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Amazefest Summer 2015: Nutrition Education and Body Mass Index (BMI) Assessment

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Abstract

Within the last three decades, the prevalence of obesity in childhood has more than doubled in the United States. Approximately 12.7 million (17%) of children aged 2-19 years are affected by obesity in childhood. This research study was launched in an effort to lessen this country's overwhelming obesity problem by educating children and teens in Arkadelphia, Arkansas about the importance of eating healthy food and living an active lifestyle. The researchers visited five local summer programs during a seven-week period to determine the weight status of typical Arkadelphia children with ages ranging from three to twelve years old. Three programs served as the treatment group and received weekly education sessions covering topics in nutrition and physical activity. Two groups served as the control group and did not participate in the weekly lessons. At the beginning and end of the seven weeks, the children in both the treatment and control groups were weighed and measured and the pre- and post data was compared. Pre- and post assessment body mass index (BMI) were calculated and results collected in a database under the categories of underweight, healthy weight, overweight, and obese. Data was collected from 141 children. Newsletters containing a summary of the day's lesson and practical ways to improve lifestyle were sent home with the children in hopes that caregivers would continue the child's nutrition and physical activity education at home. Prevention is the main goal of this research, as studies have shown that educating students on the importance of nutrition and physical activity prevents weight gain and thus weight gain related health problems. This particular study was conducted to estimate the effectiveness and value of seven weeks of practical nutrition and physical activity-specific education and its role in the prevention of childhood obesity.

Introduction

Over the past 30 years, obesity in children has more than doubled in the United States. Problems arise when the caregiver is not aware of the weight status of their child: the child may be at a healthy weight but seen as underweight, or overweight but seen at a healthy weight which leads to the caregiver overfeeding the child.[1] This emphasizes the importance of a positive environment and child-caregiver relationship during childhood. Instilling healthy eating habits allows for optimal growth and development, preventing overweight/obesity and illnesses in the future.[1] Though teaching children practical nutrition information is important, educating the caregiver has shown to be vital to the prevention of childhood obesity.[2] One study reports that after an 8-week nutrition education program, significant improvement of 1-2 points on a 5-point scale occurred in areas such as television watching, eating with the family, and fruit and vegetable consumption for both the child and the caregiver. More than 50% of the participants reported that fast food consumption decreased by the end of the study.[2] Educating both the caregiver and child has proven to be the best way to ensure proper growth and development in childhood.

Acknowledgements

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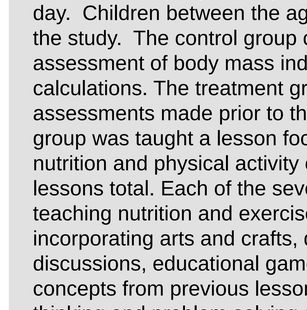
Methods

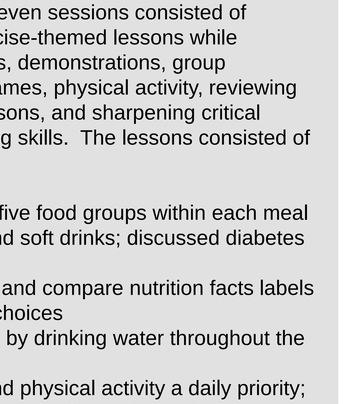
Amazefest Summer was conducted in cooperation with Peake Rosenwald, Fun Time, Perritt Primary, Boys & Girls Club, and Arkadelphia Kids Club summer programs. One hundred and forty-one children were enrolled in the program. The treatment group had 86 children and the control group had 55 children. The program impacted as many as 58 children per day. Children between the ages of 3-12 years participated in the study. The control group consisted only of pre- and post-assessment of body mass index (BMI)-for age percentile calculations. The treatment group had BMI-for-age percentile assessments made prior to the first lesson. The treatment group was taught a lesson focused on various aspects of nutrition and physical activity each week resulting in seven lessons total. Each of the seven sessions consisted of teaching nutrition and exercise-themed lessons while incorporating arts and crafts, demonstrations, group discussions, educational games, physical activity, reviewing concepts from previous lessons, and sharpening critical thinking and problem solving skills. The lessons consisted of the following topics:

Lesson 1: Incorporating all five food groups within each meal
Lesson 2: Limiting sugar and soft drinks; discussed diabetes and obesity
Lesson 3: Learning to read and compare nutrition facts labels to help make healthy food choices
Lesson 4: Staying hydrated by drinking water throughout the day; water content in foods
Lesson 5: Making sports and physical activity a daily priority; the necessity of getting adequate sleep; decreasing the amount of time spent in sedentary activities
Lesson 6: Practical ways to make healthy lifestyle changes; healthier fast food options; choosing foods low in fat and sugar
Lesson 7: Eating breakfast every day; using food models to simulate the creation of healthy meals

After the last lesson, post-assessment BMI-for-age percentile calculations were made. All data was entered into Excel and SPSS to be analyzed. Comparisons were made between the pre- and post-assessments for the control group and the treatment group as well as comparisons between groups.



Lesson 7: using food models to include all five food groups in healthy meal simulations



During lesson 5, we learned about the importance of physical activity and created our very own Olympic medals!

Measuring children's height and weight to assess BMI

Week 1: participating in physical activity

Learning how to make healthy choices at fast food restaurants and how to choose foods low in fat and sugar

Results

In the control group there were 25 children (10 male and 15 females). Eight were Caucasian, sixteen were African American and one was Indian. Seventeen were present for pre-assessments and post-assessments.

Analysis of the control data (n=17) revealed a mean pre-assessment BMI of 16.4± 1.5 and a post-assessment BMI of 16.5±1.4. A paired sample t-test showed there was no statistical significance between the pre-BMI and the post-BMI with a p=0.12.

BMI-for-age-percentiles weight status categories for the pre-assessment (n=17) were: underweight- 5%, healthy weight- 59%, overweight- 18%, and obese- 18%. Post-assessment of the BMI-for-age-percentiles weight status categories for the control group saw slight changes: underweight- 5%, healthy weight- 47%, overweight- 30%, and obese- 18%. Two children moved from having a healthy weight at the beginning of the summer research program to being in the overweight category at the end of the program.

There were 61 children (39 males and 22 females) in the treatment group. Thirty were Caucasian and 31 were African American.

Results

BMI-for-age-percentiles weight status categories for the treatment group's pre-assessment (n=29) were: underweight- 0%, healthy weight- 48%, overweight- 21%, and obese- 31%. Post-assessment of the BMI-for-age percentiles weight status categories for the treatment group saw slight changes: underweight- 0%, healthy weight- 45%, overweight- 24%, and obese- 31%. One child moved from the healthy weight to overweight, one child moved from obese to overweight and one child moved from overweight to obese. The remainder of the children remained in the same weight status category.

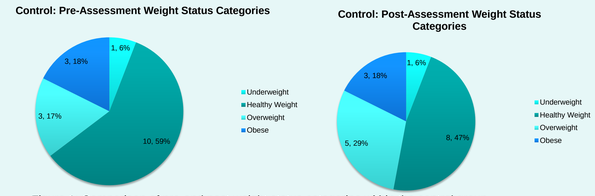


Figure 1: Comparison of pre-and post weight status categories within the control group

Figure 2: Comparison of pre-and post weight status categories within the treatment group

Conclusion

The goal of the summer was to teach children in Arkadelphia, Arkansas about nutrition and physical activity to reduce the risk of obesity in childhood. The children were able to recall the information weeks after the lessons were taught and reported practical changes they made according to what they learned.

The majority of children in the control and treatment group remained in the same weight status category. Only two children in the control group and three children in the treatment group changed weight status category. There's a possibility that error could occur in measuring height and therefore, BMI calculations.

The summer nutrition research program succeeded in educating children on the importance of nutrition and exercise which has been shown to reduce the risk of obesity during childhood.

References

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2. Dickin K, Hill T, Dollahite J. Practice-based evidence of effectiveness in an integrated nutrition and parenting education intervention for low-income parents. *J Acad Nutr Diet.* 2014; 945-950.