The Effect of Nutrition and Physical Activity Counseling on Knowledge and Behavior of Elementary Students in a Rural, Coastal Community

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THE EFFECT OF NUTRITION AND PHYSICAL ACTIVITY COUNSELING ON
KNOWLEDGE AND BEHAVIOR OF ELEMENTARY STUDENTS IN A RURAL,
COASTAL COMMUNITY

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ABSTRACT

The purpose of this study was to explore the knowledge level of nutrition and physical activity among rural school-age children in a north Florida coastal community. There is evidence to support a correlation between nutrition and physical activity with obesity in children. The children who participated were living in a rural, coastal community in north Florida. They were school-age ranging from 3rd grade to 7th grade. This was a convenience sample from an after-school program (The Boy’s and Girl’s Club). The group was given a questionnaire to obtain demographic information, knowledge level, and behaviors of nutrition and physical activity. The children were tested pre and post a program that involved education on nutrition and structured physical activity. The pre test was given on Monday and followed by 30-minute nutrition counseling sessions and a fifty-minute exercise counseling with activities. These activities continued Tuesday through Friday with the post test administered the following Monday. Findings showed an increase in knowledge scores pre to post test however because of some study limitations, this result must be viewed with caution. It was noted by the researcher that those who did participate clearly enjoyed the structured activity. Implications for nursing suggest that this approach, integrating education and structured physical activities is doable in this population and has the potential for positive long-term health benefits in children.
CHAPTER 1
INTRODUCTION

Obesity is a growing problem in the United States (US). It has become a national epidemic that ultimately may adversely affect our children’s health and the economy of the future. The Centers for Disease Control (CDC) and Prevention define obesity as an excessively high amount of body fat or adipose tissue in relation to lean body mass (Center for Disease Control, 2004). The term overweight refers to increased body weight in relation to height, when compared to some standard of acceptable or desirable weight (CDC). Over the past 10 years, obesity rates in children have more than doubled (Gorton, 2000). From National Health and Nutrition Examination Survey II (1976 to 1980) to NHANES 1999, the prevalence of overweight has gone from 7% to 13% among children and from 5% to 14% among adolescents (Wang, Yang & Lowry, 2003). Between 1960 and 1990, the prevalence of overweight children ages of 6-11 years old increased from 4% to 11%, and between 12-19 year old children the rate has increased from 5% to 11%. Most of the literature suggests that it is more likely for overweight children to become overweight adults (Ogden, Flegal, Carroll, & Johnson, 2002).

Crooks (2000) states that in the United States prevalence of overweight children is increasing and has been found to implicate certain chronic illnesses in adults (i.e. hypertension, coronary heart disease, and diabetes mellitus). About 60% of overweight children between the ages of 5 and 10 years old have already developed one or more risk factors associated with serious chronic diseases (Gorton, 2000). The U.S. Department of Health and Human Services (USDHHS) Healthy People 2010 estimates that costs attributable to obesity both in medical cost and lost productivity amount to an estimated $99 billion in 1995.

Statement of the Problem

Obesity has severe consequences. According to Healthy People 2010, overweight and obesity are major contributors to many preventable causes of death. More children are obese today than ever before, thus it is more important to closely examine this problem. More research is needed in this area to see what approaches may best decrease the incidence of obesity among children.
Significance of the Problem

Obesity is a significant health problem among youth today. The potential impact on the future health of our society is significant as there is a relationship among obesity, diabetes, and cardiovascular disease. The increase of Type 2 diabetes, one of the most serious health problems of overweight and obese children, has recently escalated according to the position letter published by the Journal of the American Dietetic Association (April 2003). Obesity prevention is especially important because evidence indicates that obese children are more likely to become obese adults (Gorton, 2000). Healthy People 2010 states that more than half of adults in the US are estimated to be overweight or obese. Healthy People 2010 also selected the incident of being overweight and obesity as a leading health indicator of many preventable causes of death.

Although the cure for the rapidly rising rates of the overweight among American children and adolescents in the past three decades have not been identified, changes in physical activity and eating habits of children and adolescents appear to be major factors. The Surgeon General’s report Call to Action to Prevent and Decrease Overweight and Obesity (2003) outlined the need for the development of comprehensive nutrition education and physical activity promotion programs to prevent child obesity and promote health (Stang and Taft Bayerl, 2003). A study done at the University of Michigan indicated that although parents recognize their influence on their children’s feeding practices, the study identified the challenges posed by the community on the ability to promote healthful eating habits for their children (Bruss, Morris, and Dannison, 2002). The most popular snack items in children’s diets are foods that are traditionally high in energy, fat, and sodium and less dense in micronutrients. Typical snacks include soft drinks, potato and corn chips, cookies, candy bars, and ice cream (Sullivan et al., 2002). Another study indicated that soft drink consumption among children increased 41% between 1989/1991 and 1994/1996, from 198g per day to 279g per day, and while the quantity of food children consume may exceed energy needs, its nutrient content is less than optimal (French, Lin, and Guthrie, 2003). These studies support the need to educate school-age children with the goal to change eating and exercise behaviors.

Studies show that currently, the most popular activities among children are watching television and playing video games. Children watch an average of 25 to 27
hours of television a week. In contrast, children spend only 14 minutes a day (1.38 hours a week) engaged in physical activity (Stephens 2002). While schools have historically provided opportunities for physical activity, cutbacks in space, and funding have drastically reduced the number of children who participate in daily physical education classes (Stephens 2002).

Physical activity remains low in our country and it is one of the most prevalent risk factors for the development of obesity and cardiovascular disease. In the United States in 1997, only 20% of adolescents and 15% of adults reported engaging in at least 30 minutes of sustained physical activity, such as brisk walking, five or more times per week (Robbins et al., 2001). In a comprehensive analysis of 108 studies that identified factors influencing physical activity among the youth, the correlates of physical activity among children ages 3-12 were: being male, having been active in the past, having parents who were not overweight, having a preference for active rather than sedentary pursuits, intending to be active, seeing few barriers to physical activity, consuming a healthy diet, reporting access to programs or facilities, and spending time outdoors (Robbins et al., 2001).

According to a study of national costs attributed to both overweight (BMI 25-29.9) and obesity (BMI greater than 30), medical expenses accounted for 9.1 percent of total U.S. medical expenditures in 1998 and may have reached as high as $78.5 billion ($92.6 billion in 2002 dollars) (CDC, 2004). Medical costs associated with being overweight or obese may involve direct and indirect costs. Direct medical costs may include preventive, diagnostic, and treatment services related to obesity (CDC, 2004). Indirect costs relate to morbidity and mortality costs (CDC, 2004).

Nursing research can lead the way in obesity prevention and education. Nurse Practitioners can lead the way in prevention of illness induced by obesity by program developments and research. Obesity management should include not only weight loss but also prevention of weight gain and management of associated risk factors such as hypertension or hyperlipidemia (Hannah, Hunter, Kemper, & Willoughby, 2002). Weight loss is associated with improvements in obesity-related health complications, but patients and practitioners are frequently disappointed by the long term results of weight control efforts. The high prevalence of obesity and its subsequent health risks requires
that primary care practitioners play a major role in the prevention and management of this disorder. Nurses, particularly advanced practice nurses (APN’s), often assume responsibility for health promotion activities. This involves teaching and program development with the intent of decreasing risk factors for disease and assisting the person to develop a commitment to health-promoting behaviors (Hannah, Hunter, Kemper, & Willoughby, 2002).

Statement of Purpose

The purpose of this study is to determine if education about nutrition and physical activity in school-age children can improve healthy choices made by school-age children. By increasing nutrition and physical activity awareness in children a healthier lifestyle may be maintained as young adults. Healthier lifestyles maintained throughout adulthood would decrease health problems later in life that are very costly and debilitating. Increased knowledge will be tested by results measured pre program implementation and post program implementation with healthy exercise habits being introduced during an after school program encouraging exercise and providing education on proper nutrition. This study will examine if children have a higher knowledge level related to nutrition and exercise after participating in an education program after school.

Research Questions

In order to assess school-age children knowledge and behaviors, the following questions will guide this study.

1. What is the existing level of knowledge of nutrition and physical activity among school-age children in a South Eastern rural, coastal community, as indicated by a 15 question pre-test?

2. What is the effect of an education program on nutrition knowledge and exercise practices among school-age children post counseling?
Operational Definitions

This section defines terms that were used to provide meaning in this study. These definitions are essential to determine the precise boundaries in the study and clarify essential qualities of each term.

**School age children**- measured by children participating in the boy’s and girl’s club public after school program in rural coastal North Florida County, ages 8-13 years old.

**Educational Program**- Five 90-minute presentations on nutrition and physical activity perceptions and behaviors utilized for the purposes of this study, which include education of nutrition and demonstration of physical activities identified in the physical activity practices check list.

**Current knowledge Level**- measure of knowledge level as measured by the student content knowledge assessment tool (Field Fitness tool).

**Physical activity practice**- as defined by the physical activity practices check list.

**Change**- as measured by the post physical activity check list and post content knowledge assessment tool.

Theoretical Framework

This study was based upon the individualized need to change behaviors to promote a healthy lifestyle related to nutrition and physical activity. Therefore, Erikson’s (1968) developmental stage for school-age children was used to reflect the participant’s developmental level and Nola Pender’s Health Promotion Model (HPM)(2002) were chosen to guide this study.

Nola J. Pender’s *HPM* (Pender, Murdaugh, & Parsons, 2002) served as the theoretical framework for this study. Pender has assumptions that reflect both nursing and behavioral science perspectives: Persons have the capacity for reflective self-awareness, including assessment of their own competencies. Individuals seek to regulate actively their own behavior. Health professionals constitute a part of the interpersonal environment, which exerts influence on persons throughout their lifespan. Self-initiated reconfigurations of person-environment interactive patterns are essential to behavior change (Pender, Murdaugh, & Parsons, 2002).
The HPM has several theoretical propositions. The basis for investigative work on health behaviors are from the theoretical statements derived form the model. The HPM is based on some of the following theoretical propositions: Prior behavior and inherited and acquired characteristics influence beliefs, affect, and enactment of health-promoting behavior. Perceived competence, or self-efficacy, to execute a given behavior increases the likelihood of commitment to action and actual performance of the behavior. When positive emotions, or affect, are associated with a behavior, the probability of commitment and action is increased. Situational influences in the external environment can increase, or decrease, commitment to, or participation, in health-promoting behavior. Commitment to a plan of action is less likely to result in the desired behavior when other actions are more attractive and, thus, preferred over the target behavior (Pender, Murdaugh, & Parsons, 2002).

In this study, application of the HPM incorporates the individualized cognitive perceptions of the health promotion behavior and physical activity factors that directly influence knowledge and behaviors. For change to occur, the individual participants must perceive the need to change behaviors (Pender, Murdaugh, & Parsons, 2002).

The application of Erikson’s (1968) psychosocial developmental states was identified in this study to provide a depiction of school-age maturational phase. Stage four, the latency stage, consists of school-age child from age six to twelve. Erikson identified this school-age stage as industry versus inferiority. The task is to develop a capacity for industry while avoiding an excessive sense of inferiority (Erikson, 1968). Children must “tame the imagination” and dedicate themselves to education and to learning the social skills their society requires of them (Erikson 1969). By understanding the school-age phase, the APN can value the importance of encouraging health while balancing industry and inferiority, to promote the virtue of competency.

Assumptions
The following assumptions were made for the conduction this study:
1. No prior formal nutrition or physical activity course has occurred in the group of children.
2. The children responded truthfully and to the best of their knowledge.
3. All measurements of height and weight were accurate.
Summary

The intention of this study was to determine if an education program makes a difference in school-age children, but also to promote healthy nutritional and physical activity habits. The rate of obesity is increasing at an alarming rate in the United States (US). Healthcare costs are increasing at this same alarming rate. Nearly two-thirds of adults in the US are overweight, and 30.5 percent are obese, according to data from the 1999-2000 National Health and Nutrition Examination Survey (NHANES). With efforts to control the rate of obesity in school-age children, there can be a positive health impact with health promotion that leads the way into adulthood.

The cost of Type 2 diabetes related to overweight and obesity in 2001 was a total of $98 billion (National Institute of Diabetes and Digestive and Kidney Diseases of the National Institutes of Health, 2004). USDHHS indicates the total costs (medical cost and lost productivity) attributable to obesity alone amounted to an estimated $99 billion in 1995 (Healthy People 2010). Costs such as these can and should be controlled for the future of our children and health of our society, physically and financially. By understanding Erickson’s (1968) developmental stage and by applying the strategies modeled by Nola Pender, this study seeks to add knowledge to programs that may change nutritional and physical activity practices among school-age children.
CHAPTER 2
REVIEW OF LITERATURE

This literature review consists of theory, a description of the pathology of obesity and its indications. It also includes a concise analysis of empirical studies related to the topic of obesity due to poor nutrition and the impact of exercise. A brief review of obesity is needed to clarify the actual health consequences of obesity.

The Theoretical framework used to guide this study was Nola Pender’s Health Promotion Model (HPM) (2000). Her approach identifies behaviors for enhancing health. Cognitive-perceptual factors are identified: importance of health, definition of health, perceived status of health, perceived benefits of health promotion, and perceived barriers to health promotion. These are modified by personal, situational and interpersonal characteristics: age, gender, education, income, body weight, family patterns of health care behaviors and expectations of significant others. Erikson’s (1968) Stages of Development were used as a supportive theoretical framework to provide a basis for understanding the developmental and behavioral characteristics of school-age children.

Theory

Theoretical Framework

Nola J. Pender’s (2002) HPM. Pender’s model is based on assumptions, which reflect both nursing and behavioral science perspectives. The HPM is based on theoretical propositions. Health-promoting behavior is inherited and acquired characteristics are influenced by beliefs. These behaviors come from personal valued benefits. Commitment to action can be constrained due to perceived barriers and mediated behavior. Behavior and performance can be increased with perceived competence or self-efficacy. This increased perceived self-efficacy results in fewer perceived barriers to a specific health behavior and results in increased positive affect. In turn, the probability of commitment and action is increased when positive emotions or affect are associated with a behavior. When significant others model a behavior, persons are more likely to commit to and engage in health-promoting behaviors. Also, health promoting behavior can be increased or decreased based on influences of families, peers and health-care providers. Many situations in external environment can increase or
decrease commitment or participation in health-promoting behavior. The greater the commitments to a plan, the more likely health-promoting behaviors are maintained over time. Commitment to a plan is less when a person has competing demands over which they have little control. Also, commitment to a plan is harder when the desired behavior is less attractive than the target behavior. Incentives for health actions can be created by modifying cognitions, affect, and the interpersonal and physical environment.

Pender’s research focuses on developing interventions to increase physical activity in pre-teen and teenage girls. She identified interventions that can be administered via the computer or the web and were personalized to individual girls. These interventions can be administered in school-based clinics or primary care settings (Pender 2002). By developing interventions to increase physical activity and educate school-age children on healthy choices a child’s perceived competence or self-efficacy to execute a given behavior increases the likelihood of commitment to action and actual performance of the behavior. Changing behaviors and increasing self-efficacy can pave the way for improving the health of youth as they attain adulthood. This in turn can create a considerable impact on the future cost of healthcare.

Health consequences of obesity

Obesity results when the intake of calories exceeds metabolic needs. Sedentary lifestyle plus chronic ingestion of excess calories was considered the cause of obesity until recently. Although these factors are undoubtedly the principal cause in some cases, there is now evidence for strong genetic influences on the development of obesity (Tierney, Mcphee, & Papadakis, 2004). There are two major types of obesity; upper body (apple-shape) and lower body (pear-shape) obesity. Patients with central or upper body obesity have excessive body fat in the abdomen and flank areas. Individuals with this type of obesity have a greater health risk of Type 2 diabetes mellitus, ischemic heart disease, and stroke than do those with lower body obesity (Dunphy & Winland-Brown, 2001).

The most important and common results of the morbidity and mortality risk in obesity are from hypertension, Type 2 diabetes mellitus, hyperlipidemia, coronary artery disease, degenerative joint disease, and psychosocial disability. Approximately 60% of individuals with obesity in the United States have the metabolic syndrome (including
three or more of the following factors: elevated abdominal circumference, blood pressure, blood triglycerides, and fasting blood sugar, and low HDL cholesterol) (Tierney, Mcphee, & Papadakis, 2004).

According to one study of children the risk factors selected for analysis (i.e., fasting insulin, high-density lipoprotein cholesterol, low-density lipoprotein cholesterol, triglycerides, and total cholesterol/high-density lipoprotein cholesterol) were significantly related to percentage of body fat and waist circumference identified association with adverse cardiovascular risk profiles. The data indicate that children with > 33% body fat and children with a waist circumference > 71 cm were more likely to possess an adverse CVD risk-factor profile that a normal risk-factor profile (Higgins, Gower, Hunter, & Goran, 2001).

Research

Empirical evidence

Excess energy consumption and nutrient imbalances have replaced under nutrition as the most common nutrition problems in children (Sullivan et al., 2002). Childhood obesity has reached epidemic proportions: Some 4.7 million youths between 6 and 17 years of age are overweight or obese. The number of overweight youths (11%) has more than doubled over the past 30 years, with most of the increased occurring since the late 1970’s (American Dietetic Association [ADA], 2003). Common dietary problems identified in children include high energy and fat intakes, and low calcium and iron intakes. Diets are associated with obesity and chronic diseases of adulthood, such as cardiovascular disease, osteoporosis, and cancer (Healthy People 2010).

While the quantity of food children consume may exceed energy needs, its nutrient context is less than optimal (French, Lin, & Guthrie, 2003). The most common snack time for children occurs in the afternoon consisting of soft drinks, potato and corn chips, cookies, candy bars, and ice cream (Sullivan et al., 2002). Williams & Hodgkin (2003) indicates that grade-school children only eat about 25 % of the five servings of fruits and vegetables required during any given day. National dietary intake surveys indicate that consumption of soft drinks among children and adolescents is high and has been increasing dramatically in recent decades. Soft drink consumption among children
increased 41% between 1989/1991 and 1994/1996, from 198g per day to 279 g per day (French, Lin, & Guthrie, 2003).

**Nutritional recommendations.** Snacks can play an important role in nutritional intake. A study determined that a simple intervention like providing a low-fat snack to elementary school children between the time school ends and dinner time would affect 24-hour energy and fat intake. A second purpose of this study was to determine if the snack affected the dietary intake of sodium, calcium, and iron. The contribution of protein, carbohydrate, and fat expressed as a percentage of total energy for the entire day, showed that protein increased 2.1 percentage points and fat decreased by 1.6 percentage points. Administration of the low-fat snack improved the nutritional quality of the total daily nutrient profile. Carbohydrate intake decreased while protein, iron, and calcium intakes improved (Sullivan, et al. 2002).

**Impact of obesity on healthcare cost.** Total costs (medical cost and lost productivity) attributable to obesity alone amounted to an estimated $99 billion in 1995 (Healthy People 2010). Based on a study performed in a control school receiving usual curricula and physical education classes compared to a trial school, the trial school found that prevalence of obesity among girls in intervention schools declined 23.6% to 20.4% during the 2 year intervention, whereas in the control schools, the prevalence increased from 21.5% to 23.7%. There were no significant differences found among boys. Investigators suggest that school-based prevention programs of this type are likely to be cost-effective uses of public funds (Wang, et al, 2003).

**Physical activity.** In two socio-demographic and scholastically similar schools Bandolier (2004) limited television and video watching to 10 hours over six months. It included 18 hours of lessons incorporated into a curriculum. Measurements were taken before and after the study. Compared with children who did not participate in the program, participating children had statistically significant relative decreases in body mass index, triceps skin fold thickness, waist circumference and waist-to-hip ratio (Bandolier, 2004).

King (2004) conducted research with 205 fifth grade children from Mississippi. Interviewers conducted a 24-hour dietary recall on each child to analyze macronutrients, micronutrients, caffeine content, fruit, vegetable content, and fluid ounces of soft drinks.
Physical activity levels were measured with pedometers to observe time in physical activity, and aerobic fitness. Finally, each child’s knowledge of diet, physical activity, body weight, and cardiovascular health was determined using “Know Your Body” health knowledge questionnaire. The overall participation was 81% with 54% of participants classified as either “overweight” or “at risk for overweight” according to Centers for Disease Control BMI classifications. African-American children were slightly higher weights and consumed significantly less fiber than Caucasian children. Only two of 194 (1%) children consumed the recommended three servings of vegetables recommended per day, whereas 34 (18%) consumed the recommended two fruit servings per day. African-American children consumed significantly more fruit servings than the Non Hispanic white children (1.0[+/-0.1 versus 0.5 [+ or -] 0.1, P = 0.004). Caffeine and soft drink consumption was higher in Non Hispanic white children. Of 205 children studied, 82% completed the self-administered health knowledge questionnaire. The average percentage of questions answered correctly was 46%. The findings also showed a lower level of physical activity than previously reported for children in this age range. This finding was important because physical inactivity is an independent and modifiable risk factor for CVD. In conclusion investigation identified the prevalence of overweight and obesity among rural middle school-aged children in a state that leads the nation in prevalence of obesity (King, 2004).

A survey conducted by the CDC (2003) indicated that 61.5% of children age 9-13 years do not participate in any organized physical activity during their non-school hours and that 22.6% do not engage in any fee-time physical activity. Fewer children age 9-13 years reported involvement in organized sports (38.5%) than in free-time physical activity (77.4%) during the seven days preceding the survey. Findings were that the majority of children 9-13 years engage in some level of free-time physical activity. The study recommended that increased rates of participation in both free-time and organized physical activities are needed, especially for non-Hispanic black and Hispanic children.

Nutritional Counseling. Few effective interventions in preventing obesity and cardiovascular disease for early adolescent and school-age children have been reported. Frenn, Malin, & Bansal (2003) conducted a stage-based intervention for low-fat diet with middle school students. Low-income, culturally diverse students from an urban middle
school (n=60) received four classroom interventions with the use of a combined Health Promotion/Transtheoretical Model to control fat in diet and increase physical activity. A control group (n=57) received the usual classroom education. Pretest percentage fat in diet was regressed on demographics, access to low-fat foods, perceived self-efficacy, benefits/barriers, and stage of change with results as proposed by the model \[F(9,64)=5.77; p=.000; \text{adjusted } R^2 = 0.35\]. Post-test percentage fat in food was significantly less for the intervention group as compared with the control group \(t = 2.06; \text{df, 115; } p=0.4\) (Frenn, Malin, & Bansal, 2003).

**Educational intervention.** Despite the availability of successful education programs that address the link between food and health, overweight and obesity among young students continues to increase (Moreno, Denk, Roberts, Tharp, Bost, and Thomson, 2004). In this study nutrition mechanisms are used to reach outside of the traditional health education setting. Unit activities under the guidance of their teachers were done on 343 students. The completed pre and post assessments measuring knowledge and concepts covered by the unit material studied. The Pre-assessment results suggest that most students understand concepts of calories in food, exercise and energy use, and matching food intake to energy use. Student knowledge was found to be much lower on topics related to health portion sizes, foods that have the most energy, essential nutrients, and what “diet” actually means, and the relationship between size and basal metabolic rate. The goal of the field test was not only to estimate learning as a result of using the unit material, but also obtaining teacher feedback and input for improving the unit. There was no statistical differences among the pre-assessment performances of the field-test comparison groups. Field-test group scores increased on all 15 items, from pre and post assessment.

In another study preformed by the Pathways Study Research Group the objective was to evaluate the effectiveness of a school-based, multi-component intervention for reducing percentage body fat in American Indian schoolchildren. A randomized, controlled, school-based trial involving 1704 children in 41 schools was conducted over 3 consecutive years, from 3rd to 5th grades, in schools serving American Indian communities. The intervention had four components 1) change in dietary intake, 2) increase in physical activity, 3) a classroom curriculum focused on healthy eating and
lifestyle, and 4) a family-involvement program. The results documented the feasibility of implementing a multi-component program for obesity prevention in elementary schools serving American Indian communities. The program produced significant positive changes in fat intake and in food- and health-related knowledge and behaviors (Caballero, Clay, Davis, Ethelbah, Rock, Lohman, et al., 2003).

Nutritional knowledge and physical activity. In a study examining the efficacy of a school-based exercise and nutrition program 238 third-grade children from 3 different schools were used to evaluate a health-related fitness school-based program and home program that required parents and children to complete activities and earn points for nutrition and exercise activities. On the post-test the treatment groups scored significantly higher than the control group on exercise and nutrition knowledge and significantly lower on fat intake. The study demonstrated that schools can adjust curriculum to meet some health needs of students and achieve modest changes in exercise and nutrition knowledge and diet (Hopper, Munoz, Gruber, & Nguyen, 2005).

Summary

The data on childhood obesity, inactivity, and poor food choices are alarming. Schools can play a key role in reversing this trend through school nutrition policies that ensure coordination of comprehensive nutrition education programs, child nutrition program, a healthy school environment, and community partners (JADA, 2003). Schools reach over 95% of all children between the age 5 and 17, and meals and snacks at schools play a critical role in developing children’s eating patterns, providing one third to half of many students’ daily nutritional needs (JADA, April 2003). Although the elementary school related to this study has a physical education teacher, there are no nutritionally trained teachers to instruct and answer nutrition related questions. As the JADA, 2003 position statement notes, of the 53.2 million school-age children in the United States (US), 27 million participate in the national school lunch program (51%), and only 7.4 million (13%) participate in the school breakfast program. There are multiple learning opportunities available for nutrition and activity promotion. PE Central has over thirty websites focused on teaching and institution of health and nutrition. They are all free to teachers and the public. California has multiple surveys ranging from physical fitness
with California Children’s Healthy Eating & Exercise Practices Survey, 1999 (CalCHEEPS) by physical activity diaries being kept by eight hundred fourteen 9-12 year-olds (Surveys and Data, 2005).

This study utilized the theoretical foundations of Pender and Erickson as the framework for measuring knowledge levels of school-age children before and after nutrition education and physical activity. Advanced Registered Nurse Practitioners can apply knowledge gained in this study to assist children in making health promoting changes in nutritional and physical activity choices.
CHAPTER 3
METHODOLOGY

This chapter describes the design, instruments, setting, population and sampling plan, protection of human subjects, procedure, and data analysis of the study. The instruments included a demographic and assessment tool questionnaire, a knowledge survey and a perception survey which reflects the participant’s knowledge, perceptions and actual behavior. These instruments provided data to reveal whether an educational intervention by an advanced practice nurse, guided by the Health Promotion Model, could facilitate an increase in nutrition and physical activity knowledge and behaviors. The health club sponsor at the elementary school introduced activities to participants of the study. This sponsor is a licensed educator employed by the Boys and Girl’s Club of the county. The participant’s human rights and voluntary participation were respected and regulated through approval from the Florida State University’s Institutional Review Board (IRB) and parental/participant signed consent.

Design

This quantitative research utilized a descriptive design. The purpose of descriptive studies is to observe, describe, and document aspects of a situation as it naturally occurs and sometimes to serve as a starting point for hypothesis generation or theory development (Polit & Beck, 2004). By documenting weekly activities before and after counseling, change in the children’s behavior can be described and documented.

A pre and post analysis was employed utilizing change scores of the dependent variable (DV). Data was obtained using the Characteristic Data Form (CDF) (Appendix D). This study compared knowledge levels before nutritional and physical activity counseling interventions, and after. The counseling and activity intervention is the independent variable.

Setting

The setting of this study was the boys and girls club after school program, located along the coast of north Florida. The boys and girls club provides homework assistance, educational programs, clubs, arts & crafts, recreation, technology and snacks for members. They have digital cameras, lap top computers, photo shop, and programs to
guide each age group through using computers and knowing the components that make them work. Students are enrolled each year by parents. Their mission is to provide a fun, safe and positive environment for children who would otherwise walk or bus home alone waiting for parents to get off work. Age groups are separated and guided by a variety of staff members.

The students participating in this research are residents of the rural, coastal community, following county regulations for zoning of the selected elementary schools. The students are third, fourth, fifth, six, and seventh graders representative of this chosen rural, coastal community.

General Demographic Characteristic: 2000

The city of Carrabelle is located in the panhandle of North West Florida. It is a small coastal town divided by the Carrabelle River. The United States Census Bureau (2000) demographics for the area reflect a total population of 1,303. Children 5 to 9 years old are 71 (5.4%) and 10 to 14 years 93 (7.1%). A major employer of Carrabelle was the harvest and export of oysters, shrimp and fish. With the decline of the seafood industry in north Florida, tourism and county prisons are the leading employers of the county.

Total population. According to ethnic demographics Non- Hispanic whites make up 91.5% (1,192), black or African American 5.7% (74), American Indian and Alaska Native 0.3% (4), Asian 0.1% (1), Native Hawaiian and Other Pacific Islander 0.1% (1), other race not specified by the census 0.8% (11), and two or more races 1.5% (20). Race alone or in combination with one or more other races reveals that Non Hispanic whites make up 92.9% (1,210), Black or African American 6.1% (79), American Indian and Alaska Native 1.1% (14), Asian 0.3% (4), Native Hawaiian and Other Pacific Islander 0.1% (1), some other race 1.2% (15).

Hispanic or Latino and race. The total population that is Hispanic or Latino (of any race) makes up 1.6% (21). Broken down into nationality Mexican make up 0.8% (11), Puerto Rican 0, Cuban 0.3% (4), Other Hispanic or Latino 0.5% (6), not Hispanic or Latino 98.4% (1,282), and Non Hispanic white 90.6% (1,181).

School enrollment. The population of those 3 years and over enrolled in school is 263. This includes nursery school or preschool at 8.7% (23), kindergarten 5.3% (14),
elementary school (grade 1-8) 44.9% (118), high school (grades 9-12) 28.9 (76), and college or graduate school 12.2% (32).

Educational attainment. There population that is 25 years and over is 904. The education attainments of this population is: less than 9th grade education 8.7% (79), 9th to 12th grade, no diploma 22.1% (200), high school graduate (includes equivalency) 41% (371), some college, no degree 17.1% (155), Associate degree 4.9% (33), Bachelor’s degree 4.9% (44), and Graduate or professional degree 2.4% (22) The total percent of those with high school diplomas or some college was 69.1% and those with a bachelor degree or higher was 7.3%.

Population/Sample Plan

Target population-sample

The target population was all third, fourth, fifth, sixth, and seventh graders that participate in a boys and girl’s club after schools program. A convenience sample of 26 students in those grades attended the initial session.

Sampling Plan

The convenience sample was obtained from the boys and girl’s club public elementary school program, which serves the majority of children living in this area thus, should be representative of the population in this area. The criteria for inclusion were: there must be a signed consent from both the parent/legal guardian, students must be at a grade level of third, fourth, fifth, sixth, or seventh grade, and be able to understand English.

Protection of Human Subjects

Approval from the IRB at Florida State University was obtained prior to any collection of data from the students or student’s records. The boys and girl’s club area director and elementary school principal reviewed the instruments used to obtain data and the education materials and activities presented to the elementary students. Written permission was obtained from the boys and girl’s club director and principal for implementation of the study (Appendix B). Following IRB requirements for protecting students to the utmost, parental/legal guardian consents and student assents (Appendix C) were obtained prior to any administration of collection of data. The student assent of
participation of activities was voluntary and the student could choose to cease involvement at any time throughout the study. Although there was a minimal risk involved in the study, the consents included the researcher’s and guidance counselor’s contact information for any discussion of potential problems. The consent reinforced the verbal statement prior to each session that the data obtained from the surveys was confidential, to the extent allowed by law, and utilized only for group results. Names were not be used on the data collection tools. Coded by the researcher, birth dates were used to match pre- and post test scores. Students with identical birthdays were assigned letters with their birth date for differentiation. Only group data is reported. The assents, consents and data collected remain in a locked file cabinet by the researcher. This cabinet will only be accessed by the researcher to maintain utmost of confidence. At the end of three years from the initial start of the study, all hard copies and any identifiable information will be shredded and appropriately discarded by the researcher.

Instrumentation

Three instruments were used to gather data about the participants and the knowledge level of these participants. The first instrument was a Characteristic Data Form (CDF) created by the investigator to collect demographic, educational, and assessment characteristics of the students sampled for this study (Appendix F). This data collection instrument included demographic information: gender, age, height, weight, grade, and ethnicity. The modified form, post intervention consisted of identification, height and weight (Appendix F). It should be noted that this demographic instrument has no reliability testing but that the three member committee that reviewed the instrument agreed it was a valid measure of the data to be obtained.

The second instrument was a 15-item multiple-choice Student Content Assessment or Food and Fitness Field Test (Appendix F) designed to measure students’ content knowledge of topics (e.g., energy in food, energy expanded during different physical activities, healthy food choices, special diet needs,) covered by nutrition and physical activity counseling. The instrument measures students’ knowledge level in a pre/post test format. The author of the tool, Nancy P. Moreno was e-mailed for permission to use the
tool and consent was obtained (Appendix E). Reliability and validity data were not published for this instrument.

The third instrument was a physical activity record (Appendix F) designed by the researcher to measure students’ activity daily for one week. The check list started on Monday and ended on Sunday. Activities were listed for students or students’ parent/guardian to check the activity and estimate time activity performed. Activities included: walking, running, swimming, riding bike, skate boarding, game activity (basketball, football, or soccer), general play time (outdoors not performing listed activities), and time spent watching television. Again, there is no reliability or validity data published on this instrument.

Procedures

After approval from the IRB, flyers (Appendix G) were sent out the week before the study, with information on the study and the researcher. The flyer also provided information for contacting researcher for questions. The Friday before the start of the study on the following Monday, a short program introduction lasting approximately 20 minutes was provided for student and staff before consents, assents, and physical activity record are sent home by the researcher. The researcher was available to answer questions to parents and children on Friday at the school.

Monday afternoon at a time provided by the boys and girls club the researcher gathered consents and assents and provided students with the one week of activities scheduled and implemented the program. Third, fourth, fifth, sixth, and seventh graders that have volunteered for a “health and fitness program” at the elementary school were given the characteristic data form and pre-test on Monday. Then a 30 minute nutrition and fitness counseling session was provided, followed by a 50 minute physical activity guided by positive nutrition and physical activity reinforcement. The nutritional information provided at counseling and list of daily activities will be provided (Appendix G). The researcher, club staff, and volunteers assisted in the program.

The second day of the program (Tuesday) the researcher, staff, and volunteers guided the students through 90 minute physical activities guided by positive nutrition and physical activity counseling and reinforcement. The third, forth, and fifth day of the
intervention mirrored the second. On the following Tuesday the post-test was implemented and physical activity records collected.

After the week program ended, a modified characteristic data sheet and activity checklist (Appendix G) was provided to each student that participated in the program. The Modified characteristic data sheet had the student’s identification code. Height and weight were obtained to provide researcher with BMI data post intervention. The physical activity checklist, post test, and modified characteristic data sheet were picked up the following Tuesday, Wednesday, and Thursday. The researcher spent additional hours collecting modified characteristic data sheets and administering the post test to students that were absent on Tuesday.

Data Analysis

Descriptive and inferential statistics were used to address each of the research questions will be discussed. The variables that are continuous and interval in scale were described using the mean and the median for central location, variance for standard deviation, and skew. Discrete variables were described using frequencies, percentages, and cumulative percentages. Along with these statistics, graphs were used to describe the variables of weight, BMI, and test scores.

Summary

A cross-sectional, descriptive approach was used for this study. The researcher investigated the level of knowledge in school-age children by pre and post testing measurements. A convenience sample of students in the third, fourth, fifth, six, and seventh grades that volunteered for the “health program” at the elementary school were the group of study. After approval from the Human Subjects Committee of the FSU IRB, participants were given a copy of the instruments and a letter of consent. Chapter 4 presents the results of the data analyses.
CHAPTER 4
RESULTS

The purpose of this study was to determine if education about nutrition and physical activity in school-age children can improve healthy choices regarding nutrition and exercise, made by school-age children in a rural Southeastern community. This chapter describes the results from the analysis of data in relation to the research questions guiding this study. The results include statistical findings regarding demographic characteristics and nutrition knowledge and activity levels.

Sample

The initial plan was to collect data on 40-50 students who participated in the after-school program at the Boy’s and Girl’s Club. The plan for the study was for the third, fourth, fifth, and sixth graders to complete pre and post test measuring knowledge gained from the educational programs. They were also to complete sheets detailing their physical activity before and after a week long series of counseling sessions. While 26 children attended the initial session of the study ranging from third to seventh grade, only 13 returned with permission consent and assent forms completed. Of these 13 participants 2 did not complete the posttest and modified characteristic data sheet. Only 3 participants completed the pre program daily physical activity record and none completed the post program activity record.

Demographic Characteristics

Descriptive statistics were used to describe characteristics of the participants (Appendix D). D) 57% were males (N = 6) and 43% (N=7) were females. All participants were Non Hispanic. Ages ranged from 8-12 years old with a mean age of 9.81 (SD = 1.07). The mean height of the participants 58.47 inches (SD = 4.12), mean weight pre-test 90.18 (SD = 25.20) and post-test 88.50 lbs. (SD = 23.34).

Of the 13 participants that completed the Characteristic Data Form, initially 21 parents (mother and father) had jobs identified by the children. Five mothers did not have a job and one mom was a volunteer fire fighter in EMT school. Of the fathers, 3 worked for corrections, 2 worked for the state, 2 were truck drivers, 2 were in
construction, 2 worked in a lumber yard, 1 was in lawn service, 1 worked in a cleaning service, 1 was a building inspector for the county, 1 was a county deputy, 1 worked for the Boy’s and Girl’s club, 1 worked at the bank, 1 was a pharmacy tech, 1 worked for GT-com, and one was” unknown”. Eleven of the 13 children identified mom as the primary care-giver and two identified their “granny”.

Knowledge Levels

The Field Fitness Survey Exam was used, which included 15 multiple choice questions regarding knowledge of nutrition and physical activity facts. Simple and paired t-test was employed to analyze the data and reflected the difference between test scores before and after counseling.

Research Question One. “What is the existing knowledge level knowledge of nutrition and physical activity practices among school-age children in a Southeastern rural, coastal community, as indicated by a 15 question pre-test?” To examine this question, data were collected regarding knowledge of nutrition. The pre-test scores had a mean of 41.36 (N = 11) (SD = 13.93). These scores reflect a lower than 50% knowledge level.

Research Question Two. “What is the effect of an education program on level of knowledge about nutrition and exercise practices among school-age children post counseling?” To examine this question, data were collected using the physical activity work sheet pre and post activity sessions and a post-test regarding knowledge of nutrition. The post-test mean score was 55.36 (N = 11) (SD = 12.69). There was an overall increase in test scores on the Student Content Knowledge Assessment. (See Figure 1)

Data regarding physical activity were incomplete due to lack of students returning their activity sheets, so changes could not be analyzed. Only 3 students returned the physical activity records. Of the three daily physical activity records that were returned inside play and watching television were the most popular activities. Student A rode bicycles for 10 minutes on Monday and 5 hours on Saturday. Students’ B & C did not ride bikes all week. All the subjects played inside for 1 to 6 hours daily. On Friday, Saturday and Sunday, all subjects played outside from 2 to 5 hours. All subjects
documented time watching television daily. Weekdays television times ranged from 30 minutes to 4 hours. Weekends, Friday included, showed that time spent watching television ranged from 5 to 10 hours.

In addition to the above questions, this study also examined the relationship between the knowledge scores, changes in physical activity and reduction of weight and BMI. To examine this question, a series of repeated measure t-tests were conducted on various pre-test and post-test measures, including tests scores, weight, and body mass index. Results from these analyses found a significant difference between pre and post test scores \[ t (1, 10) = -3.14, p < .05 \], in that scores increased after the implementation of the nutritional and physical activity counseling (see figure 1). There were no significant differences between pre and post for weight \[ t (1, 10) = 1.71, p = .12 \] or body mass index \[ t (1, 10) = 1.09, p = .30 \] (see figure 2 and 3).

![Graph showing percentage on the Food and Fitness Field Test](image)

**Note.** Sample Size = 11

**Figure 1.** Mean difference in test scores pre and post.
Note. Sample Size = 11

Figure 2. Mean difference in weight pre and post.

Note. Sample Size = 11

Figure 3. Mean difference in body mass index pre and post.
CHAPTER 5
DISCUSSION

In the United States, the rate of obesity in school-age children continues to rise although awareness is broadening daily in the country. Childhood obesity is one of the most prevalent nutrition problems among children, exceeding iron deficiency anemia, the previous leader (Hodgkin, 2003). Therefore, the purpose of this study was to explore a method of increasing the knowledge level of nutrition and physical activity facts and practices among school-age children. The participants sampled in this research study were middle school and one high school student who lived in a rural, coastal Southeastern community in Florida. This chapter discusses the findings, theoretical framework, study strengths and limitations, and implications for nursing practice, education, and research.

Discussion of Findings

The data revealed that all of the participants came from blue collar families, meaning they all work in middle to lower income bracket. Either the mother or grandmother was the caregiver. The participants were all Non Hispanic white \( n = 11 \), including the original participants that filled out the Characteristic Data Form \( n = 23 \). Of the 13 participants that finished the study (post CDF) all had BMI’s fewer than 24.36%. Based on reported weights, the mean BMI of these children was 18.85% at pre program measurement and 18.61% post measurement. A BMI greater than 25 or more among adults is considered obese, according to the Center for Disease Control. None of the sample would be considered overweight. It should be noted that overweight may or may not be due to increases in body fat (CDC, 2004). Athletes are an example of when a BMI could be high while having very little body fat. Desirable BMI levels may vary with age (CDC, 2004). According to the CDC, individuals with a BMI of 25 to 29.9 are considered overweight, while individuals with a BMI of 30 or more are considered obese (CDC, 2004). Because of the lower BMI of the participants pre program intervention it is not surprising there was no significant change post program. Perhaps focusing on the quality of their nutritional habits would be more important in health promotion activities for this group, so that as they get older they do not become obese. Also, there were no
African American children in this sample and it is known that African American children have a higher rate of risk for obesity.

The knowledge level findings of this study were that the participants (N = 11) had a mean knowledge score of 41.36% on the pre Student Content Knowledge Assessment and 55.36% on the post Student Content Knowledge Assessment. There was a significant increase in test scores. However, while there was an overall increase in test scores pre to post test, it cannot be discerned if the increase was a result of this intervention program or increased reading ability as the students were older and had more education, more exposure to media such as television and newspapers regarding nutrition or higher personal emphasis based on increased awareness of body image. So unfortunately we cannot say with confidence that the increased knowledge scores were a result of the program intervention.

Conceptual Framework

There were a limited number of studies found using the HPM (2002) and Erikson’s developmental stages when addressing childhood obesity. But these frameworks were chosen to guide this study based upon the individualized need to change behaviors in promotion of a healthy lifestyle related to nutrition and physical activity. This could only be done by first understanding the developmental stage at which the school-age children learn, based on capacity for industry while avoiding an excessive sense of inferiority. They must learn the feeling of success, whether it is in school or on the playground, academic or social (Boerre, 1997).

Erikson’s (1968) developmental stage for school-age children was used to reflect the participant’s developmental level of the latency stage, which identifies this school-age stage of industry versus inferiority. The task is to develop a capacity for industry while avoiding an excessive sense of inferiority (Erikson, 1968). This theory supports the rational involved in the balance of industry and inferiority. If a child develops too much industry it could lead to narrow virtuosity, which is a maladaptive tendency, were we see children who can not “be children”. These are kids without a life; child actors, child athletes, child musicians, child prodigies of all sorts (Erikson, 1968). The most common maladaptation is inertia; this is when a child suffers from the “inferiority complexes”. A
happier thing is to develop the right balance of industry and inferiority –that is, mostly industry with must a touch of inferiority to keep us sensible humble (Boeree, 1997). In this study, the opportunity was provided for students to experience a sense of initiative by participation within the structured physical activity and by learning more about nutrition and health. The activities were selected so that all could participate regardless of age or size, thus minimizing any sense of inferiority.

By combining the Health Promotion Model (2002) and Erikson’s (1968) developmental stages the odds of increasing knowledge levels and creating change in behaviors are heightened. This is done by providing the opportunity to engage in health-promoting behaviors and promoting a feeling of success. Pender’s model notes how motivation increases with positive outcomes. She also emphasizes that each child is the individual, has unique characteristics that influence change and can be taught to develop social skills and health care promotions that are nutritious and healthy. In this study children were encouraged to participate in any kind of physical activity at home that they liked, but would still keep them active. They were also exposed to new kinds of physical activities in the structured exercise component of the study.

Comparison to the Literature

This study did not have the hoped for results in children’s behavior change, however this is not necessarily uncommon. A study performed in the United Kingdom (UK), reported disappointing behavioral changes when implementing a program similar to that conducted in this study but was even longer in duration (Sahota, Rudolf, Dixey, & Cade, 2001). According to these authors, only a few primary prevention studies of school based interventions have been reported in the United States, and none in the United Kingdom (Sahota, Rudolf, Dixey, & Cade, 2001). This was a 10 month study to determine if a school based intervention to reduce factors contributing to obesity. The setting included 10 primary schools in Leeds, England. The children’s ages ranged from 7 to 11 years old. The health promotion philosophy was adopted at a school level. Interventions included teacher training, modification of school meals, and development of school action plans with curriculum, physical education, tuck shops, and playground activities. Unfortunately, behavioral changes were not seen after a 10-month
implementation of the health program. These findings underscore the difficulties in changing children’s behavior, even when there is support at an administrative level within schools.

Limitations

There were several limitations encountered throughout the study. The major limitation was the short time frame and small sample size. Initially, the follow-up measures including the posttest modified characteristic data forms and the post daily physical activity records were to be initiated one month after the pretest and counseling and activities sessions concluded. However, because of the unanticipated time length to attain IRB approval, the researcher had to modify the time frame to ensure the study was complete by the academic deadlines that were mandated. This created a limitation, by decreasing the amount of time between pre and post testing. Also, because the one week post data collection day fell on a Monday holiday, the post data were collected the following three days. Thus, not only was the time between pre and post testing limited, the giving of the post test was not consistently given one week later. Results may be biased by the short period of time between testing and by the variance in the timing of post testing.

A limitation was also seen in the amount of time the counseling was performed. A longer nutritional intervention period to counsel the children could have provided more information to the children so that the increase in test scores could more definitively be related to the counseling provided. A longer physical activity counseling and activity intervention would have possibly shown increases in the amount of physical activity the students were engaging in.

Another major limitation was sample size. Initially, it was expected to have 40 children participating in the study. After being informed that there would be approximately 10 to 12 fourth, fifth and sixth graders, the decision was made to include the third grade, which added an additional 12 to 15 students. On the first day of the study one seventh grader attended and he was allowed to stay. However, even with these modifications, only 13 of the students actively participated and two of which did not complete the post test. The resulting small sample size was probably impacted, too, by
the loss of several students due to absenteeism and lack of signed parental consents and assents.

The time of day the study was implemented also proved to be a major limitation. When permission was granted by the boy and girl’s club, it was asked that the researcher start at 4:30 PM due to the clubs schedule. This time period allowed the children to complete their homework assignments with boy and girl’s club employees before they met with the researcher. Unfortunately, the students started leaving approximately 10 minutes after the nutritional and physical activity counseling started. The researcher did not consider the fact that parents pick up the children all afternoon, at different times. Every day a different group of children were present at different times. The students stayed from 10 to 90 minutes and every day was different. There was no consistency in the attendance times, so children only were able to hear only some parts of the counseling and participate in only some of the physical activity projects.

Other limitations include the region the study was conducted. This area of Franklin County has predominantly Non- Hispanic white school attendance. Although the county is racially diverse, it is not seen on eastern area of the county. Franklin County is one of the largest land areas per square mile in Florida, and has a large unpopulated area to the east. Apalachicola, to the west of Carrabelle is the County seat and has a larger, more diverse population. It should be noted that the county is in the process of consolidating the public schools, and by 2010 the schools population will reflect a much greater diversity. The lack of ethnic diversity that was present in the current study decreases the ability to generalize the findings.

Strengths

There is a limited amount of research on school age children and the effect of counseling in nutrition and physical activity having on children’s behavior. It has been established that obese children are a risk for being obese as adults and that obese adults are more likely to have obese children. However, most of the research has been on obese children and risk factors associated with obesity, not on interventions to alter this documented pattern. In recent years, the United States Department of Health and Human Services has set goals through the Healthy People 2010 campaign to address the need for
school age obesity awareness and behavioral modification programs at home and within the schools to decrease this growing problem. This study offers a plan for specific education with nutritional and physical activities including these within established programs at schools where children are. While doing this study, the boy and girl’s club director informed the researcher that the club has just started a similar study on a national level for the next 3 years. They will be looking at the same issues addressed in this study, but over an extended period of time. Thus, while the current study did not have significant findings, it was consistent with the federal government’s mission and programs and can shed light on some of the barriers to implementing programs and effecting change in this population.

Implications for Nursing Practice

The significance of the problem and results of this study will provide nurse practitioners with helpful information when interacting with school age children in the office and community settings. Nurse practitioners can be major contributor to this topic in the future. As an APN in a clinician role, the nurse should be aware of assessing BMI and all risk factors related to obesity in children. A nurse practitioner should reinforce positive nutrition and exercise habits without insulting or upsetting the child or parent. Providing accurate information without forming “inferiority complexes” will play the biggest role in ensuring school-age children increase their knowledge levels of nutrition and physical activity.

Through leadership in all areas of nursing, the nurse practitioner can validate the significance of education in the clinic setting. By taking the time to discuss goals and problems with this age group, they can be accurately guided into positive changes. With positive changes there will be increased credibility in the advanced practice nurse, leading to recognition of and reimbursement for the nurse educator role and more influence in the political forum. Finally, the nurse practitioner can take a leadership role in the community to guide school personnel who may wish to implement obesity prevention programs for children.
Recommendations for Future Research

Throughout this study, the researcher found many areas regarding obesity, nutrition, exercise, diet changes, and habits among children that would benefit from further research. Recommendations for further research would include a similar format with a larger sample. This study preformed over a longer time period would also provide more insight to the long term changes in nutrition and exercise habits that affect school age, so that children at risk could be identified sooner. Over time, even a small decrease in calories eaten and a small increase in physical activity can help prevent weight gain or facilitate weight loss (Healthy People 2010).

Most research involving obesity has been conducted on adults. Studies that show good correlation between BMI and adiposity in youths find that other factors such as gender, race, age, and maturational status are important to consider in predicting adiposity (Troiano & Flegal, 1998). A comparison study using the boys and girls club at other locations and groups of similar children that do not go to the same club may have interesting results. The boy and girls club offers lots of activities, so when compared to a similar group of “turn-key” kids (kids that go home alone) the results may show that community activities after school are more beneficial to health promotion.

Due to the need in decreasing or controlling the national obesity trend, surveys, comparison studies, and future research on a national level involving programs in the school system would be of benefit to researchers. This would provide the larger sample size, expansion of regional limitations, a more diverse group of subjects, a longer implementation time, and more demographic information on subjects and region that would validate and more generalize the study. Also, adding the element of family involvement or participation in the “healthy choices” lifestyle could have a positive effect on children’s health practices.

Summary

This chapter provided an overview of the results, limitations, assumptions, strengths and recommendations for future research. It has been established in this study that school age children in today’s world are at an increased risk of obesity now and in the future, due to multiple factors. Twenty-five percent of American children are now
obese; this is not a game to play with a child’s health (Hodgkin, 2003). There is still a
great need for health care providers to reach school age children regarding obesity and
good health behaviors. This study was limited by the small sample and lack of
participation. The results indicated that an educational and physical activity program did
not influence behaviors for short or long term. However, it suggests that the school age
child’s knowledge about nutrition and physical activity may increase through an
educational program.

It is the researcher’s contention that through the application of Erickson’s (1968)
and Pender’s Health Promotion Model (2002), school age children’s behaviors could be
influenced by their value of being healthy and looking healthy. Validation of these ideas
could be conducted via further research. Further research that focuses on the school age
children’s behavior related to nutrition knowledge, eating practices and physical activity
would be appropriate and is needed. Health care providers must stay vigilant and
dedicated in the challenge to reach children regarding nutrition and physical activity.
APPENDIX A

FLORIDA STATE UNIVERSITY INSTITUTIONAL REVIEW BOARD APPROVAL LETTER
Office of the Vice President For Research  
Human Subjects Committee  
Tallahassee, Florida 32306-2783  
(850) 644-8633 - FAX (850) 644-4392

APPROVAL MEMORANDUM

Date: 9/29/2005

To: Dana Whaley

242 Peggy Lane  
Carrabelle. FL 32322

Dept.: NURSING

From: Thomas L. Jacobson, Chair

Re: Use of Human Subjects in Research  
The effect of Nutrition and Physical Counseling for Elementary Students in a Rural Community

The forms that you submitted to this office in regard to the use of human subjects in the proposal referenced above have been reviewed by the Human Subjects Committee at its meeting on 9/14/2005. Your project was approved by the Committee.

The Human Subjects Committee has not evaluated your proposal for scientific merit, except to weigh the risk to the human participants and the aspects of the proposal related to potential risk and benefit. This approval does not replace any departmental or other approvals which may be required.

If the project has not been completed by 9/13/2006 you must request renewed approval for continuation of the project.

You are advised that any change in protocol in this project must be approved by resubmission of the project to the Committee for approval. The principal investigator must promptly report, in writing, any unexpected problems causing risks to research subjects or others.

By copy of this memorandum, the chairman of your department and/or your major professor is reminded that he/she is responsible for being informed concerning research projects involving human subjects in the department, and should review protocols of such investigations as often as needed to insure that the project is being conducted in compliance with our institution and with DHHS regulations.

This institution has an Assurance on file with the Office for Protection from Research Risks. The Assurance Number is IRBH00000446.

cc: Deborah Frank  
HSC No. 2005:705
APPENDIX B
AGENCY PERMISSION LETTERS
Boys & Girls Clubs of the Big Bend in Franklin County
Area Director: Joe Hayes
155 Avenue E
Apalachicola, Fl 32320
Fax: (850) 653-2782

August 18, 2005

Dana Whaley, RN, BSN
Nurse Practitioner Student
Florida State University Graduate
School of Nursing
Duxbury Hall
Tallahassee, Fl 32306-4310

Dear Mrs. Whaley,

Pursuant to the conversation we had earlier in the week, I Joe Hayes/Director, Boys & Girls Clubs of the Big Bend, give permission to Dana Whaley, RN, BSN (Graduate Student at Florida State University) to implement her study “Nutrition and Physical Activity Counseling Among School Age Children in a Rural, Coastal Community.” I have reviewed questionnaires and educational materials regarding nutrition and physical activity.

Sincerely,

Joe Hayes
Area Director
Boys & Girls Clubs of the Big Bend
"The Positive Place for Kids"

JH/sk
August 18, 2005

Dana Whaley, BSN
Nurse Practitioner Student
Florida State University
Graduate School of Nursing
Duxbury Hall
Tallahassee, Florida 32306-4310

Re: Practicum

Dear Nurse Whaley:

It is with great pleasure I welcome you onto the campus of Carrabelle School to implement your study with regards to “Nutrition and Physical Activity Counseling Among School-aged Children in a Rural and Coastal Community.”

I issue consent for you to work with our elementary students, in conjunction with their teachers, as your content addresses many of the Sunshine State Standards.

As we discussed, the only requirement other than coordinating with the individual teachers at hand is for you to be finger printed and be assigned Level II clearance. This is being requested as a result of the passage of the Jessica Lunsford Act.

After I have received the notification of the clearance and parents have consented for their children to participate in your program, you may begin your course of study on campus.

I understand that your program will include the administration of a questionnaire, the presentation of nutrition and physical activity, and the collection of data. Moreover, I understand that the data will be collected on two separate occasions during the fall semester along with one week of daily activities and educational counseling with the children.

I wish you well in your educational endeavors. Please notify my office if I may be of further assistance.

Warm Regards,

Richard Key
Principal
APPENDIX C
INFORMED CONSENT AND ASSENT LETTERS
Appendix D
Florida State University
Human Subjects Committee
INFORMED PARENTAL CONSENT

Title of Research: The Effect of Nutrition and Physical Activity Counseling for Elementary Students in a Rural, Coastal Community.

I freely and voluntarily, and without any element of force or coercion, consent to be a participant in this project. I have been informed that this project is to be conducted, as part of the degree requirements, by Dana Whaley, a registered nurse, who is currently enrolled in the graduate nursing program at Florida State University. The study will take place during the period of September 15, 2005, through October 19, 2005, under the guidance of Deborah Frank, Ph.D., and a Professor in the School of Nursing.

I understand the purpose of this study is to determine the effects that nutrition and physical activity counseling have on elementary students. I understand that if my child participates in the project, he/she will walking, run, and play for a minimum of 30 minutes a day, weather permitting.

I understand that my child’s participation is totally voluntary and he/she may stop the participation at any time without prejudice, penalty, or loss of benefits to which I am otherwise entitled. Participation or withdrawal will not affect my child’s grade. In addition to parental consent, my child will be asked for voluntary assent for participation in this study. All my answers to the questions will be kept confidential, to the extent allowed by law. The results of the research study may be published, but my child’s name will not be used. Only group findings will be reported.

I understand there is a possibility of a minimal level of risk involved if I agree to have my child participate in the study. He/She might experience anxiety when thinking about being overweight or my personal health habits. The nurse researcher and elementary school guidance counselor will be available to talk with me or my child about these concerns, if needed.

I understand that there are benefits for participating in this research project. First, my child’s own awareness and behaviors about his/her health may be increased. Also, my child will be providing health care professionals with valuable insight into school-age children’s behaviors regarding nutrition and physical activity. This knowledge can assist them in providing health services that help other school-age children stay as healthy as possible. I can obtain a copy of the results of this study upon request.

I understand that my privacy will be protected at all times. Information obtained during the course of the study will remain confidential, to the extent allowed by law. All information will be coded by numbers and no names will be used in any report. The data will be stored in a locked cabinet in the School of Nursing until 2009, after which, they
will be destroyed. Only the researcher, her major professor, and statistical consultant will have access to the data.

Any questions I have concerning the research study or my participation in it, before or after my consent, will be answered by Dr. Deborah Frank or the researcher. I can reach Dr. Deborah Frank at Florida State University’s School of Nursing at (850) 644-5608.

In case of injury or in the event I have questions about my rights as a participant in this research study, or if I feel I have been placed at risk, I can contact the Chair of the Human Subjects Committee Institutional Review Board, through the office of the Vice President for Research at (850) 644-8633.

The nature, demands, benefits, and any risk of the project have been explained to me. I knowingly assume any risks involved. I understand that in signing this consent form, I am not waiving any legal claims, rights, or remedies.

I have read the entire informed consent form and have been offered a copy with my signature.

(Child’s Name)

(Parent’s Signature) (Date)
Appendix E

Florida State University
Human Subjects Committee

ASSENT FORM FOR STUDENTS LESS THAN 18 YEARS OF AGE

Title of Research: The Effect of Nutrition and Physical Activity Counseling for Elementary Students in a Rural, Coastal Community.

I freely and voluntarily consent to be a participant in this project. I understand that Mrs. Dana is doing this study as part of school requirements. The study will take place for one month (September 15, 2004, through October 19, 2005), under the guidance of Dr. Deborah Frank, PH.D., and a Professor in the School of Nursing.

I understand the purpose of this study is to determine the effects that nutrition and physical activity counseling have on elementary students. I understand that participation will include walking, run, and play for a minimum of 30 minutes a day, weather permitting.

I understand my participation is voluntary and I may stop at any time and return to boys and girl’s club activities. My name will not be used. Only group findings will be reported.

The nurse researcher and elementary school guidance counselor will be available to talk with me about any concerns, if needed.

I understand that there are benefits for participating in this research project. First, my own awareness and behaviors about my health may be increased. Also, I will be providing health care professionals with valuable insight into school-age children’s behaviors regarding nutrition and physical activity. This knowledge can assist them in providing health services that help other school age children stay as healthy as possible.

(Parent’s/Legal Guardian’s Name)  PRINT

(Child’s Name)

(Parent’s/Legal Guardian’s Signature)  PRINT

(Date)
APPENDIX D
CHARACTERISTIC DATA FORM
AND
MODIFIED CHARACTERISTIC DATA FORM
Characteristic Data Form

What is your date of birth? ______/_____/______

Are you: (Select one)

___ Boy
___ Girl

Are you: (Select one)

___ White
___ African American
___ Hispanic
___ Other

What is your current grade level? (Select one)

___ Third
___ Fourth
___ Fifth
___ Sixth

What is your parent’s job?

Dad _____________________________ Mom______________________________

Who takes care of you at home most of the time? ________________________

Height ____________
BMI ____________ (for researcher)

Weight ____________
Modified Characteristic Data Form

ID_________________________

Height ____________

BMI ________________

Weight ____________ (for researcher)
Dana,

Yes, you have our permission to use the instrument provided that authorship of the instrument (you can cite our article in Cell Biology Education) is acknowledged. As an aside, we also would be very interested in the outcomes of your study. Good luck and best wishes.

Nancy

Nancy P. Moreno, Ph.D.
Associate Professor, Family and Community Medicine
Associate Director, Center for Educational Outreach
Baylor College of Medicine
One Baylor Plaza, MS411, Houston, TX 77030
[street address: John P McGovern Campus, 2450 Holcombe Blvd., Suite 0138, Houston, Texas 77021]
Phone: 713-798-8200, 798-8207; Fax: 713-798-8201; nmoreno@bcm.tmc.edu
http://www.ccit.bcm.tmc.edu/ceo
http://www.bioedonline.org

On 7/19/05 9:09 PM, "FLORIDASEAFOODFESTIVAL" <info@floridaseafoodfestival.com> wrote:

Hello Mrs. Moreno,

My name is Dana Whaley. I am a student at Florida State University School of Nursing. I am finishing the requirements for the Family Nurse Practitioner Program and would like to use your Food and Fitness Field Tests Student Content Knowledge Assessment tool to complete my graduate study research. The title is "The Effect of nutrition and physical activity counseling for elementary students in a rural, coastal community".

Please let me know if I have permission to use your tool at your earliest convents.

Thank you for your time and consideration.

Dana
APPENDIX F
INSTRUMENT
Food and Fitness Field Test:
Student Content Knowledge Assessment

Circle the answer for each of the following questions.

1. Energy in food is measured in
   a. total fat units
   b. calories
   c. kilowatts
   d. grams

2. Which activity has more energy?
   a. playing tennis
   b. sleeping
   c. reading a difficult book
   d. playing video games

3. Essential nutrients are
   a. minerals and vitamins
   b. proteins
   c. carbohydrates and fats
   d. all the above

4. If you are lactose intolerant, which foods should you avoid
   a. beans
   b. cottage cheese
   c. spinach
   d. chicken
5. A portion representing one recommending serving size of meat should be about the size of
   a. your hand
   b. a large hamburger patty
   c. a plastic CD case
   d. a deck of cards

6. What does yeast give off when it uses sugar as food?
   a. a carbon dioxide gas and heat
   b. water vapor and heat
   c. oxygen and carbon dioxide gas
   d. heat and oxygen gas

7. Which provides the best energy (assume equal portions of each item)
   a. bread
   b. nuts
   c. rice
   d. tofu

8. A persons basal metabolic rate is based on a
   a. physical activity
   b. amount of daily rest
   c. food eaten
   d. height and weight

9. The amount of food a person eats should match
   a. the amount of energy he or she uses
b. his or her age  
c. stored fat  
d. each food label

10. Which of the following is nutritious breakfast for a vegetarian who eats dairy products?
   a. yogurt, sliced apple, whole wheat toast  
   b. scrambled eggs, orange juice, whole wheat bagel  
   c. waffles, reduced fat bacon and half grapefruit  
   d. sausage biscuit, orange juice

11. According to the food pyramid, most of a persons food should come from
   a. meats and other proteins  
   b. fats and oils  
   c. milk products  
   d. breads and cereals

12. Someone with Type 2 Diabetes should
   a. eat fewer sugar or greasy foods  
   b. get insulin shots  
   c. eat more protein  
   d. avoid exercise

13. Astronauts need a different diet in space because
   a. it is hard to work  
   b. there is almost no gravity  
   c. they have to wear a space suit
d. they have trouble sleeping

14. A persons diet is
   a. a way to lose weight
   b. the same as the food pyramid
   c. shown on food labels
   d. **everything someone eats**

15. Which of the following does not carry out photosynthesis?
   a. yeast
   b. green plants
   c. sea weed
   d. ferns
### Daily Physical Activity Record

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<th>Monday</th>
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<th>Friday</th>
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</tbody>
</table>
Health and Fitness Issues for the Youth of Carrabelle
Dana Whaley, RN, BSN
MSN Candidate
Florida State University
School of Nursing
Students and Parents

My name is Mrs. Dana Whaley. I am a student at Florida State University working on my Masters Degree in Nursing. During the month of September I will be conducting a nutritional and physical activity study with the Boy’s and Girl’s Club of the Big Bend to complete my graduate studies. I will be available at Carrabelle Schools and by telephone to answer any questions the week of the study.

Biography

After completion of my degree, I hope to put my skills to work here in Franklin County as an Advanced Registered Nurse Practitioner. I graduated from Apalachicola High School in 1987 and currently live in Carrabelle with my husband Carl and son Duncan. I attended Okaloosa-Walton County Community Collage receiving an Associates Degree and then attended Gulf Coast Community College Nursing Program. I started working in Tallahassee as a Registered Nurse and went back to Florida State University and earned my Bachelors Degree in Nursing in 1995. I plan to finish the Masters Program at FSU this December. I am currently employed as a Critical Care Nurse at Capital Regional Medical Center in Tallahassee where I have worked for the last 12 years.

For Information, Please contact: Dana Whaley

At

850-697-8639 Home / 850-519-5309 Cell

Or email me at

chs_sro@hotmail.com
Activities for nutrition and physical activity counseling

Monday- walking
Counseling theme- review energy, calories, carbohydrates and nutritional value.
It also included computer activities involving nutrition for example, nutrition analysis tools and system (NATS).  [http://nat.crgq.com/energy/advanced.html](http://nat.crgq.com/energy/advanced.html)
In 1996 Chris Hewes and Jim Panter, developed this program in the Department of Food Science and Human Nutrition at the University of Illinois. It was retrieved from the PBS.org website.

Tuesday- gardening and yard work (planting a small garden on the elementary school property)
Counseling theme- review activities that have energy, food values in nutrition
Computers

Wednesday- aerobic video #1 (Tea Bo).
Counseling theme- different diets. Discuss vegetarians and other countries diets.
Computers

Thursday- aerobic video #2
Counseling theme- exercise and health (over weight or not, just do it!) reinforcement of moderation.

Friday- aerobic video #1 and #2
Counseling theme- discussion of health problems related to being over weight. What can happen to your body after years of not eating right and not exercising regularly?
Computers
REFERENCES


BIOGRAPHICAL SKETCH

Dana Whaley was born in Port St. Joe, Florida on August 31, 1969. She was raised in Apalachicola where she graduated from Apalachicola High School in 1987. Dana graduated from Okaloosa Walton County Community College in Niceville, Fl with an Associates of Arts degree and then Gulf Coast Community College School of Nursing in Panama City, Fl with an Associates of Science in Nursing. Encouraged by her Grandmother, Mrs. Ollie Ruth Houseman, RN, to continue her education, she moved to Tallahassee and while working as a nurse at Capital Regional Medical Center (CRMC) returned to school at Florida State University and graduated with a Bachelor’s Degree in Nursing on December of 1995. As a charge nurse in the Cardiac Intensive Care Unit at CRMC, she continued her education part-time. While commuting from Carrabelle to Tallahassee over the years she has managed to near the time of graduation with the help of her husband Carl and son Duncan. She expects to graduate from Florida State University with a Master’s Degree in Nursing in the fall of 2005. She plans to practice as an Advanced Registered Nurse Practitioner (ARNP) in a primary care setting in her local community, focusing on family care. Along with her husband Carl and son Duncan, Dana currently resides in Carrabelle Beach Florida.