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Eat Better, Move More: An Educational Program Teaching Healthy Exercise Habits to
Low-Socioeconomic Elementary School Students

An honors research project submitted in partial
fulfillment of the requirements of the degree of
Bachelor of Science of Nursing

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Keywords

Exercise, Healthy, Habits, Obesity

Abstract

The unhealthy habits of our modern culture show a concern for our future generations. The combination of our genotype with social and cultural interactions can lead to obesity. This study was conducted because there is little evidence of school-based interventions for the health of ethnic minority students. The purpose of this study was to evaluate to what extent the Eat Better, Move More (EBMM) program exercise content affected 4th and 5th grade students exercise habits. A convenience sample of twelve fourth-grade and twelve fifth-grade students completed the EBMM exercise module. A quasi-experimental design was used through a single group pre-test/post-test questionnaire to answer the research question. Descriptive statistics were used to analyze the data. Students received education through the teachers who taught from the EBMM teaching program. The results from this study indicated that participation in physical activity increased after the education modules.

I.INTRODUCTION

Background and Significance

Childhood obesity puts children and adolescents at risk for poor health their entire life. The prevalence of obesity in the United States for ages 2-19 is 13.7 million, or 18.5% (Hales, Carroll, Fryar, & Ogden, 2017). Obesity and being overweight have been directly related to serious health problems. Children who are overweight or obese are at risk for hypertension, type 2 diabetes, heart disease, stroke, and cancer (Health Risks of Being Overweight, 2015). In order

to improve the future health of Northwest Arkansas' youth, it is imperative to provide education about a healthy lifestyle.

There is little evidence of a successful school-based program focused on nutrition and exercise for low socioeconomic students. There have been many studies assessing different aspects of healthy lifestyle education (Llargués, et al., 2017; Bethea, et al. 2012; Story, et al., 2003). Providing information concerning the benefits of exercise and how to incorporate increased exercise into daily life is key to improving the health of the next generation.

Purpose of Study

The purpose of this study was to examine the effects of the EBMM program exercise module on 4th and 5th grade student's daily activity level. The outcomes from this study could be used to inform future research and best practices for support healthy lifestyle behaviors in 4th and 5th grade students.

To accomplish the purpose of this study it was necessary to answer the following research question:

1. Do 4th and 5th grade students increase healthy behaviors related to exercise (increased activity) after participation in the EBMM program exercise module?

II. LITERATURE REVIEW

The population of the United States has never been larger, in terms of weight. Children learn from their parents and are adapting habits through observation. When it comes to diet and exercise, these unhealthy traits that are passed down put the children at an increased risk for being overweight or obese and severe health issues. An estimated one in five children between the ages of six and seventeen are overweight. (Davis, Davis, Northington, Moll, & Kolar, 2002).

In minority households, the problem is more prevalent. Gaps in socioeconomic status are an important contributor to this health disparity, especially between white and Hispanic children (Isong, et. al., 2018). There is a lack of resources and knowledge of nutritious foods, therefore obesity is rising and becoming the social norm. Because of an increase in consumption of fast food, low-nutrient-density snack foods, sweetened beverages, increased screen time and decreased physical activity, obesity is growing among children (Bryars et al., 2012). Targeting younger kids and providing them with tools they can use to live a healthy life will help erase the cycle of reverting back to unhealthy foods or dieting.

One possibility for the discrepancy between races and health status could be social environment and the neighborhood built environment. The lack of green spaces, high number of fast food restaurants, and low walkability indices increases a person's risk for development of obesity (Suglia, 2016). Hispanic families are subjected to worse living conditions than their non-Hispanic counterparts, and in turn this increases the risk for obesity. Goodway and Smith (2005) identified four themes that obstruct the ability for urban children to be physically active. They include: outside environment that limits opportunities for physical activity, home environments that result in sedentary behaviors, and limited community role models for physical activity. The lack of these items unfortunately puts minority population at risk for becoming overweight.

Few obesity prevention/intervention school-based studies that target a young population of ethnic minorities residing in underserved communities have been conducted (Bryars et al., 2012). This understudied population suffers from becoming overweight and the health risks that go along with it. According to the *Schools and Staffing Survey's (SASS) Public School Data*

File (2007-08), in Arkansas the average student will spend 6.89 hours a day in the school.

Children spend a majority of their time in the school setting, and thus can be greatly impacted through school based interventions on physical exercise and healthy lifestyles. The challenge is to maintain the interest level of the kids, and provide information in a way that is easy to understand at a 4th and 5th grade level.

The lack of conclusive evidence for the most effective weight loss program is a challenge when deciding on the best way to face the problem. Veugelers and Fitzgerald (2005) examined students enrolled in school-based programs targeting obesity and found these students exhibited significantly lowered rates of overweight and obesity, had healthier diets, and reported more physical activities than students with no nutritional programs. This evidence shows that implementing education programs in a school setting is useful when targeting obesity.

Several studies implemented in elementary schools have shown no physical change although they did demonstrate an increase in healthy choice behavioral intentions, knowledge, attitudes and behaviors (Caballero, et al., 2003). Story et al. (2003) also concluded that while there was no physical change in the students in an after-school obesity prevention program, that it is a promising model for the future. Although no significant signs of physical change occurred in both these studies, behaviors towards health were changed and with time physical changes may have occurred. An increase in knowledge may benefit the lives of the children by increasing healthy choices made over a long period of time. The children demonstrated an increase in knowledge and a more positive feeling about being healthy which may lead to physical changes in the future.

Other studies have been more successful in their results. Llargués, et al. (2016) conducted a six year cluster randomized study where teachers developed activities related to healthy habits into the curriculum. This intervention was successful in decreasing the number of overweight students, changes in food and physical activity habits were sustained four years after the implementation of the program. This demonstrates that school-based interventions can have a lasting effect on children. Haghani, Shahnazi, & Hassanzedah (2017) reported a quasi-experimental study, where students were given lessons about physical activity and dietary behaviors and asked to complete questionnaires afterwards. There was an improvement in participants general healthy lifestyle and a reduction in weight. This study used the school resources and the time the students spend at school to implement the teaching during the day.

While there have been many studies on the best plan for weight loss, the impact of childhood obesity and the use of family intervention is understudied (Durant, Baskin, Thomas, & Allison, 2008). Involving the whole family makes each member accountable, it also encourages interaction within the family. Parental influence with regards to children's nutrition and physical activity behaviors is a well-known determinant of childhood obesity (Ickes, McMullen, Haider, & Sharma, 2014). A supportive and encouraging parent that is positively reinforcing the information the students learn will better help this radical and necessary change.

The use of technology in students' lives is seen as a burden and troublesome. But using this technology to the advantage of the students when it comes to changing healthy behaviors may be appropriate for keeping them engaged. A study used the popular video game *Dance Dance Revolution* (DDR) to increase physical activity and decrease sedentary screen time (Bethea, et al. 2012). The participants in this study decreased the amount of sedentary screen

time and reported that it may facilitate an increase in vigorous physical activity. The results from this study demonstrated that a simple video game can increase fitness in children and help decrease sedentary time.

In conclusion, there are a multitude of studies that have attempted to support a healthy lifestyle in school age children. While there is not a specific program that clearly supports an increase in healthy behaviors for all children, the information from these studies can inform future research and education programs for school age children.

III. METHODOLOGY

Research Design and Methods

The purpose of this study was to examine the effects of the EBMM program exercise module on 4th and 5th grade student's daily activity level. A quasi-experimental design was used through a single group pre-test/post-test questionnaire to answer the research question (Appendix A). Descriptive statistics were used to analyze the data. This study was approved by the University of Arkansas Institutional Review Board. Parental consent to participate in this study was obtained from all student participants. All students in the class received the same education regardless of study participation. This study used a convenience sample of 24 students, 12 males and 12 females, from a single site sample at a diverse socioeconomic and ethnic elementary school in Northwest Arkansas. Demographics of the combined 4th and 5th grade students included 41.67% Hispanic, 12.5% White, 8.33% Marshallese, 4.17% Filipino, and 41.17% Biracial. The students who participated included 16.67% from a single parent home. Education was provided by the teacher four times during the school year for the EBMM program. The education module was taught as the third module in the series of the four module

program. A pre-test and post-test was generated concerning exercise and given to the participants one week prior to the exercise session and one week following. The pre-test and post-test were the same and took approximately 15 minutes to complete. The Eat Better, Move More surveys we given before and after each education session and consisted of food recall, activity level, and sleep habits (Appendix A). For purposes of this study only the exercise questions were assessed.

IV. Results

The results indicated there was an increase in participation in P.E. in 4th and 5th grade students (Appendix B).

Fourth-grade students reported an increase in the amount of P.E. participation, sports practice, as well as sports games. This data was collected through the survey question, 'Did you participate in PE or a sports practice/game this week?' The results from the pre-test showed 66.6% of the students answered that they did participate in PE for greater or equal to 30 minutes. Post-test results indicated there was an increase with 83.33% of the students answering they participated for greater or equal to 30 minutes. For the sport practice, pre-test showed 25% indicated they did have some type of practice and it increased to 33.3% on the post-test. Sports game data showed 8.3% answered they did participate in a game pre education and it increased to 16.67% after the education. These results indicated that the education was successful in encouraging the students to increase their activity.

Although the above survey question generated an increase in exercise performed, the survey question 'What other physical activity did you participate in this week?' showed a decrease after the lesson. This was exercise that was done outside of P.E., 58.33% of

fourth-grade students said they exercised in some type of other physical activity, but after it decreased to only 8.33%. This question indicates the students did not increase their physical activity outside of school P.E. or a sports game/practice. This decrease could be because of the weather and the inability to play outside, or providing the students with more information on what sports game meant.

Like the fourth-grade data, the fifth-grade students showed an increase in P.E. participation, sports practice, and any other physical activity. For the survey question ‘Did you participate in PE or a sports practice/game this week?’ the students reported an increase in amount of time of P.E. participation from 33.33% to 83.33%. Students also reported an increase in engagement in a sport practice from 25% to 33.33%. From the survey question ‘What other physical activity did you participate in this week?’, student responses increased from 58.33% to 66.67%. These increases demonstrated that possibly the exercise education module affected an increase in participation in physical activity during and after school for fifth-grade students.

An unexpected result was a in the participation in a sports game. 16.66% answered they had a sports game on the pre-test, whereas 0% answered they had a sports game post education. This decrease, like the fourth-grade data, could be because of the winter months and the lack of sports games during these times. Also, indoor facilities for sports games have a higher cost which could be a barrier for the students.

Limitations

This study had several limitations, which should be considered. One consideration was the use of a convenience sample, which may not be an adequate representation of the population. Therefore, these results cannot be generalized as an adequate representation of the

population. Also the limited sample size does not support generalization. There were 24 participants and this could create a greater chance of obtaining a misrepresentation of the population.

Additionally, the self-reported data could be bias due to the desire to please the teacher and give the “right” answer. To avoid shame, participants may have selected answers that proved they were being healthy when they were not. Participants also could have misinterpreted the questions to the questionnaires, thus providing inaccurate information as well.

The lack of responses from the students was also of limitation that needs to be considered when looking at the data. Because the surveys were on paper and done by the students themselves, it could have been possible that they skipped questions or simply did not answer because they did not know. Implementing a survey with less questions and more focused towards exercise would benefit further studies.

This sample of participants was chosen because of the low socioeconomic population. The study site included a high number of Hispanic and Marshallese students, therefore the results cannot be generalized. If this study was to be conducted at another institution with different populations, it is not known if it will yield the same results.

Physical education is provided at the elementary school for 40 minutes twice a week. Recess is provided daily unless it is raining, snowing, or any other inclement weather. This exercise provided by the school was not included in some of the student surveys. If this study was repeated, it would be important to instruct the children to include this exercise as part of their weekly activity.

Conclusions

This research was presented at the National Student Nurses Association (NSNA) conference in Salt Lake City, Utah. It was positively received and members of the nursing community agreed with our position statement of needing to educate children on healthy habits. The EBMM program helped promote participation in 4th and 5th grade exercise at school. A continuation of this research is recommended using random sampling with larger numbers of school age children. Other recommendations for future research would include implementing the EBMM program in multiple study sites. Getting more data and reaching more participants could help determine the validity of this program. The sample size of 24 is not enough to conclusively report if this program will help combat childhood obesity. A community based participatory research (CBPR) should be considered for future studies. CBPR emphasizes the participation of the community and the population being studied as an integral part of the research process. It is especially helpful when working with vulnerable low socioeconomic communities, such as this population.

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Appendix A

EBMM Survey Questionnaire

These surveys were completed before and after education was provided to assess if knowledge was gained. For this research study, only questions 7 and 8 were assessed when looking at exercise.

1. How did you get to school today ?
 - Bus
 - Car
 - Walk
 - Bike
2. What did you eat for breakfast this morning? - List what you ate beside the line that matches where you ate breakfast.
 - I skipped breakfast this morning
 - I ate breakfast at school this morning
 - I ate breakfast at home this morning
3. What did you eat for lunch today? - List what you ate beside the line that matches where you ate breakfast.
EX: Ate school lunch - 1 piece of pizza and cookie with chocolate milk.
 - I skipped lunch today
 - I ate the school lunch
 - I brought lunch from home
4. Did you eat a snack yesterday between school and evening meal? (dinner or supper)
 - Yes
 - No
5. If you ate a snack yesterday, what did you eat?
EX: ate 2 apples
6. What did you eat for your evening meal last night? (dinner or supper)
 - I did not eat a meal last night
 - I ate at home last night
 - I ate food from a restaurant last night - fast food, take out, sit down meal
7. Did you participate in PE or a sports practice game this week?
EX: I had PE for 30 minutes Wednesday.
 - PE- what day and how long
 - Sports practice- list sport and how long practice
 - Sports game- list sport and how long game lasted
8. What other physical activity did you participate in this week?
List the activity and how long
EX: basketball 30 minutes
9. What time did you go to sleep last night?
10. What time did you get up this morning?
11. Did you sleep all night?
 - Yes
 - No
12. Did you feel sleepy after you got up this morning?
 - Yes
 - No
13. Do you feel sleepy now?
 - Yes
 - No

Appendix B

Data Results

Based on the responses from the EBMM surveys, this graph illustrates the information provided by students before and after teachings. Participation in P.E. notably increased after the teachings. In relation to the second survey question about other physical activity, there is a decrease. This decrease could potentially be due to the winter months or lack of responses on the post survey.

EBMM Survey Data

