

Does an integrated nutrition education program affect Body Mass Index and knowledge retention of fifth grade students?

PURPOSE

The purpose of this participatory action research is to discover if there are differences in BMI's between fifth grade students who are exposed to instruction integrating nutritional information and their knowledge retention and those who are not exposed to the same information.

INTRODUCTION

Childhood obesity is a growing epidemic in the United States. The CDC reports that in 2011, 17% (or 12.5 million) children in the United States 2 to 19 years old are obese (DNPAO & CDC, 2012). In North Carolina alone, the obesity rate is 13% by the time students reach high school (CDC, 2012). Research has shown that increasing nutritional knowledge along with activity can positively affect Body Mass Index (BMI) over a long period of time. A supplemental nutrition education program integrated within a physical education setting can be an effective way to address childhood obesity and reduce a child's BMI (Schaub & Marian, 2011).

Increasing nutritional knowledge in addition to promoting physical activity can positively affect child's Body Mass Index (Moore et al., 2009). It is been documented that increased focus on core subjects has resulted in inadequate nutrition education which indirectly relates to the obesity epidemic in children (Hammerschmidt, Tackett, Golzynski, & Golzynski, 2011).

People will engage in health behaviors if they have the skills required to undertake the behavior (O'Dea & Wilson, 2006). Wallen and Davis concluded that the effectiveness of teaching nutrition education in various settings can positively reinforce and support health messages (2010). By integrating nutritional concepts into Physical Education classes, students can develop a better understanding of concepts related to caloric intake and expenditure, and furthermore, demonstrate improved dietary behaviors and more correct health and food beliefs (Wallen & Davis, 2010, Worsley, Coonan, & Worsley, 1987).

In addition to the nutrition education, there is an increased need for a strong Physical Education program. According to Shriver and Gates (2008), "obesity results from an imbalance between energy intake and expenditure" (p. 986). Physical Education class is the perfect setting to help students understand how calories consumed relate to calories burned.

Several school-based intervention programs have been created that incorporate nutrition and activity. For example, the WAY (or Wellness, Academics and You) was a program created for fourth or fifth grade students from four states over a 12 week period. These students were enrolled in six modules, each of which was followed by 10 minute aerobic exercise routine. Children who participated in this intervention had significantly lower BMIs and a greater increase in activity levels as well as intake of fruits and vegetables than the control group in the post intervention, which was conducted six months later (Spiegel & Foulk, 2006). There have also been web-based instructional units created to impact the health related knowledge, attitudes, and behaviors of fifth grade students. Palmer, Graham, & Elliot (2005) report integrating technology leads to improved physical activity knowledge and attitudes towards participation. By combining nutritional information and exercise, not only will student's overall health improve but their attitude towards such as well.

METHODOLOGY

Sample

The research design is quasi-experimental with a test control group. A sample of convenience was used, which allowed for a small participant pool. Participants were chosen from Ayden Elementary School's fifth grade student population. The 39 participants in the intervention group were selected based on the two class homerooms that attend Physical Education class in the same time period. The 43 participants of the comparison group were selected by the two class homerooms that do not attend Physical Education with the intervention group in any class period. There was no other specific characteristic involved in enrolling the participant. The participants were able to withdraw at any time without penalty.

Measurement/Instrumentation

The participants had their height and weight recorded regarding their individual Body Mass Indexes (BMIs). Additionally, participants completed a pre-test which assessed their behavior, attitude, and knowledge of nutrition. The CATCH Kids Club After-School Questionnaire developed by the University of Texas was used to record this information ("CATCH 'EM Measurement Tools Descriptions", 1999, p. 1). This self-administered questionnaire is designed to measure the behavioral and psychosocial variables that are being targeted by the intervention (Kelder et al., 2005). The quantitative data collected from the CATCH survey will be analyzed using SPSS19 statistical software to determine pre/post differences. The BMI measurements will be calculated using the following formula: $\text{weight (lb)} / [\text{height (in)}]^2 \times 703$ and percentile ranked using the CDC's BMI-for-age growth charts ("Healthy Weight: Assessing Your Weight: BMI: About BMI for Children and Teens | DNPAO | CDC", n.d., p. 1).

Detailed Study Procedures

An integrated nutrition education curriculum will be provided as the intervention. All participants will engage in Physical Education units involving gymnastics, throwing and catching, basketball skills, cooperative activities, and fitness units. The experimental group will have nutritional content included in their instruction. Information dealing with caloric expenditure versus intake, food models showing portion size, My Plate interactive instruction, and information regarding food nutrients is being included.



Data Analysis

Participants will later be given a post- test questionnaire and a post- BMI analysis. The statistical procedures used will be a paired t Test and independent t Test. The paired t Test is appropriate to use in comparing the pre- and post- means within each related group for the questionnaire and BMI. The independent t Test is appropriate to use to compare the post- test means between the experimental and control groups.

ANTICIPATED RESULTS

The hypothesis that can be made based on the intervention is that the BMI's will not significantly change based on the sixteen week time period that it took place within. In regards to the participant's nutritional knowledge and behaviors, these variables should increase on both levels. When compared to the control group, the individual's in the experimental group should have gained the appropriate amount of knowledge to answer survey questions more efficiently and also be able to adjust behaviors based on the information given.

There are many outside variables to consider that spread beyond the control of the researcher. For example, the quality of nutrition that the participants have available to them in their homes will play a role in the ability of him/her to engage in the more beneficial behavior. Also, if the individuals involved in the study do not have open-minded role models in the home to practice the desired behavior, then it will be difficult for the participant to change.

Overall, it is believed by the researcher that further investigation is needed on a long term basis to discover if a child's BMI will change with consistent nutrition education throughout grades K-5 as part of the instructional school day. The participants at Ayden Elementary School have shown that there is an interest in receiving health information.

References

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