EAT RIGHT THINK BRIGHT!

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Table of Contents

ABSTRACT TEXT

Body image dissatisfaction has risen in recent years in children and adolescents. Changes in eating behavior can be a result of dissatisfaction with one's body. The purpose of this study was to evaluate the effectiveness of an intervention designed to positively impact body image and nutrition knowledge in 5th and 6th grade students. This quasi-experimental design with intervention included pre–post surveys and focus groups. Participants included 46 students, ages 10 - 12 years who were in 5th and 6th grade. All students were attending Randolph Elementary School and were recruited by their health educator. Data was collected pre- and post-intervention through Kahoot quizzes, body image surveys, and food frequency questionnaires. This 3-week intervention was based on social cognitive theory and included presentations, videos, handouts, and food demonstrations related to food groups, intuitive eating, and body image. Changes in nutrition-related knowledge, body dissatisfaction, and body image were evaluated using paired t-tests and Wilcoxon signed-rank tests. After the intervention, both student knowledge and body image significantly increased ($p<0.001$). A Spearman correlation was used to evaluate the association between changes in knowledge scores and changes in body image scores. No significant association was found between the two scores ($p = 0.53$). These results indicate that a 3-week program integrated into the school curriculum can improve body image and nutrition knowledge in 5th and 6th grade students.

INTRODUCTION

Eating disorders among children has become a major problem worldwide. The National Association of Anorexia and Associated Disorders statistics found that 46% of children ages 9 to 11 years old are "sometimes" or "very often" on diets.[1] Consequently, there are around 10,200 deaths each year due to eating disorders.[1] Disordered eating is also a substantial issue in the United States. There are currently around 30 million people in the U.S. that have an eating disorder. Around 95 percent of people with eating disorders are between the ages 12 and 25.[2]

Body image dissatisfaction and disordered eating is common among elementary school students. Azmira et. al conducted a cross-sectional study on 776 primary school students to identify body image dissatisfaction. The study results found that there were 51.7% who had normal BMI and were still dissatisfied with their body image. Overweight and obese students had a higher level of body image dissatisfaction (79.6%). Body image concerns have also been shown to increase with age. This may be related to the physiological changes in body shape and self-esteem brought on by puberty.[3] Another community-wide prospective longitudinal study identified disturbances in eating behavior in 581 Elementary students, whose ages ranged from 9 to 10 years old. The results found that 11% of 9-year-olds and approximately 7% of 10-year-olds scored in the anorexic range on a Children's Eating Attitude Test.[4]

Adolescence is an important age for body image development due to various social, cultural, physical, and psychological changes occurring between the ages of 12 years and 18 years of age.[5] The correlation between weight and body image is complex. There are a multitude of variables that must be considered, including internalization of body ideals, weight-related pressures and concerns, and a range of social influences.[5] Negative body images in adolescents can be detrimental to their health. Consequences can include physical activity avoidance, eating disorders, and dysfunctional exercise.[5] Treatments for eating disorders have traditionally focused on behavioral therapies and medications. Current treatments for eating disorders have advanced

to include support for family-based approaches for children and adolescents, holistic approaches, and other medications, such as lisdexamfetamine.[6]

Intuitive eating has recently been used to help treat and prevent disordered eating. Intuitive eating (IE) is characterized by eating in response to physiological hunger and satiety cues rather than emotional cues and not considering certain foods to be forbidden. IE also focuses on a person's eating behavior and the body's internal ability to regulate its nutritional needs.[7] One systematic review on adult women found that IE was associated with less disordered eating behaviors, an improved body image, and greater emotional functioning.[8] IE is conceptualized as containing four major components, including an unconditional permission to eat, eating for physical rather than emotional reasons, reliance on hunger and satiety cues, and body-food choice congruence.[9]

The Social Cognitive Theory (SCT) has been extensively used in nutrition education programs.[10] Promoting self-efficacy is important component of the SCT, and should be utilized when developing a nutrition education programs.[10] One case-control study conducted on 1,100, second and third grade elementary students worked to determine the effects of nutrition knowledge and behavior after an education program that was based on the SCT.[11] The study included 6, weekly nutrition classes based on Food Pyramid information.[11] Pre- and post-test questionnaires were provided to students before and after the intervention to assess dietary changes and behaviors.[11] The intervention included an interactive game for the students to use when learning nutrition information.[11] The treatment group exhibited a significant improvement in overall dietary behaviors when compared to the control group ($P<0.001$).[11] Children in the intervention group also experienced a significant improvement in nutrition knowledge ($P<0.001$).[11] This study indicated the benefits of observational and behavioral learning on health behavior changes.[11]

The specific cause of eating disorders is currently unknown. However, there is growing evidence that family history is a risk factor for disordered eating in children and teenagers. It has been found that eating disorders are significantly more likely to occur in teens who have a parent or sibling with an eating disorder.[12] One study conducted by Lowes et al, found that 94% of children reported that their parents told them what food to eat. Parental influence due to maternal level of body concern was found to have a strong impact.[13]

A needs assessment was conducted on 34, 5th and 6th grade students at Randolph Elementary School (RES). The student's ages range from 10 - 12 year old. Data was collected through the use of a healthy eating and body image survey. Results from the surveys found that 52.9% of students agree/somewhat agree that they have heard their peers talk about wanting to lose weight. The majority of students (50%) also agree/somewhat agree that they have heard their parents talk about wanting to lose weight. There was also a large percentage (32.4%) who had agreed/somewhat agreed that they have considered going on a diet.

Previous methods used to address concerns around student's health have utilized nutrition education programs in elementary schools.[14] However, there are currently a limited number of studies regarding how intuitive eating can be used with nutrition education programs to promote healthy body images among adolescents. The purpose of this study is to evaluate the effectiveness of a nutrition intervention with hands-on food demonstrations and assess its impact on student's body image concerns and eating habits. Through our study, we will work to increase students' knowledge on healthy food portions and the functions of the major macronutrients. We also worked to develop approaches to reduce body image concerns and how to use intuitive eating to help students have a healthy relationship with food. It was hypothesized that 5th and

6th grade students will have a decrease in body image concern and increase in the variety of healthy food choices they make.

METHODS

Study Design

A quasi-experimental design with intervention was used to determine if there is a relationship between body image and nutrition in 5th and 6th grade students, as well as any changes following the intervention. This three-week intervention was based on social cognitive theory. Methods included presentations, videos, handouts, and food demonstrations related to food groups, intuitive eating, and body image. Pre- and post- intervention changes were assessed among participants involved in this study using food frequency questionnaires (FFQ), body image questionnaires, and Kahoot quizzes (see Appendix). Before the intervention was conducted, the State University of New York at Oneonta Institutional Review Board had approved all methods and materials.

Participants

A total of 46 students, 5th and 6th grade from 4 different classes were involved in this study. All students were attending Randolph Elementary School in Randolph, Vermont. Ages ranged from 10 - 12 year old. Participants were recruited by the students' health teacher. Newsletters and consent forms were sent home to the parents of each student. Only students with signed student and parental consent forms were used in this study.

Intervention

This study is based on the Social Cognitive Theory to design an intervention that would motivate students to make behavior changes. Participant's behavioral capabilities were enhanced through nutrition education lessons and videos. Observational learning was also utilized with the students through hands-on food demonstrations. All interventions took place in Randolph Elementary school, in Randolph, Vermont. Three combined, 5th and 6th grade health classes were used in this study. Identical lectures were given to each class once a week. The nutrition intervention lasted over a three-week period, starting January 31st through February 18th, 2022. Sessions lasted 30 to 45 minutes. The intervention included a PowerPoint presentation, videos, informational handouts, and a food demonstration. The presentation topics included understanding the MyPlate food groups, learning the major macronutrients, and understanding refined and whole grains, intuitive eating, and understanding body image. The food demonstration involved teaching students how to incorporate all of the major macronutrients into healthy energy bites. All students were provided with a recipe so they can try making it at home. After the demonstration, students were encouraged to try the energy bites.

Data Collection

All surveys were created for this study to be used before and after the intervention. To keep anonymity, students were provided with a code number to track who completed pre- and post-assessments. Students were instructed to write their code numbers at the top of their paper forms and were also used for their Kahoot names. All classes completed a 13 question, Kahoot questionnaire. Kahoot surveys assessed students' knowledge of MyPlate, portion sizes, and

processed foods before and after the intervention (see Appendix A). A separate five question paper survey was completed pre- and post- intervention to evaluate the average rate of student's body image concerns (see Appendix B). Students were asked to rate on a scale of 1 to 5, whether they strongly disagreed or agreed to the question being asked. The students were also provided with a short, 4 question food frequency questionnaire before and after the intervention to determine if the intervention made an impact on the student's food intake. The response options included: (1) I do not eat this food item, (2) I consume less than 1 serving per day, (3) 1 serving each day, (4) 2 or more servings each day. The students were asked to mark in one of the 4 response options (see Appendix C).

Data Analysis

Quantitative data from the baseline and post-intervention surveys were analyzed using SPSS 26 software. The focus of the data analysis was to determine whether there was a correlation between nutritional knowledge and body image concerns and to identify changes following the intervention. Survey results from all four classes were combined into 1 group to evaluate differences in datasets pre- and post-intervention surveys results. Only students who completed all pre- and post- surveys were analyzed (n= 46). Kahoot differences in pre- and post-tests were compared for normality using a Shapiro-Wilk test. Differences were considered not statistically significant with $P>0.05$. This means the Kahoot data is normally distributed ($P=0.065$). Parametric t-test were utilized due to the abnormal distribution of Kahoot data.

Body image survey responses were analyzed by assigning a numerical value to calculate the weighted average. Positive body image questions were ranked 0 to 4, with 0 being strongly disagree and 4 being agree. Negative body image were ranked inversely from 4 to 0, with 4 being strongly disagree and 0 being agree. Differences in body image survey in pre- and post-intervention results were also compared for normality as well, using a Shapiro-Wilk test. The body image data was found to be abnormally distributed as well, ($P<0.0001$).

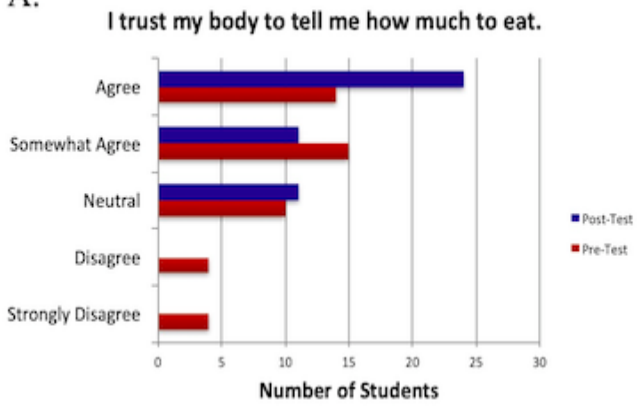
Paired t-tests were used to determine the mean differences in pre- and post- tests for body image and Kahoot scores. A Pearson correlation was conducted to determine if a positive increase in Kahoot scores were associated with changes in body image scores. Changes were determined by the difference between baseline results and post-intervention test scores. FFQ responses were also ranked, with health promoting foods ranked positively from 1 to 4, with 4 being they consume this food often. These questions included fruits and vegetables. The students "sometimes foods" were ranked inversely from 4 to 1. These items included the desserts and chips/fries.

RESULTS

Table 1. Demographic Profile of Participants (n= 46)	
Age (y)	**Students (n)**
10 – 12	46
Sex	
Male	25
Female	21
Race	
African American	3

A total of 46 students were involved in this study. The demographic profile of the study participants is summarized in **Table 1**. Demographic data was collected from the student's principle. Of the 46 students that were involved in this study, 91.3% were Caucasian, 6.5% were African American, and 2.17% were Hispanic/Latino. There was a somewhat even distribution of male and female participants. The sex of the subjects composed of 54.3% male and 45.7% females participants.

A.



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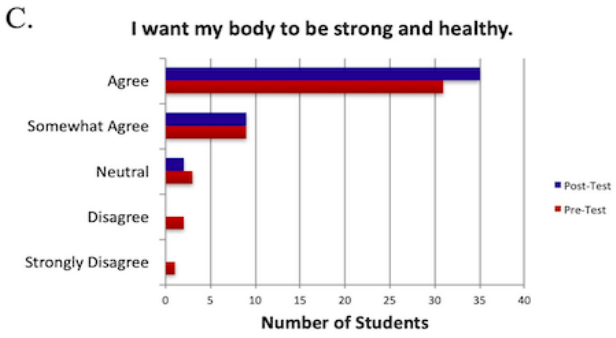

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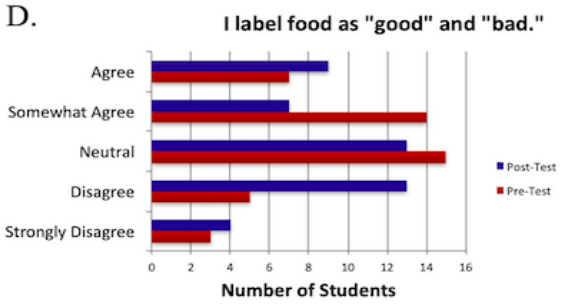


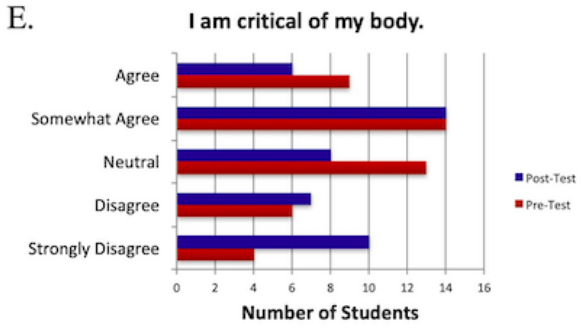
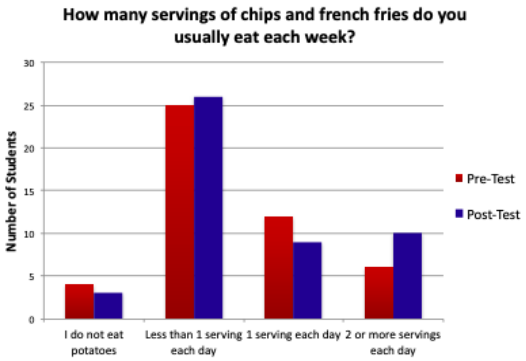


Figure 1. Pre- and post-intervention body image questionnaire data was assessed. Results found that 50% of the students on the pre-intervention questionnaire indicated that they agree/somewhat agree that they are critical of their body. After the intervention, this number decreased to 43.5%. Also, 45.7% of the students agree/somewhat agree that they label foods as good and bad. On the post-intervention questionnaire, there was a 6.5% decrease in students reporting being critical of their body, a 10.8% decrease in students labeling food as "good" and "bad" and a 7% increase in students' reported ability to trust their body to tell them how much to eat. Student Likert scale responses were scored, and total scores on the pre- and post-intervention body image questionnaire were calculated.

The Wilcoxon Signed Rank test was conducted to compare changes in total student scores from the pre-intervention to the post- intervention body image questionnaire. Body positivity significantly increased from the pre-intervention to the post-intervention body image questionnaire ($p<0.001$). A Wilcoxon signed-rank test was then conducted on the body image pre- and post-test scores. The results found that the mean pretest score was 11.78 and after the intervention, this score increased to 13.54 on average (Fig. 4). These results show a statistically significant increase in body positivity in post-test scores ($p<0.0001$).

Figure 2. Chips/French Fries FFQ Pre- and Post-test results. There was an 8.7% increase in students who consumed 2 or more Chips/French fries daily.



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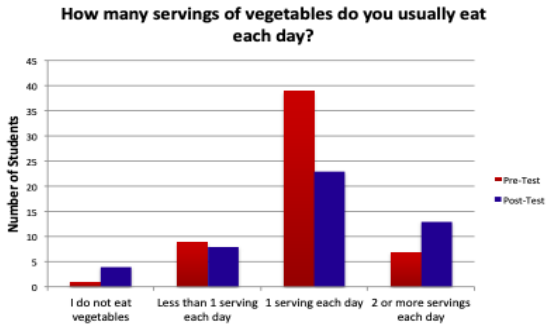

Figure 4. Dessert FFQ Pre- and Post-test results. There was a 4.3% increase in the amount of students who consume 2 or more desserts each day.

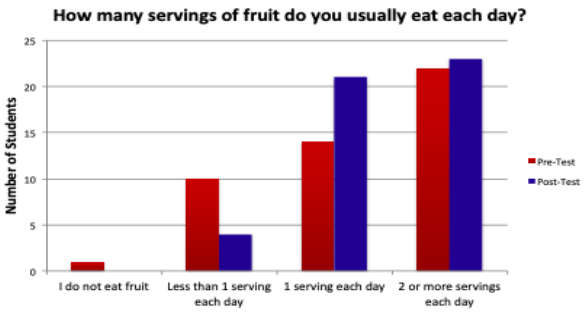

Figure 5. Fruit FFQ Pre- and Post-test results. There was a 33.3% increase in the number of participants who listed they consume 1 serving of fruits and a 3.75% increase in students who listed 2 or more servings each day.

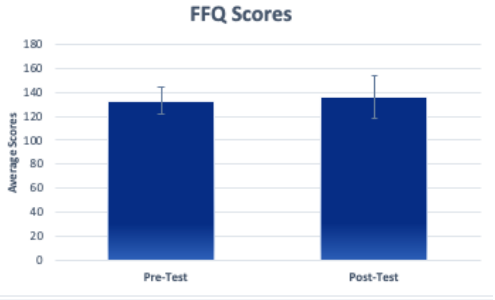

Figure 6. FFQ mean Pre- and Post-test scores (P<0.003).

These results indicate that a 3-week program integrated into the school curriculum can improve body image and nutrition knowledge in 5th and 6th grade students. A Spearman correlation was then used to evaluate the association between changes in knowledge scores and differences in body image scores. Results showed no significant association between the two scores (p = 0.53). This indicates that there was no correlation between body image and knowledge.

Based on the Shapiro-Wilk test for normality on the differences between post- and pre-test scores, the FFQ pre- and post-test data was found to be not statistically significant (P= 0.262). Since the p-value measure was not <0.05, it would indicating that the data is normally distributed. A t-test was then conducted to compare pre- and post-test results. The average difference between the two means is 3.0, with a high standard deviation of 7.35. This indicates the student had improvements in FFQ post-test scores. As shown in figure 6, the results were found to be statistically significant (P<0.003).

Kahoot Pre- and post- survey results were only analyzed on students who attended all three nutrition education lessons (n= 46). Kahoot survey results were found to be normally distributed, and a paired t-test was used first to compare differences in pre- and post- survey results. The

student's mean baseline scores of 44.78% increased after the nutrition intervention to 64.96% (Fig. 1). The students were found to have a significant increase in knowledge post-intervention ($p < 0.0001$).

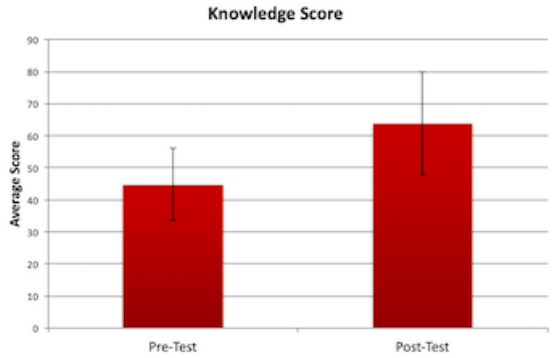

Figure 7. Kahoot Pre- and Post-test Score Analysis. Students had a significant increase in knowledge of healthy portion sizes and the functions of the major macronutrients, based on Kahoot results. P<0.0001.

DISCUSSION

These findings confirm the study's hypothesis that 5th and 6th grade students will have a decrease in body image concerns and an increase in the variety of healthy food choices they made following the intervention. The evidence is that based on FFQ, students showed a statistically significant improvement in post-test scores (0.003). There was also an increase in fruit and vegetable consumption among students. Consistent with prior research, this study found a large percentage of students were critical of their body.[1] Participants' body image scores improved after the intervention based on post-test results ($p<0.0001$). These results are likely due to the interventions focus on body neutrality and the emphasis of reframing thoughts about one's body to be more positive.

Results also indicated that the students had an increase in knowledge on healthy portion sizes and the functions of the major macronutrients, based on Kahoot results ($p<0.0001$). This findings were possibly due to the use of SCT idea of observational learning through our use of PowerPoints and videos as educational tools for the lectures. Student's participation in this 3-week program on nutrition education and body positivity was found to have a beneficial effect on body image and nutrition knowledge of 5th and 6th grade students at Randolph Elementary school. This approach focused on the principles of intuitive eating and portion sizes based on the MyPlate food groups. However, results found that there was no correlation between nutrition knowledge and body image concerns among students. These findings are likely due to the short time frame of this study. One cohort study conducted on college students found that nutrition knowledge had a significantly positive correlation with dietary attitudes ($P < 0.01$).[15] Differences in our results may be due to the younger population in our sample of 10 – 12 years of age.[15] Few previous studies have conducted an intervention to relate body image and nutrition knowledge in adolescents.

Education on IE used to improve nutrition knowledge and body image in adolescents has not been well studied.[7] The use of IE, students were able to focus on their personal eating behavior and how their bodies regulate its nutritional needs.[7] This study was successful likely due to the use of the SCT through the use of observational and behavioral learning to improve student's health behavior changes.[11]Many previous studies have found that the SCT to improve nutrition knowledge in children.[10, 11] Many interventions have also found nutrition education and cooking demonstrations to have a positive impact on healthy food consumption and nutrition knowledge in children .[2] However, minimal research has demonstrated the effectiveness of intuitive eating practices combined with nutrition education on adolescent populations. This study is unique, due to the variety of intervention strategies utilized including a hands on food demonstration, nutrition lessons, videos, and handout materials. Consistent with previous studies, this intervention found an increase in nutrition knowledge and overall dietary behaviors through the use of the SCT.[11] Our study worked to incorporate the SCT into our intervention through the use of hands-on food demonstrations, which incorporated behavioral learning. There were improvements found in the student's self-efficacy indicated by the 7% increase in students' reported ability to trust their body to tell them how much to eat. This study could be improved further, through additional questions assessing how student's self-efficacy played a role in their eating habits.

Limitations of the Research

Some limitations of this research study should be noted. One limitation is due to the fact that this intervention relied on student's self-reported measures. Another limitation is the short intervention time frame of only 3 weeks. The third limitation is the small sample size of 46 students. The fourth limitation was that there was little diversity in the population sample. Lastly, findings are also subject to researcher bias since it was not blinded and participants were not randomized. These issues merits the need for longitudinal research with a larger, more diverse sample to determine the lasting effects of this intervention. A control group would also be beneficial to compare and contrast findings. Despite these limitations, this study has advantages due to multiple methods of data collection.

Implications for Future Work and Practice

The results of this study can serve as a model for health classes in Elementary schools when teaching body positivity and intuitive eating to 5th and 6th graders. Due to the significance in body image and Kahoot post-test scores, this study can be used as a foundation to build upon for future research. These methods can be used to improve eating concerns and behaviors among adolescents. To improve eating habits of Elementary students, health teachers can be trained in ways to effectively teach intuitive eating. Collecting more anthropometric data, including height and weight would be beneficial to assess if any changes of weight or BMI occurred. In summary, this study of 5th and 6th grade students has shown to decrease body image concerns and improve nutrition knowledge. Further research is needed to evaluate how this approach can be applied in larger, more diverse populations.

References

[1] Eating Disorder Statistics. National Association of Anorexia Nervosa and Associated Disorders. https://anad.org/get-informed/about-eating-disorders/eating-disorders-statistics/. Published March 3, 2021. Accessed October 23, 2021.

[2] Statistics & Research on Eating Disorders. National Eating Disorders Association. https://www.nationaleatingdisorders.org/statistics-research-eating-disorders. Published July 14, 2021. Accessed February 13, 2022.

[3] Latiff AA, Muhamad J, Rahman RA. Body image dissatisfaction and its determinants among young primary-school adolescents. Journal of Taibah University Medical Sciences. https://www.sciencedirect.com/science/article/pii/S1658361217301208. Published August 8, 2017. Accessed September 3, 2021.

[4] Deleel ML, Hughes TL, Miller JA, Hipwell A, Theodore LA. Prevalence of eating disturbance and body image dissatisfaction in young girls: An examination of the variance across racial and socioeconomic groups. Psychology in the schools. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2844708/. Published September 1, 2009. Accessed September 3, 2021.

[5] Voelker DK, Reel JJ, Greenleaf C. Weight status and body image perceptions in adolescents: Current perspectives. Adolescent health, medicine and therapeutics. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4554432/. Published August 25, 2015. Accessed February 7, 2022.

[6] Davis L. Recent advances in therapies for eating disorders. National Center for Biotechnology Information. https://www.ncbi.nlm.nih.gov/pmc/. Published 2019. Accessed February 7, 2022.

[7] Intuitive Eating Studies. IntuitiveEating.org . https://www.intuitiveeating.org/resources/studies/. Published June 3, 2019. Accessed February 7, 2022.

[8] Bruce LJ, Ricciardelli LA. A systematic review of the psychosocial correlates of intuitive eating among adult women. Appetite. https://www.sciencedirect.com/science/article/abs/pii/S0195666315300635?via%3Dihub. Published October 22, 2015. Accessed February 7, 2022.

[9] Keirns NG, Hawkins MAW. The relationship between intuitive eating and body image is moderated by measured body mass index. Eating behaviors. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6535356/#R3. Published April 2019. Accessed February 7, 2022.

[10] Hall E, Chai W, Albrecht JA. Relationships between nutrition-related knowledge, self-efficacy, and behavior for fifth grade students attending title I and non-title I schools. ScienceDirect. https://www.sciencedirect.com/science/article/pii/S0195666315300441. Published October 8, 2015. Accessed April 15, 2022.

[11] Powers AR, Struempler BJ, Guarino A, Parmer SM. Effects of a nutrition education program on the dietary behavior and nutrition knowledge of second-grade and third-grade students. Journal of School Health. https://go-gale-com.oneonta.idm.oclc.org/ps/i.do?p=AONE&u=sunyo_main&id=GALE%7CA134211126&v=2.1&it=r. Published April 2005. Accessed April 16, 2022.

[12] Eating disorders. Mayo Clinic. https://www.mayoclinic.org/diseases-conditions/eating-disorders/symptoms-causes/syc-20353603. Published February 22, 2018. Accessed February 13, 2022.

[13] Lowes J, Tiggemann M. Body dissatisfaction, dieting awareness and the impact of parental influence in young children. Br J Health Psychol. 2003 May;8(Pt 2):135-47. doi: 10.1348/135910703321649123. PMID: 12804329.

[14] Nutrition education in US schools. Centers for Disease Control and Prevention. https://www.cdc.gov/healthyschools/nutrition/school_nutrition_education.htm. Published February 15, 2021. Accessed February 7, 2022.

[15] Erdenebileg Z, Park SH, Chang KJ. Comparison of body image perception, nutrition knowledge, dietary attitudes, and dietary habits between Korean and Mongolian college students. National Center for Biotechnology Information. https://www.ncbi.nlm.nih.gov/pmc/. Published 2018. Accessed April 20, 2022.

[16] Quizzes. MyPlate. https://www.myplate.gov/resources/tools/quizzes. Accessed April 21, 2022.

Appendix A

Healthy Eating Survey[16]

The following questions ask about , physical activity, and body image. **This is not a test.** We would like to assess what you know about MyPlate and the different food groups.
Please circle your response to each question below.

1. **Which of these nutrients can you get from eating <u>whole</u> fruit that is not usually found in juice?**
    a. Vitamins
    b. Minerals
    c. **Fiber**
    d. Sugar

2. **About how much of your plate should be fruits and vegetables?**
    a. One quarter
    b. **One half**
    c. Three quarters
    d. All of it

3. **What vitamin gives carrots and sweet potatoes their orange color?**
    a. Vitamin D
    b. Folate
    c. **Vitamin A**
    d. Vitamin O

4. **What color vegetable should you eat the most?**
    a. Orange, they taste best
    b. Purple they're rare and exotic
    c. Green because kale is green
    d. **A variety of colors**

5. **What food group are beans, peas, and lentils counted in?**
    a. Vegetable group
    b. Protein group
    c. **Both**
    d. Neither

6. **Any food made from wheat, rice, oats, cornmeal, barley, or another cereal grain is in the Grains Group.**
    a. **True**
    b. False

7. **What is the best way to know that the bread you are buying is a whole-grain bread?**
    a. The bread tastes "grainy."
    b. Bread is brown in color.
    c. Another customer says so.
    d. **Any ingredient includes the word "whole."**

8. **Refined grains are grains that have been milled, a process that removes the bran and germ. This is done to give grains a finer texture and improve their shelf life, but it also removes dietary fiber, iron, and many B vitamins. Which of these foods is a refined grain?**
    a. Oatmeal
    b. Bulgur (cracked wheat)
    c. **White rice**
    d. Popcorn
    e. All of the above

9. **Which food is a vegetarian choice in the Protein Foods Group?**
    a. Hummus (made with chick peas)
    b. Sesame seeds
    c. Peanut butter
    d. Black bean veggie burgers
    e. **All of the above**

10. **Most Americans get enough protein in their diets.**
    a. **True**
    b. False

11. **What important mineral is found in all foods in the Dairy Group?**
    a. Vitamin C
    b. Riboflavin
    c. **Calcium**
    d. Fiber

12. **What is the name of the sugar found naturally in milk?**
    a. Fructose
    b. **Lactose**
    c. Glucose
    d. Sucrose

13. Which of the following is NOT a processed food?
    a. Canned food
    b. Frozen broccoli
    c. Chips
    d. **Eggs**[16]

Appendix B

Body Image Survey

The following questions ask about healthy eating, physical activity, and body image. **This is not a test.** We would like to learn about what kids your age eat and how they feel about their weight.

All answers will be kept private. Your name will not be used. Please be as honest as you can!

Please circle your response to each question below. Remember, you are free to skip any questions that you don't want to answer.

1. **I am critical of my body.**
    a. Strongly disagree
    b. disagree
    c. Neutral
    d. Somewhat agree
    e. Agree

2. **I label food as "good" and "bad".**
    a. Strongly disagree
    b. disagree
    c. Neutral
    d. Somewhat agree
    e. Agree

3. **I want my body to be strong and healthy.**
    a. Strongly disagree
    b. disagree
    c. Neutral
    d. Somewhat agree
    e. Agree

4. **I feel guilty for eating because it effects my shape/weight.**
    a. Strongly disagree
    b. disagree
    c. Neutral
    d. Somewhat agree
    e. Agree

5. **I trust my body to tell me *how much* to eat.**
    f. Strongly disagree
    g. disagree
    h. Neutral
    i. Somewhat agree
    j. Agree

Appendix C
Food Frequency Questionnaire

How Often Do You Eat These Foods?

Please estimate the average amount of foods you eat as best as you can. This is NOT a test.

Put an X in the box that best matches your answer. *Please only mark one response for each question.*

1. **How many servings of vegetables do you eat each day?** (1 serving = 1⁄2 cup cooked vegetables or 1 cup salad vegetables)

I do not eat vegetables	Less than one serving each day	1 serving each day	2 or more servings each day

2. **About how many servings of chips and French fries wedges do you usually eat each week?** (1 serve = a small cup)

I do not eat potatoes	Less than one serving each day	1 serving each day	2 or more servings each day

3. **About how many servings of fruit do you usually eat each day? Do NOT include fruit juice.** (1 serving = 1 medium piece or 2 small pieces of fruit or 1 cup of diced pieces)

I do not eat fruit	Less than one serving each day	1 serving each day	2 or more servings each day

4. **About how many desserts (candy, cookies, brownies...) do you usually eat each day?**

I rarely eat desserts	Less than one dessert each day	1 dessert each day	2 or more desserts each day