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Healthy Eating Habits of School Aged Children in Rural-Areas

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Abstract

This study provides further understanding of interventions to impact healthy eating habits in children. Children received a short lesson on healthy eating habits, and took a pre and post test to see how much their knowledge improved. Test means increased from pre-test to post-test (51.76 to 60.48). A paired samples t-test showed the results to be statistically significant ($p<0.002$). The findings of this study supports providing elementary school aged children with nutritional education may impact their ability to make wiser, and healthier choices regarding food intake.

Introduction

Childhood obesity is a growing epidemic in the United States. Despite the programs that have been implemented and the information that has been disseminated to prevent and stop this epidemic, childhood obesity is still very prevalent among society. According to the Centers for Disease Control and Prevention, obesity now affects seventeen percent of all children and adolescents (Ogden & Carroll, 2010). As has been demonstrated, most obesity results from unhealthy eating habits, inactivity, and poor lifestyle choices (Ogden & Carroll, 2010).

The impact of childhood obesity affects the current state of a child's health but it also has major implications on their future adult health. Children who are obese are more likely to have increased blood pressure and cholesterol that put them at risk for cardiovascular disease (Mooney, 2012). Children who are obese also have an increased risk of developing type II diabetes, hypertension, musculoskeletal problems, stroke, and a multitude of other comorbidities (Mooney, 2012). School-aged children who are obese have a fifty percent chance of becoming obese adults (Mooney, 2012). In addition to

physical problems associated with being obese, these children can also develop social and psychological problems, which can lead to depression and anxiety (Mooney, 2012). Childhood obesity may impair all aspects of one's being. An important question to ask is: Are these children aware of the impact that unhealthy eating has on their health?

Health officials are becoming increasingly concerned with the rising obesity rates in rural areas. Larson and associates (2009) state that obese children in rural areas are impacted most negatively by their environment, as they have poor access to supermarkets and healthful food. It is increasingly hard for children to make healthy life decisions when an unhealthy environment surrounds them. This unhealthy environment includes restaurants that have increased portion sizes, unhealthy food advertising in the media, and less supermarket availability (Larson, Story & Nelson, 2009).

Children living in rural areas are said to consume diets higher in fat and calories, and have less exercise (Befort, 2012). Befort (2012) also stated "There is a definite cultural diet in rural America, full of rich, homemade foods including lots of meat and dessert". Children in rural areas have been said to have more screen time during the day and watch more television, which takes away from the time that they can be active (Befort, 2012). There are also barriers to addressing childhood obesity in rural areas. They generally have increased poverty levels, and limited school resources on physical education and nutrition due to budgets (Befort, 2012).

Review of the Literature

Studies have been done to determine similarities and differences between health behaviors and weight status among urban and rural children in the United States, but it is not a topic that has been fully explored. In one study fifth grade children from two urban

schools and two rural schools were invited to participate in an assessment on their health and weight (Davis, Boles, James, Sullivan, Donnelly, Swirczynski, & Goetz., 2006). One hundred and thirty eight of those children chose to participate in the assessment. Results of this showed that children from both areas consumed equal amounts of calories and calories from fat, but children from rural areas consumed more junk food and had more unhealthy eating habits (Davis, et al., 2006). The study also suggested that children raised in an urban setting participated in more metabolically equivalent activity and were generally more active children (Davis, et al., 2006).

A study completed with Appalachian children evaluated body mass index (BMI) for children aged six through eleven living in a rural community (Montgomery-Raegan, Bianco, Heh, Rettos, & Huston, 2009). Two thousand elementary school children participated in this study and filled out questionnaires. The goal of this study was to identify children who were most at risk of obesity based on their demographic and behavioral factors. The results of this study showed that 38 percent of those two thousand children had a high BMI, 20.9 percent of them were overweight, and 17 percent of them were at risk for becoming overweight (Montgomery-Raegan, et al., 2009). The children that had a high BMI, were overweight, or were at risk for becoming overweight showed higher instances of watching television, eating the majority of their meals at school, and having parents who smoked then children who were of a healthy weight (Montgomery-Raegan, et al., 2009)

With all the knowledge known on childhood obesity and the factors that contribute to it, studies have also been completed to promote interventions to change children's knowledge on nutrition and healthy habits. In the Appalachian counties of

Ohio, a study was done to look at the dietary intake of children and the affect that it had on obesity. Third graders in three rural counties were studied to determine the effect of the Food, Math, and Science Teaching Enhancement Resource Initiative curriculum to improve their dietary intake (Hovland, McLeod, Duffrin, Johanson, & Berrymen., 2010). This curriculum was delivered to 204 students, and their intake was recorded using a questionnaire (Hovland, et al., 2010). Results showed that the curriculum did not significantly affect the dietary intake of these students. Therefore, the prevalence of poor dietary intake warrants more nutritional education and interventions for students (Hovland, et al., 2010).

The feasibility and effectiveness of a Healthy Choices Intervention (HCI) Program with fifteen 9-12 year old overweight and obese children and their parents is another intervention study that was completed (Jacobson & Mazurek-Melnyk, 2010). Children and parents found the HCI to be useful and give important information. Positive effects of the HCI for the children included decreased BMI, increased knowledge, choices and behaviors, and increased self-control (Jacobson & Mazurek-Melnyk, 2010). Positive effects of the intervention for the parents included increased knowledge, behaviors, and decreased anxiety (Jacobson & Mazurek Melnyk, 2010).

Research Question

The research question of this study is "Do teaching interventions on nutrition in rural school-aged children increase their knowledge of healthy eating habits?" Perhaps, children are not aware of the new guidelines and healthy habits to prevent obesity. Asking this question and implementing the intervention that coincide with it can increase a child's knowledge on eating healthy, and the effects that healthy eating and unhealthy

eating have on the body. It can cause them to make better food choices, and to decrease their individual likelihood of obesity.

Understanding the amplitude of this problem and the effects that it is having on this generation's children is important. Perhaps awareness of childhood obesity can be increased through education directly to children, resulting in entire families making healthier choices. This study will examine the effect of a teaching intervention on the knowledge about healthy food choices in school age children in a rural area of western New York.

Research Methodology

The quantitative research study used was a "Before-After" design, where a pre-test was given to a group to measure their baseline knowledge, followed by an intervention, and completed with a post-test to determine if the dependent variable was affected by manipulation. In this study, the dependent variable was the knowledge of the third grade students, and the independent variable was the intervention preformed which was a short twenty-minute lesson and activity on healthy eating habits.

Ethical considerations were taken into account for this intervention study. Category Three Institutional Review Board approval was also obtained. Permission was obtained from the elementary school's principal and teaching staff. The principal was notified of IRB approval and permission was first granted from her. After, each staff member involved was informed of all details of the intervention, and asked if they wished to participate or not. In addition to this, parents and students received a statement of informed consent. Each parent and student was informed of the intervention, the risk-benefit ratio, what they would be learning, who they could contact with any questions,

and the decision to participate or not participate. Each student had to assent and his or her parent had to consent to participate in the study in order for participation to occur. Each student's identity was kept anonymous and confidential on their pre and post-tests, by assigning a number to each person.

The pre and post-tests used for this intervention were designed by taking information related to "The Healthy Food Plate Model" ("My Plate", 2012) (see figure 2). Both tests consisted of ten multiple-choice questions. For the post-test, the same multiple-choice questions were used, except they were placed into a different order. Face validity for the pre-test and post-test was obtained from an experienced third-grade teacher in this elementary school system.

Implementation

Three third grade classrooms at a rural elementary school in Batavia, New York were used for this study during the spring of 2012. These three classrooms all had the same curriculum each school year. The students had learned about healthy eating before in their classrooms, using the "Food Pyramid" model (See Figure 1). This model shows each of the food groups, what belongs in them, and how many servings per day need to be obtained to eat healthy regularly.

For this intervention, the "Food Plate" was taught to the students instead of the "Food Pyramid" ("My plate," 2012). The students had not been taught about this new model in the past. This model shows a standard plate, which is sectioned off into four separate parts (See Figure 2). These parts simply show how much of your plate should be taken up by foods from a certain food group at each meal. Protein and whole grain foods are shown in equal fourths on the plate, while fruits and vegetables are split in a

slightly different way. On the opposite side of the plate, more space is found in the vegetable section than the fruit section. Also, off to the side of the plate there is a small cup for dairy products in the model ("My plate," 2012).

A pretest was administered to the children just before the implementation of the intervention. The pretest was a multiple-choice test of ten questions to assess the knowledge the student had about healthy eating habits. Then, an activity was done to aid in the teaching of the new material from the Food Plate model. At this age and developmental level of middle childhood, it was thought that this model for healthy eating would be easier to comprehend and to remember for these children. There was no need to memorize specific portion sizes or specific servings per day, as long as each meal eaten was done so by following the format of the Food Plate model.

During the intervention, each child was shown a large image of the food plate. They were also each given a small paper plate of their own, along with markers. Each student copied the different sections of the Food Plate example onto their own in front of him or her. This intervention was aimed at keeping the interest of the students, along with their new learning. The classes were lead in discussions about healthy foods for each food group, and the students volunteered their thoughts and ideas. Whole grains, and fresh fruits and vegetables were discussed. Also, different types of protein, meat, seeds, beans, and nuts were all discussed. Each student drew their own favorite foods from each food group on their plates and following, each student shared their plate with the class.

After the students did the group activity and discussion, they each completed a post-test. This post-test contained ten multiple-choice questions, the same questions that

were seen on the pre-test but in a different order. Students were asked to complete the post-test to the best of their ability with the new information that they had gained from their short twenty-minute lesson.

Results

Fifty-nine students from the 3rd grade elementary school classrooms completed this intervention. Thirty-three of those students were female, and twenty-six of those student's were male. There were sixteen eight year olds who participated, and forty-three nine year olds.

SPSS statistical analysis was used to determine the significance of the intervention. The pre-test mean score was 51.76, with a standard deviation of 16.74. The post-test mean score increased to 60.48, with a standard deviation of 19.02. Knowledge and score increased from the pre-test to the post-test, indicating a knowledge increase from the students.

The difference in pre and post test scores was tested by using a Paired Samples T-Test. The results of this study were found to be statistically significant. The two-tailed significance found was $p<.002$. The mean of the t-test was -8.720, and the standard deviation was 20.45. The standard error mean was 2.66, and the degrees of freedom were 58.

Discussion

It was hypothesized that "awareness on healthy eating habits and childhood obesity can be increased in school-aged children, evolving their knowledge and resulting in healthier lifestyles." The null hypothesis can be rejected here, since the study showed that this intervention increased the knowledge of children's healthy eating habits. Also,

the question in this study can be answered with the results of the healthy eating habits intervention. The question asked was "Do interventions on nutrition in rural school-aged children increase their knowledge of healthy eating habits?" The results of this study supported that interventions on healthy eating habits increase children's knowledge on nutrition. The literature supports the findings of this study. The need for elementary school's to have more nutrition education was by Brouse & Chow, (2009) who suggested that even though children were making their own food choices, they did not have good knowledge on what was healthy for them. Jacobson & Mazurek-Melnyk (2010) demonstrated that a healthy choices intervention increased the knowledge, healthy choices and behaviors of children. Howland and associates (2010) found that education on healthy eating habits and nutrition is needed repeatedly in school-aged children.

Limitations

One limitation of the research was the short time frame that was given to perform the healthy eating habits lesson in the various third grade classrooms. More time could have allowed for more learning activities and a greater increase and understanding of the new knowledge that the students were taught. Another limitation of this study was that this was a cross-sectional study. More information could have been obtained if the same students could be tested again, a year later, to see the knowledge that kept to their memory. Also, children's body mass index was not allowed to be obtained. Pairing a child's answers on the tests given, to their specific BMI's could have provided more information on BMI correlating to knowledge of nutrition.

More research is needed to strengthen the studies on nutritional habits of school-aged children. A longitudinal study would provide evidence of incorporation of material into daily nutritional patterns. One group of children could have multiple healthy eating habits lessons over a period of years, and be tested multiple times to see what they retained. This could be compared to a group who had only one or two nutritional lessons, who were also tested, to compare the amount of knowledge that is gained by increasing the amount of nutrition lessons given. More knowledge is needed for research, and more lessons are needed for children to increase the healthy choices that they make in their lives.

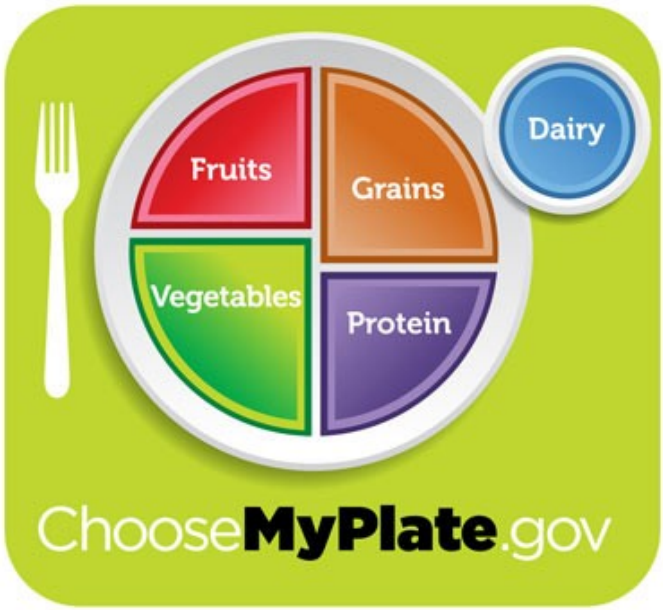
Implications

This small but significant study adds to the evidence that children's knowledge related to healthy eating can be changed by short teaching interventions. Nurses should be knowledgeable on kid-friendly ways to teach healthy eating habits, so they can provide proper information to school aged children. Nurses play a huge role in education on nutrition, and in turn- they help to aid in a healthy lifestyle for children. This is taking a step against childhood obesity, and the many comorbidities associated with it.

Figure 1:

www.thefeltsource.com

Figure 2:



www.myplate.gov

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