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Vast difference of obesity in American children compared to children worldwide

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Abstract
According to the Centers for Disease Control and Prevention in the last 30 years, obesity has more than doubled in children and quadrupled in adolescents. Since 1980 the percentage of children aged 6-11 years in the United States who were obese increased from 7% in 1980 to 18% in 2012. The purpose of the research was to collate, analyze, and compare body mass index (BMI)-for-age percentile results of children participating in a summer nutrition research program in Arkadelphia, AR, with the BMI-for-age percentiles of children in Arkansas, the United States and worldwide. The BMI-for-age percentiles for each participant in the program during the eight years of the study were compiled by age, gender and ethnicity into one document. Some participants repeated the program multiple years, and their BMI-for-age percentile changes were tracked from year to year. A total of 408 students (189 males and 219 females) ages 3-14 were studied from 2007-2014. Within those gender groups there were three ethnicities: Caucasian (220), African American (178), and Hispanic (6), as well as four without ethnicity listed. Summer research BMI-for-age weight percentiles by gender and ethnicity. Results showed that 99 participants' weights remained the same, 14 gained weight, 11 lost weight, and 4 fluctuated between weight loss and weight gain.

Introduction
Obesity in childhood has become a worldwide health crisis. The global prevalence of overweight and obesity has increased significantly since 1990 with a total of 43 million overweight or obese children.1 In the United States since 1965, childhood obesity has more than doubled in children and quadrupled in adolescents. Approximately, 12.7 million (17%) of children and adolescents aged 2-19 years are affected by obesity in childhood.2 According to the Arkansas Center for Health Improvement, the 2013 data for school age children in Arkansas listed more males (23%) than females (20%) obese and a higher percentage of females (18%) than males (17%) overweight. The percentage of overweight students was similar for both genders (2%, respectively). A comparison of overweight and obesity by ethnicity in Arkansas found that Hispanic students had the highest rates at 49%, African American students at 42%, Native American students at 40%, Caucasian students at 36% and Asian students at 32%. The research study compared overweight obesity data collected from students participating in an eight year summer nutrition research program in Arkadelphia with Arkansas, United States and worldwide statistics.

Methods
Each summer from 2007-2014, children participating in a nutrition research program have had their height measured and have been weighed, a BMI has been calculated, and a BMI-for-age percentile determined using the National Centers for Health Statistics growth charts. Based upon the percentile, a weight status category has been assigned. The Centers for Disease Control and Prevention listed the weight status category as follows: underweight is less than the 5th percentile, healthy weight is the 5th percentile to less than the 85th percentile, overweight is the 85th percentile to less than the 95th percentile and obese is equal to or greater than the 95th percentile.

Results
Data were entered into an Excel spreadsheet and analyzed to calculate total number of participants for all summers as well as a breakdown of percentages by gender, ethnicity, and weight status category. Statistical analysis was performed using SPSS Statistics (version 21.0, IBM Corporation). Analysis of variance between ethnicity and weight status category and gender and weight status category were performed. Longitudinal data were entered into an Excel spreadsheet and calculated to find the changes in weight status category by the number of years participants attended. Data were further analyzed to determine weight change based upon gender and ethnicity in the program.

Results: Repeated Summers
Longitudinal data were collected for children continuing in the program for multiple summers. A total of 128 students (74 female and 54 male) of the 408 participants were tracked for years (96), three years (26) and four years (3). Of the 128, there were 71 Caucasians, 56 African Americans and 1 Hispanic. The results showed that 99 participants’ weights remained the same, 14 gained weight, 11 lost weight, and 4 fluctuated between weight loss and weight gain.

Conclusion
Data collected during summer research compared to Arkadelphia Schools, Arkansas, the United States, and the world show varying percentages in each weight category. The results differ, as is evident in the percentages of obese children in the research study (19%), Arkansas (22%), the United States (17%), and the world (5%). Although there is a lower percentage of obese children in the world, the World Health Organization finds that this number is increasing.

References

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Table 1. Statistics of children’s weight status categories in Summer Research, Arkadelphia, Arkansas, U.S., and globally.
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. The 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 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 education at home. 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 teach 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; discuss 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 fat food choices; choosing foods low in fat and sugar
Lesson 7: Eating breakfast every day; using food models to simulate the creation of healthy meals

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 nutrition may be low seen as underweight, or overweight but seen at a healthy weight which leads to the caregiver overfeeding the child. 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. Though teaching children about nutritional information is important, educating the caregiver has shown to be vital to the prevention of childhood obesity. 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. Educating both the caregiver and child has proven to be the best way to ensure proper growth and development in childhood.

Acknowledgements
Dr. J.D. Patterson Summer Research Grant

Introduction

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; discuss the necessity of getting adequate sleep; decreasing the amount of time spent in sedentary activities
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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.

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.

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 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 moved from 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