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Fitness is Fun Club: A Program to Combat Childhood Obesity

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Chapter One

Introduction

Background and Significance

America's youth are in crisis, as obesity in children and adolescents has become an epidemic in this nation. Obesity is now the most common health problem among children in the developed world (Hughes & Reilly, 2008). At a time in the lives of children when they should be avidly pondering what they want to be when they grow up, the nation is wondering if they will live long enough to achieve such expectations. Why wouldn't they? According to the Centers for Disease Control (CDC) (2010), approximately 72.5 million or nearly 50% of American adults are obese and 16% of children in the United States are obese. Obesity is a factor that contributes to several leading causes of preventable death including heart disease, stroke, diabetes, and some types of cancer. The CDC also estimates that annual medical costs directly related to obesity to be around 147 billion dollars (Centers for Disease Control, 2009). Approximately 80% of obese children will become obese adults adding to the already astronomical costs of health care (Lawrence, 2010).

At the same time the obesity rates are increasing to epidemic levels in the United States, only 8% of elementary schools, 4% of middle schools, and 2% of high schools provide daily physical education (Lawrence, 2010). Along with the decreases in physical activity programs at school, the average American child spends three hours or more a day in front of a television, computer, or video game (Minderovic & Frey, 2007). The southern United States has consistently been the trendsetter for the increased percentages of obese adults. Among several counties in five southern states including Georgia, 77% were in the top two quintiles for diabetes and obesity prevalence (CDC, 2009). Stobbe (2010) pointed out that it is hard to find conditions

that are not worsened or made more costly by obesity and therefore emphasis needs to be placed on investing in more obesity- fighting programs in this country. Obesity is also associated with a lower quality of life, social stigmatization, and discrimination (Morbidity and Mortality Weekly Report, 2010.)

The US Surgeon General issued a call to action to prevent and decrease overweight and obesity rates to less than 15% in 2001. However, as of 2009, no state had met the Healthy People 2010 objective of reducing the prevalence of obesity to less than 15%. A total of 33 states had obesity prevalence of greater than 25% and nine of those states, which included Tennessee, had a prevalence of greater than 30% (Morbidity and Mortality Weekly Report, 2010). The fact that no state met the Healthy People 2010 goal of 15% prevalence suggests that our past efforts in this area are not sufficient and need to be intensified. The Federal Government is attempting to intensify these efforts to address the obesity crisis in this nation through the "Let's Move" campaign which mobilizes public and private partnerships to help change state and local policies related to diet and physical activity (Morbidity and Mortality Weekly Report, 2010). It is now up everyone in this country to do their part to help teach as many children as possible about the most important lesson of their life, their health and well being. There is no greater gift that can be given to children than the ability to live a long healthy life free from diseases and premature death that is preventable. At the same time, a dramatic impact on the rising healthcare costs that are directly related to sedentary lifestyle behaviors can be made.

Purpose

The purpose of this study is to provide education about physical activity to 10-12 year olds; specifically to educate them about the proper amount of physical activity needed every day

and to help them better understand the health risks associated with the lack of physical activity in an effort to reduce obesity

Hypothesis

The hypothesis for this study is that introducing educational interventions to children age 10-12 years old can increase their knowledge level of how much exercise is needed each day and the greatest health risks associated with not getting that exercise. The null hypothesis is that introducing educational interventions to children age 10-12 years old will not increase their knowledge level of how much exercise is needed each day or the health risks of not getting it. Children do not always have the ability to choose the foods that are brought into their home; however, they can control what they do with their time. It is the belief of the researcher that teaching children the amount of physical activity they need to get each day as well as how making sure they get the proper amount will help improve their health now and in the future. It also can impact long term health behaviors and possibly impact the life of that child for many years to come.

Framework

The theoretical framework that was incorporated in this study was Nola J. Pender's Health Promotion Model (HPM). According to Pender, Murdaugh, and Parsons, (2006), the most important difference between health promotion and disease prevention is the underlying motivation of the behavior. The model describes, "Health Promotion is behavior motivated by the desire to increase well-being and to actualize health potential" (Pender et al., 2006 p. 47). "Disease prevention or Health protection is behavior that is motivated by a desire to avoid illness, detect it early, or maintain functioning within the constraints of that illness" (Pender et al., 2006 p. 47). The HPM is the best fit for this research because the purest form of motivation

for this model exists in childhood and young adulthood when energy, vitality, and vigor are important to attain and the threat of chronic disease is not viewed as a threat by this age group. Youth may engage in healthy behaviors for the pure pleasure of doing so (Pender et al., 2006). The goal of the Fitness is Fun Club is to improve personal decision making and health practices of the students who participate in the program so they can increase their overall well being as a result they may be able to avoid health problems later in their life. By making activities high energy and fun, the children may associate the change with good feelings and fun and may continue to make it a part of their daily lives for many years to come. Even though children and adolescents can understand consequences of behaviors, they are at a time in their lives where they are feeling good and often see themselves as invulnerable to illness and therefore it is very important to make the intervention valuable to them in this way. The Health Promotion model can potentially be used across the lifespan and works especially well in the proposed age group (Pender et al., 2006).

Assumptions

This program was implemented with the assumption that promoting positive personal behaviors at an early age reinforced with education on the effects that poor health choices can have on the overall quality and quantity of health over a lifetime, can positively influence both the knowledge level and the activity levels of fourth and fifth grade students. It was also assumed that children of this age can understand the cause and effect of certain actions and are at an age to cooperate fully. It is also assumed that parents will be willing to allow their children to participate because the study can possibly improve the overall health and wellness of the children who participate and there is very little risk involved and no collection of any personal identifying information at any time during the study. It is also assumed that the children who participate will

have very little prior knowledge of the ill health effects of sedentary lifestyles and will have little or no knowledge of the amount of physical activity that they need to be getting on a daily basis. It is assumed that the students who participate in the program will have a better understanding and be able to communicate the ill health effects that lack of physical activity can create and at the very least will know how much physical activity they need to be getting every day in order to stay healthy.

Chapter Two

Review of Literature

It is hard to believe that obesity is currently the most common disease of childhood and adolescence in the developed world (Paoletti, 2007). How did this nation get here? How did this happen? And what can be done to stop this trend? Obesity is defined in children and teens as having a Body Mass Index (BMI) above the 95th percentile. According to the 2010 Shape of the Nation Report, 33% of children age 6-11 are overweight and 17% are obese. These rates have essentially doubled since 1980. Eight of the ten states with the highest rates of childhood obesity are right here in our backyard in the south (National Association for Sport and Physical Education & American Heart Association, 2010). At a national level the CDC estimates that 72.5 million adults in the United States are obese costing our country an estimated $147 billion dollars in medical costs (CDC, 2010). Since research indicates that about 50% of obese children are likely to become obese adults, sitting idly by and doing nothing is no longer an option (Lawrence, 2010). Experience has shown that it is much easier to prevent weight problems and obesity in children than to try to reverse it once it occurs. Therefore, it is essential to intervene at a very young age (Paoletti, 2007). The amount of money that is being spent in this nation that is directly related to the obesity epidemic will at some point become unsustainable. Children deserve to grow up and look forward to starting a life, career, and family without being plagued with preventable diseases that hurt their quality of life, stifle their abilities, and shorten their life span.

Theoretical Literature

Health Promotion

According to Lawrence, Hazlett, and Hightower (2010), national public health efforts are beginning to look at prevention of obesity in children and adolescents instead of focusing resources on the treatment of obesity in adults. In 2000 the US Department of Health and Human Services (HHS) Healthy People 2010 initiatives placed a national emphasis on the childhood and adolescent obesity problem by identifying it as one of the ten leading indicators for public health (CDC, 2020). However, childhood and adolescent obesity is continuing to climb at an alarming rate and continues to be one of the greatest challenges the healthcare of this nation faces. There are few effective treatments for children who are already overweight, making prevention efforts all the more important (Dolinsky, Siega-Riz, Perrin & Armstrong, 2011).

Health Risks

Paoletti (2007, p.37) stated, "Without proper intervention, adult morbidities will likely begin to appear in the young." Many health problems related to obesity that were once thought to be only applicable to adults are now being seen in children. These include hypertension, hyperlipidemia, Type II diabetes, and symptoms of hardening of the arteries, and non-alcoholic fatty liver disease (Singh, 2008). According to McBride (2010), some children from three to eight years of age already have the presence of vascular lesions. More than 60% of overweight children have at least one additional cardiovascular risk factor, and 20% have two or more risk factors. There are two periods during childhood that are considered to be critical for obesity development and that is between four and six years of age and again in adolescence (McBride, 2010). In childhood and adolescence, obesity may increase the process of atherosclerosis, years before any symptoms develop. Evidence shows that abdominal fat begins to accumulate in

childhood and it is that distribution of fat that is most strongly associated with cardiovascular risk factors (Lazarou & Kouta, 2010). It is also suggested that childhood obesity is a very powerful predictor of adult obesity with some estimates that about 80% of obese adolescents will become obese adults (Singh, 2008). According to Hughes and Reilly (2008), several cardiovascular risk factors are strongly associated with childhood obesity, including high blood pressure, adverse changes in lipid profiles, left ventricular mass increases, decreased cardiac function, endothelial function abnormalities, hyperinsulinemia, and insulin resistance.

Educational Intervention

The key components to successful weight management include increased physical activity, diet modification, and targeting sedentary behaviors in children (Hughes & Reilly, 2008). Interventions in schools are a good opportunity to attain proactive, early and positive health results, which have the broadest reach with the lowest cost and have the greatest ability to reach disadvantaged children. Children are at school for at least six hours a day and school has a great deal of influence in the lives of children and therefore can provide the best platform for interventions in promotion of physical activity levels, healthy diets, and other healthy lifestyle behaviors (Singh, 2008). There are two types of school-based interventions, those that focus on increasing physical activity and those that focus on nutritional intervention (Hutchinson, 2010). Increasing physical activity, decreasing sedentary behaviors, and improving nutritional education for children are all effective strategies to decrease obesity in children and adolescents (Singh, 2008). Put in simple terms, the cause of being overweight is energy imbalance in the body. In other words, the energy taken in is greater than the energy expenditure and national health surveys show that significant proportions of children are not getting the recommended level of 60 minutes of moderate physical activity per day (McBride, 2010). This is why interventions that

combine physical activity and dietary changes are the most effective as they control the energy intake as well as increase the energy expenditure (McBride, 2010).

Research Literature

Interventions

The research literature that was reviewed ranged from reviewing different school based interventions and evaluating their effectiveness attempting to intervene in the childhood obesity epidemic in the United States. Shaya, Flores, Grarayor, and Wang (2008), conducted a meta-analysis to look at school based obesity interventions that had been done between the ages of seven and nineteen years from 1986 until 2006. The interventions ranged in duration from four weeks to as long as eight years and included 15 studies that utilized physical activity interventions exclusively; 16 studies that utilized educational and behavioral modification strategies; and 20 studies that utilized both physical activity and behavior modification (Shaya et al., 2008). The interventions that were geared toward increasing physical activity showed great efficacy in reducing obesity and increasing overall physical fitness in the school age group in 13 of the 15 studies (Shaya et al., 2008).

Sedentary Behaviors

Hooker (2010) found that the hours watching television and playing video games are positively associated with an increased BMI. According to Hooker (2010) one-hour increase in watching television was shown to increase the BMI of a child. This study also found that children who attend public school are more likely to be overweight than children who attend private school and that participating in sports decreases the probability of being overweight by 5.7%.

Legislative and Education Intervention

Schools have a responsibility to become actively involved in helping to develop obesity prevention programs (Hooker, 2010). The Federal Government increased funding through the Omnibus Appropriations Act of 2009 by allocating $78 million to help initiate, expand, and improve physical education and after school activities for students in kindergarten through 12th grade (Hooker, 2010). Boehmer, Brownson, Haire-Joshu, and Dreisinger (2007) looked at legislation from all 50 states searching for policies that identified state level childhood obesity prevention legislation that had been either introduced or adopted from 2003 through 2005. Boehmer et al. (2007) was one of the first studies to really look at patterns of legislation to prevent childhood obesity. This study showed that the amount of legislation that was introduced and adopted increased from 2003 through 2005 (Boehmer et al., 2007). The topic with the most introduced legislation was based on increasing school nutrition standards. In the United States, most of the authority for public health policy is dealt with at the state level (Boehmer et al., 2007).

Health Promotion

According to Larsen, Mandleco, Williams, and Tiedeman (2006), once a child has become overweight, most treatment options are difficult and unsuccessful making it of the utmost importance to prevent weight problems before they ever begin. Primary health care providers working in the family or pediatric setting are in a unique position to educate families on healthy lifestyle behaviors (Larsen et al., 2006). In response to the growing concerns about the rising prevalence of childhood obesity, in 2003 the American Academy of Pediatrics developed a policy statement challenging physicians and practitioners to make screening and education to

families for childhood obesity a regular part of the well child exam (Larsen et al., 2006). Irwin, Irwin, Miller, Somes, and Richey (2010) partnered with the professional basketball team the Memphis Grizzlies and implemented a school based intervention titled "Get Fit with the Grizzlies." This program was implemented in fourth and fifth grade Physical Education classes in 11 randomly chosen Memphis elementary schools and included approximately 1600 students (Irwin et al., 2010). The southern region of the United States has the highest childhood obesity rates with the state of Tennessee ranking fourth nationally (Irwin et al., 2010). The "Get Fit with the Grizzlies" program used the pretest/ posttest evaluation method for the study (Irwin et al, 2010). The questionnaire consisted of questions to assess the student's knowledge as well as questions to assess the student's current health behaviors, specifically eating and physical activity habits (Irwin et al., 2010). The intervention was done during Physical Education (PE) classes and included a six lesson supplemental unit focusing on nutrition and exercise. The PE teachers were trained on how to administer the pre/posttest using a set protocol to help achieve reliability. The students in this particular study showed significant improvement between pre and post test responses of seven of the eight knowledge based items using the standard measure for significance ($p < .05$) (Irwin et al., 2010). Posttest results showed that both rigorous and moderate physical activity behaviors met or exceeded recommended amounts. The "Get Fit with the Grizzlies" program confirmed that these types of interventions could be motivating to children to obtain lifelong health knowledge and potentially change health behaviors (Irwin et al., 2010). Irwin et al. (2010) found that addressing childhood obesity is not only considered a school responsibility but a community obligation.

Summary

It has become increasingly clear that childhood obesity has become a national health threat and one of the greatest public health challenges. Singh (2008) stated that about 50-80% of obese children will grow up to become obese adults and place an unsustainable burden on our nation's health care costs in the attempt to combat diseases directly related to the obesity epidemic (Singh, 2008). Obese adults are at increased risk for coronary heart disease, hypertension, stroke, type II diabetes, certain types of cancers, and premature death. The previously discussed research and theoretical literature have helped build both a valid case for further research in this area as well as some good ideas of what has already been done and on what level it was done.

Chapter Three

Methods and Procedures

Research Design

This quantitative pretest posttest study explored both the knowledge level and activity level of the students who participated in the Fitness is Fun Club educational program. The purpose of the Fitness is Fun Club was to provide education once a week for four weeks about physical activity to 10 – 12 year olds; specifically to educate them about the proper amount of physical activity needed every day and to help them better understand the health risks associated with the lack of physical activity in an effort to reduce obesity. The pre/post test questionnaire was similar in nature to the questionnaire used in the "Get Fit with the Grizzly's" study because the researcher was looking for information along the same lines, just not in as much detail. The "Get Fit with Grizzly's" study looked at nutrition along with activity level, which was a much broader scope than this researcher wanted to undertake on for this study. On the first day of the Fitness is Fun program the participants were given a pre-test questionnaire to evaluate if they knew how much physical activity they need to get on a daily basis to stay healthy, if they knew about the consequences to their heath if they do not get enough physical activity, and if they knew the long term health benefits of making sure they get the physical activity that their body needs each day. The questionnaires were administered, the data collected, and placed in a sealed envelope. At the end of the four week program, a post–test questionnaire was administered, the data collected, and placed in a sealed envelope. This questionnaire was the same questionnaire administered at the beginning of the program before the educational intervention was done in order to evaluate whether any knowledge was gained in these three areas as a result of the Fitness is Fun Club educational intervention.

Sample

The Fitness is Fun Club used a convenience sample of fourth and fifth grade students from the after school care program at a local elementary school. Participation was entirely voluntary and parents were provided with information about the program prior to allowing participation; an informed consent was obtained on each student before being allowed to participate. Fourth and fifth grade students were included because of their ability to clearly understand instruction at this age and participate with little assistance. This age group was also selected because they are just getting ready to go into middle school and it is at middle school that many physical education programs are eliminated from the curriculum. Therefore, if the students do not participate in team sports, they often do not get the physical activity they need each day. It is also at this age that many students begin to form some of their lifelong habits both good and bad.

Setting

The setting was at the school gym unless the weather allowed playing outside. The participants from the after school program were taken outside or to the gym for one hour each week to play very structured, fun games that promote cardiovascular health. The participants were introduced games that were easy to play with little or no equipment and with or without others to play with them. At the end of each hour, the benefits of physical activity on long-term health and risks of not getting that physical activity were reviewed. Each week a different activity was offered. The emphasis was to find fun activities that the participants can do even if there is no one else around to play with them.

Ethical Considerations

Institutional Review Board (IRB) approval was obtained prior to implementation of this study. The research was conducted with minor children and informed consent was obtained (Appendix A) from a parent or legal guardian as well as assent from the student prior to the student being allowed to participate in the activities. Identifying information from the students participating was kept in a locked fireproof box. The students were instructed not to include their name or any identifying information on their pretest and posttest questionnaires. There was nothing involved in the research that could cause any mental distress for any of the children involved. There was a slight possibility as with any physical activity program of injury while playing. While every attempt was made to keep the students safe and free of injury, accidents could not be entirely ruled out as a possibility. Each participant was free to stop participating at any time without reason.

Instrumentation

After an exhaustive search of the current literature for an existing tool, none could be found. Therefore the researcher developed the tool that was used in this study and it included pretest and posttest questionnaires. This questionnaire included six questions about how much activity they get on a daily basis, how much physical activity they need to get on a daily basis to stay healthy, questions about the risks of not getting enough physical activity, and the long term benefits of making sure they do get the daily physical activity required. This instrument was similar to the instrument used in a study by Irwin et al, (2008) called “Get Fit with the Grizzlies” just on a much smaller scale. The “Get Fit with the Grizzlies” used an 18-item instrument that contained both knowledge based and behavior based questions. Fitness is Fun Club was a similar study only on a much smaller scale so only six items were included on the instrument that also

looked at both knowledge based and behavior based questions for data collection. A program evaluation to simply address whether the participants enjoyed the program and if they would like to see it implemented in the after school program on a yearly basis was given out at the final meeting. These questionnaires are included as Appendix C and D for further review.

Procedure

The Fitness is Fun Club began with an introductory meeting, the researcher met with the parents and the children to go over the objectives of the program which were to increase the knowledge level of the participants about the amount of physical activity that is needed on a daily basis and the health risks of not getting enough. The content that was to be provided each week and the types of activities planned were also discussed. Each of the parents was then given an informed consent to complete and a copy of the pre-test and post-test questionnaires that were going to be used. This meeting was held after school hours at a local church because it was easier to get all of the parents there at the same time.

Week one of the Fitness is Fun Club; the first objective was to collect the data on the pretest questionnaires. The second objective was to introduce a fun activity that they could do at home with little or no equipment and whether anyone was there to play with them or not. The third objective was to answer the question for them about how much physical activity was needed on a daily basis to stay healthy. First, each participant turned in a signed informed consent. The consent forms were collected, put into a sealed envelope, and then locked in a fire proof safe. A medical consent form was already on file for each of the students at the school. The participants were lined up in alphabetical order and the pre-test questionnaire was distributed along with pencils for filling them out. The students were instructed not to put their name or any other identifying information on this questionnaire. The questionnaires were then placed into a

large envelope labeled Pre- Program Questionnaire and sealed for later analysis. After the questionnaires were collected, the activities planned for that day were started. There were always several activities planned in case the participants appeared to be getting bored. On the first night, the meeting took place in the gymnasium and a game was introduced where everyone got into a circle, gave their name and an activity that started with the first letter of their name, then everyone would do that activity such as "my name is Donna and we are going to Dance." The second activity that was done was Simon Says and each participant got to be Simon at least once. They would do something like, "Simon says run around the gym one time, or hop on one foot". At the end of the meeting, there was discussion about the fact that children need to get 60 minutes or one hour of physical activity every day in order to stay healthy. The participants were instructed to think of an activity they could do at home that week that they really enjoyed and spend one hour every day doing that activity.

Week two, the first objective was to play some really fun activities that could be played with friends in competition or alone. The second objective was to reinforce this by sending home a list of fun and simple activities that they could do at home even if they had no one to play with that day. The third objective was to reinforce how much physical activity they needed to get each day to stay healthy and to add health benefits of getting that physical activity to the discussion. The participants had a Mini Olympics where they competed in several activities that included balloon volleyball, jump rope competitions, animal relay races, and basketball dribbling competitions. The winners in each category were awarded with a very small plastic trophy and a blue ribbon and all participants got to keep the jump ropes provided for them to use at home. At the end of the second meeting, the activity they had done during the week at home and how much activity they were able to get that week were discussed. They were each given a calendar

that was obtained from the "Let's Move" website, to keep track of how much physical activity they were getting each day. The benefits of physical activity were reviewed again at this meeting as well as the amount of physical activity each one of them needed each day. They were given a list of fun activities that they could do at home to get their 60 minutes of physical activity, even if they had no one to play with (Appendix E).

Week three, the first objective was to show the students what exactly was meant by "raising their heart rate" and why it was healthy. This was demonstrated to them by using several stethoscopes and with the help of a few parents who helped with cleaning and proper positioning of the stethoscopes'. Each participant was able to listen to their heartbeat standing still with a stethoscope, then again after doing ten jumping jacks to help them directly link physical activity with heart rate. Then a discussion took place about why it was important to get your heart rate up for at least 60 minutes every day. The participants were then taught how to play baseball using a tennis racquet and tennis ball. After playing this game for about 30 minutes, they played tag for the remainder of the time. The amount of physical activity they need to get each day was reviewed again, as well as some of the health problems that can occur when people do not get enough physical activity over a long period of time. Each student was given a Frisbee to take home from this meeting. There was a poll taken to see if they would prefer to have Fitness is Fun Club t-shirt and water bottle or go to Pin Strikes, a local bowling and fun center for kids, for the final meeting. It was a unanimous vote to go to Pin Strikes the next week as a gesture of thanks for participating.

Week four, the first objective was to have the students fill out the posttest questionnaire and program evaluation. The second objective was to simply have a great time at the final Fitness is Fun Club meeting. The participants and their parents met the researcher at Pin Strikes

for a night of bowling, laser tag, balladium, and bumper cars. This event was planned and paid for by paid for by the researcher to thank the students for their participation and it fit well in with the physical activity theme of the program. First, they were asked to complete the posttest questionnaire and lined up in alphabetical order so the questionnaires could be kept in proper order with the pretest questionnaires. They were again instructed not to put their name or any identifying information of the questionnaire. They were also asked to fill out an evaluation of the overall quality of the program and instructed not to put their name or any identifying information on that form either. The posttest questionnaires were labeled and put with the pretest questionnaires and the program evaluations in the alphabetical order they were received. The participants then bowled, played laser tag, and played balladium for several hours and had a really good time.

Data Collection

The data collection was done through pre-test/post-test questionnaires, with the pretest questionnaire given before the Fitness is Fun Club started. The students were lined up by alphabetical order; questionnaires were collected administered, collected, and placed into a sealed envelope that was labeled pre- test questionnaires for later analysis. The post-test questionnaires were given at the conclusion of the four-week physical fitness education program. The children were again lined up in alphabetical order and the questionnaires were administered, collected, and placed into a sealed envelope labeled post-test questionnaires for later analysis. The pretest and posttest questionnaires were then put together alphabetically as they were collected so that each student's data could be evaluated. There was one group included in the data collection.

Data Analysis

Once the data was collected, it was entered into SPSS 20. Descriptive analysis was then run on the data. Paired samples t-tests were also conducted on questions one, two, three, and four to compare the data collected from the pre and post questionnaires. The standard measure for significance of ($p < .05$) was applied to the data that was evaluated.

Limitations

The limitations of this study include a small sample size that may not be representative of the overall population. The study was conducted at one school, in one state, which can also limit the generalizability to the general population. The study also lacks the ability to follow the students over a period of time to evaluate the long term effects the program may have on the student's future decisions on physical activity levels. This study did not look at eating habits, which can play a major role in overall health and well being of individuals. There was no control or comparison group included in this study. There was also a risk of data bias with having the same person implementing the intervention and collecting the data. Finally, the researcher was unable to find a tested tool for data collection after searching the current literature on this topic so no Cronbach's Alpha could be run.

Chapter Four

Data Analysis

Introduction

This study used pre-test/post-test methodology to explore whether the introduction of education about healthy lifestyle behaviors including the proper amount of physical activity needed and the health risks associated with not getting enough physical activity can affect both the knowledge level and physical activity levels of children ages 10-12 years. The study included an educational intervention over four weeks that addressed the amount of physical activity that children need to stay healthy and the health risks of not getting that physical activity.

Demographics

Participation included a total of 22 fourth and fifth grade students (N= 22) from a school in North Georgia from various backgrounds, ethnicities, and income levels. Of the 22 participants, males (64%) were represented to a greater degree than females (36%). Fifth graders (55%) were represented to a greater degree than fourth graders (45%). See Table 1.

Table 1

Response Summary by Gender and Grade

Gender	***n***	**Percentage**
Female	8	36.0
Male	14	64.0
Total	22	100.0
Grade	**n**	**Percentage**
Fourth	10	45.0
Fifth	12	55.0
Total	22	100.0

Instrument Reliability

After a thorough search of the literature to find an instrument that had been tested and retested, none were found. The instrument that was used for this study was developed specifically for this study. Therefore, internal consistency of the instrument in this study could not be verified using Cronbach's Alpha.

Analysis of Hypothesis

Descriptive statistics were run on the data collected as well as paired samples t-test to evaluate the impact of the intervention of implementing an educational unit on both knowledge level and physical activity level of the students who participated. Significance ($p < .05$) was applied to the data that was analyzed.

Question 1

Question number one asked how many hours the students spent watching TV, playing video games, or playing on the computer. Timeframes ranged from 0-1 hours to more than five hours used in the questionnaire for amount of watching television or computer time. There was a mean (2.0) time of 1-3 hours of television and computer time reported in the pretest questionnaires with (SD .926) ($p <. 001$). There was a mean (1.68) time of 0-1 hours reported on the posttest questionnaire with (SD .716) ($p < .050$). A significant decrease in mean screen time from pretest to posttest was found (t (21) = -2.084, $p < .050$). Table 2 has the summary of this paired samples *t*-test.

Table 2

Response Summary Question 1- Hours spent watching TV or on computer

Question 1	***M***	***SD***	***t*-test**	***p***
Pretest	2.00	9.26		.001
Posttest	1.68	.716	2.084	.050

Question 2

Question number two asked how many hours every day the students spent playing outside, running, jumping, and being active. Timeframes ranged from 0-1 hours to more than five hours in the questionnaire for amount of time spent playing outside running, jumping, and being physically active. There was a mean (1.64) time of 0-1 hours of time spent playing outside reported in the pretest questionnaires with (SD =. 790) (p =. 101). There was a mean (2.04) time of 1-3 hours of time spent playing outside on the posttest questionnaires with (SD = 2.14) (p = .005). A significant increase in the mean activity time from pretest to posttest was found (t (21) = -33.169, $p < .005$). Table 3 has the summary of this paired samples t-test.

Table 3

Response Summary Question 2 - Hours spent playing outside

Question 2	***M***	***SD***	***t*-test**	***p***
Pretest	1.64	.790		.101
Posttest	2.14	.351	-3.169	.005

Question 3

Question number three asked how much physical activity children need to get every day. These answers ranged from less than 30 minutes to 90 minutes with three being the correct answer of 60 minutes. The mean (2.09) on the pretest was 30 minutes of activity (SD = 1.065), and the mean (3.00) on the posttest was 60 minutes of activity (SD = 0.000). A statistically significant increase in scores from pretest to posttest was found (t (21) = -4.004, $p < .001$). Table 4 has the summary of this paired samples t-test.

Table 4

Response Summary Question 3 - How much physical activity do children need daily?

Question 3	***M***	***SD***	***t*-test**	***p***
Pretest	2.09	1.065		
Posttest	3.00	0.00	-4.004	.001

Question 4

Question number four asked what the greatest health risk of not getting enough physical activity over a long period of time. The answers ranged from one to four with the correct answer being number three, which was Heart Disease. The mean on pretest was 1.45 (SD = .671), and the mean on the posttest was 3.00 (SD = .000). A statistically significant increase from pretest to posttest scores was found (t (21) = -10.803, $p < .0000$). Table 5 has the summary of this paired samples *t*-test.

Table 5

Response Summary Question 4- What is the greatest health risk of not getting physical activity?

Question 4	***M***	***SD***	***t*-test**	***p***
Pretest	1.45	.671		
Posttest	3.00	.000	-10.803	.000

A program evaluation was also done to evaluate whether the participants enjoyed the Fitness is Fun Club or not and if they would like to see it implemented each school year. This information is presented in Table 6.

Table 6

Fitness is Fun Club Evaluation Response

Enjoyed Fitness is Fun Club	**n**	**Percentage**
Yes	19	86.0
No	3	14.0
Total	22	100.0
Would like to see every year	**n**	**Percentage**
Yes	19	86.0
No	3	14.0
Total	22	100.0

Summary

The Fitness is Fun program was implemented without any problems and was completed with N= 22 participants remaining active for all four weeks of the program. The statistical analysis done with SPSS 20 revealed a statistically significant difference in the pretest questionnaire answers and the posttest questionnaire answers in all four questions evaluated.

Therefore, the stated hypothesis in this study, that introducing educational interventions to children age 10-12 years old can increase their knowledge level of how much exercise is needed each day and the greatest health risks associated with not getting that exercise, was supported. The Null Hypothesis in this study, that introducing educational interventions to children age 10-12 years old will not increase their knowledge level of how much exercise is needed each day or the health risks of not getting it, was rejected.

Chapter Five

Discussion, Conclusions, and Recommendations

Discussion of Results

Introduction

America's youth are in crisis, as obesity in children and adolescents has become an epidemic in this nation, obesity is now the most common health problem among children in the developed world (Hughes & Reilly, 2008).

Purpose of the Study

The purpose of this study was to provide education about physical activity to 10-12 year olds; specifically to educate them about the proper amount of physical activity needed every day and to help them better understand the health risks associated with the lack of physical activity in an effort to reduce obesity.

Framework

The Health Promotion Theory by Nola J Pender which suggests that "the most important difference between health promotion and disease prevention is the underlying motivation of the behavior." (Pender, 2006 p 47) "Health Promotion is behavior motivated by the desire to increase well-being and to actualize health potential" (Pender, 2006 p 47). "Disease prevention or Health protection is behavior that is motivated by a desire to avoid illness, detect it early, or maintain functioning within the constraints of that illness" (Pender, 2006 p. 47).

Methodology

This quantitative descriptive pretest posttest study was conducted using an instrument that was developed by the researcher specifically for this study. The data was collected over a four-week period of time and then entered into SPSS 20. Descriptive analysis was conducted

yielding means and standard deviations. Paired samples t-tests were then conducted on the data to compare pretest and posttest scores. A significance of ($p < .05$) was applied to this data.

Sample

A convenience sample was used for this study. Fourth and fifth grade students from a local elementary school were invited to participate in the study. The sample size was N=22. Of this sample size, n = 8 were female and n = 14 were male.

Instrumentation

After reviewing the available research and other literature in this area, a suitable instrument to measure what the researcher was seeking to measure was not available. Therefore, a new instrument was developed specifically for this study. Question number one was related to the amount of time the students spent involved in sedentary behaviors like watching television, playing on the computer, etc. Question number two was related to the physical activity levels of the students. Question number three was related to the student's knowledge of how much physical activity is needed on a daily basis to maintain a healthy lifestyle. Question four addressed the knowledge level of the students in the area of the health risks associated with not getting the recommended amount of physical activity.

Discussion of Results

There were a total of 22 pretest and posttest questionnaires completed and SPSS 20 was used to run descriptive statistics. Paired samples t-tests were also run on questions one through four with the following findings.

Question 1

Regarding the hours of TV, video games per day, there was a significant difference between the pretest findings and posttest findings. The mean screen time decreased from one to

three hours to zero to one hour. Therefore, the educational intervention did have a positive impact on the amount of time that the participants watch TV or play video games. This finding was not consistent with findings in the "Get Fit with the Grizzlies" (Irwin et al., 2010). Irwin et al. (2010) found no improvement in screen time behavior. This finding is encompassed in Pender's 2006 Health Promotion Theory that suggests individuals are motivated by the desire to increase well being as well as to avoid disease (Pender et al., 2006).

Question 2

Regarding the hours of physical activity that the participants were getting on a daily basis, there was a statistically significant difference between pretest findings and posttest findings. The mean activity time increased from zero to one hour to one to three hours. The educational intervention did have a positive impact on the amount of physical activity the participants were getting on a daily basis. This finding was consistent with the findings by Irwin et al. (2010) called "Get Fit with the Grizzlies" that also showed that both moderate and vigorous physical activity levels increased and either met or exceeded the daily recommendations. This finding is encompassed in Pender's Health Promotion Theory that suggests that individuals are motivated by both the desire to promote well being as well as to avoid illness (Pender et al., 2006).

Question 3

Regarding the knowledge level of how much physical activity is needed every day to maximize health and well being, there was a statistically significant difference between the pretest findings and the posttest findings. Therefore, the educational intervention did increase the knowledge level of the participants on how much exercise is needed daily to maintain maximum health. This finding was not consistent with the study done by Irwin et al. 2010 called "Get Fit

with the Grizzlies," which showed a lack of association between the intervention and the knowledge level of the participants. The finding is encompassed in Pender's 2006 Health Promotion Theory in that the participants are young and need to be educated about how much physical activity that is needed each day or they are less likely to strive to meet that goal (Pender et al., 2006). In other words, if they don't know what the goal is, how can they be expected to attempt to attain it?

Question 4

Regarding the knowledge level of participants about the greatest risk of not getting the physical activity that their body needs on a daily basis in order to remain healthy, there was a statistically significant difference between pretest findings and posttest findings. The educational intervention did increase the knowledge level of the participants about the greatest health risk of not getting the amount of physical activity that they need each day to remain healthy. The knowledge level of the participants about the risks of unhealthy lifestyle behaviors in the area of physical fitness was not addressed in the study by Irwin et al. (2010) "Get Fit with the Grizzlies." However, Singh (2008) found that programs that aim to improve education about physical activity levels and sedentary behaviors in adolescent children are an effective micro-population strategy to improve obesity in this country. These findings are encompassed in Pender's Health Promotion Theory in that by educating the participants about the risks of not getting the daily physical activity that is needed to their health, they can be motivated to make sure they get the amount needed. Pender suggests that people are motivated by a desire to avoid illness (Pender et al., 2006).

Recommendations

It is the recommendation of the investigator that further research be done in this area to see if a program like this can have long term impact on not only the knowledge level but also the behaviors of children with early intervention. Longitudinal studies are needed in order to effectively study the long- term behaviors changes if any that could come from an intervention of this nature. It was also not concluded in this study the effects this program had on the activity levels of the participants with any clarity and should be further evaluated. Programs like these would be economical to implement in afterschool programs across the country and give children an additional means of meeting the physical activity level requirements of 60 minutes per day. If the researcher were to attempt to do this study again, a larger sample would be looked at in more than one school. The instrument used would look at a broader number of items that can affect health and well being such as diet. Interventions should be done over a period of months instead of weeks.

Summary

In summary, the findings of Fitness is Fun Club did show that an educational intervention program with fourth and fifth grade students had a positive impact on both the knowledge level and activity levels of those who participated. Although this study was done on a very small scale looking at only fourth and fifth graders from one school, there is some evidence to suggest that this type of program can be an effective micro-population strategy to improve obesity in this country (Singh, 20008). There was statistically significant evidence in all four of the areas explored in this study. The data showed that the knowledge level about how much physical activity is needed on a daily basis did increase. The data also showed that the knowledge level about the health risks of not getting enough daily physical activity increased. Activity levels of

the participants also increased according to the data collected. What remains to be understood is how long this intervention will continue to influence their physical activity behaviors. The only way to address that is through a longitudinal study over a number of months to years, which was well beyond the scope of this study. Findings of the Irwin et al. (2010) study called "Get Fit with the Grizzlies" also confirmed that an educational intervention did have a positive impact in motivating children to obtain knowledge that helped change their health behaviors. Irwin et al. (2010) looked at 888 children from eleven different schools in Memphis Tennessee and used similar methods and was implemented in PE classes over a period of six weeks. It is the hope of this researcher that these duplicated results should encourage us as a nation to make an investment in our children now to improve their health outcomes and help them avoid diseases and mortality as an adult.

Plan for Dissemination of Findings

The researcher plans to submit results of this research for publication in a Pediatric Nursing Journal. The researcher also plans to submit findings to the "Let's Move" campaign that was created by First Lady Michelle Obama to help combat the childhood obesity problem in this country. The researcher would also like to submit the findings to The Council for Afterschool Programs in Georgia. The findings of this project will also be presented at the campus wide Florence Oliver Anderson day at Southern Adventist University on April 17.

Appendix A

Informed Consent for Participation in Research

Southern Adventist University

Project Title: Fitness is Fun Club

Researcher: Donna Bearden, RN, BSN, and Graduate Student

Phone Number: 706-935-5768

Dear Parents,

I would like to take the time to invite your child to participate in a fun, active club that will meet once per week during after school care. During our weekly meetings I will be educating you child on the amount of physical education that is needed on a daily basis to maintain a healthy lifestyle and many fun ways to make sure they get that activity. I will also be educating them on the benefits of physical activity and the harmful health effects of not getting enough. It is my hope that by introducing this information, your child will have a much better understanding about the importance of developing good exercises habits that may follow them into adulthood. By doing so, possibly preventing many of the diseases associated with inactivity such as hypertension, diabetes, and heart disease when they are adults. It is my thought that by implementing interventions with children at this age, it could potentially change lifelong habits and affect their overall long-term health and well-being. While doing these activities with your child, I will be assessing their understanding before and at the end of the Fitness is Fun Program with a simple questionnaire that will require no identifying information from them at any time. At the end of the program I would like to assess from you their activity level at home to see if it has improved as a result of this study. I am a graduate student in the Family Nurse Practitioner Program at Southern Adventist University and would like to use the data collected during the four week program as a part of my graduate research thesis paper. Participation is completely voluntary and your child can withdraw at any time without question. If your child has permission and would like to participate in this program, please sign below and return before August 21.

Thank You,

Donna Bearden, RN, BSN, MSN student

My Child _____ has my permission and would like to participate in the “Fitness is Fun Club” and research study on physical activity levels of fifth grade students.

_____ _____

Parent Signature Date

I understand that someone will be observing and studying my physical activity behaviors while I am playing in the" Fitness is Fun Club" and I would like to participate.

_____ _____

Child's Signature Date

_____ _____

Witness Date

Appendix B

Medical Release Form

Parent/Legal Guardian's Name _____

Address _____

Phone #'s Home (_____) _____ - _____ Work (____) _____-_____

Cell (_____) _____ - _____ Other (____) _____- _____

In an emergency, contact: _____

Relationship to child: _____ Phone # (____) ____ - _____

Physician's Name: _____

Address: _____

Phone: (_____) _____ - _____

Dentist's Name: _____

Address: _____

Phone: (____) _____ - _____

Primary Insurance Company _____

Phone: (_____) _____ - _____

Billing Address: _____

Policy Holder's Name: _____

Address: _____

Relationship to Child: _____

ID#_____ Group#_____

List any Medical Problems_____

_____

List any Medications Taken_____

Consent for Treatment

In the event of an emergency or non – emergency situation requiring medical treatment, I

_____, hereby grant permission for any and all medical and/or dental attention to be administered to my child in the event of an accidental injury or illness, until such time as I can be contacted. This permission includes but is not limited to the administration of first aid, the use of ambulance, and the administration of anesthesia and/or surgery, under the recommendation of qualified medical personnel.

Signature_____ Date_____

Appendix C

Pre and Post Questionnaire

Please do not write your name on this questionnaire

How many hours a day do you spend watching TV, playing video games, or on the computer?

A. < 1 hour
B. 1-3 hours
C. 3-5 hours
D. > 5 hours

How many hours a day do you spend outside playing and being active running, jumping, etc?

A. < 1 hour
B. 1-3 hours
C. 3-5 hours
D. > 5 hours

How much physical activity do children need to get on a daily basis?

A. < 30min/day
B. 30min/day
C. 60min/day
D. 90min/day

What is the greatest risk of not getting enough physical activity?

A. Weight gain
B. Fatigue
C. Heart Disease
D. Arthritis

What are the benefits of getting the proper amount of physical activity?

A. Helps prevent weight gain
B. Increases Mental alertness
C. Reduces the risk of heart disease
D. All of the above

Inactivity contributes to which health problem?

A. Obesity
B. Diabetes
C. Heart Disease
D. Stroke

Appendix D

Student Evaluation of Program

Post Program Only

1. Did you have fun doing the Fitness is Fun Program?
    a. Yes
    b. No
2. Would you like to see a Fitness Program like this at your school all of the time?
    a. Yes
    b. No
3. If a Program like this were offered at your school, would you sign up to do it?
    a. Yes
    b. No

Appendix E

Ten Easy/Fun Activities you can do at home to get 60 minutes of Physical Activity!

1. Pillow fight
2. Jump Rope
3. Dancing
4. Balloon Volleyball
5. Tennis Racquet Baseball
6. Animal Olympics
7. Playing Hide and Seek
8. Jumping Jacks
9. Racing up and down the Stairs
10. Jogging in place

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