutritional knowledge. But, among this study their direction as well as other studies assessed the students on different information like sugar consumption.⁵ This reflects the importance of providing nutrition education to students in order to create a better relationship with food and preventing chronic conditions from developing during early ages of adolescence.

Overall, the nutrition education intervention conducted at Ossining elementary school district had positively affected the student’s nutritional knowledge regarding vitamins and the five food groups. These results can be concluded based on the data gathered from the post- test mean scores.

STRENGTH AND WEAKNESS

A strength of the study is the improvement of the student’s nutritional knowledge after the implementation of the nutrition education. This is a strength because since the study was effective there can be implementation of course within the school districts in order to prevent the development of chronic conditions during their adulthood. Whereas a major weakness would be the intervention was only a one-day lesson, if the course were longer there would be a more significant change in the student’s knowledge/ habits. Another weakness would be the sample size ($n=18$), this is a fairly small group which could have skewed the validity of the study.⁶ The last weakness was that the students sitting closely together. This was a limitation because the students could have helped one another which could have altered the data.

CONCLUSION

Food and nutrition is used within everyday lives it could have a positive or negative impacts on someone's health. But, with the implementation of regular nutrition education to students it could make drastic changes in their overall health. Schools should begin to implement these courses as a bigger component for students in order to help prevent conditions like diabetes, hypertension, obesity, as they get older. As well as creating healthy habits as they age into adulthood.

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APPENDIX

Appendix A: Pre and Post test Questionnaire:

Directions: Please answer the following by circling the answers that best fits your knowledge. If you are unsure of a question, you can let me know and I can review it with you.

1. Can you select a food group?

- a) Fiber
- b) Minerals
- c) Vitamins
- d) Grains
- e) I do not know

2. What vitamin comes from dairy products?

- a) Vitamin D
- b) Vitamin E
- c) Calcium
- d) Both A and D
- e) All of the above
- f) I do not know

3. Select one source that has Vitamin B12?

- a) Fruits

- b) Vegetables
- c) Chicken
- d) Grains
- e) I do not know

4. Can you identify a vegetable?

- a) Eggs
- b) Fish
- c) Cucumber
- d) Papaya
- e) I do not know

5. Can you identify a fruit?

- a) Squash
- b) Onions
- c) Kiwi
- d) Broccoli
- e) I do not know

6. How many vitamins are needed in the body?

- a) 13
- b) 20

- c) 10
- d) 15
- e) I do not know

7. What is Vitamin A used for?

- a) Building strong bones
- b) Vision
- c) Collects free radicals
- d) Helps form blood when there is a cut
- e) I do not know

8. Does eating whole grains in one's diet impact risk of heart disease?

- a) True
- b) False
- c) I do not know

9. Does Vitamin E and Vitamin A help with vision?

- a) True
- b) False
- c) I do not know

10. How many food groups are there?

a) 1

b) 2

c) 4

d) 5

e) I do not know