

A Childhood Obesity Prevention Project: Implementation of the KidsFit Obesity Prevention
Program Among School-aged Scouts to Increase Knowledge and Behaviors Related to Nutrition
and Exercise: Cub Scouts

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Abstract

The rising rates of overweight and obesity in children is associated with an increase in adverse health outcomes and associated medical costs. There is a need for an evidence-based intervention that can be used in various community settings to address this issue. The purpose of this DNP project was to provide education to 8 to 11 year old Cub Scout Troop members in a group setting to increase their knowledge and healthy behaviors related to nutrition and exercise. The KidsFit program, created by Robert Wood Johnson Barnabas Health, is used as the intervention in this project. This program was delivered over the course of six weeks, with one weekly meeting each week. The curriculum used instructional teaching, discussion, and activities in a social setting. This project was a pilot study using a pre-/posttest design with outcome measures including physical activity and nutrition knowledge, physical activity and nutrition behaviors, and number of daily steps. The KidsFit program resulted in an increase in participants' health knowledge and behaviors, as well as an increase in the amount of daily physical activity. At this time, childhood obesity prevention programs have only been evaluated in school districts and primary care office settings. By implementing this intervention in a Cub Scout troop, an alternate population of school-aged children are being reached. This project is a beginning step to the potential expansion of this childhood obesity prevention tool to reach children at local, county, state, and national levels.

Keywords: childhood obesity, prevention programs, community, peer influence, per learning, nutrition, physical activity

Introduction

As the prevalence of childhood obesity continues to rise, children of all ethnic backgrounds, economic status, and geographic location are being affected. Childhood obesity can cause both short- and long-term physical, emotional, and psychological effects. The short-term effects may include low self-esteem, body dissatisfaction, eating disorders, and social teasing (Knol et al., 2016). Long-term effects such as hypertension, insulin resistance, type 2 diabetes, and joint problems are more likely to emerge in adulthood. In the United States, childhood obesity rates have tripled since the 1970s and currently affects nearly 1 in 5 school-aged children and young adults (Center for Disease Control and Prevention [CDC], 2018). This is a health issue that needs to be addressed starting in childhood. Fortunately, one of the most common causes of childhood obesity is lifestyle behavior, specifically nutrition and exercise, which can be modifiable through effective intervention.

Modifying behaviors early in childhood and educating children about the benefits of healthy dietary choices and exercise is the first step in ending the childhood obesity epidemic (Kumar & Kelly, 2017). School-aged boys between the ages of 8 and 11 are particularly vulnerable to developing unhealthy lifestyle behaviors (Lloyd, Logan, Greaves, & Wyatt, 2011). With the increase in availability of food products and sugar-sweetened beverages, it is easy for children to consume these food items on a regular basis. In addition, school-aged children spend the majority of their day in school where their only activity is during recess or physical education classes (Obesity Action Coalition, 2018). Without opportunities to engage in physical activities, children are spending increased time doing sedentary activities such as watching television, playing video games, or using the computer. As puberty begins, boys experience many physical changes including rapid growth and weight gain of an average of 37 pounds (Fonseca, 2018).

However, depending on their lifestyle behaviors, weight gain may be drastically higher or lower than the average 37 pounds, indicating obesity or an eating disorder.

School-aged boys rely on their friends and peers for advice and reassurance during their various transitional stages. The Cub Scout Troop provides a safe peer environment where boys integrate into a collective of lifelong friends (Boys Scouts of America, 2019). Together, the boys learn life skills, receive guidance, and gain confidence that can improve their future. Education delivered in a social environment allows for children interaction and peer support to influence a child's perception of healthy behaviors (Knol et al., 2016). KidsFit is childhood obesity prevention program established by Robert Wood Johnson Barnabas Health [RWJBarnabas Health] (2019) that incorporates low-cost and age-appropriate interactive activities and education to guide children and their parents to make healthy behavior changes. Maintaining good nutrition and overall health will help the boys remain confident in their appearance and character as they enter adolescence. Implementing the KidsFit program within a Cub Scout Troop equips boys between the ages of 8 to 11 years old with the necessary knowledge to make independent healthy behavior changes (Pandita et al., 2016). The results of this project provides unique findings that contribute to the current childhood obesity prevention initiatives, allowing health care providers to advocate for the expansion and utilization of this resource to benefit boys from all different backgrounds and socioeconomic status.

Background and Significance

Background

Childhood obesity has reached epidemic levels worldwide. Overweight and obesity have significant impact on physical and psychological health in children (Knol et al., 2016). Unfortunately, the majority of children with obesity carry their adiposity into adulthood, placing

them at higher risk of developing diseases like diabetes and cardiovascular disease at an earlier age (Kumar & Kelly, 2017). Research has shown that obesity results from an imbalance between energy intake and expenditure (Sahoo et al., 2015). Energy intake, in the form of dietary choices, and energy expenditure, in the form of physical activity, – are modifiable risk factors. When the risk is minimized at an early age, long-term consequences are less likely to occur. Therefore, childhood obesity prevention should be a high priority in all age groups and levels of society.

Healthy nutrition behaviors in children. Dietary factors contribute to the gradual development of overweight and obesity. Healthy nutrition in early life is crucial to lifelong health. From an early age, parents can establish healthy eating behaviors by providing well-balanced meals including a variety of fruits and vegetables, whole grains, fat-free or low-fat dairy products, proteins, and healthy oils (CDC, 2017). As children begin to gain independence, it is crucial that they have the necessary knowledge to make health conscious decisions for themselves. Healthy choices can be difficult due to the vast number of aggressive marketing campaigns for commercial food products and beverages (World Health Organization [WHO], 2019a). Parents can guide and prepare their child to make health conscious choices by allowing them to participate in meal preparation, encouraging them to choose between two healthy food options, and providing positive feedback when healthy choices are made (Hagan, Shaw, & Duncan, 2017).

In addition, schools are in a unique position to provide students with opportunities to learn about and practice healthy eating behaviors through health class curriculums and school lunch options (WHO, 2019b). However, research shows that children ages 2 to 18 years are still consuming 40% of their daily calories from sources with added sugars and solid fats (CDC, 2017). When children lack the support and guidance from their families and schools, it can be

difficult for them to develop healthy lifestyle behaviors. Childhood obesity programs offered in the community could be an additional resource for children who otherwise do not have the access to effective education and role models in their home or school environments.

Physical activity behaviors in children. It is evident that there is a lack of awareness among children and their families regarding the association of physical activity to the development of childhood obesity (Kumar & Kelly, 2016). As part of an increasingly digitalized generation, computers and tablets are becoming common resources in many schools across the country (Robinson et al., 2017). Students are exposed to long durations of screen time to complete homework assignments, in addition to the time that they would normally spend on leisurely entertainment and social media. The highly technological culture is contributing to the increase of sedentary activity in many individuals. The WHO (2019a) recommends a daily total of 60 minutes of moderate to vigorous exercise for youth 5 to 17 years old. In the United States, only 42% of children ages 6 to 11 years of age meet these physical activity recommendations (Beauchamp, Rhodes, & Nigg, 2017). The National Youth Fitness Survey shows that the percentage of children who are physically active in the United States is declining (CDC, 2016b).

Despite the concerning statistics, there are still no established federal requirements for school-based physical education, and few states require a minimum weekly amount of time spent in physical education or physical activity (Robert Wood Johnson Foundation, 2018). Many elementary school classes only participate in two to three days of physical education classes per week with an allotment of about 35 minutes per class (CDC, 2016a). Recommended guidelines for physical activity in children should be greater emphasized in all childhood obesity prevention teaching, as well as federal policies, to promote physical activity across all settings. The excess amount of time spent in sedentary activity contributes to the increasing rates of children who are

overweight or obese. Childhood obesity prevention curriculums are designed to include physical activities, such as Zumba, and multiple options to incorporate physical exercise in daily life (RWJBarnabas Health, 2019).

Social influence and Cub Scouts. When attempting to address childhood obesity, it is important to understand the influence of social relationships on an individual's perception of health (Jalali, Sharafi-Avarzaman, Rahmandad, & Ammerman, 2016). Children are more likely to participate in behaviors that they observe watching adults and peers in their surrounding environment (Salvy & Bowker, 2014). For example, if a child associates with a group of friends who only play video games after school, it is more than likely that the child will also participate in this sedentary behavior. Meanwhile, if a child's social group routinely play a game of basketball every day after school, he may join along in this activity. According to psychologist Albert Bandura's social learning theory, the presence of positive peer influence and modeling is especially important when attempting to conduct behavior change (McLeod, 2016).

A component of the KidsFit program is social influence, which is supported by the Cub Scout Troop setting where children of similar age can provide mutual support and motivation as healthy lifestyle behaviors are being learned together. The Cub Scouts have a long history of encouraging boys to engage in teamwork, leadership, and empowerment (Boy Scouts of America, 2019). It is known that children imitate peer behaviors, so by implementing an obesity program for children in a Cub Scout group setting may be effective in changing poor habits and encouraging healthy behaviors (McLeod, 2016). The troop members can support each other, encourage one another to live a healthier lifestyle, and share the knowledge with other friends.

Significance

Childhood obesity prevention should be a matter of concern not only to health care providers, but also to the general public. This includes public health officials, lawmakers, teachers, parents, families, taxpayers, and children themselves. Obese children are at an increased risk of developing comorbidities that can adversely impact their quality of life (Knol et al., 2016). While health consequences are often most apparent, the economic costs of obesity on hospitals, primary care practices, and health care systems is less obvious but just as important to acknowledge (Nath, 2019). The economic costs can be better understood when examining the consequences of childhood obesity in adulthood. If an obese child continues to be obese in the future, the individual will most likely be affected by one or more of the comorbid diagnoses (Kumar & Kelly, 2017). As a result, additional diagnostic tests and referrals to specialists such as a cardiologist or endocrinologist will be required. These extended medical services can affect healthcare reimbursement, national healthcare expenditures, and the ability of primary care providers to provide quality patient care (Dee et al., 2014). Indirect costs associated with obesity include decreased production as a result of work absences, higher rates of school drop outs, and early retirement. It is evident that the detrimental effects of childhood obesity impact physical health of the affected individual, as well as the economic costs of the general population. Thus, all individuals should be attentive and supportive of current childhood obesity prevention research and initiatives.

Previous initiatives and knowledge. Pediatric health care providers are in the frontline of the battle against the current childhood obesity crisis (Rhee, Kessl, Lindback, Littman, & El-Kareh, 2018). Despite their determination, the prevalence of childhood obesity continues to rise, suggesting that the current education provided in the primary care office is not adequate to initiate behavior change. Pediatricians in United States spend an average of 13 to 16 minutes for

face-to-face interactions with a patient (Elflein, 2019). This short time period does not allow for in-depth discussion and evaluation of lifestyle factors contributing to the development of overweight or obesity in children. Providers also report barriers such as low confidence in their ability to provide behavioral management skills and counseling techniques, as well as a lack of time and resources (Rhee et al., 2018). In addition, if health care providers detect that a child is at risk or meeting the criteria of being overweight or obese, there are no set guidelines to follow for the prevention or treatment of childhood obesity (Kumar & Kelly, 2017). Since education and lifestyle modifications are accepted first line interventions for childhood obesity prevention, the availability of structured childhood obesity prevention programs in the community could be a valuable tool for clinical practice (Obesity Action Coalition, 2018). It would provide an opportunity for childhood obesity prevention topics that are briefly discussed in the office setting to be reinforced and applied to the daily lives of children and their families.

In the past, research has been conducted to evaluate the effectiveness of various childhood obesity prevention programs used as a school curriculum, after-school program, or in primary care settings (Jenike, 2013; Manger et al., 2012; Nabors, Burbage, Woodson, & Swoboda, 2015). Methods of education include individual counseling, health class curriculums, pamphlets, and posters. However, the efficacy of these educational methods has limited effects on an individual's intent to change their lifestyle behaviors (WHO, 2018). Since many of the previous research were conducted in school settings, the strength of evidence is high in support of school-based childhood obesity prevention programs as an educational intervention to combat childhood obesity (Karp & Gesell, 2015). The overall results of the different programs have been proved to be beneficial, however several limitations of the programs were reported. The limitations identified in previously studied obesity prevention programs included: 1) a lack of participant-

reported questionnaires to accurately assess outcomes, 2) similar demographics of participants preventing results to be generalized to the larger population, 3) tedious curriculum requirements contributing to participant drop-out, and 4) inability to pilot the program in various settings due to time constraints (Jenike, 2013; Manger et al., 2012; Nabors et al., 2015).

Plans for the future. The KidsFit program does not share similar limitations as the previously discussed obesity prevention programs, with the exception of the need to assess its effectiveness in different populations. It has been previously piloted in an after-school setting, a private recreational building, and local grocery stores across New Jersey with significant effects on health promotion (RWJBarnabas Health, 2019). The components of this project will address the limitations of previous research by including: 1) the use of a pre- and post-intervention test and questionnaire to be completed by participants; 2) implementation of the program in a culturally diverse community in Newark; 3) a curriculum with engaging activities and data collection methods throughout the program (e.g. personal pedometer); and 4) integrating the KidsFit program with the Boy Scouts of America organization, an integration that has not been previously attempted. By minimizing the limitations identified by previous research, new evidence can be reached to better understand the effectiveness of this intervention. As new populations of school-aged children are reached, the contexts and challenges associated with implementing prevention programs in communities of different socioeconomic and demographic areas can be identified. These factors are important for decisionmakers to consider and better understand the applicability of the intervention program to their own community, potentially allowing this intervention to be a national or global option to address the child obesity epidemic.

Needs Assessment

Global Level Needs

Without effective childhood obesity interventions, there will be an emergence of young adult populations diagnosed with earlier onset of chronic diseases previously observed only in older adults. These consequences may be in the form of physical, psychological, and financial effects. As a result, obesity is the fifth leading global cause of mortality (CDC, 2018). Several organizations have recognized this global health trend and are working towards seeking effective interventions to address childhood obesity. The WHO (2018) has formed a high-level “Commission on Ending Childhood Obesity” as a response to the rising prevalence of childhood obesity. As part of this response, all countries have mutually agreed to a set of global targets for halting the increase in obesity. This goal includes no increase in overweight among children under age 5, school-age children, or adolescents by 2025. In order to meet their goals, the WHO has been seeking advice from researchers in different countries on recommendations for how to confront the current obesity crisis.

United States Needs

In the United States, the lifetime health care costs of obese 10-year-olds alone reaches roughly \$14 billion (Duke Global Health Institute, 2014). The United States has been struggling to find effective interventions to tackle the rising health care costs, stating that an investment of \$2 billion a year would be cost-effective if it reduced obesity in children 10 years of age by just one percent (WHO, 2018). This cost analysis depicts the call-for-action in our population of interest, which are school-aged male cub scouts between the ages of 8 to 11 years. National efforts to identify strategies to teach school-aged children healthy eating and encourage adequate physical activity would have benefits on both population health and economic costs (Manger et al., 2012). *Healthy People 2020* has initiated a goal to reduce the proportion of children and adolescents, aged 2 to 19, who are considered overweight or obese (Office of

Disease Prevention and Health Promotion, 2019). The baseline showed that 16.1% of this population were considered obese by the end of 2018, while the goal is set at 14.5%. There is still a need for additional intervention measures in order to reach the goal by 2020. Therefore, if this project is proven effective, the use of the KidsFit program or a similar structured obesity prevention program should be expanded across the United States.

New Jersey State Needs

New Jersey's childhood obesity rate is 14.8% and ranking 28th highest for obesity among the 50 states in the United States (Robert Wood Johnson Foundation, 2018). Current state policies created in response to the childhood obesity crisis include defined physical activity and screen time for children, physical education in public school requirements, and farm-to-school nutrition programs (American Academy of Pediatrics New Jersey Chapter, 2018). In addition to the availability of healthy lunch options at school, children would benefit from having more nutrition education to assist them in making these healthier food choices (State of New Jersey Department of Education, 2018).

City of Newark Needs

A community assessment was completed to identify high risk factors and needs of the city of Newark, New Jersey. The prevalence of obesity varies by racial, ethnic, and socioeconomic factors (Kumar & Kelly, 2017). Childhood obesity is more common among African Americans, American Indians, and Mexican Americans than in non-Hispanic whites. Meanwhile, Newark is comprised of 50.1% Black or African American residents, 36.4% Hispanics, and 10.7% non-Hispanic Whites (United States Census Bureau, 2017). Health disparity does not only include biological characteristics, but also considers factors such as language, dietary preferences, and social characteristics (American Heart Association, 2014). For

example, the diverse population in Newark includes many non-English speakers, with the most common languages being Spanish, Portuguese, and French Creole (United States Census Bureau, 2017). The various languages can contribute to communication barriers between providers, patients, and their parents – resulting in less effective health education (Berkowitz, 2014).

Obesity is also more prevalent in low-income populations (Kumar & Kelly, 2017). The reported median household income in Newark is \$34,826, which is much lower than the \$57,652 average household income in United States (United States Census Bureau, 2017). 28.8% of the persons in Newark are at the poverty level which is more than twice the national poverty rate of 12.3%. Financial barriers can affect access to health care services and the ability to purchase nutritional food items, placing this population at risk of inadequate health education and unhealthy dietary behaviors (American Heart Association, 2014). The presence of the many risk factors contributes to the extremely high childhood obesity rates in Newark, with 47% of children ages 8 to 11 currently considered overweight or obese when compared to the national prevalence of 36% for the same population (United States Census Bureau, 2017). If effective, the KidsFit obesity prevention program could be a valuable opportunity to access children living in a high-risk community.

Cub Scout Troop Needs

The setting of this project takes place among Cub Scout Troop in Newark, NJ which is composed of 8 to 11-year-old males. In addition to the community needs previously addressed, childhood obesity in Newark is more prominent among school-aged males compared to females, with the data showing 26% and 24% respectively (Brownlee et al., 2010). The 8 to 11-year-old age range is an opportune time to provide the KidsFit intervention, as it will provide children with the knowledge and resources necessary to make healthy choices as they transition from

elementary school to middle school and gain more independence over their lifestyle (Manger et al., 2012). The Boys Scouts of America is an organization that strives to prepare young people to make ethical and moral choices over their lifetime by instilling important values (Boys Scouts of America, 2019). This organization's mission aligns with the aim of this project in hopes to provide school-aged troop members the knowledge and resources to improve their physical, mental, and social health at a young age, which will have lasting benefits into their adult life. This project was feasible in this Cub Scout Troop as the troop currently meets every week, which allowed for the weekly KidsFit schedule for a duration of 6-weeks. Furthermore, completion of the KidsFit program qualified the Scouts for their "personal fitness" merit pin or badge, which requires the troop member to understand the importance of preventive health, explore the benefits of fitness and nutrition, and participate in a physical fitness program.

Problem Statement

Despite increases in education and efforts to provide early intervention of childhood overweight and obesity, the prevalence continues to increase among children of all ages. In 2000, 13.9% of youth ages 2 to 19 were considered obese with a steady rise in obesity throughout the years reaching 18.5% in 2016 (CDC, 2016b). The consequences of childhood obesity extend into adult years as longitudinal studies show that 77 to 92% of obese teenagers remain obese when they reach adulthood (Finkelstein, Graham, & Malhotra, 2014). This statistic shows that childhood obesity is a relevant issue for individuals of all ages and emphasizes the necessity to tackle childhood obesity early in life prior to the establishment of behavioral patterns (Cloutier et al., 2018). The current preventive education and interventions available to the school-aged children do not effectively initiate behavior change in this population (Kumar & Kelly, 2017).

This project evaluated the effectiveness of an established childhood obesity prevention program, called KidsFit, to deliver education regarding healthy behaviors among 8 to 11-year-old boys in a Cub Scout troop. Peer support and friendships are important to children, therefore making this social setting an ideal opportunity to learn (Knol et al., 2016). By instituting an obesity prevention program to a Cub Scout Troop as part of their curriculum, the troop members were encouraged to make healthier food choices and increase their physical activity level. The results provided evidence for health care providers to advocate for availability of additional childhood obesity prevention interventions in the community to effectively educate children and their families on modifiable lifestyle behaviors. The intervention used in this project enhances the current evidence by implementing a structured childhood obesity prevention program in a community setting that has not been accessed before.

Clinical Question

This project focused on answering the question, “Among school-aged 8 to 11 years old Cub Scout Troop members (P), what is the effect of a 6-week (T) KidsFit obesity prevention program (I) on health knowledge (O) and behaviors (O) related to nutrition and exercise?”

Aim and Objectives

The primary aim of this DNP project was to increase knowledge and health behaviors related to nutrition and exercise in Cub Scout boys 8 to 11 years of age in a social setting by implementing the KidsFit obesity prevention program. The objectives required to achieve this aim were as follows:

- Cub Scout Troop member’s health knowledge will increase after the 6-week KidsFit program as evidenced by the “Nutrition and Physical Activity Pre & Post Test”

- Cub Scout Troop member's health behaviors will increase after the 6-week KidsFit program as evidenced by the "Food Frequency and Lifestyle Habits Questionnaire" and weekly fitness tracker steps
- Inform best practices for the use of structured childhood obesity prevention programs in the community for health promotion at the end of the project

Literature Review

A comprehensive table of evidence (Appendix A) was created to investigate three critical considerations: 1) importance of childhood obesity prevention; 2) effectiveness of childhood obesity prevention programs on identified outcome measures; and 3) impact of social relationships in a school-aged child.

Search Strategy

Cumulative Index of Nursing and Allied Health Literature, PubMed, Ovid Medline, and Google Scholar databases were searched to find research studies using the following keywords: *childhood obesity, prevention programs, community, social influence, and social peers*. Date delimitations were 2011 to the present, as the Co-Investigator was interested in finding recently studied childhood obesity prevention programs. The search results yielded 399 unduplicated studies.

Inclusion criteria required the research studies to be original research studies, qualitative studies, or systematic reviews in peer-reviewed journals that examined childhood obesity prevention programs in the community. Two studies in the table of evidence were comprehensive literature reviews used to define and examine the causes of childhood obesity. Included studies must have recruited participants within the age range of 6 to 12-year old and include some or all male participants. The exclusion criteria were studies that did not implement

a childhood obesity prevention program, studies that only delivered programs primarily to parents' and caregivers', and studies that did not permit full article access electronically. After applying these inclusion and exclusion criteria, there were 38 studies remaining. In addition to the 38 studies, gray literature from CDC, WHO, and RWJBarnabas Health were also included.

Definition of Childhood Obesity

Childhood obesity is a complex, multifactorial, and preventable disease (Kumar & Kelly, 2017). For the purposes of this study, the CDC definition of childhood obesity as a “body mass index at or above the 95th percentile for children and teens of the same age and sex” is used (CDC, 2016a, para. 1). Body mass index is a number that reflects body weight adjusted for height and is calculated by a person's weight in kilograms divided by the square of height in meters (CDC, 2018). The body mass index value is then defined in different weight groups: 18.5 to less than 25 is considered normal weight; 25 to less than 30 is considered overweight; and 30 and above is within the obese range. The most common cause of obesity in children is an excess amount of calorie intake compared to caloric expenditure combined with a genetic predisposition for weight gain (Kumar & Kelly, 2017). The balance between calorie intake and output can be controlled through effective lifestyle modifications beginning at a young age.

Importance of Prevention in School-Aged Children

School-aged children are at an opportune time period in their life to learn important lifestyle behaviors that will decrease their risk for childhood obesity (Pandita et al., 2016). As the United States healthcare system shifts its focus towards prevention rather than treatment, there is a demand for more childhood obesity prevention initiatives (Kumar & Kelly, 2017). Childhood obesity prevention is the most effective when it is started at an age where the education can be understood (Manger et al., 2012). Lloyd et al. (2011) piloted an obesity

prevention program among children in three different age groups to find that children ages 9 to 10-years-old were the most receptive and willing to implement changes compared to the younger or older children. Manger et al. (2012) further notes that school-aged children are receptive to the education because they are eager to learn and participate in the healthy lifestyle. Jester, Kreider, Ochberg, & Meek (2017) and Watson, Baker, & Chadwick (2016) found that behavioral measures continued to improve at 2 months and 1 year after participation in a childhood obesity prevention program, emphasizing the potential of this intervention to sustain knowledge use into adult years.

Childhood Obesity Prevention Programs

Childhood obesity prevention programs have proven to be a potential cost-effective solution to address the gap in childhood obesity prevention resources among school-aged children (Nabors et al., 2015). Childhood obesity prevention programs are most effective and accepted when it is designed to deliver both dietary and physical activity education to children and their parents. In examining the design of existing childhood obesity prevention programs, 10 out of the 12 identified articles included programs that deliver both exercise and nutrition education to children (Cohen et al., 2014; Jester et al., 2017; Lloyd et al., 2011; Manger et al., 2012; Nabors et al., 2015; RWJBarnabas Health, 2019; Salvy, De la Haye, Bowker, & Hermans, 2012; Shin et al., 2014; Tucker & Lanningham-Foster, 2015; Watson et al., 2016).

Since parent knowledge is crucial to sustaining healthy behaviors in children, some form of education should be provided for parents as well (Castro, Samuels, & Harman, 2013; Manger et al., 2012; Nabors et al., 2015; RWJBarnabas Health, 2019). Parent education can be in the form of direct participation in the program, written materials, visual aids, and provision of healthy home recipes (Castro et al., 2013; Manger et al., 2012; Nabors et al., 2015). Childhood

obesity prevention programs have been well received by children, parents, and stakeholders as reported by post-program surveys (Nabors et al., 2015). Manger et al. (2012) found that 78% of parents believed that childhood prevention programs were good to excellent in influencing the lifestyle of their children and were pleased to participate in this intervention. These programs are an under-utilized intervention for improving access to children who can benefit from having additional opportunities to engage in physical activity and learn about nutrition.

Promotion of healthy dietary behaviors. In order to initiate healthy dietary behavior change, individuals must first have an understanding about the basics of nutrition including daily nutrition requirements, impact of nutrition on body functions, and sources of nutrition (Castro et al., 2013). Three studies compared the effectiveness of an obesity prevention program to promote healthy dietary behaviors versus traditional school health curriculum (Cohen et al., 2014; Manger et al., 2012; Nabors et al., 2015). In all three studies, participants had a more significant increase in nutritional knowledge, increase in consumption of fruits and vegetables, and decrease in dietary fat intake after the conclusion of the program as compared to the traditional school health curriculum. Through the use of obesity prevention programs, dietary recommendations are delivered by incorporating easy-to-understand approaches such as the Dietary Approach to Stop Hypertension diet, Dining by Traffic Light, MyPlate, and 5-2-1-0 campaign (Jester et al., 2017; Manger et al., 2012; Nabors et al., 2015; RWJBarnabas Health, 2019; Tucker & Lanningham-Foster, 2015).

Childhood obesity prevention programs are more likely to be effective when the educational information is supplemented by activities to practice healthy behaviors (Watson et al., 2016). Castro et al. (2013) conducted a childhood obesity prevention program that delivered nutritional information that was enhanced by a community garden allowing children and their

families to grow fresh vegetables and participate in cooking workshops. As a result, there was a reported increase in the number of fruits ($p < 0.001$) and vegetables ($p < 0.001$) available to children in their homes. Children were also more willing to consume fruits ($p < 0.001$) and vegetables ($p < 0.001$) each day. Many parents also reported cooking healthier meals at home using the recipes that were provided through cooking lessons and parental handouts (Castro et al., 2013; Nabors et al., 2015). Children and their families experience an increase in knowledge and intent to adopt healthy dietary behaviors as a result of the education and activities delivered by childhood obesity prevention programs.

Promotion of physical activity behaviors. Childhood obesity prevention programs have also increased knowledge and participation in physical activity among children. Verbal education regarding the importance of physical activity are supplemented by engaging activities such as the use of a pedometer, exercise equipment, sport games, and contests (Manger et al., 2012; Nabors et al., 2015; Tucker & Lanningham-Foster, 2015; Watson et al., 2016). Nine of the 12 studies found a significant increase in time spent on physical activity and a reduction in time spent on watching television and other sedentary activities after participation in a prevention program (Jester et al., 2017; Lloyd et al., 2011; Manger et al., 2012; Nabors et al., 2015; RWJBarnabas Health, 2019; Salvy et al., 2012; Shin et al., 2014; Tucker & Lanningham-Foster, 2015; Watson et al., 2016). Tucker and Lanningham-Foster (2015) found that the participants in their intervention, who participated in a Let's Go 5-2-1-0 program, reported a significant increase in their physical activity levels from baseline ($p < 0.005$),

Although some programs evaluate body-mass-index as an outcome measure, the duration of most prevention programs is usually too short to significantly impact body-mass-index (Jester et al., 2017). In addition, changes in body-mass-index is not a focus of prevention programs as it

is a universal intervention with many normal weight participants (Tucker & Lanningham-Foster, 2015). The goal of prevention programs is to increase other outcome measures, such as time spent on physical activity, which will ultimately prevent increases in body-mass-index above 25 which is considered overweight or obese. From the review of literature, it is evident that childhood obesity prevention programs are designed to effectively increase physical activity knowledge and increase time spent on physical activity.

KidsFit. RWJBarnabas Health (2019) first created the KidsFit program as an inpatient obesity treatment program in 2007. The treatment program was piloted in Newark Beth Israel Medical Center and focused on a slow progression of body-mass-index reduction and weight loss in children who were already considered overweight or obese. Related to the program's positive outcomes, registered dietitians realized the need to teach children to care for themselves outside the hospital walls to prevent obesity. As a result, registered dietitians revised the curriculum to create the KidsFit obesity prevention program to increase knowledge of healthy behaviors among school-aged children in the community. The first KidsFit obesity prevention program was piloted at the Maple Ave elementary school in Newark, New Jersey. Since then, the program has expanded to 13 schools across New Jersey and received various awards such as the American Hospital Association's Nova award in 2013.

The effectiveness of the KidsFit curriculum has been analyzed using pre-program and post-program questionnaires (RWJBarnabas Health, 2019). In the 2016-2017 school year, the KidsFit program effectively increased the baseline knowledge of its participants from 64% to 80% post intervention. The program curriculum focuses on guiding children and their parents to establish healthy lifestyle behaviors through exercise and nutrition. The goal is to prevent serious health complications associated with childhood obesity that could occur later in life, educate, and

promote healthy behaviors leading to lifelong health. The curriculum is suitable for children between the ages of seven to 18 years with activities and lessons that can be adaptable to each developmental stage. The effectiveness of the KidsFit curriculum to educate and engage children in healthy behaviors at an early age aligns with the aim of this project.

Impact of Social Relationships on Behaviors of School-aged Children

Childhood obesity prevention programs are more beneficial when implemented in a social setting since social and environmental factors decisively influence an individual's attitude and belief of health (Lloyd et al., 2011). Eight of the 12 reviewed research occurred in peer setting such as community gardens, school health classes, and after-school programs (Castro et al., 2013; Cohen et al., 2014; Jester et al., 2017; Lloyd et al., 2011; Manger et al., 2012; Nabors et al., 2015; RWJBarnabas Health, 2019; Tucker & Lanningham-Foster, 2015). A social network analysis validates the concept that obesity prevention education delivered in a social setting can be reinforced by peer influence (Shin et al., 2014). Shin et al. (2014) determined that all behaviors, whether healthful or unhealthful, at baseline can be influenced by peers. Specifically, children who participated in obesity prevention programs were more likely to be influenced by other peers who performed similar healthful behaviors. However, these children were then less influenced by their peers when unhealthy behaviors were observed. Childhood obesity prevention programs provide a buffer for children from the effects of negative peer influence.

Children report that prevention programs are more “fun” and influential when there are peers present compared to individual learning (Watson et al., 2016). Social modeling, social facilitation, and impression management are the main reasons that account for the effects of peer influence on childhood obesity-related behaviors, especially food consumption and physical activity (Shin et al., 2014). Salvy et al. (2012) explains that social modeling is the idea that

individuals form beliefs and attitudes about the behaviors they observe in others, which then shapes their own behavior. Social facilitation suggests that the presence of others can promote certain behaviors. Impression management assumes that an individual's concern to be perceived positively by friends and peers motivates the individual to chair their behaviors in the company of others (Shin et al., 2014). Childhood obesity prevention programs should be implemented in a setting that provides the opportunity for social relationships to influence health behavior.

Theoretical Framework

Social Cognitive Theory

The Social Cognitive Theory (SCT) (Appendix B) was developed by Albert Bandura in the 1960s in an effort to study the dynamic interaction of the person, environment, and behavior (Bandura, 1998). The SCT considers the unique way that individuals acquire and maintain behavior, while taking into account the social environment where the behavior is performed. It emphasizes the importance of social influence and external and internal social reinforcement. The interaction of these factors is referred to as “reciprocal determinism”, where each factor has the potential to influence the other (Knol et al., 2016, p. 205).

Per the SCT, the determination of human behavior can be divided into three factors: cognitive, behavioral, and environmental (Bandura, 1998). Cognitive, also known as personal factors, includes knowledge, attitude, and expectations. Knowledge is comprised of having the information and education required to determine the need for personal behavior change. The beliefs that an individual holds about their personal capabilities, otherwise known as self-efficacy, then affects whether they make good or poor use of the knowledge they possess. Self-efficacy is developed by four sources of influence: personal mastery of experiences, vicarious experiences provided by social models, social persuasion, and emotional states. As individuals

become successful in their personal experiences, observe other people succeed, persuaded by social peers, and supported by a positive emotional mood, they will develop a greater belief in their abilities to engage in change. Positive outcome expectations contribute to health behavior as incentives. These incentives can have a positive physical effect, social reaction, and self-evaluation reaction. Behavioral factors include engaging in self-regulated learning and adapting to new knowledge. It is necessary to have the knowledge and experience so that skills may be developed to overcome barriers to successful behavior change. Lastly, environmental factors include social norms, access in community, and influence on others. Normative influences regulate actions through social sanctions and self-sanctions. Norms influence behavior due to the social consequences that may arise. If a behavior meets the accepted social norms, then there will be positive social reactions. Social norms can develop into behavioral standards which influence the conformity of other individuals. Positive behaviors should be part of a societal commitment and community resources should be accessible.

Integration of the Social Cognitive Theory in the DNP Project

SCT is a commonly used theoretical framework to understand behavioral change in children as it addresses individual, environmental, and social constructs (Harmon et al., 2014). These factors guide the development of intervention strategies that are applicable to the individual's personal factors, environment, and behavior (Knol et al., 2016). In this project, baseline knowledge and baseline health behaviors were assessed using pre-intervention questionnaires. Through the curriculum, participants were provided with essential knowledge to identify the benefits of adopting healthy behaviors. The educational knowledge allowed participants to have the capability and confidence to perform healthy behaviors – specifically knowing what to do and how to do it (LaMorte, 2018). The aims and objectives for each class

session were reviewed and participants were asked to identify personal goals and expectations. Behavioral factors were assessed based on pre-intervention questionnaires inquiring about baseline nutrition and physical activity practices. Barriers, including personal, community, and financial factors were factored into the program curriculum so that appropriate resources were provided to participants to guide them to success. For example, the nutrition curriculum offered recipe ideas that include low-cost ingredients to eliminate the financial barriers experienced by lower socioeconomic communities.

Finally, environmental factors are extremely influential on the determination of human behavior. Children should have the resources and relationships in their immediate environment to encourage target behaviors, such as increasing fruit and vegetable intake, understanding nutritional choices, and increasing level of physical activity. This childhood obesity prevention project attempted to reach the home environment through community-based education where both the child and parent receive educational components of the program (Knol et al., 2016). According to Bandura, the environment can influence behavior and be changed to reinforce health eating and physical activity (Bandura, 1998). The implementation of the project in a Cub Scout Troop provided an opportunity to deliver health promotion education in an environment that has social peer support. When healthy behaviors are mutually accepted as a norm within the peer group, Cub Scout members are more likely to conform to the social standards. Since education was provided in a group setting, participants were also able to learn through the observation of their peers. Once a Cub Scout member observed a healthy behavior being conducted by his peer that resulted in positive outcomes, it is more likely that the individual will reproduce that learned behavior (LaMorte, 2018). This project incorporated SCT by taking

advantage of the social support offered by the Cub Scouts Troop, and instilled self-efficacy, observational learning, and expectations to achieve healthy behavioral change (Bandura, 1998).

Methodology

Setting

The implementation of the KidsFit program took place at a community center in Newark, New Jersey where the Cub Scout Troop met every week. The Co-Investigator obtained permission to implement the project within this Cub Scout Troop by verbally asking the troop leader if she would be interested in having her troop participate. The troop leader agreed to provide the meeting room, tables, and chairs where the KidsFit program activities can be carried out (Appendix C).

Study Population

Boys ages 8 to 11 years old who participate in Cub Scouts were recruited as participants. The maximum allotted sample size was 20 participants. Stakeholders, such as parents and the troop leader, were also involved in this project. While all parents were not present for the sessions, they were given handouts that included a summary of the information presented as well as various healthy recipes. The troop leader was present during the meeting and also gained knowledge regarding healthy lifestyle behaviors.

Design of Study

This was a pilot intervention that adopts a pre- and posttest study design.

Participant Recruitment

Participants were recruited by the Cub Scout Troop leader, who verbally introduced the project with the parents and invited the troop members to participate. The Co-Investigator gave the troop leader flyers to distribute to the parents with project information listed (Appendix D). A

week prior to the first meeting, the Co-Investigator visited the Cub Scout Troop to discuss the details of the project and answer any questions that parents or the troop members may have. At that time, the Co-Investigator distributed two consent forms, assent form, and demographic data questionnaire to parents and troop members to complete on site. For troop members who were not present that day, consents, assent, and demographic data questionnaire was completed prior to the first meeting. The troop leader gave parents the contact information to reach the Primary Investigator or Co-Investigator, if additional questions or concerns arose.

Consent

Once IRB approval was obtained, the parents were given a consent form to sign which allowed their child to participate in this project (Appendix E). Explanation was provided to parents that that they may refuse their children from participating in the study at any time. Parents were also asked to complete an adult consent form and the demographic questionnaire (Appendix F). In addition, the troop members completed a document of voluntary assent prior to the start of the project (Appendix G). Security protocols to protect these documents were followed as described in the “Data Maintenance and Security” portion of this paper.

Study Intervention

This Doctor of Nurse Practice (DNP) project was an obesity prevention project that implemented the KidsFit program created by RWJBarnabas Health with a Cub Scout Troop. The KidsFit curriculum is a 10-week program with a new lesson each week (Appendix H). Each weekly lesson has an outline for the Co-Investigator to follow (Appendix I to R). Each meeting lasted 45 minutes to one hour. Permission was granted from the KidsFit program coordinator for the Co-Investigator to combine the lessons and condense the program into six weeks for this

DNP project (Appendix S). The Co-Investigators received in-person training by the KidsFit program coordinators prior to the implementation of this program.

For this DNP project, week one included the topics of “New Beginnings” and “Bodies in Balance” (RWJBarnabas, 2019). The topics pertaining to this class involved the definition of being healthy, the importance of healthy foods and exercise, maintenance of a balanced body, and the process of food into energy. Week two included “MyPlate: Fruits and Vegetables” and “My Plate: Grains and Proteins”. This meeting discussed how to make a healthy plate, food groups, nutrients from food items, how different parts of the body uses nutrients, and servicing sizes. Week three includes “My Plate: Dairy” and “Dairy and Bone Health”. This week focused on nutrients found in dairy foods, the importance of calcium in bone health, and fun ways to incorporate dairy into meals. Week four included “Investigating Food Labels”. Participants were taught how to read food labels on different food items focusing on fats, sugar and salt, and understand the meaning of percent daily value. Week five included “Sugar and Breakfast Foods” and “Fast Foods”. This meeting focused on how the body processes sugar, investigating how much sugar is in different food items with focus on breakfast cereals, and assessing the nutritional value of fast food items. Week six included “Healthy Habits for Life”. This last week focused on summarizing key points discussed throughout the 6-weeks. Participants were asked to reflect on the information they learned and how they will apply it to their daily lives. At the conclusion of the project, participants were provided with a “Live Long and Strong Contract” for which made a personal promise to their bodies to continue making healthy lifestyles choices to live long and strong (Appendix T).

The format of each weekly meeting began with the participants completing the Daily Food Log (Appendix U). This food log activity was used to teach children about what food

groups their food choices belong in. The overall objective behind this activity was to teach the children about nutrition and encourage them to eat well-balanced meals from all food groups on a daily basis. This activity was followed by instruction about that week's health topic (Appendix S). The instructional lesson was enhanced by individual and group activities, providing the troop members with an opportunity to practice healthy behaviors (Appendix I to R). The Co-Investigator discussed with the participants about how the activity applied to the lesson introduced earlier. At the conclusion of the meeting, the Co-Investigator asked questions to assess the participant's knowledge, comprehension, and application of the presented information that day. When the parents came to pick up their child, they received handouts that included information presented in class that day (Appendix V). They also received easy-to-make and affordable recipes to incorporate into their daily meal preparations (Appendix W). The only daily task the participants were asked to complete was to record the number of steps on their fitness trackers at the end of the day on a weekly log (Appendix X). The fitness tracker was an added intervention by the Co-Investigator due to the evidence suggesting its ability to further stimulate physical activity among children (Manger et al., 2012).

Outcome Measures

Prior to the start of the program, participants and their parents received a demographic questionnaire that contains 4 questions about the participant's ethnicity, age, education, and annual family income (Appendix Y). This questionnaire was developed by the project team in order to better understand their study population. In addition, the program contained activities that involved making healthy snacks and trying new healthy foods. Therefore, at the bottom of the questionnaire form, parents were required to list any allergies that the participant may have.

To better accommodate each individual participant, parents of children with learning disabilities were asked to identify ways that the Co-Investigator could best help their child learn.

The success of the project was evaluated based on unvalidated tools created by RWJBarnabas Health. One of the tools titled “Food Frequency and Lifestyle Habits Questionnaire” (Appendix Z) assessed the health behaviors practiced by the participants. There were 18 questions on this questionnaire that assessed for the frequency of lifestyle behaviors relating to nutrition and physical activity. Fifteen of the questions asked for participants to provide a response based on a Likert scale of “never, rarely, sometimes, most days, and every day”. Three of the 18 questions had a “yes” or “no” answer for the specific health behavior. Each question was scored on a 5-point scale with 1-point for the lowest frequency of healthy behaviors and 5-points for the highest frequency of healthy behaviors. Each question was recoded as appropriate to the behavior being described. Specifically, questions one to eight were coded as “never (1), rarely (2), sometimes (3), most days (4), everyday (5)”. Questions nine to 15 were coded as “never (5), rarely (4), sometimes (3), most days (2), everyday (1)”. Question 16 and 17 was coded as “yes (5) and no (1)”. Question 18 was coded as “yes (1) and no (5)”. There were no right answer to these questions, and simply reflects the participant’s current lifestyle behaviors.

The second tool was titled “Nutrition and Physical Activity Pre- and Post-Test” (Appendix AA). This tool contained 20 multiple choice questions. The questions determine how much the participants understood the topics discussed such as components of food labels, food groups in MyPlate, and the use of food and exercise – all of which are topics covered by the KidsFit program. Each question had a correct answer which reflected the participant’s knowledge. The number of correct questions was divided by the number of total questions on the

test (20 questions) to obtain the final test score. The score was then multiplied by 100% to obtain the final score out of 100%. The tools were distributed and completed by the participants at the Week 1 meeting and at the conclusion of the program intervention on Week 6. Since the program questionnaires primarily focus on healthy dietary behaviors, the use of fitness trackers was added as an additional evaluation method. Each child was given a fitness tracker and asked to record the number of steps they performed at the end of the day on a paper chart (Appendix X). This was used to evaluate if there was an increase in daily physical activity over the course of the 6-week implementation period.

Risks and Harms

To minimize potential risks and harms, the Co-Investigator completed the CITI program course for human research and has designed this project with the participants' safety as a priority (Appendix BB). In addition, Jennifer Olas and Kimberly Sacoto were team members who were present during some sessions to help with program activities and data analysis. Both team members have also completed the CITI program course (Appendix CC). This project was reviewed and approved by the Rutgers Institutional Review Board to ensure that the rights and welfare of the participants are protected. There were minimal potential risks to the participants. Minimal potential risks included wasted time and minor injuries that may result from program activities. These minor injuries may include, but are not limited to, accidental paper cuts from crafts, falling when performing physical activity, and accidental contact with furniture or other children during exercise activities. The furniture in the room was rearranged on days when physical activity is involved in the curriculum to minimize these accidental injuries. During the activities that included simple recipe making, participants may risk tasting a new food item that they may not particularly enjoy. When food is involved, there is always a risk of the participant

being allergic to a particular food item. However, parents were provided with a consent form to allow their child to participate in the recipe making and identified any food allergies to prevent allergic reactions.

Participants could potentially have psychological harm from thinking that they are participating in the project due to being overweight or having poor health behaviors. The participants were reminded that the project was aimed to increase knowledge and healthy eating behaviors to prevent the development of overweight and obesity and its associated health consequences. The participants were not weighed at any point during this program to prevent troop members from feeling self-conscious about their current weight. Socially, participants had the potential to miss out on other activities that may be occurring at the same time as the troop meetings. The co-investigator avoided this by conducting the program during the same time that participants have allotted for weekly Cub Scout Troop meetings. The troop leader had stated that the project will not interfere with the normal Cub Scout Troop agenda.

Cost and Incentives

There were no monetary costs involved in the participation of this project. Instead, the participants just offered their time. As an incentive, participants were given a fitness tracker at the beginning of the program that they kept as an encouragement to engage in daily physical activity. During some weekly sessions, there were some challenges and group activity competitions. Winners of these activities were given prizes such as water bottles, stress balls, and jump ropes. In addition, the participants also received their “Physical Fitness” pin for their Cub Scout uniform at the completion of the program.

Timeline

The timeline of this project included presentation of the project to the project chair in Spring 2019, submission of the project proposal to the IRB in late spring 2019, IRB approval obtained during Summer 2019, implementation of the project early Fall 2019 for six consecutive weeks, analyzation of data in mid Fall 2019, and final presentation in early 2020 (Appendix DD). The ten-week KidsFit curriculum was condensed into six weeks, with permission from the RWJBarnabas KidsFit team, to better fit the projected timeline. The curriculum topics and recommended activities remained the same (Appendix S). The Co-Investigator will present the project at the National Association of Pediatric Nurse Practitioners conference in Spring 2020, along with presentation at the Rutgers University Poster Day. Publication in a peer reviewed journal is also anticipated.

Resources

The resources needed for this project included a meeting room, tables, and chairs, which was provided by the community center where the Cub Scouts meet. Additional resources included the KidsFit workbook for the student, as well as instructor guide for the Co-Investigator. The cost of the KidsFit curriculum was graciously provided free of charge by the RWJBarnabas KidsFit team (Appendix EE). The project team purchased fitness trackers for each participant. A paper calendar was provided for the child each week to record the number of steps their tracker displayed at the end of each day. Other necessary supplies included pencils, markers, paper to print handouts, scissors, blender, and measuring cups. In addition, prizes were purchased as incentives for winning individual or group challenges. These prizes consisted of water bottles, jump ropes, different types of sporting balls, stress balls, and other items that encouraged healthy behaviors. Half (\$500) of the National Association of Pediatric Nurse Practitioners childhood obesity scholarship granted to a team member, Jennifer Olas, helped

offset the costs of supplies for this project. The Co-Investigator personally covered the costs of nutritious snacks provided at each meeting and the food ingredients needed for some curriculum activities. The total budget anticipated prior to the start of this project was \$520 (Appendix FF).

Evaluation

Data Maintenance and Security

The Co-Investigator utilized Microsoft Excel to analyze all data pertaining to the project. At the beginning of the project implementation phase, all participants were assigned a participant number in which all their data was collected by. A locked Excel file was used to record each participant to their identified number. After being assigned a number, all paper handouts, questionnaires, and tests utilized in the program only contained the participant's assigned project number for confidentiality. In addition, an Excel file was created that included: assigned participant number, demographic data (age, education, ethnicity, and family income), allergies, learning disabilities, pre-intervention test percentage, post-intervention test percentage, pre-intervention response to each questionnaire question, post-intervention response to each questionnaire question, and mean number of weekly steps for weeks one and six. The files used for data analyses were locked in a password and fingerprint protected computer only known and in possession of the Co-Investigator. All the consent forms, assents, and demographic paperwork that have identifiable information, as well as the documents with non-identifiable information were kept in a locked safe in the Co-Investigator's home until completion of the study.

Paper documents collected during the study were personally driven by the Co-Investigator to the Primary Investigator's office at Rutgers University. These forms are kept in a locked cabinet in the Primary Investigator's locked office within the Rutgers Newark Nursing Department. All computerized files used for data analysis purposes were transferred to an

encrypted USB drive that will have a protected password. The documents on the encrypted USB drive will be opened with a password only known to the Primary and Co-Investigators. The USB was also personally driven to the Primary Investigator's office for storage. The remainder of the files were deleted from the Co-Investigator's personal password-protected computer. All documents and USB drive stored at Rutgers University will remain in the Primary Investigator's office for six years as per the Institutional Review Board guidelines. After this time, the documents will be shredded and the documents on the USB will be permanently deleted using a storage-wiping software program and destroyed with a hammer by the Primary Investigator. The broken and damaged pieces will then be discarded.

Data analysis

Demographic Questionnaire. The demographic data was analyzed as part of descriptive statistics. Since age is a continuous variable, the mean was determined by Excel. Education, ethnicity, and family income are categorical variables, and thus was reported by number and percentage. Due to the small number of participants, all reported data was valuable to the outcome of data analysis. The co-investigator recovered any missing data by asking the participant's parent to fill out the missing values at the next meeting. Any unattainable data was omitted in the analysis of that particular variable.

Behavioral Questionnaire. Each question on the questionnaire was analyzed separately, as the question category assessed different aspects of health behavior. Since there was no correct answer on the behavioral questionnaire, each response was recoded, as appropriate to the specific question, into an ordinal level of measurement reflecting a Likert scale. Using descriptive statistics, the aggregate mean of each response was determined with "5" as the highest frequency and "1" as the lowest frequency of participant-reported healthy behaviors. Change in aggregate

behavioral mean score between the pre- and post-test determined the effectiveness of the program.

Knowledge Test. The Co-Investigator analyzed the knowledge test by grading each individual pre- and post-test. An overall score was assigned to each test, out of a total score of 100. The overall score of each pre- and post-test results was entered into Excel. Using descriptive statistics on Excel, the aggregate mean of the pre-tests was determined. The aggregate pre-test mean was then compared against the post-test aggregate mean. An increase between the pre-test aggregate mean score compared to the post-test aggregate mean score determined the effectiveness of the program.

Fitness Tracker Steps. All participants' mean steps reported during the first week was compared to the mean number of steps reported during the last week through Excel. Descriptive statistics was generated to evaluate the aggregate mean number of steps completed during the first week compared to that completed during the last week of the program. An increase between the aggregate mean number of steps completed during the first week compared to the aggregate mean number of steps completed during the last week determined the effectiveness of the program.

Anticipated Findings

This project was aimed at evaluating the effectiveness of the KidsFit obesity prevention program when implemented in a social setting such as a Cub Scout Troop. At the completion of the program, the anticipated findings included an increase in nutritional knowledge identified by improvement of the posttest score compared to the pretest score. The Co-Investigator anticipated that the program would result in an increase in the frequency of participant-reported health behaviors on the "Food Frequency and Lifestyle Habits Questionnaire" (Appendix Z). It was

expected to see an increase in the frequency of children engaging in nutritious behaviors such as consumption of daily breakfast, low-fat or fat-free milk, water, fruit, vegetables, lunch, and home prepared meals. Furthermore, was expected to see a decrease in participant-reported frequency of consuming soda, juice, whole milk, fast food, fried foods, sweets, and chips. From the activities incorporated in each weekly lesson, it was anticipated that the participants would report an increase in participation in exercise or organized sports, walking or non-sedentary activities, and reading nutrition labels after participation in the KidsFit program. It was anticipated that there will be an increase in the weekly average number of steps on the fitness tracker reading as the child progresses through the 6-week program.

Results

Demographic Data

Nine Cub Scout troop members actively participating in the Cub Scout troop in Newark consented to participate in the project (n=9). Due to attendance reasons, one Cub Scout member was excluded from the data analysis (n=8). Two boys were 8-years-old, two boys were 9-years-old, two boys were 10-years-old, and two boys were 11-years old (Appendix GG). The resulting mean age of the participants was 9.5-years-old. Two boys were in 3rd grade; three boys in 4th grade; one boy in 5th grade; two 2 boys in 6th grade (Appendix HH). The 6th grade boys participated in the project as they remained 11 years old and in the same troop during the entirety of the project duration. Seven of the 8 boys live in a household where the annual family income was less than \$39,999 (Appendix II). One of the 8 boys live in a household where the annual family income was reported to be between \$40,000 to \$69,999. All of the participants were of Hispanic ethnicity, with English as their preferred primary language (Appendix JJ). No participants had any reportable food allergies. In addition, 4 of the 8 participants were identified

by their parents to have a learning disability, specifically reading and/or writing. One of the four participants with a learning disability is diagnosed with attention-deficit/hyperactivity disorder, but currently does not take any medications. The parents of the children with learning disabilities noted that the child is regularly able to participate in full activities but could benefit from short and clear instructions with verbal directions.

Outcome Measures

Health knowledge. The pre-test scores ranged from the lowest being 30% to the highest being 95%. The pre-test aggregate mean score was 50.63%. After the implementation of the KidsFit program, the children were asked to complete the same assessment on Week 6. The post-test scores ranged from the lowest being 70% to the highest being 95%. The aggregate post-test mean score was increased to 81.88%. For every question on the knowledge test, the percentage of participants who answered each question correctly increased on the post-test compared to the pre-test. (Appendix KK)

Healthy behaviors. On Week 1, participants were asked to complete a “Food Frequency and Lifestyle Habits Questionnaire” (Appendix Z) to evaluate the frequency of healthy behaviors at baseline. The questionnaire was scored by “5” being the highest frequency of healthy behaviors and “1” being the lowest frequency of healthy behaviors. At pre-test, the aggregate mean score of healthy behaviors practiced was 3.06. After the implementation the aggregate mean score was increased to 4.02. There were three questions on the questionnaire that had the most drastic improvement of healthy behavior. The first question inquired about whether or not the participant obtained greater than one hour of exercise or sports per day. In the pre-test, 4 of the 8 children reported “yes” and 4 reported “no”. In the post-test, 7 of the 8 children reported “yes” and only 1 reported “no”. The following question asked if the child performs greater than 1

hour of walking or active house chores each day. In the pre-test, 4 of the 8 children answered “yes” and 4 children answered “no”. In the post-test, all 8 of the participants answered “yes” to obtaining greater than 1 hour of walking or active house chores each day. Lastly, one question assessed whether or not the child spent more than 1 hour play video games or other screen times each day. In the pre-test, all of the 8 participants answered “yes” to spending more than 1 hour on sedentary screen time each day. On the post-test, however, 5 of the 8 children answered “no” to spending more than 1 hour on screen time each day. (Appendix LL)

Physical activity. On Week 1, participants were given fitness trackers and asked to record their daily number of steps to determine the amount of physical activity completed during each week (Appendix X). One participant did not return his weekly steps on Week 1 or Week 6. Two mothers reported to me that they did not allow their boys to wear the fitness trackers for the majority of the school day because they were too distracted by the screen functions. As a result, fitness tracker data was only collected from 5 out of the 8 participants due to inconsistent use of the fitness tracker which would result in inaccurate step counts. During Week 1, the lowest number of reported weekly steps was 19,859 steps and the highest was 42,911. The average mean of weekly steps completed by the participants in Week 1 was 29,097 steps. After the implementation of the KidsFit program, the lowest number of reported weekly steps was 34,733 and the highest was 62,492 steps. The aggregate mean of weekly steps completed by the participants increased to 45,272 steps on Week 6. (Appendix MM)

Discussion

This project utilized a childhood obesity prevention program in a community setting for boys ages 8 to 11 years of age whose parents agreed to their participation. The project findings indicated that the participants achieved improvement in all three outcome measures: health

knowledge, frequency of healthy behaviors, and level of physical activity. More specifically, test scores on health knowledge increased by 31.28% after the intervention (Appendix KK); frequency of healthy behaviors being practiced by the participants increased by an aggregate mean score of 0.96 after the intervention (Appendix LL); and weekly recorded steps on the fitness trackers increased by 16,175 steps after the intervention (Appendix MM).

While there was still an increase in correct responses on the post-test, it is evident that less participants were able to answer question 17 and 18 correctly compared to the other questions on the knowledge test. After reviewing the questions, some participants explained that they saw the word “energy” in the question and automatically selected the “exercise” answer choice because energy is needed for exercise. Some explained that they felt more energized after exercise, so they selected “exercise” as the answer. When reflecting on question 18, the lack of correct answers could be attributed to difficulty in the participants’ ability to remember numerical values. Many of the participants were able to recall information that was discussed and reinforced by visual pictures or activities; however, the values pertaining to nutritional information was difficult to remember. Participants had practiced investigating nutritional labels, but were not expected to memorize the values. In addition, many of the snacks distributed were in 100-calorie portion sizes which confused some participants into selecting the “100g” answer choice. Overall, there was still an increase in the percentage of participants who answered each individual question correctly after the intervention.

These study findings emphasized previous research findings that determined the effectiveness of childhood obesity prevention programs when they are designed to deliver both dietary and physical activity education to children and their parents (Nabors, Burbage, Woodson, & Swoboda, 2015). The KidsFit curriculum reflected a multifactor education strategy that

addresses healthy diet, promotion of exercise, and family involvement in the process of changing lifestyle patterns among school-aged children. Education was provided to parents through handouts of the topics discussed in the meeting and healthy low-cost recipes that could be made at home. In addition, some parents were present in the meeting room which allowed them to also receive the information being presented so that they can reinforce healthy behaviors in the home environment.

The three factors of Albert Bandura's Social Cognitive Theory (1998) can be used to understand the effectiveness of this structured childhood obesity prevention intervention to initiate behavior change. The 15-minute lecture provided at the beginning of each weekly meeting provided the participants with valuable information to increase their knowledge regarding that week's topic. The increase in the troop's baseline aggregate score on the "Nutrition and Physical Pre- and Post-Test" compared to the score on Week 6 identifies that the cognitive factor of Bandura's theory was effectively addressed. Next, interactive group activities were incorporated into each weekly lesson. Each activity was designed to reinforce the information presented during the lecture. Participants were eager to join in the activities, such as designing a balanced meal, making fruit and vegetable smoothies, trying different fruits and vegetables, and reading nutrition labels to determine the healthier cereal choice. Opportunities to practice healthy behaviors on a daily basis was shared and discussed at the end of each lesson. The increased in the troop's baseline aggregate score on the "Food Frequency and Lifestyle Habits Questionnaire" and weekly fitness tracker steps compared to the questionnaire score and recorded steps on Week 6 identifies that the behavioral factor of Bandura's theory was effectively addressed. Lastly, troop members were more willing to discuss and practice healthy behaviors when their surrounding peers were doing the same. For example, the two older Scout

members motivated each other to be physically active by competing who could get the greater number of steps each week on their fitness trackers. As a result, the younger troop members also became more eager to be physically active to reflect their older role models. The acceptance of healthy behaviors as the social norm identifies that the environmental factors of Bandura's theory was effectively addressed. The ability of the intervention to initiate behavior change was only achievable once each factor in the Social Cognitive theory was fulfilled.

Similar programs have been implemented in limited doctor offices and afterschool programs, but never before in a community setting where boys belonging to the same organization could offer each other social support and encouragement. The presence of a social environment within a mutually supportive organization was a key facilitator in the achievement of project objectives. The Cub Scout Troop was able to learn these valuable lessons in a safe environment where similar-aged peers could act as positive influences. The inclusion of participants between the age ranges of 8 to 11-years-old proved to be beneficial because the older Scout members acted as role models to the younger ones. Occasionally, when the troop members who were identified to have a learning disability experienced difficulty in understanding or reading the material, other troop members willingly helped their peers. Obesity prevention education delivered in the social setting of the Cub Scout Troop with effective results validates that behaviors can be reinforced by peer presence and influence (Shin et al., 2014). These findings fit into an emerging research topic on programs designed to implement social-cognitive learning-based programs to address childhood obesity.

The findings of this project reinforce previous research that identified the importance of early obesity prevention interventions prior to the establishment of behavioral patterns (Cloutier et al., 2018). The age group accessed in this project were school-aged boys between the ages of 8

to 11-years-old. The increase in all outcome measures determine that school-aged children are receptive to early obesity prevention education and are eager to practice healthy behaviors when opportunities are provided. In the relatively short period of time over 6 weeks, children were able to learn how to make healthy dietary choices and the benefits of adequate exercise. Education delivered to children at an age when they begin to understand how their body works and make decisions independently is crucial in sustaining healthy behaviors in their adult life. It is important to continue examining application of existing prevention programs in various settings and to determine if the programs result in long-term change in children's knowledge and behaviors (Nabors et al., 2015).

Limitations

Limitations of this project include a small sample size ($n=8$) which do not allow for generalizability of the results. Some participants ($n=3$) were also not included in the data analysis of the weekly fitness tracker steps due to inconsistent use of fitness trackers, which likely altered the physical activity level outcome. Another limitation is the self-reporting nature of the behavioral questionnaire, as participants can bias their responses to appear more socially acceptable among their Cub Scout Troop peers. There was also a short follow-up time to assess for long-term behavior change. For future studies, there should be an increase to the follow-up time to at least 3 to 4 months post-intervention to assess for sustained behavior change. Finally, when addressing lifestyle change in children, it is also important to provide education to the parents. Parents are responsible for key components of behavior change, such as grocery shopping, providing home cooked meals, and allowing opportunities to exercise. Therefore, as part of the KidsFit curriculum, parents received handouts at the end of each meeting that includes a summary of the topics discussed that day and healthy low-cost recipes. However, in this

specific troop, two parents did not speak fluent English. The parent handouts were not translated into Spanish, which limited the ability of the parents' to understand the content of the educational handout. For future studies, all parent handouts should be made available in English and/or other commonly spoken languages.

Unintended Consequences

One unintended negative consequence of this project was that the cost of materials and healthy food items exceeded what the Co-Investigator had originally estimated (Appendix FF). While the anticipated budget for the project was \$520, the actual total cost was \$655.92. Unless the program is sponsored by the community, organizations, government funding, or other outside sources, the financial costs of supplies associated with the program activities could be a burden for low-income communities. The lack of financial support may be a barrier for communities to successfully implement obesity prevention programs in various settings. One unintentional benefit of this project was the ability to also disseminate the educational information to parents and other adult community members. A majority of the participants' parents brought their child to the Cub Scout meeting and waited for them during the meeting. Since the meeting place only had one large room, many parents were able to hear and learn the information being delivered. Oftentimes, the parents would ask the Co-Investigator questions after the meeting, in which additional educational information would be discussed. In addition, a circulating representative from the Cub Scouts and Boys Scouts of America organization would periodically visit the troop site. The representative was very interested in and supportive of the intervention being delivered among this local Cub Scout Troop. At the conclusion of the program, he asked the Co-Investigator if the program could also be delivered among other troops in the community. The presence of parents and other stakeholders during the meeting allows for shared education, more

awareness of childhood obesity interventions, and provides an opportunity for future expansion of the intervention to a greater population of children.

Plan for Process Evaluation

The DNP project was completed according to the anticipated timeline and activities. All project objectives were successfully met as evidenced by the increase in the three outcome measures discussed above. The Co-Investigator will present the aggregate findings to the stakeholders, troop leader, and parents so they can fully understand the impact of the intervention. The process evaluation will involve assessing how well the program and intervention activities were implemented and received by the participants. During the summative meeting, the Co-Investigator will obtain suggestions for improvements or modifications that can be made to the intervention in order to maximize its future potential among other children populations.

Implications

Implications for Clinical Practice

The findings of this DNP project demonstrated that structured childhood obesity prevention programs have the potential to increase knowledge and behaviors related to nutrition and physical activity. This project is valuable in advocating for the use of this intervention to overcome barriers of effective education in the clinical setting. Previous research has shown that when children are identified as being overweight, many primary care providers do not take additional measures to engage or counsel patients and their caregivers in weight management discussions (Rhee, Kessl, Lindback, Littman, & El-Kareh, 2018). Providers indicate this lack of education is due to limited resources, specifically time, staff support, and community resources. They also report low confidence in their ability to counsel and treat obesity. In the future,

childhood obesity prevention programs, such as KidsFit, can be used as a resource for providers to either implement in their offices or recommend as a first line prevention intervention.

Additionally, the findings support previous research identifying the effectiveness of community-based efforts to prevent overweight children by promoting healthy eating and increased physical activity (Manger et al., 2012). Specifically, communities that implemented a structured obesity prevention program had a 8.8% prevalence of overweight children, compared to a 17.8% prevalence in neighboring communities without any effort to intervene. Since obesity prevention programs have previously only been studied in limited settings; this project reaches a new population of children in a low socioeconomic community and social setting. Extrapolating from our clinical findings, health care providers should advocate and support obesity prevention programs in different settings. Health care providers should collaborate with local policy makers to fund and support the development of these low-cost programs in their immediate medical offices and/or in other community settings. Providers will be able to take one step further beyond identifying the child as overweight; but to also provide an action plan to eliminate unhealthy lifestyle behaviors and prevent additional weight gain.

Effective results of this DNP project will empower health care professionals to design and implement nutrition and exercise activities to promote health knowledge and behaviors of young children (Nabors, Burbage, Woodson, & Swoboda, 2015). Providers can gain valuable experience when helping to implement the KidsFit program and improve their knowledge of and ideas about health promotion delivery in unique settings where they can reach children who may be in need of additional opportunities to practice and learn healthy behaviors.

Implications for Healthcare Policy

The childhood obesity epidemic is an urgent national public health crisis that requires responses from the government at the federal, state, and local levels to improve population health and reduce health inequities (McGuire, 2012). The findings of the DNP project impacts current health policies related to education and community involvement.

To date, there are many existing policies to empower consumers with the information required to make healthy dietary choices. For example, the Nutrition Labeling and Education Act of 1990 requires most packaged foods and beverages to have nutritional labels (The State of Obesity, 2018a). Despite the continuous efforts of the U.S. Food and Drug Administration to make labels more consumer friendly and reflect typical consumer eating habits, many individuals still do not understand how to interpret this information. A majority of school health curriculums do not include nutrition label interpretation nor spend adequate time discussing this topic. Meanwhile, structured childhood obesity prevention programs, such as KidsFit, teaches children how to read nutrition labels and use the information to determine the quality of food items. By learning this skill, the efforts of government policies to provide nutrition labels will be used for its intended purpose. The effectiveness of structured childhood obesity prevention programs to equip children with the knowledge required to make healthy dietary choices supports the need for more health care policies that provide funding for these programs in various communities.

According to psychologist Albert Bandura (1998), an individual's environment is an important determinant of behavior change. The effectiveness of this DNP project depends on having a supportive social environment and opportunities to practice healthy behaviors. Thus, school and community healthcare policies should be reexamined for barriers of childhood obesity prevention since children spend a majority of their time in these settings (Karp & Gesell, 2015). For example, policies for agricultural programs that are responsible for the type and

quantities of food and beverages available in public schools should offer only nutritious options. Currently, there are no federal requirements for school-based physical education and few states require minimum weekly amount of physical activity (The State of Obesity, 2018b). The state of New Jersey mandates at least 150 minutes of health and physical education per week in all grades (National Association for Sport and Physical Education, 2010). For children who do not have an opportunity to exercise outside of the school environment, the current mandate does not even come close to the recommended 60 minutes per day of aerobic exercise for children (American Heart Association, 2019). Boards of Education should modify school policies allot an adequate amount of time in the school day devoted to healthy school meals and physical activity (Harvard School of Public Health, 2019). The U.S. Department of Health and the Department of Transportation can support policies that fund remodeling efforts for “green” communities through creation of pedestrian paths, public parks, and community gardens to encourage physical activity.

Finally, this DNP project impacts health policy by emphasizing the potential need for the more intense government-imposed policies that focus on eliminating modifiable risk factors of obesity: nutrition and physical activity. For example, the government can intervene by imposing taxes on sugary drinks and creating policies that contain recommendations for nutritional quality standards for food marketed to children via internet, television, and social media (Novak & Brownell, 2012). Researchers of a microsimulation determined that a \$0.01/ounce tax on sugary drinks would result in an average daily reduction of 1.5 beverages in children and 2.2 beverages in adolescents (Kristensen et al., 2014). Meanwhile having a policy ban on child-directed fast food television advertising was determined to decrease the number of children eating two or more fast food meals per week by almost 20% and for adolescents by 18%. Overall, the findings

of this DNP project emphasizes the importance of health policies that support structured childhood obesity prevention programs in communities, environmental modifications that create opportunities for healthy nutrition and behaviors, and reduction of obesity-related behaviors to improve population health.

Implications for Quality and Safety

The health consequences associated with childhood obesity ranges from short-term to long-term and involves all parts of an individual's health – both physical and psychological. Health care providers are responsible for monitoring the wellbeing and quality of life for each of their patients. In this context, the provider's role requires the identification of risk factors for childhood obesity and initiating early intervention. As the findings of this DNP project determines the effectiveness of childhood obesity prevention programs to increase health knowledge and healthy behaviors, providers should advocate for the availability of this resource as a way to deliver high-quality and safe patient care.

Implications on Education

This DNP project clarifies the components of an effective educational model for behavioral change. The KidsFit program uses the Social Cognitive Theory (Bandura, 1998), which focuses on the environment, behavioral, and cognitive factors. This knowledge allows providers to better formulate education material and create learning environments that facilitate learning. Effectiveness of the KidsFit program will allow health care providers to recommend the same or similar prevention programs that focus on both dietary and physical activity. The selected target population of children aged 8 to 11 years old will result in the earlier implementation of health promotion in clinical practice. This change results from the understanding that prevention in young children is the most effective way of combating

excessive weight gain and obesity, since changing ingrained lifestyle habits in older children and in adults is often extremely difficult, if not impossible (Manger et al., 2012).

In addition, nutrition and obesity prevention education may be integrated in the curriculum and training for nursing students, registered nurses, and nurse practitioner students. These individuals have a health knowledge background that is valuable in disseminating information to patients that they encounter in their line of work. Education can also extend to other community members who are also passionate about childhood obesity prevention initiatives. Since many structured obesity prevention programs do not require a health care provider to deliver the education, providers can take an active role in educating and training other community members to expand the intervention. Instead of placing the full responsibility of preventive education on health care providers, it can become a community initiative to improve population health.

Economic Implications

The economic burden of healthcare costs associated with the management and consequences of childhood obesity will likely continue to rise as the prevalence increases. In 2010, childhood obesity is responsible for \$14 billion in direct medical costs (National League of Cities, 2019). Therefore, the prevention of childhood obesity is a key element in current public health strategies to control the direct and indirect costs of the disease (Doring, Mayer, Rasmussen, & Sonntag, 2016). Although previous research has created the consensus that behavioral interventions initiated early in childhood has the greatest preventive effect, the evidence on what works and what does not work is lacking. Cost-analysis studies have found that an investment of \$2 billion a year would be cost-effective if it reduced obesity in 10-year-old children alone by just one percent (World Health Organization, 2018). Some organizations have

already realized the value of funding prevention initiatives, such as the Robert Wood Johnson Foundation that pledged \$500 million to fund for childhood obesity prevention initiatives over the next five years (Finkelstein, Graham, & Malhotra, 2014). The effectiveness of the KidsFit program on health knowledge and behaviors demonstrates the importance of multi-level funding to focus on prevention rather than treatment. The findings of this DNP project contributes to the growing evidence that supports the use of structured childhood obesity prevention programs as a cost-effective intervention. As additional evidence in support of such programs is established, federal, state, and local governments will be more willing to allocate resources directly for this childhood obesity prevention intervention.

Sustainability

The efforts of this DNP project will be maintained in the Cub Scout Troop through the acceptance of this program as one of the offered activities to qualify for the Physical Fitness merit badge. The troop leader has approached the Co-Investigator to inquire about the feasibility of implementing this program again in September 2020. Furthermore, the local organization representative have expressed interest in expanding the KidsFit program to troops, both girls and boys, within the community in the years to come. The Co-Investigator has agreed to return and educate interested troop leaders on how to implement obesity prevention programs and to deliver effective education. These healthy nutrition and physical activity topics will be very useful and easily applied with the goals of the Scouting organization.

Professional Reporting

The Co-Investigator will be reporting the aggregate results to the troop leader, organizational stakeholders, and parents of the troop members. Aggregate results will also be reported to the KidsFit team at Robert Wood Johnson Barnabas Health System, so that the

project findings can be part of a greater statewide initiative. In addition, the poster presentation of this project has been accepted by the National Association of Pediatric Nurse Practitioners at the 2020 national conference. The Co-Investigators will disseminate the project findings with other pediatric health care providers at this conference and through publications to advocate for the expansion of this intervention in various communities and to encourage other providers to utilize existing programs as a resource in the clinical setting. In the near future, the project team plans to submit the findings of this project to an academic journal, such as Journal of Pediatric Health Care, for publication.

Plans for Future Scholarship

In the future, the Co-Investigator will be involved in assisting the aforementioned organization representative in expanding the program among other local troops. While the Co-Investigator may not be the one implementing the program, education will be provided to other troop leaders on how to deliver an obesity prevention program focusing on healthy nutrition and exercise. Local troops from other towns have also verbalized interest in implementing this program as an activity for the physical fitness merit badge. Therefore, the Co-Investigator can continue to research the effectiveness of this intervention in troops from various socioeconomic communities so that the findings can be more generalized to a larger population. Ideally, the intervention can become accepted as a permanent activity in the Boys Scouts of America organization so troop members from all across the state can participate. The Co-Investigator will also advocate for the use of this intervention in various primary care practices that she encounters in her career. After speaking to different primary care doctors about her current research, doctors have verbalized interest in initiating this program in their office for patients who are identified to be at-risk for obesity during annual physicals or those families who request

for resources to learn healthy lifestyle behaviors. This intervention has the potential to reach and positively impact children in various different settings and communities.

Summary

Effective childhood obesity prevention interventions are necessary to combat the rising prevalence of childhood obesity worldwide. Current education being provided during short pediatric annual physicals and school health curriculums are inadequate to initiate behavior change. Structured childhood obesity prevention programs have been previously implemented in limited office settings and afterschool programs with effective results. The study which this project was based, offered a childhood obesity prevention program curriculum called KidsFit to a population of school-aged children in a community that had never been accessed before. The results of this project support the use of such an intervention as it revealed increases in all three outcome measures of health knowledge, healthy behaviors, and level of physical activity. This project demonstrates that childhood obesity prevention programs are effective and have a potential to address childhood obesity prevention in school-aged children across various community settings.

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Appendices

Appendix A

Table of Evidence

Article Number	Author and Date	Evidence Type	Sample, Sample Size, Setting	Findings That Help Answer the EBP Question	Observable Measures	Limitations	Evidence Level, Quality
1	Castro, Samuels, & Harman, 2013	Pilot study, quasi-experimental	60 families in a low-income community (Orange County, North Carolina) with at least one child aged 6 years or younger (120 children total). The project took place in three different community gardens in Carrboro, North Carolina (an elementary school, a community park, and land owned by a utility company)	Implementation of Growing Healthy Kids program to prevent childhood obesity among low-income families. This program provides access to information about proper nutrition and healthy eating while allowing families to participate in growing fresh vegetables. Program includes weekly gardening sessions, cooking and nutrition workshops, and social activities. Use of community gardens increases access to nutritious foods in low-income communities. When individuals participate in a community garden, they consume more fruits and vegetables. Local communities can be mobilized to take action for childhood obesity prevention. Community leaders and all residents have the ability to partner, collaborate, expand and enrich childhood obesity prevention initiatives/policies.	Pre- and post-program changes in 3 variables: 1) BMI classification – of the baseline data, 36 children had a BMI classification of obese or overweight. Of 23 children classified as obese, 3 ($p<0.05$) had achieved BMI classification of overweight at post-program. Of 13 children with baseline classification of overweight, 3 ($p<0.03$) had achieved BMI classification of normal. Children with normal BMI at the beginning, remained normal BMI post-program. 2) Number of fruits and vegetables available in the home: There was an increase in number of fruits available to children in homes over the program period increasing from 1.75 to 4.3, 146% percentage increase ($p<0.001$). Increase in number of vegetables from 3.5 to 4.3, 123% increase ($p<0.001$) after program. 3) number of fruits and vegetables children consumed each day: increase in fruit from 3.2 to 7.8, 28% increase ($p<0.001$). Increase in vegetable from 2.1 to 2.8, by 33% ($p<0.001$).	Lack of control group for comparison Nonrandomized sampling limits generalizability of findings Need for a longitudinal study design with larger sample size to provide stronger evidence Lack of a standardized measure to assess fruit and vegetable intake Need for replication of this program in other communities to test feasibility in communities with different characteristics	II/B
2	Cohen, Kraak, Choumenkovitch, Hyatt, & Economos (2014)	Randomized Control	Total of 432 children in grades 1 to 6. 8 elementary schools in rural communities in California, Kentucky, Mississippi, and South Carolina (2 schools from	The schools assigned to the CHANGE intervention received daily access to a foodservice component and an educational curriculum every week. The intervention took place from mid-fall after baseline data collection and were maintained for the rest of the school year. Training was provided to the school cafeteria staff to serve healthier	Baseline data was collected using the 2007 Block Food Screener for ages 2 to 17 years old and compared to post-intervention responses using the same tool. The food screener is self-administered with adult assistance and inquiries about food consumption information from the	Many students failed to complete a second food survey at the end of the intervention, resulting in loss of participants. Since students in the control schools did not	I/B

			each state). Schools were randomly assigned to 4 intervention schools and 4 control schools.	<p>school breakfasts and lunches – cafeteria changes included offering whole grains, five different fruit and vegetable options weekly, providing beans or peas weekly, supplying 1% and nonfat milk daily, and limiting ice cream sales. Students were exposed to the Shape Up curriculum and the 5-2-1 messages. The intervention also included parent and community outreach components to promote healthy lifestyle changes during and after the school day.</p> <p>Control school followed the state's health curriculum and did not have any changes to cafeteria food offerings.</p> <p>Students exposed to the CHANGE intervention consumed 0.08 cups of vegetables per 1,000 kcal more per day compared to control schools ($P<0.05$). Students in the intervention school also consumed 0.22 cups of combined fruits and vegetables for 1,000 kcal more at the end of the intervention compared to those at the control schools ($P<0.05$).</p>	<p>past 24 hours for 41 commonly consumed foods and beverages and their portion sizes.</p> <p>Parents also provided additional information on their child's age, sex, race/ethnicity, grade, and demographics on a family survey.</p>	<p>receive any additional curriculum, they could have been consuming many common foods but did not recognize it to be in a particular food group on the survey (i.e. Students were eating whole-wheat bread but did not know it was considered to be in the whole-grain group).</p> <p>Impact of intervention on physical activity level was not assessed</p>	
3	Jester, Kreider, Ochberg, & Meek, 2017	Quasi-Experimental	60 pediatric patients between 2-17 years old with a BMI equal to or greater than the 85 th percentile for their sex and age; [REDACTED] primary care practice in Georgetown, DE	<p>Used the National Institute for Child's Health Quality Obesity Toolkit to survey dietary and physical activity along with goal-setting to improve healthy habits. PCPs provided one-on-one education to patients/parents on obesity awareness and healthy lifestyle behaviors using the 5-2-1-0 campaign. Convenience group, no control group. No significant changes in BMI and blood pressure. Healthy dietary and physical activity measures had significant improvement post-implementation.</p> <p>Behavioral measures continued to improve 2 months after the intervention.</p> <p>Most participants self-reported that they met their goals 2 months after intervention.</p>	Data for BMI, blood pressure, and behavioral measures collected before intervention and at 1- and 2-months after intervention. Behavioral measures included self-reported amount of fruits and vegetables consumed in a day, number of hours spent watching television each week, number of hours for physical activity each week, number of sugary drinks consumed each day, whether or not personal or parental goal was met.	Participants were recruited based on convenience sampling and limited to one site, which potentially creates selection bias. Most participants were of Hispanic ethnicity, which may limit the generalizability of results. Lack of a control group to compare results without intervention. Limited timeframe which did not allow enough time to assess the difference in BMI or blood pressure, or if healthy behaviors were maintained over time.	II/B
4	Kumar & Kelly, 2017	Comprehensive Literature review	Review of literature using PubMed database	The development of childhood obesity has multifactorial contributors relating to environment, genetics, and ecological effects.	Information about definition, epidemiology, etiology, comorbidities, clinical assessment, and treatment of childhood obesity was retrieved.	Additional research is needed to evaluate the efficacy and safety of treatment modalities.	V/A

				<p>Environmental effects can cause increased caloric intake while decreasing caloric expenditure.</p> <p>Staged approach to weight management in children. First stage includes specific dietary and physical activity recommendations. Multidisciplinary approach for interventions. Primary care offices, dietitians, behavioral counselors, can deliver services with community partners such as public health programs, local schools, Head Start, Boys and Girls Club, etc.</p>		Additional search from different databases may yield different literature.	
5	Lloyd, Logan, Greaves, & Wyatt, 2011	Quasi-Experimental	<p>Pilot 1 – A total of 119 children ranging from 8 to 11-year-olds, 9 to 10-year-olds, and 10 to 11-year old.</p> <p>Pilot 2 – A total of 77 children ages 9 to 10 years old</p>	<p>Implementation of the Healthy Lifestyles Program (HeLP), which is a school- based intervention to prevent obesity in children.</p> <p>Performance objectives were mapped onto 3 broad domains of behavior change objections: establish motivation, take action, and stay motivated.</p> <p>In first phase of pilot study 9-10-year-olds were most receptive and willing to accept behavior changes compared to the older or younger age groups</p> <p>Discusses the significance of behavior change technique (BCT) – using strategies in the intervention that enable children to practice a targeted behavior and see role models perform the behavior in order to increase self-efficacy. This is a construct of the Social Cognitive Theory.</p> <p>Pilot 1: positive behavior changes were developed after the program. Encouraged more activities that children can participate in.</p> <p>Pilot 2: Children experienced improved self-esteem. Increase in healthy lifestyle changes as a result of the program.</p>	<p>Height, weight, waist circumference, % body fat, physical activity, food intake, screen time, and viewing habits were evaluated.</p> <p>Intervention focuses on reduction of the consumption of sweetened fizzy drinks, increase in the proportion of healthy snacks consumed and reduction of TV viewing and other screen-based activities to improve and increase physical activity.</p> <p>Intervention mapping was used to plan a school-based obesity prevention program.</p> <p>Health Action Process Model was used to provide framework for implementation. It is consistent with behavior changes including social cognitive theory and control theory.</p>	The intervention as limited to a small pilot group – generalization of the results cannot be applied to a larger scale unless future studies implement the program in a larger group.	II/B
6	Manger et al., 2012	Quasi-experimental	697 first grade children in Pittsburgh from different schools. 29 schools participated in this study, using the school as the setting. 14 schools were used as the intervention	The VITAL program was implemented in the 14 intervention schools while the curriculum of the other 15 control schools remained unchanged. The VITAL program included 8 different weekly lessons that included games and physical activity to teach young children healthy eating and	To examine the impact of the program on participants, measures included: 1) BMI: decrease in BMI was not significant. However, in the control group 43 children were initially classed as obese, which decreased to	This is a pilot program in the town of Pittsburgh – the program needs to be implemented in other settings and schools to determine the effectiveness.	II/B

			group, and 15 schools as controls.	<p>appropriately physical activity. The VITAL program also provided received age-appropriate reading material, simple exercise equipment, and pedometers. Teachers received a curriculum guide, a DVD that describe VITAL, and a booklet containing information about healthy eating, appropriate physical activity, and dietary approach to stop hypertension (DASH) diet. Parents were showed the DVD during parent-teacher meetings to understand the program better.</p> <p>One of the most effective ways of combating childhood obesity is prevention in young children, since changing ingrained lifestyle habits in older children and adults is often extremely difficult.</p> <p>Young children are more anxious to learn and participate in healthy lifestyle.</p> <p>A review of intervention programs concluded that it would be most effective to focus on both dietary and physical activity than on dietary behavior alone.</p>	<p>29 at the end (32%). In the intervention group, of the 54 participants considered obese, 20 moved to a lower category at the end of the study (37%)</p> <p>2) parents-reported questionnaires requesting their observation on the effectiveness of the VITAL in changing eating and exercise habits: Parent observed increase in consumption of healthier foods from 60% pre-implementation to 80% after. Parent observed increase in exercise frequency from 56% to 76% after the program</p> <p>3) Teachers and parents' evaluation of the VITAL program: 80% of teachers at the school rated the program has good to excellent in promoting good nutrition, and 77% rated it good to excellent as promoting physical activity. 78% of parents reported that the VITAL program was good or excellent in influencing lifestyle of their children and were pleased to have this program in the curriculum</p>		
7	Nabors, Burbage, Woodson, & Swoboda, 2015	Quasi-Experimental	Total of 64 children: School #1 had 17 students in intervention and 6 students in control group. School #2 had 29 children in intervention group, 12 in control group.	<p>Intervention group selected to participate in the program, while the control group selected other afterschool groups, such as science club and yearbook club. Intervention group received weekly sessions at both schools focusing on red and green light foods and the importance of exercise. Goal-setting was completed with a coach at both schools focusing on one personal healthy eating and exercise goal per week. Parents received handouts with information and recipes. Parents were satisfied with the program.</p> <p>Young children are able to learn about healthy eating behaviors in a short period of time. Reported understanding and identifying foods considered "red light" versus "green light".</p>	<p>Parents completed surveys to determine their satisfaction with the program and assess whether they were receiving and using health recipes.</p> <p>Pre- and post-intervention questionnaires assessing fruit consumption, vegetable consumption, chips and fries consumes, sweets consumption, and number of days exercised in the past week.</p>	<p>Samples of convenience</p> <p>Comparison groups were not matched groups</p> <p>Non-compliance with survey completion at end of the program</p> <p>Curriculum and level of engagement in physical activity was different between schools</p> <p>Limited to two communities – need to implement existing prevention programs in other settings to promote</p>	II/C

				<p>Increased in exercise post-intervention. Increase in fruit and vegetable consumption post-intervention. Strong significance for a decrease in sweets consumption post-intervention.</p> <p>Motivational interviewing is successful only if children are overweight.</p>		health knowledge to young children	
8	Robert Wood Johnson Barnabas Health, 2019	Lecture of the KidsFit program. Presentation of the impact of a Quasi-Experimental Intervention	Third to fifth grade students in 13 public schools across New Jersey	<p>KidsFit Obesity prevention program was implemented in public schools across New Jersey as an additional school curriculum. These programs were delivered by registered dietitians.</p> <p>The program consists of engaging activities that teach healthy dietary choices and adequate levels of physical activity.</p> <p>Parents were involved in the program through parent handouts that were sent home after each class.</p> <p>In the 2016-2017 school year, the program effectively increased baseline knowledge of participants from 64% to 80% post intervention.</p>	Pre-program and Post-program questionnaires evaluating level of daily physical exercise, nutritional knowledge, and amount of daily healthy dietary choices.	<p>This program has only been implemented in school settings and local super markets with registered dietitian. Need to expand the program to other settings.</p> <p>Need to train other community individuals to deliver the training so that the program can be more accessible in different communities.</p>	IV/A
9	Salvy, De la Haye, Bowker, & Hermans, 2012	Review of literature	Review of 154 articles focusing the influences of peers on eating and physical activity during childhood.	<p>Peers and friends impact eating and physical activity.</p> <p>Presence of peers and friends increases children's energy intake. Social modeling is main reason that accounts for the effects of peer influence on healthful eating. Individuals eat more when their eating companions eat more and less when their eating companions eat less.</p> <p>Social facilitation affects physical activity: youth are more physically active when in the company of peers and friends. In contrast, being alone deter physical activity.</p> <p>Peer modeling of physical activity may have an impact on self-efficacy, or the belief about being able to overcome perceived barriers and perform required skills necessary to engage in physical activity.</p> <p>Impression management: individuals consciously or unconsciously attempt to</p>	Discusses the influence of social facilitation, impression management, modeling, and normative framework on individuals' eating behaviors and their participation in physical activity.	Articles were separated based on children and adolescents – not separated in more specific ages and developmental periods. There are certainly considerable developmental differences in the source and nature of the peer influence between different ages.	V/A

				control the impressions that other people form by regulating their own behaviors when in the company of others. People tend to accomplish their impression management goals by eating minimally. It also motivates individuals to increase physical activity to have a strong and confident appearance. Friends experience shared environments and opportunities to engage in particular eating or physical activity behaviors – can cause similarities in behavior over time.			
10	Shin et al., 2014	Quasi-Experimental	343 students in program intervention group, 214 in control group. All students were either in 5 th or 6 th grade. Participants reside in Southern California	<p>Implementation of Pathways to Health program in the intervention group. The program strives to promote healthful eating and physical activity.</p> <p>Intervention program had positive effects on physical activity at school ($p<0.05$), physical activity outside of school ($p<0.05$), fruit and vegetable intake ($p<0.05$), and sedentary activity ($p<0.001$).</p> <p>In both the intervention and control group, peer exposure was positively associated with one's own behavior. Children in the intervention program were less influenced by their peers when unhealthy behaviors were conducted, compared to the control group. The Pathways program provides a buffer for children from the effects of negative peer influence.</p> <p>All obesity-related behaviors were positively associated with more exposure to negative/positive peer behavior, which supports social facilitation that occurs among peers.</p>	<p>Data was collected based on completion of student assessments at baseline, 6-months after intervention, and annually at 1 year and 2 years post intervention.</p> <p>Questionnaire assessed level of physical activity, food intake choices, amount of sedentary activity, participation in team sports, BMI percentiles, social network indicators (identification of 5 best friends, and best friends were asked to complete the same questionnaires).</p>	<p>Data was generated by children's self-report surveys, so threats to validity related to self-report data cannot be discounted.</p> <p>Most of the students who participated in this study were of Hispanic background residing in a low-income urban setting – preventing it to be representative of the broader population.</p>	II/B

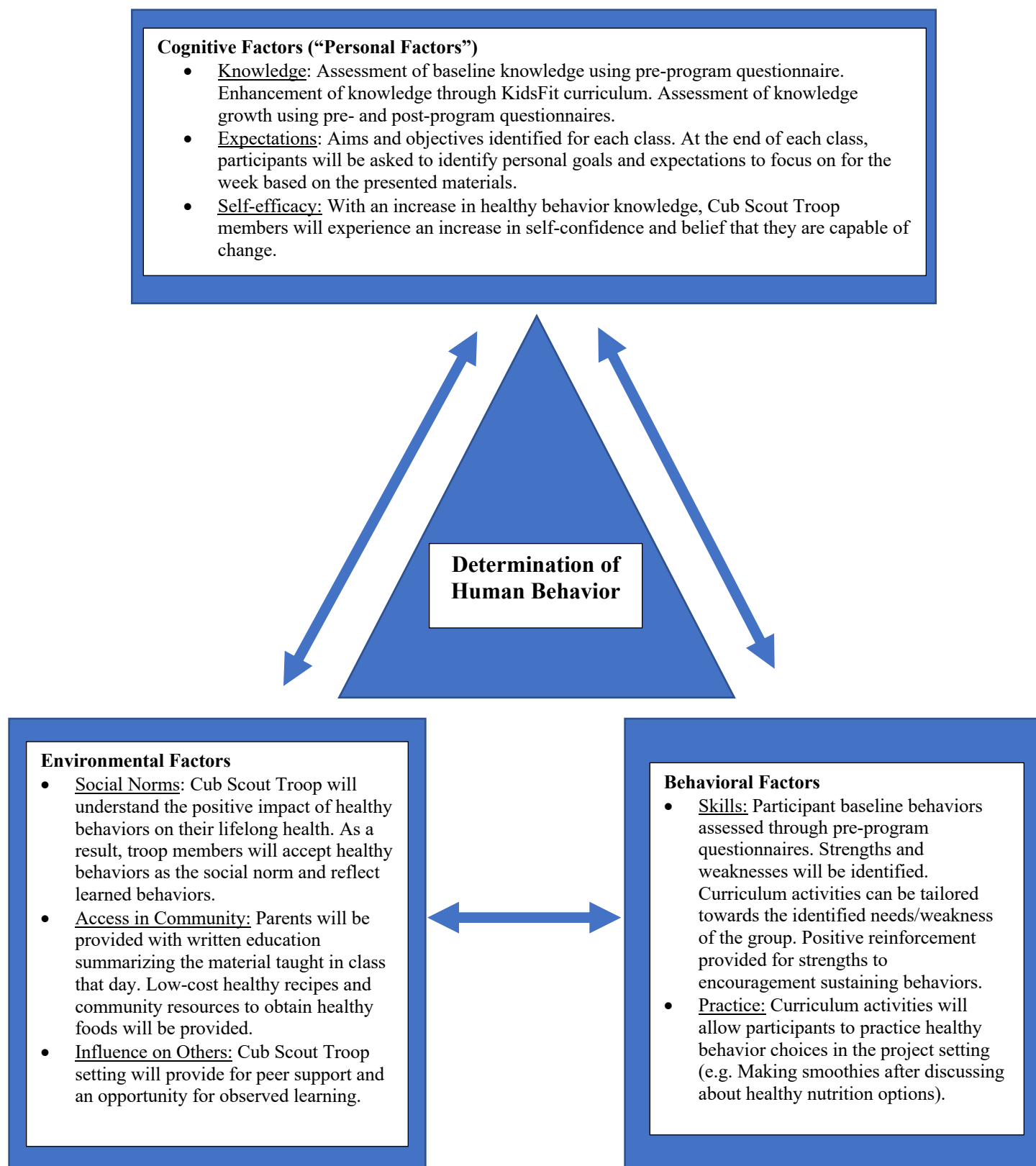
11	Tucker & Lanningham-Foster, 2015	Quasi-Experimental	<p>Two elementary schools (A&B)</p> <p>A total of 72 children participants (A=50, B=22 students)</p>	<p>School nurses and nursing students were trained in the 5-2-1-0 curriculum</p> <p>Study ran from September to April, delivered in classroom by the school nurse with weekly on site 1:1 coaching delivered by senior nursing students on child physical activity levels and health behavior change.</p> <p>Changes in BMI and Healthy Habits Survey items from baseline to end of the year evaluated. P values < .05 were considered significant.</p> <p>School A: 19 fourth- graders and 31 fifth-graders with a mean age of 9.8 years. BMI did not change significantly, but the number of servings of fruit and vegetables increase from baseline to end of the year, fruit juice consumption decreased, whole milk intake decreased, active play increased.</p> <p>School B: 22 fourth- graders with a mean age of 9.5 years. Fruits and vegetable consumed increased. Participation in physical activity level increased.</p> <p>Neither demonstrated significant decrease in beverage consumption.</p> <p>Key messages of increasing fruits and vegetables, limiting screen time, increasing moderate to vigorous physical activity, and reducing sugar-sweetened beverages with reinforcement coaching positively impacted elementary school children behavior.</p>	<p>Baseline and end of year data collected on BMI percentile, healthy habits, and physical activity. BMI calculated based on CDC growth charts. BMI was not the focus as this is a universal intervention with many normal weight participants.</p> <p>Students answered questions from healthy habits survey (Let's Go 5-2-1-0) that addressed nutrition, screen time, physical activity, and family eating patterns.</p> <p>StepWatch Activity Monitor was worn to determine level of physical activity.</p>	<p>Inconsistency between education delivery strategy due to rotation of nursing students halfway through semester at one program.</p> <p>Activity from the StepWatch monitor was only counted from 7am-10pm. Any physical activity outside of this range was not included in the results, which could have altered data.</p> <p>Small sample from only two schools without control group.</p>	II/B
12	Watson, Baker, & Chadwick, 2016	Qualitative study	<p>14 children (8 males, 6 females) between 11 and 14 years old</p>	<p>Interview of participants that took place in the MEND (mind, exercise, nutrition, Do it!) program. This is UK's largest childhood obesity program.</p> <p>MEND is a community-based program for kids 7 to 13 years old. It is a 12-week program that meets twice a week for 1 to 2 hours. A family member is required to attend.</p>	<p>Participants were interviewed about their experiences of the MEND program one year or more after completion. The children participated in the MEND program during primary school and have now transitioned to secondary school where most behavior changes are seen.</p> <p>Participants' experiences were explored using the Interpretative Phenomenological Analysis.</p>	<p>It was a small self-selected subgroup of participants, so all participants views were not taken into account.</p> <p>The actual amount of weight loss and lifestyle changes were not a focus.</p>	III/B

				<p>Children enjoyed the program when they were able to be interactive and participate in individual feedback.</p> <p>“Fun” was the most common theme identified among students. “Fun” was experienced through active participation (exercise, activities, sports, games).</p> <p>“The power and influence of others” helped form conditions that made the program enjoyable and influenced behaviors.</p> <p>The enjoyable experience paved the way to deciding whether or not to conduct behavior change.</p>	<p>Interviewed on participant’s: perceived use of the MEND program; decision to enroll in the program, personal benefits obtained from the program; favorite or difficult things about the program; after effects of the program; and changes in self-esteem before during and after the program.</p>		
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Source: (Dang & Dearholt, 2017)

Appendix B

Social Cognitive Theory



Appendix C

Site Agreement Form

Date: 02/11/2019

Re: Letter of Cooperation for [REDACTED]

Dear Tiffany Meng,

This letter confirms that that I, [REDACTED], as an authorized representative of the [REDACTED], allow the Co-investigator, Tiffany Meng and her team members access to conduct study related activities at the listed site(s), as discussed with the Co-investigator and briefly outlined below, and which may commence when the Co-investigator provides evidence of IRB approval for the proposed project.

- **Research Site(s):** [REDACTED]
- **Funding Agency:** RWJBarnabas will be providing the KidsFit curriculum.
- **Study Purpose:** The purpose of the study is to determine the effectiveness of the KidsFit program to increase healthy dietary choices and time spent on physical activity in school-aged children in a community setting.
- **Study Activities:** Permission forms and demographic questionnaire will be distributed to parents prior to the start of the implementation process. Participants will be participating in KidsFit class once a week for a duration of 6-weeks. There will be a pre- and post-questionnaire distributed to all participants to evaluate the effectiveness of the KidsFit program. Pedometers will be provided to participants to collect data regarding the amount of physical activity performed.
- **Subject Enrollment:** [REDACTED] ages 9-11 years old
- **Site(s) Support:** Access to troop members as participants and assistance in distributing permission forms and questionnaires to parents of troop members. A meeting space in the community recreation building will be provided for program meetings, which will occur once a week for a duration of 6-weeks.
- **Data Management:** Demographic data and questionnaires completed by the participants. The data collected will be anonymously analyzed and reported. Data will be entered in a password protected Microsoft excel, Microsoft word, and SPSS analysis file. No information collected will contain personal information that can be used to identify the individual participants.
- **Anticipated End Date:** May 1, 2020

We understand that this site's participation will only take place during the study's active IRB approval period. All study related activities must cease if IRB approval expires or is suspended. I understand that any activities involving Personal Private Information or Protected Health Information may require compliance with HIPAA Laws and Rutgers Policy.

Our organization agrees to the terms and conditions stated above. If we have any concerns related to this project, we will contact the Principal Investigator. For concerns regarding IRB policy or human subject welfare, we may also contact the Rutgers IRB (see orra.rutgers.edu/hspp).

Regards,



Appendix D

Recruitment Flyer



RUTGERS
School of Nursing

A Childhood Obesity Prevention Project: Implementation of the KidsFit Program among School-aged Scouts to Increase Health Knowledge and Behaviors Related to Nutrition and Exercise

Purpose: This research study is being done to examine the effectiveness of a childhood obesity prevention program to increase children's knowledge and behaviors related to nutrition and physical activity.

Description: The KidsFit childhood obesity prevention program, established by RWJBarnabas Health, will be implemented among school-aged Scouts to examine its effectiveness to increase health knowledge and behaviors. The program will consist of classroom instruction and enhanced by engaging age-appropriate activities.

Benefits: The benefits of taking part in this research study may be improved health knowledge and lifestyle behaviors. Participants may choose to consume more fruits and vegetables and engage in more physical activity. Participants will gain social support and encouragement from their peers as they learn healthy behaviors together. However, it is possible that he may not receive any direct benefit from taking part in this research study.

Participants: All [REDACTED] members within the ages of 8 to 11 years old (rising Third to Fifth graders in September 2019) are eligible to participate in this research.

Cost: There is no monetary cost to participate in this research study.

Locations:

[REDACTED]

[REDACTED]

Time/Date: This research project will begin in early fall 2019. The meeting will take approximately 45 minutes to 1 hour every week, for 6 weeks total.

□ For more information, questions, or comments, please contact:

Girl Scouts: Jennifer Olas MSN, RN-BC at [REDACTED]

Cub Scouts: Tiffany Meng BSN, RN at [REDACTED]

[Version 3, September 19, 2019](#)

Appendix E

Parent Consent Form for Child Participation



Rutgers, The State University of New Jersey
65 Bergen Street-Room 1126
Newark, NJ 07107-3001

www.nursing.rutgers.edu
Phone: (973) 972-4307
Fax: (973) 972-8947

PARENTAL PERMISSION TO PERMIT CHILD TO TAKE PART IN RESEARCH

TITLE OF STUDY: A Childhood Obesity Prevention Project: Implementation of the KidsFit Program Among School-aged Scouts to Increase Knowledge and Behaviors related to Nutrition and Exercise.

Principal Investigator: Dr. Ganga Mahat, EdD. RNBC

Co-Investigators: Jennifer Olas RN-BC, MSN, Pediatric Nurse Practitioner, Doctor of Nursing Practice (DNP) student; Tiffany Meng RN, BSN, Pediatric Nurse Practitioner, DNP student

Team Member: Kimberly Sacoto, Undergraduate Nursing student

STUDY SUMMARY: This consent form is part of an informed consent process for a Doctor of Nursing Practice (DNP) Project and it will provide information that will help you decide whether you want your child to take part in this research study. It is your choice for her to take part or not. The purpose of this study is to determine if the KidsFit program is effective in increasing health knowledge and behaviors among Scouts age 8-11 years old. If your child takes part in the study, he/she will be asked to participate in a group discussion based on the KidsFit obesity prevention curriculum. He/She will be asked to recall what he/she ate the day before meetings and learn how food works within our bodies. His/her time in the study will take six weeks. He/she will attend meetings for one hour each week. Possible harms or burdens of taking part in the study may be a loss of time, and any harm that occurs with a group of children in one location such as tripping, falling off a chair, paper cuts or being accidentally bumped into by another child. There is also the potential risk of your child thinking they are participating in this program because of their weight. The possible benefits of taking part may be improved health, and an increase in fruit and vegetable consumption as well as physical activity. There is also a chance that the participants will not receive any benefits from taking part in this study. Your child's alternative to taking part in the research study is not to take part in it.

The information in this consent form will provide more details about the research study and what will be asked of your child if you permit him/her to take part in it. If you have any questions now or during the study, you should feel free to ask them and should expect to be given answers you completely understand. After all of your questions have been answered and you wish your child to take part in the study, you will be asked to sign this permission form. You are not giving up any of your child's legal rights by permitting him/her to take part in this study or by signing this parental permission form.

Who is conducting this research study?

Dr. Ganga Mahat is the Principal Investigator of this research study. Jennifer Olas and Tiffany Meng are the Co- Investigators. Jennifer and Tiffany are a doctorate students at Rutgers, The State University of New Jersey, School of Nursing. The Co-Investigators have the overall responsibility for the conduct of the study. Jennifer will primarily be working with the [REDACTED]; while Tiffany will primarily be working with the [REDACTED]. However, there are often other individuals who are part of the research team. Kimberly Sacoto is a team member and Undergraduate Nursing student; she may be helping with meetings and data analysis.

Dr. Ganga Mahat, EdD. RNBC may be reached at [REDACTED]
Jennifer Olas MSN, RN may be reached at [REDACTED]
Tiffany Meng BSN, RN may be reached at [REDACTED]

The Co-Investigators or another member of the study team will also be asked to sign this informed consent. You will be given a copy of the signed consent form to keep.

Why is this study being done?

Rutgers, The State University of New Jersey

This research study is being done because it is a requirement for the Co-Investigators, Jennifer Olan and Tiffany Meng, to complete a DNP Project for their DNP degree. Therefore, this particular study is being done to see if the KidsFit program will help increase children's knowledge and behaviors on topics related to nutrition and physical activity. We hope to identify a program that is beneficial in teaching children proper nutrition and exercise habits to help prevent childhood obesity. It is being done with a [REDACTED] and [REDACTED] to see if implementing this program is successful among a small group of peers.

Who may take part in this study and who may not?

[REDACTED] between the ages of 8 and 11 are allowed to take part in this study if their Troop Leader agrees for the troop to participate. The troop member must understand and speak English to participate and be able to participate in their regular Scout Meetings. If a child has an existing condition, or disability, but is able to regularly attend Scout meetings, then there are no anticipated difficulties preventing their participation in the study. If a child is in a wheelchair or has a physical disability but is able to participate in regular Scout meetings, then he/she will be able to participate in the activities of this study. Pedometer readings will not be evaluated for any participant in a wheelchair. Pedometer readings will not affect the overall results of the research, as this is an added outcome measure. However, the child will still be able to receive the education and participate in the other activities. If the child's existing psychological/physical condition becomes too overwhelming for the child to participate in the research meetings, they can decline to participate or end participation at any time.

Inclusion Criteria

- The participants will be girls and boys aged 8-11 years old who are currently a member in [REDACTED] or [REDACTED]
- They must understand and speak English to participate.
- The Troop Leader must agree to participate.
- The participant must be able to attend and participate in regular troop meetings to participate in the study.
- If a child is in a wheelchair or has a physical disability but is able to participate in regular Scout meetings, then he/she will be able to participate in the activities of this study. Pedometer readings will not be evaluated for any participant in a wheelchair.

Exclusion Criteria

- Participants outside the range of 8-11 will not be eligible to participate.
- Children who are not currently in the [REDACTED] or [REDACTED] cannot participate.
- Scouts cannot participate if their Troop Leader does not agree to participate.
- Scouts with an existing condition that prohibits them from participating in their normal Scout meetings will not be able to participate.

Why has my child been asked to take part in this study?

Your child is being asked to participate in this research because they are a member of either the Girl Scouts or Cub Scouts and are between 8 and 11 years old. This is the recommended age to institute an obesity prevention program.

How long will the study take and how many subjects will take part?

The study will take six consecutive weeks and we will meet once a week for an hour each meeting. One Girl Scout troop has been asked to participate and up to 20 girls may participate. One Cub Scout troop has been asked to participate and up to 20 boys may participate. The KidsFit curriculum was created to use in the classroom setting, therefore, it is not desirable to institute the program in a larger than a traditional classroom setting to ensure the students all receive adequate attention.

What will my child be asked to do if he/she takes part in this study?

Your child will be asked to attend the six meetings. During the first meeting, he/she will be asked to complete a Nutrition and Physical Activity Test and Food Frequency and Lifestyle Habits Questionnaire so we can determine what he/she already knows about nutrition and get a baseline assessment of his/her nutrition behaviors. During each subsequent meeting, he/she will be asked to listen to the lesson that covers a different health topic each week. He/She will participate in the activities and occasionally try a new healthy snack. Your child will be given a pedometer (which is hers to keep after the study is over) and is encouraged to wear the tracker every day and document the reading each night. Your child will be given a calendar each week to document her accrued steps at the end of each day. He/She will be asked to complete the same Nutrition and Physical Activity Test and Food Frequency and Lifestyle Habits Questionnaire at the end of the study to assess how much knowledge was gained and how many health behaviors have changed.

Summary of what to expect each week:

During the first meeting, participants will complete the Nutrition and Physical Activity Pre-Test as well as the Food Frequency and Lifestyle Habits Questionnaire. Based on the demographic form that inquires about learning disabilities, the participants will be broken up into two small groups. Those who struggle completing the questionnaire on their own will be grouped together so these students as well as the others are unaware, they are being given more help. The Co-Investigator and team member will each lead a group and will read aloud each question and answers to each group. This will ensure the children have a clear idea of which answer they wish to circle. At this first meeting, each participant will also be given a pedometer to help count the number of steps they complete each day. Completing these assessments provide the Co-Investigator with a baseline understanding of what the children already know and what their food and lifestyle habits are before beginning the program. The children's scores will not be discussed among the group to prevent any child from feeling inferior to any other child due to a test score. The participants will also complete the Daily Food Log, which will be used to learn about the different food groups. This session combines the "New Beginnings" lesson and "Energy Balance" lesson. Participants will complete fun activities to learn how food fuels the body and how we can balance what we eat with activity. The participants will receive their pedometers at the end of the first meeting and are encouraged to document their steps at the end of each day while participating in this study.

During the second meeting, the "MyPlate: Fruits and Vegetables" and the "MyPlate: Grains and Protein" lessons will be discussed. The participants will hand in their fitness logs for the past week and then complete their Daily Food Log. We will discuss the 5 food groups as well as what counts as a serving of fruits and vegetables. They will complete activities that focus on grains and proteins and how all the food groups fit into MyPlate.

The third meeting will focus on dairy and bone health, "MyPlate: Dairy" and "Dairy and Bone Health". They will hand in the fitness logs, we will review their food logs, and will make a smoothie for all participants to try. This entails discussing the role of each ingredient and how it relates to bone health.

The fourth meeting will also entail collecting the fitness log, and time will be spent discussing food labels and how to identify a serving size, calories, fat, salt and sugar. This lesson on "Food Label Investigation" teaches the participants how to read a food label and interpret what each part of the label means.

The fifth meeting will cover "Sugar and Breakfast Cereals" and "Fast Food and Fats" to discuss sugar, breakfast foods, as well as fast food and fats. They will turn in their fitness logs, review the food log, and the participants will discover how much sugar is in a food or beverage and how to select foods that contain less sugar. They will also learn how to choose healthier options from the menu at fast food restaurants and how to identify unhealthy, fatty foods.

During the sixth and last meeting “Healthy Habits for Life”, participants will describe how they have changed their eating habits because of KidsFit and will review the principles of making healthy choices, including exercise. They will turn in their fitness logs. The participants will break back into groups and retake the Nutrition and Physical Activity Post Test, as well as the Food Frequency and Lifestyle Habits Questionnaire. These will help determine the success of the program in educating and increasing behaviors that lead to improved health.

What happens if my child has a learning disability and needs help taking the Nutrition Test and Habits Questionnaire?

Parents will be asked to complete a Demographic Survey, Allergy and Learning Questionnaire before the study begins. This Questionnaire asks about your Child's age, grade, family income and ethnicity. It also asks about food allergies and learning disabilities, as well as how we can help your child if they need extra help learning. Based on this demographic form that inquires about learning disabilities, participants will be broken up into two small groups. Those who struggle completing the questionnaire on their own will be grouped together so these students as well as the others are unaware they are being given more help. The Co-Investigator and team member will each lead a group and will read aloud each question and the answers to each group. This will ensure the children have a clear idea of which answer they wish to circle.

What are the risks and/or discomforts my child might experience by taking part in this study?

There will be minimal potential risks to the participants. The potential minimal risks that participants may encounter include minor physical injuries that are unforeseen but may occur from program activities. These minor injuries may include, but are not limited to, accidental paper cuts from handling paper or doing a craft, falling when performing physical activity and accidental contact with furniture or other children during exercise activities. Rules and behavior guidelines will be discussed with the Scouts during the first meeting to help minimize these risks. Some activities include simple recipe making and participants are encouraged to try the snack. There is a risk that the participants will not enjoy the new food item. When food is involved, there is always a risk of the participants being allergic to a food item or choking. However, care will be taken regarding allergies based on the information gathered from parents about child's allergy. In addition, the Co-Investigator, Jennifer, is certified in Cardiopulmonary Resuscitation (CPR) and Pediatric Advanced Life Support (PALS). The other Co-Investigator, Tiffany, is certified in Cardiopulmonary Resuscitation (CPR) and Adult Cardiac Life Support (ACLS).

Another possible risk is developing a stigma if the participants family does not eat a lot of fruits and vegetables or cannot afford to buy them. During the study, participants will only discuss what they ate the day before to help them learn about food groups, their family's finances will not be discussed.

There is also a risk that an inadvertent loss of confidentiality may occur, but all steps to keep the data confidential will be taken. There is no personal information discussed during the sessions except the children write down what they ate the day before. It is alright if they choose to discuss their daily foods eaten outside of the group, this is not confidential information.

Psychological harm is also rare but includes participants believing they are participating in this study due to their weight or current eating habits. This project's goal is to increase knowledge and healthy eating behaviors to prevent the development of obesity and its associated health consequences. The participants will not be weighed at any time before or during this project. They may also feel disappointed that they did not achieve the most steps as determined by their weekly activity tracker log. Socially, participants may miss out on other events that may occur while they

attend meetings each week and may feel the meetings are a waste of time. There is also a chance that the participants will not receive any benefits from taking part in this study.

What are my alternatives if I do not want to take part in this study?

There are no alternative studies available. Your alternative is not to allow your child to take part in this study. Your child may participate in other activities as directed by her troop leader during this time.

How will I know if new information is learned that may affect whether I am willing to allow my child to stay in the study?

During the course of the study, you will be updated about any new information that may affect whether you are willing to allow your child to continue taking part in the study. If new information is learned that may affect your child after the study or their follow-up is completed, you will be contacted.

Will I receive the results of the research?

The Co-Investigator will meet with the troop leader, Scouts and Parents who are interested to share the aggregate results of the study once the data analysis is complete. The troop leader will also be provided with a description of the aggregate results to share with the parents of the troop members who were unable to attend the follow up meeting. All results will be aggregate data to protect confidentiality.

Will there be any cost for my child to take part in this study?

There is no cost to participate in the study.

Will my child be paid to take part in this study?

Your child will not be paid to participate in this study, but he/she will earn a patch for completion of the program and he/she is also allowed to keep the pedometer that will be given to him/her. As an incentive, participants will be given a pedometer at the beginning of the study that they may keep as an encouragement to engage in daily physical activity. As part of the KidsFit curriculum, there will be some group challenges and activities during certain meetings. Winners of these activities may receive prizes such as water bottles, measuring cups, and jump ropes. Participants will also receive a “badge” for their [REDACTED] uniform at the completion of the program. The badge will be a nutrition and fitness badge to display on their uniform symbolizing completion of an activity. The [REDACTED] will not receive a “badge” if they do not complete the study.

Who might benefit financially from this research?

The Co-Investigators will also meet with the creators of the KidsFit program at RWJBarnabas Health to present the aggregate results in hopes to improve the program for future use in different populations. There will be no raw data released to the RWJBarnabas Health team.

How will information about my child be kept private or confidential?

All efforts will be made to keep your child’s personal information confidential, but total confidentiality cannot be guaranteed. At the beginning of the project implementation phase, all participants will be assigned a number. The names and identifying numbers for participants will be documented in an excel document that will be stored on the Co-Investigator’s password and fingerprint locked computer. The Consent, Assent and Demographic Questionnaires are the only documents that have identifying information on them. All handouts, test questionnaires, and Daily Food Logs utilized in the program will only contain the participant’s assigned project number for confidentiality.

This excel file and the SPSS files used for data analysis with all the non-identifiable information will both be locked in a password and fingerprint protected computer only known and in possession of the Co-Investigator. All the Consents, Assents, and Demographic paperwork that have

identifiable information, as well as the documents with non-identifiable information will be kept in a locked safe in the Co-Investigators home until completion of the study.

What will happen to my child's information collected for this research after the study is over?

Upon completion of the study, all questionnaires, documents collected during the study, Consent, Assent and Demographic Forms will be personally driven by the Co-Investigator to the Primary Investigator's office at Rutgers. These forms will be kept in a locked cabinet in the Primary Investigator's locked office within the Rutgers Newark Nursing Department. The excel file that contains the names and numbers assigned to the participants as well as the SPSS files with the data analysis will be transferred to an encrypted USB drive and that will have a protected password. The USB will also be personally driven by the Co-Investigator to the Primary Investigators office to store in her locked office with all the other documents. All the documents on the encrypted USB will be opened with a password only known to the Primary and Co-Investigator. Unauthorized users will not have access. In addition, the files will be deleted from the Co-Investigators personal computer. All the documents delivered to the Primary Investigators office as well as the USB drive will remain in the Primary Investigators office for six years as per the Institutional Review Board guidelines. After this time, the documents will be shredded, and the USB will be destroyed with a hammer by the Primary Investigator. The broken and damaged pieces will then be discarded.

What will happen if I do not wish my child to take part in the study or if I later decide that I do not wish my child to stay in the study?

It is your choice whether your child takes part in this study. You may choose to have your child take part, not to take part or you may change your mind and withdraw your child from the study at any time.

If you do not want your child to enter the study or decide to stop taking part, their relationship with the study staff will not change, and he/she may do so without penalty and without loss of benefits to which your child is otherwise entitled.

You may also withdraw your permission for the use of data already collected about your child, but you must do this in writing to the primary investigator. Any data that has already been sent to KidsFit or to the Data Coordinating Center cannot be withdrawn because there may not be any identifiers with the data.

Who can I call if I have questions?

If you have questions about your child taking part in this study or if you feel your child may have suffered a research related injury, you can call the Primary Investigator, Dr. Ganga Mahat, (973) 353-3830 or the Co-Investigators: Jennifer Olas, [REDACTED] Tiffany Meng [REDACTED]

PERMISSION (Authorization) TO USE OR SHARE HEALTH INFORMATION THAT IDENTIFIES YOUR CHILD FOR A RESEARCH STUDY

The next few paragraphs tell you about how investigators want to use and share identifiable health information from your child's Demographic Survey, Allergy and Learning Questionnaire in this research. Their information will only be used as described here or as allowed or required by law. If you sign this consent form, you agree to let the investigators use your child's identifiable health information in the research and share it with others as described below. Ask questions if there is something you do not understand.

What is the purpose of the research and how will my child's information be used?

Your child is being invited to take part in this research study which is described at the beginning of this form. The purpose of collecting and using his/her Allergy information is to keep her safe during the research study and the learning questionnaire is used to help ensure he/she is comfortable answering the questionnaire to determine how much he/she has learned.

What information about my child will be used?

- Any documented allergies will be used to ensure that allergen is not present at any meetings
- Any learning disabilities (if present) will be used to help the research team know how to help your child answer the questions asked during the study.

Who may use, share or receive my child's information?

The research team may use or share your child's information collected or created for this study with the following people and institutions:

- Rutgers University Investigators involved in the Study

Those persons or organizations that receive your child's information may not be required by Federal privacy laws to protect it and may share your information with others without your permission, if permitted by the laws governing them.

Will I be able to review my child's research record while the research is ongoing?

No. We are not able to share information in the research records with you until the study is over. To ask for this information, please contact the Principal Investigator, the person in charge of this research study.

Do I have to give my permission?

No. You do not have to permit use of your child's information. But, if you do not give permission, your child cannot take part in this study. (Saying no does not stop your child from getting medical care or other benefits s/he is eligible for outside of this study.)

If I say yes now, can I change my mind and take away my permission later?

Yes. You may change your mind and not allow the continued use of your child's information (and to stop taking part in the study) at any time. If you take away permission, your child's information will no longer be used or shared in the study, but we will not be able to take back information that has already been used or shared with others. If you say yes now but change your mind later for use of your child's information in the research, you must write to the researcher and tell him or her of your decision: You may contact Jennifer Olas at [REDACTED] or Tiffany Meng at [REDACTED]

How long will my permission last?

Your permission for the use and sharing of your child's health information will last until the study is complete.

PARENTAL PERMISSION FOR CHILD

I have read this entire form, or it has been read to me, and I believe that I understand what has been discussed. All of my questions about this form or this study have been answered.

I am the [] parent or [] legal guardian of _____ (name of child) and I agree for my child to take part in this research study.

Subject/Child's Name (Print): _____

Parent or Legal Guardian Name (Print): _____

Parent or Legal Guardian Signature: _____ Date: _____

Signature of Investigator/Individual Obtaining Consent:

To the best of my ability, I have explained and discussed the full contents of the study including all of the information contained in this consent form. All questions of the research subject and those of his/her parent or legal guardian have been accurately answered.

Investigator/Person Obtaining Consent Name (Print): _____

Signature: _____ Date: _____

Appendix F

Adult Consent to Complete Demographic Questionnaire



Rutgers, The State University of New Jersey
65 Bergen Street-Room 1126
Newark, NJ 07107-3001

www.nursing.rutgers.edu
Phone: (973) 972-4307
Fax: (973) 972-8947

ADULT CONSENT TO COMPLETE DEMOGRAPHIC QUESTIONNAIRE

TITLE OF STUDY: A Childhood Obesity Prevention Project: Implementation of the KidsFit Program Among School-aged Scouts to Increase Knowledge and Behaviors related to Nutrition and Exercise.

Principal Investigator: Dr. Ganga Mahat, EdD. RNBC

Co-Investigators: Jennifer Olas RN-BC, MSN, (Pediatric Nurse Practitioner, Doctor of Nursing Practice student); Tiffany Meng RN, BSN (Pediatric Nurse Practitioner, Doctor of Nursing Practice student)

Team Member: Kimberly Sacoto (Undergraduate Nursing Student)

Who is conducting this research study?

Dr. Ganga Mahat is the Principal Investigator of this research study. Jennifer Olas and Tiffany Meng are the Co-Investigators. Jennifer and Tiffany are Doctor of Nursing Practice students at Rutgers, The State University of New Jersey, School of Nursing. The Co-Investigators have the overall responsibility for the conduct of the study. However, there are often other individuals who are part of the research team. Kimberly Sacoto is a team member and an undergraduate nursing student at Rutgers, The State University of New Jersey, School of Nursing; she may be helping with meetings and data analysis.

Dr. Ganga Mahat, EdD. RNBC may be reached at [REDACTED]
Jennifer Olas MSN, RN may be reached at [REDACTED]
Tiffany Meng BSN, RN may be reached at [REDACTED]

The Co-Investigators or another member of the study team will also be asked to sign this informed consent. You will be given a copy of the signed consent form to keep.

Why is this study being done?

This research study is being done because it is a requirement for the Co-Investigators, Jennifer Olas and Tiffany Meng, to complete a Doctor of Nursing Practice Project for their degree. Therefore, this particular study is being done to see if the KidsFit program will help increase children's knowledge and behaviors on topics related to nutrition and physical activity. We hope to identify a program that is beneficial in teaching children proper nutrition and exercise habits to help prevent childhood obesity. It is being done in a [REDACTED] and [REDACTED] troop to see if implementing this program is successful among a small group of peers. We're inviting you to complete a demographic survey that provides information about your child's age and grade, as well as your family income and ethnicity.

Who may take part in completing this questionnaire and who may not?

Any parent whose child is participating in the KidsFit and Scouts study is invited to participate in the demographic survey presented. If your child is not participating in the KidsFit and Scouts study, then you may not complete the demographic questionnaire.

Why have I been asked to complete this questionnaire?

You have been asked to complete this demographic questionnaire because this demographic data will be analyzed as part of descriptive statistics with the data gathered for the KidsFit and Scouts Study.

Rutgers, The State University of New Jersey

How Will Information About Me Be Kept Private or Confidential?

All efforts will be made to keep your personal information in your research record confidential, but total confidentiality cannot be guaranteed. All the Consents, Assents, and Demographic paperwork that have identifiable information, as well as the documents with non-identifiable information will be kept in a locked safe in the Co-Investigators home until completion of the study. Upon completion of the study, all questionnaires, documents collected during the study, Consent, Assent and Demographic Forms will be personally driven by the Co-Investigators to the Primary Investigator's office at Rutgers. These forms will be kept in a locked cabinet in the Primary Investigator's locked office within the Rutgers Newark Nursing Department. All the documents delivered to the Primary Investigators office will remain in the Primary Investigators office for six years as per the Institutional Review Board guidelines. After this time, the documents will be shredded.

Will anyone else have access to this information?

The descriptive statistics will be shared with the KidsFit Program Coordinators at the completion of the project. No identifying information will be shared. They will not know the names of participants or any identifying characteristics.

What are the risks of completing this demographic questionnaire?

There is a risk that an inadvertent loss of confidentiality may occur, but all steps to keep the data confidential will be taken. All the consents, assents, and demographic paperwork that have identifiable information, as well as the documents with non-identifiable information will be kept in a locked safe in the Co-Investigators home until completion of the study.

Are There Any Benefits to Me If I Choose to complete this questionnaire?

No, there are no benefits to take part in completing this survey.

What will happen to my information collected for this research after the study is over?

Upon completion of the study, all questionnaires, documents collected during the study, consent, assent and demographic forms will be personally driven by the Co-Investigators to the Primary Investigator's office at Rutgers. These forms will be kept in a locked cabinet in the Primary Investigator's locked office within the Rutgers Newark Nursing Department. All the documents delivered to the Primary Investigator's office will remain in the Primary Investigators office for six years as per the Institutional Review Board guidelines. After this time, the documents will be shredded.

If I don't complete the demographic questionnaire, can my child still participate in the study?

Yes, your child may still participate in the study if you do not complete the demographic portion of the survey. We will, however, still ask you to complete the allergy information and learning disability section of the survey for your child's safety and benefit. Simply put a line through the demographic questions and answer the questions about your child's allergies and learning disabilities.

What will happen if I complete the Demographic Questionnaire, but later decide I do not wish my child to take part in the study?

If you complete the Demographic Survey but then decide you do not want your child to participate, your demographic survey will be destroyed/shredded.

You may also withdraw your permission for the use of data already collected about your child, but you must do this in writing to the primary investigator. Any data that has already been sent to KidsFit or to the Data Coordinating Center cannot be withdrawn because there may not be any identifiers with the data.

Who can I call if I have questions?

If you have questions about completing the Demographic Questionnaire you can call the Primary Investigator, Dr. Ganga Mahat, [REDACTED] or the Co-Investigator: Jennifer Olas, [REDACTED]; Tiffany Meng [REDACTED]

Agreement to Participate in Demographic Survey**Subject Consent:**

I have read this entire consent form, or it has been read to me, and I believe that I understand what has been discussed. All of my questions about this form and the demographic survey have been answered. I agree to complete this Survey.

Subject Name (Print): _____

Subject Signature: _____ Date: _____

I am the ☐ parent or ☐ legal guardian of _____ (name of child) and I agree to complete the Demographic Survey.

Signature of Investigator/Individual Obtaining Consent:

To the best of my ability, I have explained and discussed all the important details about the study including all of the information contained in this consent form.

Investigator/Person Obtaining Consent Name (Print): _____

Signature: _____ Date: _____

Appendix G

Assent to Take Part in Research Study



Rutgers, The State University of New Jersey
65 Bergen Street-Room 1126
Newark, NJ 07107-3001

www.nursing.rutgers.edu
Phone: (973) 972-4307
Fax: (973) 972-8947

ASSENT TO TAKE PART IN A RESEARCH STUDY

TITLE OF STUDY: A Childhood Obesity Prevention Project: Implementation of the KidsFit Program among School-aged Scouts to Increase Healthy Nutrition and Exercise Behaviors

Principal Investigator: Dr. Ganga Mahat, EdD. RNBC

Co-Investigator: Jennifer Olas MSN, RN; Tiffany Meng BSN, RN

Team Member: Kimberly Sacoto, Undergraduate nursing student/

Who are you and why are you meeting with me?

Our names are Jennifer and Tiffany; we are Doctor of Nursing Practice (DNP) students at the Rutgers, The State University of New Jersey, School of Nursing. We are the Co-Investigators on a DNP Student Project. Dr. Ganga Mahat is the Principal Investigator. Sometimes other people will work with us. In this case, you will see one of our helpers, Kimberly Sacoto, who will be helping me with this project. We would like to tell you about a study that involves children like yourself. We would like to see if you would like to participate in this study.

What is this research study about?

We are doing this study to see if the KidsFit program will help you learn more about nutritious foods and how to live a healthier life. In the future, if this program is successful, we hope that it can be used to help teach other kids about being healthy too.

Why have I been asked to take part in this study?

You have been asked to take part in this study because you are either a [redacted] or [redacted] member between the ages of 8 and 11 years old.

Who can be in this study? And who may not? How long will the study take?

Any girl/boy in your [redacted] can participate as long as they speak and understand English and are between the ages of 8 and 11. If you are able to go to your regular scout meetings and participate there, then you can participate in this study. If you are in a wheelchair or have a physical disability but you still are able to participate in regular [redacted] meetings, then you can participate in the activities of this study. You will also be given a pedometer (which is like a watch that counts how many steps you take) to see how many steps you take each day, but if you're in a wheelchair you don't have to use it. If you're not in a wheel chair, we would like you to wear the pedometer every day and write down how many steps you did at the end of the day. Don't worry, we'll give you a paper to write them down on and then you bring it back to us each week.

We will meet once a week, starting in the fall for 6 weeks. Each meeting should last about 1 hour. You have to attend all the meetings and stay for the whole time to finish the study and get a patch for your uniform.

Kids who can participate:

- If you're a girl between the ages of 8 and 11 years old and you're a [redacted] then you can participate.
- If you're a boy between the ages of 8 and 11 years old and you're a [redacted] then you can participate
- You must be able to speak and understand English to participate. (or else we can't talk to each other, because we only know how to speak English)
- Your [redacted] Leader must agree to participate
- If you have no difficulty attending and participating in your normal Scout Meetings, then you can participate

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- If you are in a wheelchair or have a physical disability but you still are able to participate in regular Scout meetings, then you can participate in the activities of this study.

Kids who can't participate:

- If you are younger than 8 or older than 11, you cannot be in this study.
- If you are not in the [REDACTED] then you cannot participate.
- If your Troop Leader does not want your troop to participate, then you can't.
- If you are not able to go to your regular meetings and participate then you cannot participate in this study.

What will happen to me if I choose to be in this study?

First, you will be asked to complete a test and a questionnaire, which is a paper with some questions on it to answer. (don't worry, none of the test grades count!) This is so I can understand what you already know about your health. Then we will discuss one healthy topic each week. We'll talk about things such as how fruits and vegetables work in your body, bone health, how to read a food label, and how to choose healthy options when eating out. Your only homework in this study is to write down the number of steps shown on your pedometer every night. At the end of the study, you will be asked to complete the same test and questionnaire that you took in the beginning.

What if I have trouble reading or need help answering questions for the Test and Questionnaire?

Your Parents will let us know if you need extra help answering all these questions, which is fine! There are a lot of them to read and answer! When the time comes to answer the questions, we are going to split everyone into two small groups, this way we can make sure everyone is able to answer the questions. Your teacher, Ms. Jen or Ms. Tiffany, will read each question and the answers to everyone in your group, so you know which answer you want to circle. No other student will know if your parent told us you need extra help, so don't worry. We just want to make sure you are able to participate!

Will I get better if I am in the study?

You may learn more about being healthy as you grow up, but there is also a chance that you won't benefit from it at all or learn anything new.

Can something bad happen to me or will I feel uncomfortable if I take part in this study?

Sometimes things happen to people in studies that may hurt them or make them feel bad. These are called risks. The only risks in this study is accidental small injuries that may result from our class activities – for example, paper cuts and bumping into your friend. During our recipe making activities, you may not enjoy something you taste -and that's okay! You don't have to finish anything you do not like. If you are allergic to any foods, you can get sick if you eat them. Please tell us if you have any allergies and what they are before you eat or taste anything. If you find that the information and activities in this class are boring to you, you may feel like you are wasting your time. We will do everything we can to make this fun!

Another risk is that people who aren't involved with this study may see the answers to your questions or know that you participated in it. There isn't anything bad that can happen with them knowing, except your privacy is invaded if you didn't want anyone to know. But we are going to work really hard to keep all your information hidden and secure. If you want to talk to your friends or family about it, that's fine too!

What if I don't want to take part in this study?

You don't have to be in this study if you don't want to. No one will get angry or upset if you don't want to be in the study. Just tell us. And remember, you can change your mind later if you decide you don't want to be in the study anymore.

Will I be given anything to take part in this study?

You will receive a pedometer for being in this research study and we want you to keep it so you can still use it after the study is over. You will also receive a "Physical Fitness/nutrition" badge after this study to add to your uniform. If you do not participate, you will not receive this badge that shows you participated in the study.

What if I have questions?

You can ask questions at any time. You can ask now. You can ask later. You can talk to me or you can talk to someone else at any time during the study. Here are the telephone numbers to reach us:

Primary Investigator: Dr. Ganga Mahat, EdD, RNBC [REDACTED]

Co-Investigator: Jennifer Olan MSN, RN [REDACTED]

Team member: Tiffany Meng BSN, RN [REDACTED]

What are my rights if I decide to take part in this study?

You may ask questions about any part of the study at any time. Do not sign this form unless you have had a chance to ask questions and have been given answers to all of your questions and agree to take part in the study.

I have read this entire form, or it has been read to me, and I believe that I understand what has been talked about. All of my questions about this form and this study have been answered.

I agree to take part in this research study.

Subject Name: _____

Subject Signature: _____ Date: _____

Signature of Investigator or Responsible Individual:

To the best of my ability, I have explained and discussed the full contents of the study, including all of the information contained in this consent form. All questions of the research subjects and those of his/her parent(s) or legal guardian have been accurately answered.

Investigator/Person Obtaining Consent: _____

Signature: _____ Date: _____

Appendix H

KidsFit 10-Week Schedule

3-5 Lessons at a Glance

Session	Topic	Materials Needed All handouts and activity sheets are included the KidsFit Workbooks	Take Home Recipe
1	New Beginnings	Food Frequency and Pretest Questionnaire, Food log and the photo release/food allergy form	Photo release/ Food allergy form, Snake Snacks
2	Bodies in Balance	Food logs and energy source matchup, The calorie and energy cycle, energy balance and How do we maintain a healthy body weight?	Tropical Trail Mix
3	MyPlate: Fruits and Vegetables	Food logs, MyPlate image, Healthy Plate Planner, Cafeteria Challenge, What is Wrong with this Plate, Eat the Colors of the Rainbow.	Cheesy Veggie Quesadillas
4	MyPlate: Grains and Protein	Food logs, What are Grains? Find the Grains and What are protein foods word search. 5 grain food packages with ingredients listed. (Cereals, oatmeal, bread products, etc)	Stovetop Popcorn
5	MyPlate: Dairy	Food logs, What are Dairy Foods word scramble, EGGsperiment EGGsperiment materials: plastic cup with lid, marker, eggshells, vinegar. Images of MyPlate, images of bone builders and bone breakers	Chocolate Muscle Milk
6	Dairy and Bone Health	EGGsperiment handout and materials from previous week, Smoothie Recipe, Smoothie Ingredients: Calcium fortified OJ, frozen blueberries, fresh spinach, bananas, milk, blender, measuring cup, large spoon, small 3 oz cups, paper towels. Images of MyPlate images of bone builders and bone breakers	Blue & Green Breakfast Smoothie
7	Investigating Food Labels	Food label game (PowerPoint) Food label worksheets, Smart board or projector.	Banana Bread Granola
8	Sugar and Breakfast Foods	Sugar packets, measuring spoons. Nutrition Facts for cereals or actual cereal boxes (15 boxes or more)	Overnight Oats
9	Fast Food	Fast food worksheet with menu and nutrition facts, Crisco/ butter, tablespoon, burger bun.	Garden Fresh Whole Wheat Pizza
10	Healthy Habits for Life	Food Frequency, Pre and Post questionnaire. Air popper (optional)	Black Bean Brownie Bites

Appendix I

Week 1 Lesson Plan

Grades 3-5	Session 1	
Subject	Nutrition	
Class Title	New Beginnings	
Time	50 minutes	
NJCCCS	2.1 Wellness: 2.1.4.A.1, 2.1.4.A.2	
Instructional Objective	Learner will be able to restate the goals and objectives of KidsFit during class discussion. Learner will complete the FFQ, pretest and week 1 food log.	
Assessment	Question and answer on health behaviors as they relate to our physical wellbeing. Discussion of the short-term and long-term effects of positive and negative health behaviors. Explanation and discussion of KidsFit, class activities, food logs, goals, homework and family connection.	
Instructional Procedure	<p>Opening: Ask class, what does it mean to be healthy? What does it mean to be unhealthy?</p> <p>Discussion questions: What are some healthy and unhealthy behaviors or habits? Why should we make healthy food choices? Why should we exercise? What happens if we don't take care of our bodies?</p> <p>Guided Activity: Food Log: Instruct students to write down what they ate yesterday. Students can attempt to record what food groups they ate from, or leave it blank until this topic is covered.</p> <p>Independent Activity: FFQ and pretest</p> <p>Closing: Collect completed FFQ and pretest. Review expectations of subsequent classes. Distribution of KF books and completion of food log at the beginning of every class (students are to record what they ate yesterday at the beginning of each class)</p>	
Questions	<p>Knowledge Define health</p> <p>What are healthy habits? What are unhealthy habits?</p>	<p>Application Give an example of an instance where someone's behavior effected their health</p> <p>Why is it important to have healthy eating and exercise habits?</p>
Homework	N/A	
Materials	FFQ, Pretest, Food log. Image of MyPlate and food group examples.	
Parent Handout	Food allergy form and photo release form (<i>if not previously completed</i>).	

Source: (RWJBarnabas Health, 2019)

Appendix J

Week 2 Lesson Plan

Grades 3–5	Session 2			
Class Title	Energy Balance			
Time	50 minutes			
NJCCCS	2.1 Wellness: 2.1.4.A.1, 2.1.4.A.2, 2.1.4.B.1, 2.1.8.B.2 2.6 Fitness: 2.6.4.A.1, 2.6.4.A.3, 2.6.4.A.4			
Instructional Objective	Learner will be able to: <ol style="list-style-type: none"> 1. Understand why we need to eat food. 2. Comprehend that the calories in food provides our body with energy. 3. Define calories— What are they? Where do we find them? Why do we need them? 4. List examples of physical activity. 5. State how much exercise we should get each day. 6. Explain the consequences of eating too little or too many calories. 			
Assessment	Formative: Question and answer as related to calorie intake and calorie expenditure. Summative: Completion of calorie and energy balance activities.			
Instructional Procedure	<p>Opening: Ask students, where do we get energy from? When do we use energy? Allow students to raise their hands and provide responses.</p> <p>Discuss Energy In</p> <ul style="list-style-type: none"> • Why do we eat food? Where do we get energy from? Put the word “Calorie” on the board and ask students if they have ever seen or heard of this word. Allow students to respond. Next have students do the energy source match up. Recap: We get energy from the food we eat which contains calories. Calories are our energy source like electricity is a light’s energy source. • Do all foods contain the same amount of calories? Show students 3 foods (Images or food models of low, med, high calorie) Ask students to rank the items from least amount of calories to the greatest amount. What happens if we do not eat any calories? <p>Energy Out</p> <ul style="list-style-type: none"> • What types of activities do we need energy for? Allow students to respond. Do all activities use the same amount of calories? <p>The Calorie and Energy Cycle</p> <ul style="list-style-type: none"> • Have six students read out the steps of the calorie and energy cycle. <p>Energy Balance</p> <ul style="list-style-type: none"> • Have students add up the calories on energy balance sheet. Is the scale balanced? Tell students the calories we eat do not just disappear if we don’t use them. So what happens to the “extra” calories we eat that we do not use or burn? <p>Guided Activity: Have students stand up. Tell them we are now going to burn off the calories from a few snacks. Refer to chart in KF book. Jog for 60 seconds to burn off a breath mint. Have students read how long they would have to jog to burn off the other foods listed. (Option—Identify other snacks and the associated activity needed to burn them off)</p> <p>Closing: Have students fill in the blanks. We get energy from _____. Calories are in the _____ we eat. What activities burn calories? What happens if we eat more calories than we burn?</p>			
Questions	Knowledge <ol style="list-style-type: none"> 1. Memorize calorie equals energy. 2. List activities that use energy. 3. Identify where calories come from. 	Comprehension <ol style="list-style-type: none"> 1. Explain what happens when we don’t eat enough calories. 2. Explain what happens when take in more energy than we burn. 3. Rank foods in calorie order. 	Application <ol style="list-style-type: none"> 1. How are calories and energy related to obesity? 	Synthesis <ol style="list-style-type: none"> 1. What solutions would you suggest for someone trying to lose weight? 2. What solutions would you suggest for someone trying to gain weight (muscle)?
Homework	N/A			
Materials	KidsFit lesson book, Food logs, 1 pound of fat model, Food models, 3 food Nutrition facts labels.			
Parent Handout	Five, Zero One, Two = Steps to a Healthier You, Tropical Trail Mix recipe			

Appendix K

Week 3 Lesson Plan

Grades 3–5	Session 3		
Subject	Nutrition		
Class Title	MyPlate: Fruits and Vegetables		
Time	50 minutes		
NJCCCS	2.1 Wellness Nutrition 2.1.4.B.1, 2.1.4.B.2, 2.1.6.B.1, 2.1.6.B.2, 2.1.8.B.2		
Instructional Objective	Learner will be able to: <ol style="list-style-type: none"> 1. Name the 5 food groups. 2. Identify foods that fit into the fruits and vegetable groups. 3. State what counts as serving of fruits and vegetables and what does not count as a serving. 4. State how many fruits and vegetables we should eat every day. 		
Assessment	Summative: Completion of food log, cafeteria challenge and rainbow activity		
Instructional Procedure	<p>Do Now: Food Log (yesterday's intake)</p> <p>Guided Activity: Class discussion: How do we make a healthy plate? What types of foods fit on a healthy plate? Review food groups and provide examples of foods that fit into each group. Have students share their food log and try to determine the food groups they ate from for each meal. Write on the board the 5 food groups. As students read out loud their food logs, write down the foods they ate underneath the appropriate food group. (Optional use: the associated colored chalk or colored dry erase markers to write the food groups.) Discuss what food groups we typically eat the most of and which ones we eat the least of. Ask students, why do we need to eat fruits and vegetables? Inform students that different fruits and vegetables contain different nutrients. The more colors, we eat the more nutrients we get. How many do we need to eat? What counts as a serving? Discuss serving sizes of fruits and vegetables. Use the How to Choose Healthy handout to explain portion sizes.</p> <p>Independent Activity: Cafeteria Challenge</p> <p>Group Activity: Eat the colors of the rainbow Time students and have them complete rainbow activity. (Optional: reward team who thinks of the most fruits and vegetables.)</p> <p><i>(If time, do a brief review of Week 1 lesson)</i>—What are calories and where do they come from? What foods provide calories?</p> <p>Closing: Review food groups. Review what counts as serving. Review why fruits and vegetables are important.</p>		
Questions	Knowledge What are the 5 food groups? What food group do the foods we eat belong in? What counts as a serving?	Comprehension Why do we need to eat fruits and vegetables?	Synthesis How can we create a healthy plate?
Homework	N/A		
Materials	Images of MyPlate and food group examples (pictures or food models)		
Parent Handout	Healthy Snacks for home and school, Cheesy Veggie Quesadillas recipe		

Appendix L

Week 4 Lesson Plan

Grades 3-5	Session 4		
Subject	Nutrition		
Class Title	MyPlate and Grains and Protein		
Time	50 minutes		
NJCCCS	2.1 Wellness 2.14.B.1, 2.1.4.B.2, 2.1.6.B.1, 2.1.6.B.2, 2.1.8.B.2		
Instructional Objective	Learner will be able to: <ol style="list-style-type: none"> 1. Identify which foods belong in the grains group and which ones belong in the protein group. 2. Identify what counts as a serving of grains and what counts as a serving of protein. 3. Identify what section/percentage of the plate should be grains and what section/percentage should be protein. 4. List different types of common grains. 5. Identify a whole grain based on the package. 		
Assessment	Summative: Completion of food log, Discussion on Grains and Protein		
Instructional Procedure	<p>Do Now: Food Log (yesterday's intake) Only record intake not food groups.</p> <p>Guided Activity: <i>What are grains?</i> Have students come up with four foods that are made from the most common grains(wheat, oats, corn and rice)</p> <p>Group Activity: <i>Find the Grains.</i> Divide students in groups of 2. Hand out food labels and have students find and record the type of grains in the food. Students are looking for the words: wheat, rice, oats, barley or corn.</p> <p>Once each group has at least 3 foods discovered, have each group review one grain food they investigated.</p> <p>Transition to protein foods discussion, or have students complete the What are protein foods word search for homework.</p> <p>Protein foods can either come from animals or plants. The reason they are in the protein group is because these foods contain a lot of the nutrient protein. Do you know what we need protein for? Allow students to respond. Our bodies are made up of proteins, for example our organs, muscles, hair skin and even nails are made up of protein. Protein is a very important nutrient for our body but we need to make sure we eat low-fat or lean proteins. For example, grilled chicken, and baked fish are much lower in fat than burgers and fried chicken, which have a lot of fat inside.</p> <p>All foods that come from animals belong in the protein group, with one exception—dairy foods, which have their own food group. Let's complete this protein word search as a group to find out what foods have protein in them.</p> <p>Independent Activity: Have students go back and identify the grain foods and the protein foods they ate from their food log. Ask students if anyone ate any protein foods that come from plants.</p> <p>Closing: How much of our plate should we fill with grains and protein?</p>		
Questions	Knowledge What is a grain? What are proteins? What counts as a serving?	Comprehension Why is protein important? Why are grains important?	Application How can we create a healthy plate of grains and protein? How do we know if it is a whole grain?
Homework	N/A		
Materials	Images of MyPlate and food group examples. At least 15 grain food packages with ingredients listed.		
Recipe	Stovetop Popcorn		

Appendix M

Week 5 Lesson Plan

Grades 3-5	Session 5		
Subject	Nutrition		
Class Title	MyPlate: Dairy		
Time	50 minutes		
NJCCCS	2.1 Wellness: 2.1.4.C.1, 2.14.B.1, 2.1.4.B.2 2.2 Integrative Skills: 2.2.8. E.1		
Instructional Objective	Learner will be able to: 1. Identify foods that belong in the dairy group. 2. Identify calcium as an important nutrient that makes up our bones and helps make them strong. 3. Identify foods that weaken our bones. 4. Identify other foods that contain calcium and Vitamin D that also help build strong bones.		
Assessment	Summative: Completion of food log, What are Dairy Foods sheet		
Instructional Procedure	Do Now: Food Log (yesterday's intake) Record both food intake and food groups. Guided Activity: Discuss the dairy group. Explain that dairy foods are made from milk and contain the nutrient calcium. Using visuals (food models and or pictures) show students examples of dairy foods that help build strong bones and teeth. Some foods and drinks can weaken or "break" them (caffeinated foods, salty foods, acidic foods: ex - soda, coffee, chips, fast food). Class activities: What are Dairy Foods? Bone breaker experiment. Teacher to do experiment. Students record their expectations. Closing: Review dairy foods, bone builders and bone breakers.		
Questions	Knowledge What are dairy foods? Where do we get calcium and Vitamin D from?	Comprehension Why are dairy foods important?	Application How do we strengthen our bones? How can we avoid weak bones?
Homework	N/A		
Materials	Images of MyPlate and food group examples. EGGSperiment: plastic cup with lid, marker, egg shells, vinegar.		
Parent Handout and Recipe	Calcium and Kids Chocolate Muscle Milk recipe		

Source: (RWJBarnabas Health, 2019)

Appendix N

Week 6 Lesson Plan

Grades 3–5	Session 6		
Subject	Nutrition		
Class Title	Dairy and Bone Health		
Time	50 minutes		
NJCCCS	2.1 Wellness: 2.1 Wellness: 2.1.4.C.1, 2.14.B.1, 2.1.4.B.2 2.2 Integrative Skills: 2.2.8. E.1		
Instructional Objective	Learner will be able to: <ol style="list-style-type: none"> 1. Identify foods that belong in the dairy group. 2. Identify calcium as an important nutrient that makes up our bones and helps make them strong. 3. Identify other foods that contain calcium and Vitamin D that also help build strong bones. 4. Identify foods that weaken our bones. 		
Assessment	Summative: Completion of food log, Week 2 observations of EGGsperiment.		
Instructional Procedure	<p>Do Now: Food Log (yesterday's intake) Record both food intake and food groups.</p> <p>Discussion: Review the dairy group. Review the nutrients calcium and Vitamin D. Review the benefits of low-fat dairy. Review the foods that can weaken our bones.</p> <p>Guided Activity: Week 2 EGGsperiment. Allow students to observe the egg shells and record their observations. Pick up the egg shells with a tong or fork to show the texture and thinness of the egg shells. Students are to record their observations.</p> <p>Bone Building Smoothie: Discuss the role of each ingredient in the smoothie and how it relates to bone health. Make smoothie for students to have a small sample. Provide recipe to take home.</p> <p>Closing: Review healthy dairy foods, bone builders and bone breakers.</p>		
Questions	Knowledge What are dairy foods? Where do we get calcium and Vitamin D from?	Comprehension Why are dairy foods important? Why should we eat low fat dairy?	Application How do we strengthen our bones and teeth? What snacks can we avoid that weaken bones and teeth? What healthy snacks can we eat to strengthen our bone and teeth?
Homework	N/A		
Materials	Images of MyPlate and food group examples. Smoothie Ingredients: Calcium-fortified OJ, frozen fruit (strawberries or blueberries) fresh spinach, bananas, milk,blender, measuring cup (optional), Large spoon, Small 3 oz cups, paper towels.		
Parent Handout and Recipe	Getting Calcium Every Day and Blue & Green Breakfast Smoothie recipe		

Appendix O

Week 7 Lesson Plan

Grades 3–5	Session 7		
Subject	Nutrition		
Class Title	Food Label Investigation		
Time	50 minutes		
NJCCCS	2.1 Wellness: 2.1.4. A.2, 2.1.6.A.1, 2.1.6.B.4, b. 2.2.8. E.		
Instructional Objective	Learner will be able to: <ol style="list-style-type: none"> 1. Identify the serving size 2. Identify the number of servings per container. 3. Restate the role of calories, fat, salt and sugar in our body. 3. Identify the amount of calories, fat, salt and sugar in one serving. 4. Calculate the amount of calories, fat, salt and sugar in 2 servings and in the whole package. 5. Explain the difference between the ingredients in a natural food and an artificial food. 		
Assessment	Summative: Completion of food log.		
Instructional Procedure	<p>Do Now: Food Log (yesterday's intake) Record both food intake and food groups.</p> <p>Guided Activity: Using a large poster or projected image of a food label allows the students to locate the serving size, calorie, fat, salt and sugar amounts. Explain the meaning of a percent daily value. Optional Dialogue: Percent Daily Value is kind of like our allowance. We are allowed a certain amount of fat and salt in a healthy diet. The percent daily value tells us what percent of our fat or salt allowance we are using by eating that food. For example, if Mom or Dad gave you 10 dollars to go to the corner store to buy a snack and you spend 5 dollars, what percent of your allowance did you spend? Now let's say you only have 10 dollars for food all day, would it be wise to spend half of your allowance for one snack? No! When looking at the Percent Daily Value, remember that you want to keep the percentage for fat and salt at 5% or lower. Discuss the difference between the grams of fat and salt and the Percent Daily Value.</p> <p>Independent activity: <i>Food label investigation</i></p> <p>Group Activity Option: Food Label game (projector/smart board needed, PowerPoint for food label game). Create teams of 2 or 3 students. Hand each student 5–10 blank pieces of paper or a small dry erase board and dry erase marker. Explain to students they are investigating the food label to identify what is unhealthy about it. Provide a key for the students to refer to on the board. For example, 6 grams or more is too much sugar. <i>More than 5% fat, saturated fat or sodium/salt is too high. More than 0 grams of trans fat is too high.</i></p>		
Questions	Knowledge What is a serving size? What do the servings per container tell us? What are calories used for? What does percent daily value mean?	Comprehension Explain the difference between grams of fat or salt and the percent daily value of fat or salt. Explain how much sugar is unhealthy.	Application Calculate the amount of calories; fat, salt and sugar are in a food. Identify whether or not a food choice is healthy based on the food label. Identify healthier, less processed snack options.
Materials	Large poster of food label or projected image of food label. Food label worksheets (appendix)		
Parent Handout and Recipe	Tips for the Nutrition Facts, Banana Bread Granola recipe		

Appendix P

Week 8 Lesson Plan

Grades 3–5	Session 8		
Subject	Nutrition		
Class Title	Sugar and Breakfast Cereals		
Time	50 minutes		
NJCCCS	2.1 Wellness: 2.1.4.B.1, 2.1.4.B.2 , 2.1.4.B.3 , 2.1.4.B.4, 2.1.4.C.1, 2.1.6.C.1 , 2.1.6.C.2, 2.2.4.B.1, 2.2.4.B.3, 2.2.4.B.4		
Instructional Objective	Learner will be able to: <ol style="list-style-type: none"> 1. Identify foods and beverages with high amounts of sugar. 2. Determine how much sugar a food or beverage contains. 3. Determine the amount of sugar per serving in a food or beverage. 4. Determine the amount of sugar in an entire package or beverage. 		
Assessment	Summative: Sugar Activity (Spotlight on Breakfast Cereals) Breakfast case study.		
Instructional Procedure	<p>Do Now: Food Log (yesterday's intake) Record both food intake and food groups.</p> <p>Guided Activity: Group discussion on sugar. What types of foods and beverages contain a lot of sugar? What can happen if we eat too much sugar?</p> <p>Independent Activities: Spotlight on Breakfast Cereal activity. Breakfast case study.</p> <p>Visual activity: Measure out the amount of sugar in the breakfast cereal examples. Rank the cereals from the least to the most amount of sugar.</p> <p>Closing: How can we eat less sugar? What are some healthier breakfast options?</p>		
Questions	Knowledge What foods are high in sugar?	Comprehension Why is too much sugar unhealthy?	Application What are some low-sugar breakfast ideas? What are low sugar beverages?
Homework	Read the amount of sugar in your cereal at home. Is there more than 6 grams of sugar in one serving?		
Materials	Sugar packets, measuring spoons. Nutrition Facts for cereals or actual cereal boxes		
Parent Handout	Overnight Oats		

Appendix Q

Week 9 Lesson Plan

Grades 3-5	Session 9		
Subject	Nutrition		
Class Title	Fast Food and Fats		
Time	50 minutes		
NJCCCS	2.1 Wellness: 2.1.4.B.1, 2.1.4.B.2 , 2.1.4.B.3 , 2.1.4.B.4, 2.1.4.C.1, 2.1.6.C.1 , 2.1.6.C.2, Integrative Skills: 2.2.6.B.1, 2.2.6.B.3, 2.2.6.B.4, 2.2.8. E. 2.2.4.B.1, 2.2.4.B.3, 2.2.4.B.4		
Instructional Objective	Learner will be able to: <ol style="list-style-type: none"> 1. Define the role of fats in our body. 2. List reasons why too much fat is unhealthy. 3. Identify unhealthy fatty foods. 4. Identify healthier options at fast food restaurants. 		
Assessment	Summative: Fast food worksheet		
Instructional Procedure	<p>Do Now: Food Log (yesterday's intake) Record both food intake and food groups.</p> <p>Guided Activity: Group Discussion on fast food. Dialogue: Fast food restaurants are everywhere, but should we be eating fast food every day? What is in fast food that makes it unhealthy for our bodies?</p> <p>Independent Activity: Have students complete the fast food worksheet. Then have students go back to the menu options to search for healthier lower fat and lower calorie options.</p> <p>Visual Option: Show students how much one of the student's fast food meals actually looks like using butter or Crisco. Grams of fat % 12 = tablespoons of butter or Crisco. Measure amount of butter or Crisco and put on an empty burger bun.</p> <p>Closing: How often is it ok to eat fast food? How can we order healthier when we do eat fast food?</p>		
Questions	Knowledge What is fat?	Comprehension Why is too much fat unhealthy?	Application How can we order healthier choices at fast food restaurants?
Homework	N/A		
Materials	Fast food worksheet with menu and nutrition facts, Crisco/butter, tablespoon, burger bun.		
Parent Handout	Tips for Dining out, Garden Fresh Whole Wheat Pizza		

Appendix R

Week 10 Lesson Plan

Grades 3–5	Session 10		
Subject	Nutrition		
Class Title	Healthy Habits for Life		
Time	50 minutes		
NJCCCS	2.1 Wellness: 2.1.2.A.1 , 2.1.2.B.1 , 2.1.2.B.2 , 2.1.2.B.3, 2.1.2.C.2, 2.1.2.C.3, 2.2.2.B.1, 2.2.2.B.2, 2.2.2.B.3, 2.2.2.B.4		
Instructional Objective	Learner will be able to: 1. Describe how they have changed their eating habits because of KidsFit. 2. Explain how they have used the lessons learned in class to help their family. 3. List the principle of making healthy choices: Exercise and Eat Right.		
Assessment	Summative: Post multiple choice questionnaire, Post FFQ, Yes/No Summary		
Instructional Procedure	Do Now: Food Log (yesterday's intake) Record both food intake and food groups. (optional) Independent Activity: Post multiple choice questionnaire, Post FFQ, Yes/No Summary questions. Students are to put their name on EVERY page of questionnaire and FFQ, and remove all three items from KidsFit books. Submit 3 items. Food activity: (Optional) Healthy snack for students. Example: healthy popcorn or smoothies.		
Questions	Knowledge N/A	Comprehension What are you doing to stay healthy? What do we need to keep our bodies healthy?	Application How have you used the lessons learned in class to help you family and friends?
Homework	N/A		
Materials	KidsFit books		
Parent Handout and Recipe	Black Bean Brownie Bites recipe		

Appendix S

Condensed Lesson Schedule for DNP Project

Condensed Lessons at a Glance

Session	Topic	Materials Needed	Take Home Recipe
1	New Beginnings Bodies in Balance	Food Frequency and Pretest Questionnaire, Food log and the photo release/food allergy form Food logs and energy source matchup. The calorie and energy cycle, energy balance and How do we maintain a healthy body weight?	Photo release/food allergy form, snake snacks Tropical Trail Mix
2	My Plate: Fruits and Vegetables My Plate: Grains and Protein	Food logs, My Plate image, healthy Plate Planner, Cafeteria Challenge, what is Wrong with this Plate, Eat the Colors of the rainbow What are Grains? Find the Grains and what are protein foods word search 5 grain food packages with ingredients listed. (cereals, oatmeal, bread products)	Cheesy Veggie Quesadillas Stovetop Popcorn
3	My Plate: Dairy Dairy and Bone Healthy	Food logs, what are dairy foods word scramble, EGGsperiment materials: plastic cup with lid, marker eggshells, vinegar, Images of MyPlate, images of bone builders and bone breakers Images of MyPlate images of bone builders and bone breakers. Smoothie Recipe, Smoothie Ingredients: Calcium fortified OJ, frozen blueberries, fresh spinach, bananas, milk, blender, measuring cup, large spoon, small 3 oz cups, paper towels Images of MyPlate images of bone builders and bone breakers	Chocolate Muscle Milk Blue & Green breakfast smoothie
4	Investigating Food Labels	Food label game Food label worksheet	Banana Bread Granola
5	Sugar and Breakfast Foods Fast Food	Sugar packets, measuring spoons. Nutrition facts for cereals or actual cereal boxes Fast food worksheet with menu and nutrition facts, Crisco/butter, tablespoon, burger bun	Overnight oats Garden-Fresh whole-wheat Pizza
6	Healthy Habits for Life	Food Frequency, Pre and Post questionnaire. Air popper (optional)	Black Bean Brownie Bites

Appendix T

Live Long and Strong Contract

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Live Long and Strong Contract

I promise to continue making healthy lifestyle changes in order to live long and strong! This promise includes the following vows:

- I vow to eat foods from each of the food groups everyday
- I vow to make the best food choices I know how to in any situation
- I vow to stay active and include physical activity every day
- I vow to read the nutrition facts on all packaged foods
- I vow to eat healthy portions and continue to try new healthy foods
- I vow to encourage my family and friends to eat less sugary and fatty foods
- I vow to treat others with kindness and respect regardless of body shape or weight status
- **I vow to take care of my body because there is only one of me**
- **I vow to live long and strong.**

Signature: _____ Date: _____

Source: (RWJBarnabas Health, 2019)

Appendix U

Daily Food Log

Daily Food Log**Session 1**

Directions: Record everything you ate YESTERDAY.

If you did not eat anything during a meal or snack, leave it blank.

In the right column write down what food groups you ate from for that meal or snack.

What did you eat yesterday?		Fruits Vegetables Grains Protein Dairy Which food groups did you eat from?
Breakfast		
	Beverage:	
Snack		
	Beverage:	
Lunch		
	Beverage:	
Snack		
	Beverage:	
Dinner		
	Beverage:	
Snack		
	Beverage:	
Name one Healthy Food choice you made:		
Name on Unhealthy Food Choice you made:		

Appendix V

Information for Parents

Snacking Tips for Parents



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Plan ahead and **buy healthy snacks when you grocery shop** — you will save money and will make healthier choices than buying snacks on the go.

Give kids choices and make the choices you offer nutritious.

Pre-portion your child's snacks into small plastic bags to grab on-th-go or put a snack-sized serving on a plate.

Assign an area in your refrigerator or cupboard for healthy snacks that you have selected and your kids like — let them help themselves without having to ask for permission.

Combine snacks from at least two food groups to pack more nutrients into your child's diets — it will be more filling and will hold them over until their next meal.

For example, adding milk to cereal or serving string cheese with whole-wheat crackers or fruit is an easy way to add calcium, protein, and other important nutrients to snacks.

Remember: Space snacks far enough away from meals so appetites are not spoiled!



Appendix W

Healthy Recipes for Home

Blue & Green Breakfast Smoothie

We call it our Blue & Green Breakfast Smoothie, but whether it's for breakfast on-the-go, an after school snack, or a sweet after dinner treat, this smoothie fits the bill! We pack three of the MyPlate food groups into one glass full of vitamins and minerals that kids and adults alike won't want to put down!

Ingredients:

1 cup frozen blueberries
1 cup fresh baby spinach
1 banana
1 cup fat-free milk
1/2 cup calcium fortified orange juice
1 tablespoon honey (optional)

Directions:

1. Combine all ingredients in a blender until smooth.
Serve and enjoy!

Yield: 4 servings (1 cup per serving)

Nutrition Facts:

83 Calories; 0 g Fat (0 g Saturated Fat; 0 g Trans Fat); 1 mg Cholesterol; 33 mg Sodium; 18 g Carbohydrate (2 g Fiber, 13 g Sugar); 3 g Protein; 11% Daily Value (DV) Vitamin A; 21% DV Vitamin C; 15% DV Calcium; 2% DV Iron



Appendix X

Weekly Fitness Tracker Steps Record

Week #:

Please write the number of steps shown on your fitness tracker at the end of each day

	Fitness Tracker Results
Sunday	
Monday	
Tuesday	
Wednesday	
Thursday	
Friday	
Saturday	

Appendix Y

Demographic Questionnaire



Rutgers, The State University of New Jersey
65 Bergen Street-Room 1126
Newark, NJ 07107-3001

www.nursing.rutgers.edu
Phone: (973) 972-4307
Fax: (973) 972-8947

Demographic Survey, Allergy and Learning Questionnaire

Childs Name: _____ Date: _____

To help us better understand your family, please answer the following questions:

1. How old is your child?
 - ☐ 8
 - ☐ 9
 - ☐ 10
 - ☐ 11
2. What grade is your child in/ will be in September 2019?
 - ☐ Third grade
 - ☐ Fourth grade
 - ☐ Fifth grade
 - ☐ Other, please specify _____
3. What category does your family's annual income fall into?
 - ☐ Less than \$39,999
 - ☐ \$40,000- \$69,999
 - ☐ \$70,000- \$89,999
 - ☐ \$90,000- \$124,999
 - ☐ More than \$125,000
4. What is your ethnicity?
 - ☐ Asian
 - ☐ American Indian or Alaskan Indian
 - ☐ Black or African Americans
 - ☐ Hispanic
 - ☐ Native Hawaiian or another Pacific Islander
 - ☐ White, Non-Hispanic
 - ☐ Other, please specify: _____

Does your child have any food allergies? _____

If so, please list them: _____

Does your child have any learning disabilities that will require assistance answering questions on a written questionnaire?

If so, how can we best help him /her? _____

Appendix Z

Food Frequency and Lifestyle Habit Questionnaire

Name: _____ Date: _____ Homeroom: _____

Food Frequency and Lifestyle Habits Questionnaire

Finish the sentence by checking the appropriate circle

1. I eat breakfast

- ☐ Everyday
- ☐ Most days (4-6 days)
- ☐ Sometimes (1-2 days)
- ☐ Rarely (1 time a month)
- ☐ Never

5. I eat vegetables besides corn or potatoes

- ☐ Everyday
- ☐ Most days (4-6 days)
- ☐ Sometimes (1-2 days)
- ☐ Rarely (1 time a month)
- ☐ Never

2. I drink low-fat or fat-free milk

- ☐ Everyday
- ☐ Most days (4-6 days)
- ☐ Sometimes (1-2 days)
- ☐ Rarely (1 time a month)
- ☐ Never

6. I eat lunch

- ☐ Everyday
- ☐ Most days (4-6 days)
- ☐ Sometimes (1-2 days)
- ☐ Rarely (1 time a month)
- ☐ Never

3. I drink water

- ☐ Everyday
- ☐ Most days (4-6 days)
- ☐ Sometimes (1-2 days)
- ☐ Rarely (1 time a month)
- ☐ Never

7. I read nutrition labels

- ☐ Everyday
- ☐ Most days (4-6 days)
- ☐ Sometimes (1-2 days)
- ☐ Rarely (1 time a month)
- ☐ Never

4. I eat fruit

- ☐ Everyday
- ☐ Most days (4-6 days)
- ☐ Sometimes (1-2 days)
- ☐ Rarely (1 time a month)
- ☐ Never

8. I eat home prepared meals

- ☐ Everyday
- ☐ Most days (4-6 days)
- ☐ Sometimes (1-2 days)
- ☐ Rarely (1 time a month)
- ☐ Never

Name: _____ Date: _____ Homeroom: _____

Food Frequency and Lifestyle Habits Questionnaire (continued)

Finish the sentence by checking the appropriate circle

9. I drink soda <input type="radio"/> Everyday <input type="radio"/> Most days (4-6 days) <input type="radio"/> Sometimes (1-2 days) <input type="radio"/> Rarely (1 time a month) <input type="radio"/> Never	14. I eat sweets (candy,cookies,cakes) <input type="radio"/> Everyday <input type="radio"/> Most days (4-6 days) <input type="radio"/> Sometimes (1-2 days) <input type="radio"/> Rarely (1 time a month) <input type="radio"/> Never
10. I drink juice <input type="radio"/> Everyday <input type="radio"/> Most days (4-6 days) <input type="radio"/> Sometimes (1-2 days) <input type="radio"/> Rarely (1 time a month) <input type="radio"/> Never	15. I eat chips <input type="radio"/> Everyday <input type="radio"/> Most days (4-6 days) <input type="radio"/> Sometimes (1-2 days) <input type="radio"/> Rarely (1 time a month) <input type="radio"/> Never
11. I drink whole milk <input type="radio"/> Everyday <input type="radio"/> Most days (4-6 days) <input type="radio"/> Sometimes (1-2 days) <input type="radio"/> Rarely (1 time a month) <input type="radio"/> Never	16. I spend an hour or more exercising or organized sports <input type="radio"/> Yes <input type="radio"/> No
12. I eat at restaurants or fast food <input type="radio"/> Everyday <input type="radio"/> Most days (4-6 days) <input type="radio"/> Sometimes (1-2 days) <input type="radio"/> Rarely (1 time a month) <input type="radio"/> Never	17. I spend an hour or more Walking or doing chores <input type="radio"/> Yes <input type="radio"/> No
13. I eat fried foods <input type="radio"/> Everyday <input type="radio"/> Most days (4-6 days) <input type="radio"/> Sometimes (1-2 days) <input type="radio"/> Rarely (1 time a month) <input type="radio"/> Never	18. I spend 1 hour or more per day on Screens which includes watching TV, on the phone, computer or playing video games <input type="radio"/> Yes <input type="radio"/> No

Appendix AA

Nutrition and Physical Activity Pre and Post Test

Name: _____ Date: _____ Homeroom: _____

Nutrition and Physical Activity Pre & Post Test:

Please circle your answer

1. How many food groups are in MyPlate?
a. 4 b. 5 c. 6
2. To have a healthy weight, one must eat right and be physically active
a. True b. False
3. How many minutes of physical activity should you try to get each day to be healthy?
a. 10 minutes
b. 60 minutes
c. 120 minutes
4. How much of your plate should be filled with fruits and vegetables at each meal?
a. 1 piece of broccoli
b. Half your plate
c. Enough to fill you up
5. Eating dairy helps strengthen which part of your body?
a. Muscles and eyes
b. Skin and hair
c. Bones and teeth
6. Which of the foods below are high in fat?
a. Cheeseburger, french fries, whole milk
b. Grilled chicken, turkey 1% milk
c. Soda, candy, gum
7. What information is NOT given on a Nutrition Facts Label?
a. Calories
b. Serving size
c. How to prepare the food
8. Fruit juice is a healthy beverage and should be consumed at every meal
a. True b. False
9. A good source of plant protein is
a. Beans, nuts, seeds
b. Pretzels and chips
c. Carrots and bread
10. Which of these foods is a healthy snack that is low in fat, salt, and calories?
a. Chips
b. Fruit roll ups
c. Popcorn without butter
11. Which of the following is considered a healthy breakfast?
a. Pop tart
b. Scrambled eggs & whole grain toast
c. Lucky Charms cereal with whole milk
12. The healthiest food to eat when you go to a restaurant is
a. Fried chicken and biscuits
b. Cheeseburger and french fries
c. Grilled chicken sandwich with apples
d. Pepperoni pizza with soda
13. What is an example of a food or drink that can weaken our bones?
a. Calories b. Soda c. Low-fat milk
14. What is an example of one serving of fruit?
a. One piece of lettuce on a burger
b. A strawberry pop tart
c. One small apple
15. Fast foods such as hamburgers, chicken nuggets, & pizza contain too much
a. Sugar
b. Salt and fat
c. Vitamin A
d. Fiber
16. Skipping meals is part of a healthy diet
a. True b. False
17. Our bodies need _____ for energy
a. Water b. Exercise c. Calories
18. What is the most amount of sugar we should have a day?
a. 100g b. 5g c. 24g
19. Which food fits into both the grains group and the dairy group?
a. Burger
b. Chicken and rice
c. Macaroni and cheese
20. I use energy when I
a. Breathe and sleep
b. Run and jump
c. All of the above




Appendix BB

Co-Investigator CITI Training Certificate

		
<p>This is to certify that:</p>		
<p>Tiffany Meng</p>		
<p>Has completed the following CITI Program course:</p>		
Human Research	(Curriculum Group)	
Social / Behavioral / Epidemiologic Research Investigators	(Course Learner Group)	
1 - Basic Course	(Stage)	
<p>Under requirements set by:</p>		
<p>Rutgers- The State University of New Jersey (All Campuses)</p>		
		 Collaborative Institutional Training Initiative
<p>Verify at www.citiprogram.org/verify/?wb1ed79d6-7e85-48c0-8252-3d1037e892fa-24615063</p>		

Appendix CC

Team Members CITI Training Certificate



This is to certify that:

Jennifer Bianchini

Has completed the following CITI Program course:

Human Research	(Curriculum Group)
Social / Behavioral / Epidemiologic Research Investigators	(Course Learner Group)
1 - Basic Course	(Stage)

Under requirements set by:

Rutgers- The State University of New Jersey (All Campuses)



Verify at www.citiprogram.org/verify/?w2dd5a49d-f23c-49ad-8de3-3b210594df04-24601382

*Jennifer Bianchini had legally changed her name to Jennifer Olas in 2019



This is to certify that:

Kimberly Sacoto

Has completed the following CITI Program course:

Human Research	(Curriculum Group)
Biomedical / Clinical Research Investigators	(Course Learner Group)
1 - Basic Course	(Stage)

Under requirements set by:

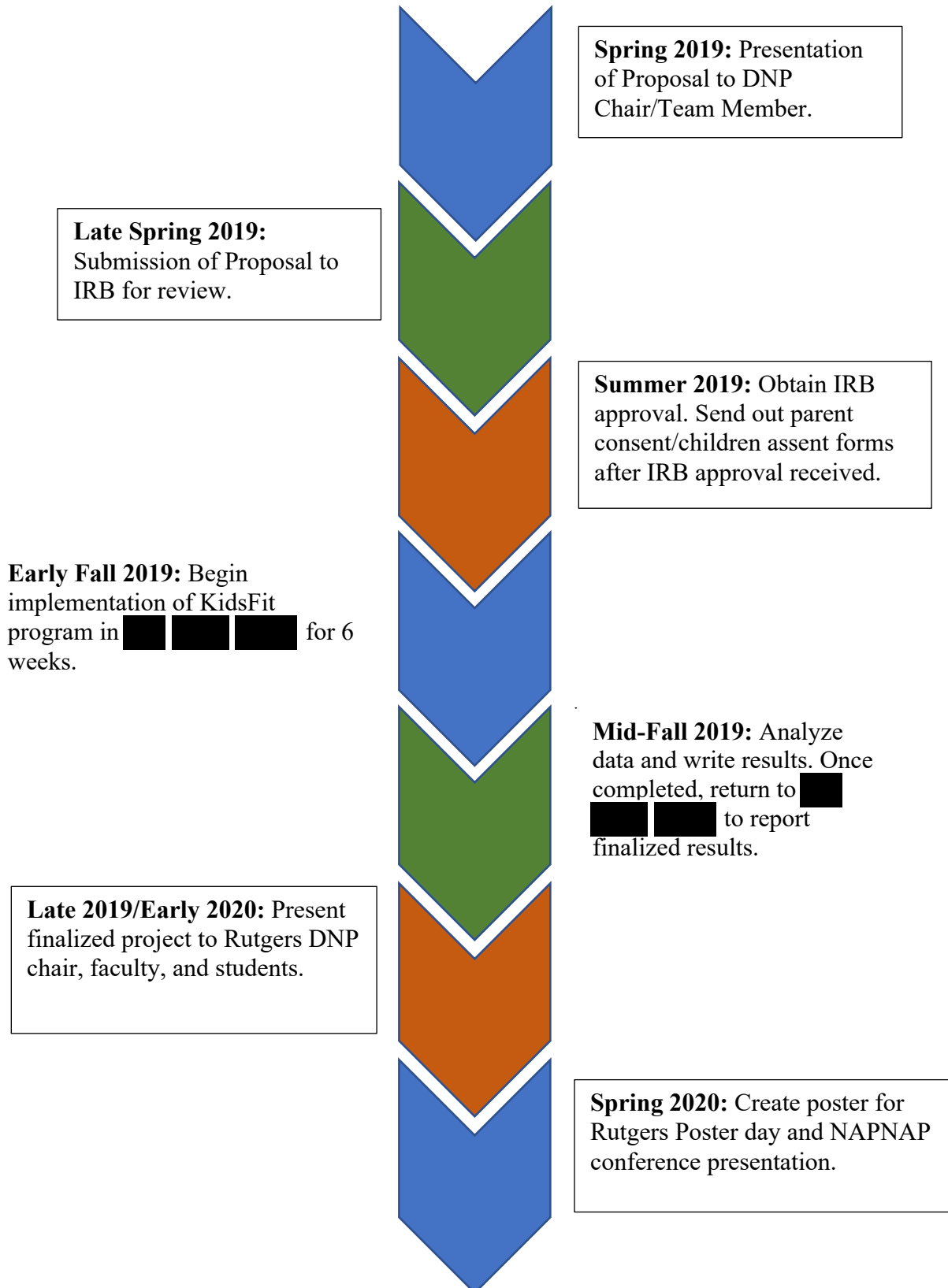
Rutgers- The State University of New Jersey (All Campuses)



Verify at www.citiprogram.org/verify/?wc8bc11cc-e2dc-498b-a240-083eb8e898b0-26285106

Appendix DD

Project Timeline



Appendix EE

Permission to Use KidsFit Curriculum

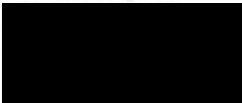


Ms. Molly Fallon-Dixon
RWJBarnabas Health



February 17, 2019

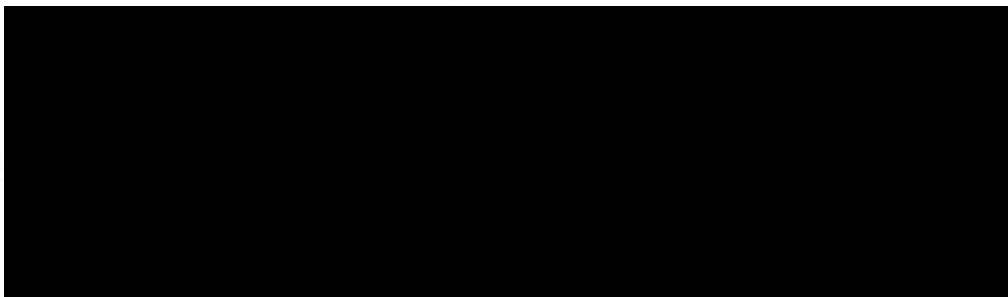
Tiffany Meng



Subject: Rutgers Pediatric DNP Student use of KidsFit Program


Dear Tiffany Meng,

This letter is to authorize you and your project team mate Jennifer Olas permission to utilize our KidsFit curriculum for your DNP project for the topic of childhood obesity. It is our understanding that you have been properly educated on the program and will implement it within a Boy Scout Troop. We look forward to collaborating with you regarding your results.



Appendix FF

Project Budget

Item	Estimated Total Cost	Actual Total Cost
Fitness Trackers	\$200	\$28.99 each x 8 = \$231.92
Water bottles	\$20	\$19.59/dozen
Jump Ropes	\$15	\$9.70/dozen
Stress Balls	\$10	\$12.99/dozen
Sport Balls	\$15	\$26.89/dozen
Frisbees	\$10	\$3 each x 8 = \$24
Stickers	\$3	\$1.49 each x 2 = \$2.98
Pens	\$10	\$9.99
Paper for activities and Student Worksheets	\$10	\$23
Folders	\$8	\$1 each x 8 = \$8.00
Crayons	\$10	\$1.99 each x 8 = \$15.92
Week 1 snacks/ingredients	\$30	\$31.67
Week 2 snacks/ingredients	\$30	\$39.29
Week 3 snacks/ingredients	\$30	\$42.96
Week 4 snacks/ingredients	\$30	\$28.31
Week 5 snacks/ingredients	\$30	\$34.66
Week 6 snacks/ingredients	\$30	\$36.42
 Fitness Badge	Originally not anticipated	\$2.79 each x 8 = 22.32
Cups	\$5	\$3.99 each x 2 = \$7.98
Plates	\$5	\$2.79 each x 2 = \$5.58
Napkins	\$3	\$1.88 each x 2 = \$3.76
Snack Bags	\$3	\$1 each x 3 = \$3
USB drive	\$13	\$14.99
Total	\$520	\$655.92

Appendix GG

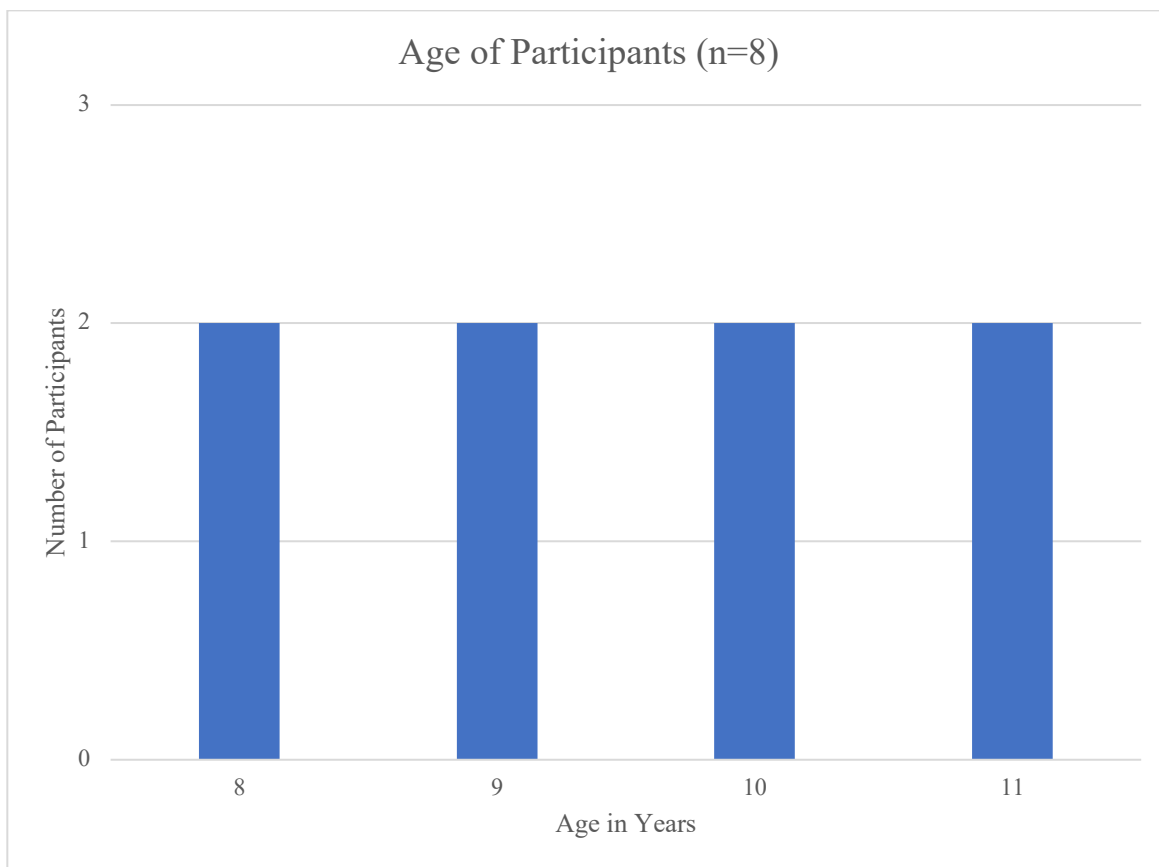


Figure 1. Demographic Questionnaire Result: Age of Participants

Appendix HH

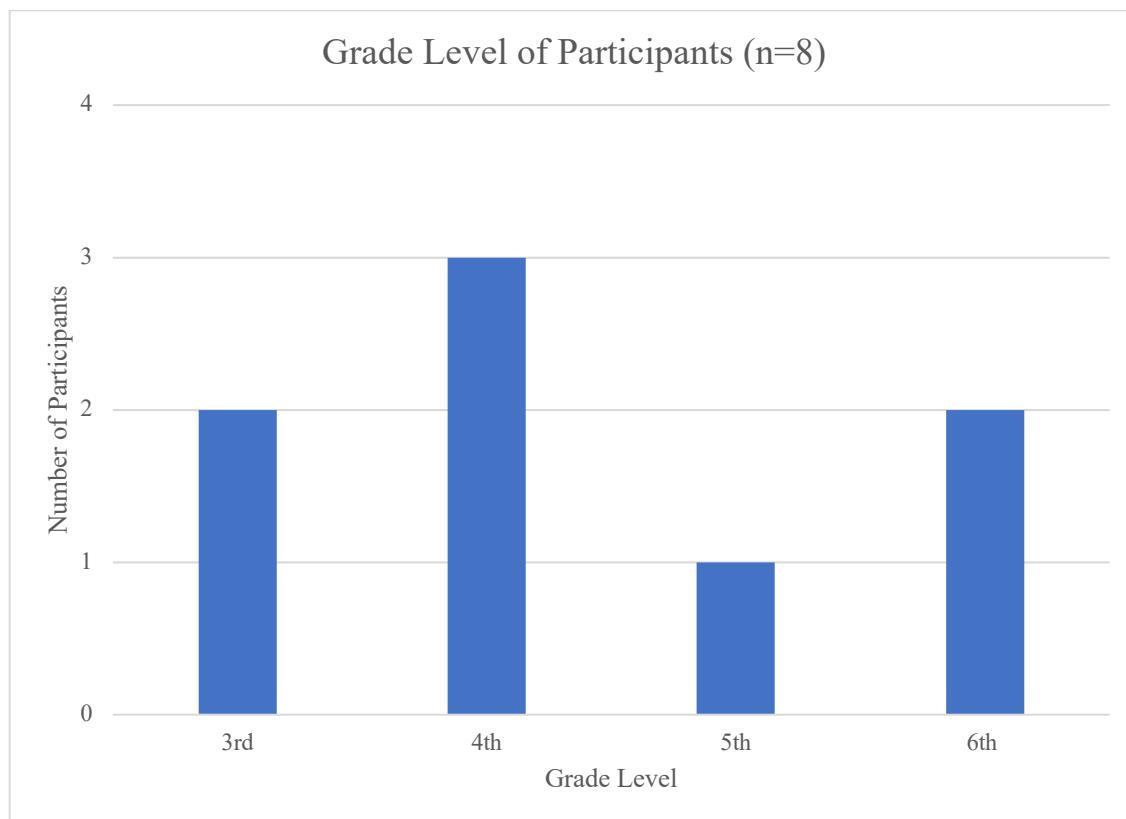


Figure 2. Demographic Questionnaire Results: Grade Level of Participants

Appendix II

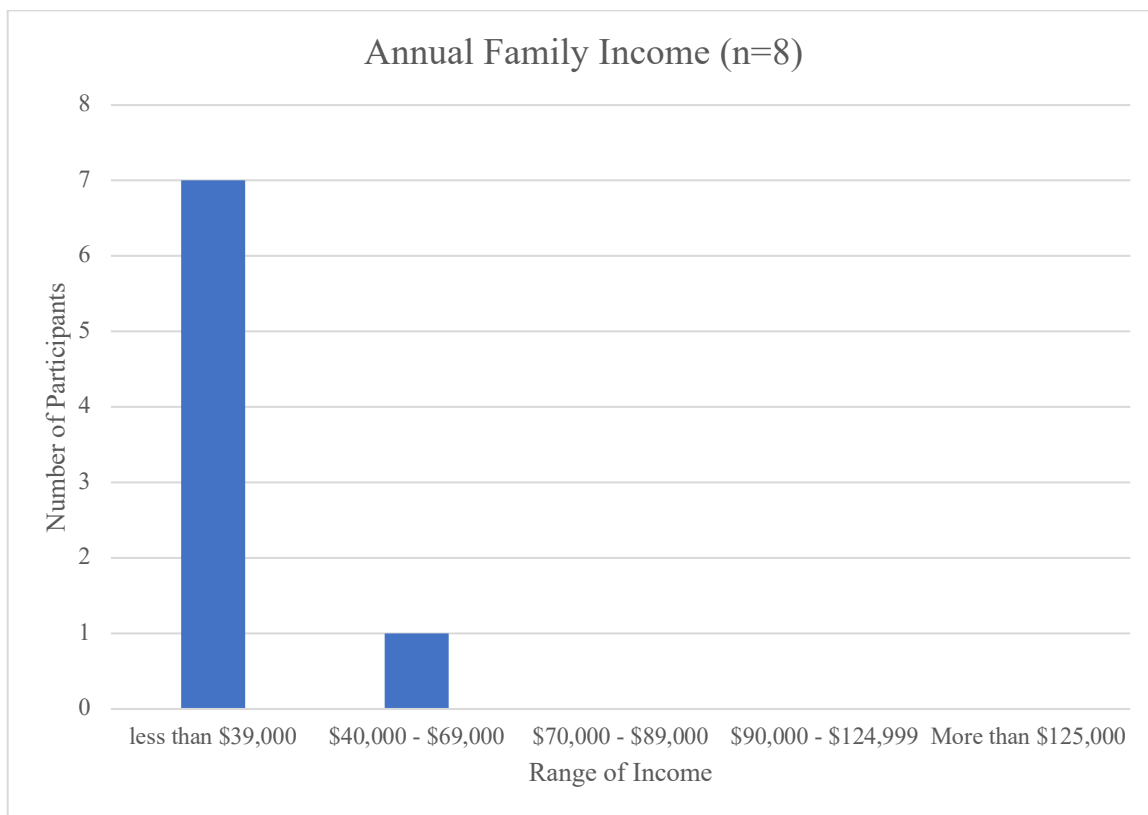


Figure 3. Demographic Questionnaire Results: Annual Family Income

Appendix JJ

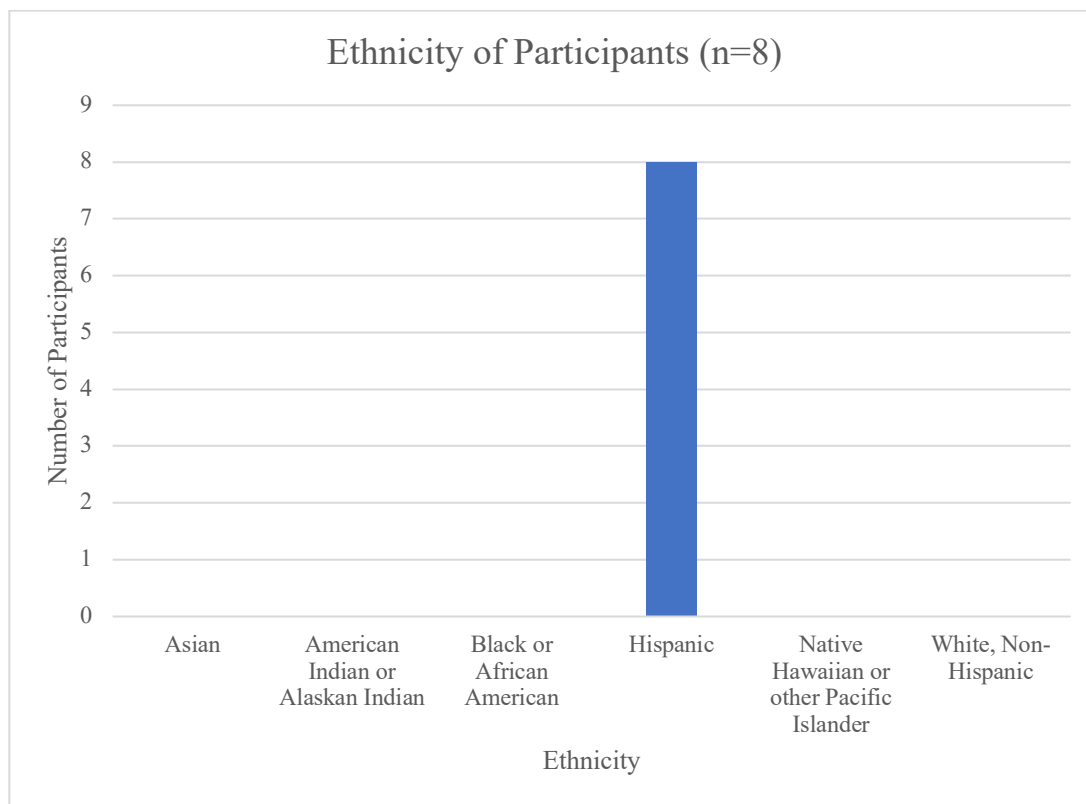


Figure 4. Demographic Questionnaire Results: Ethnicity of Participants

Appendix KK

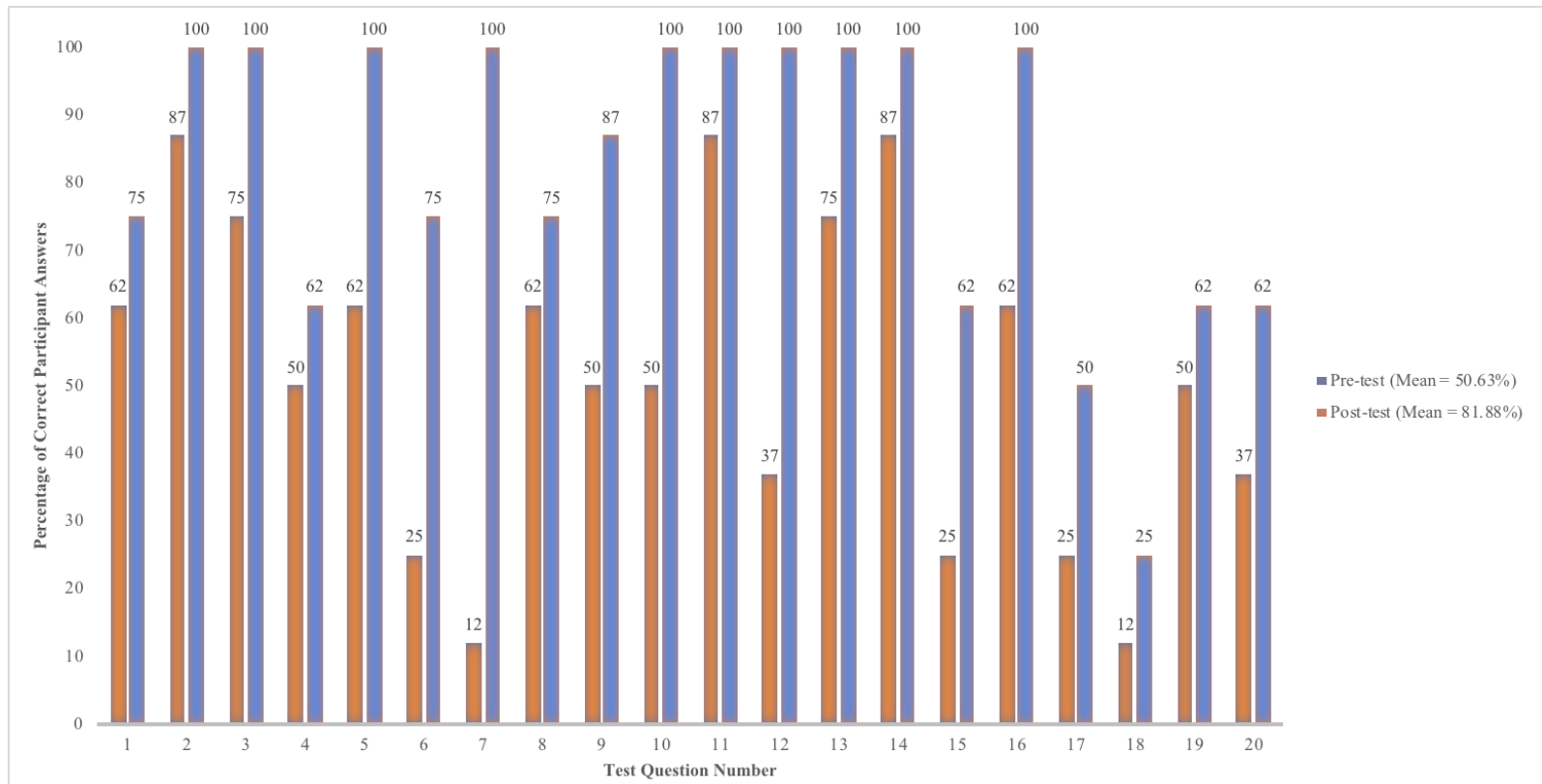


Figure 5. Outcome measure: Pre- and post-intervention health knowledge reported on “Nutrition and Physical Activity Pre- and Post-Test” (n=8)

Appendix LL

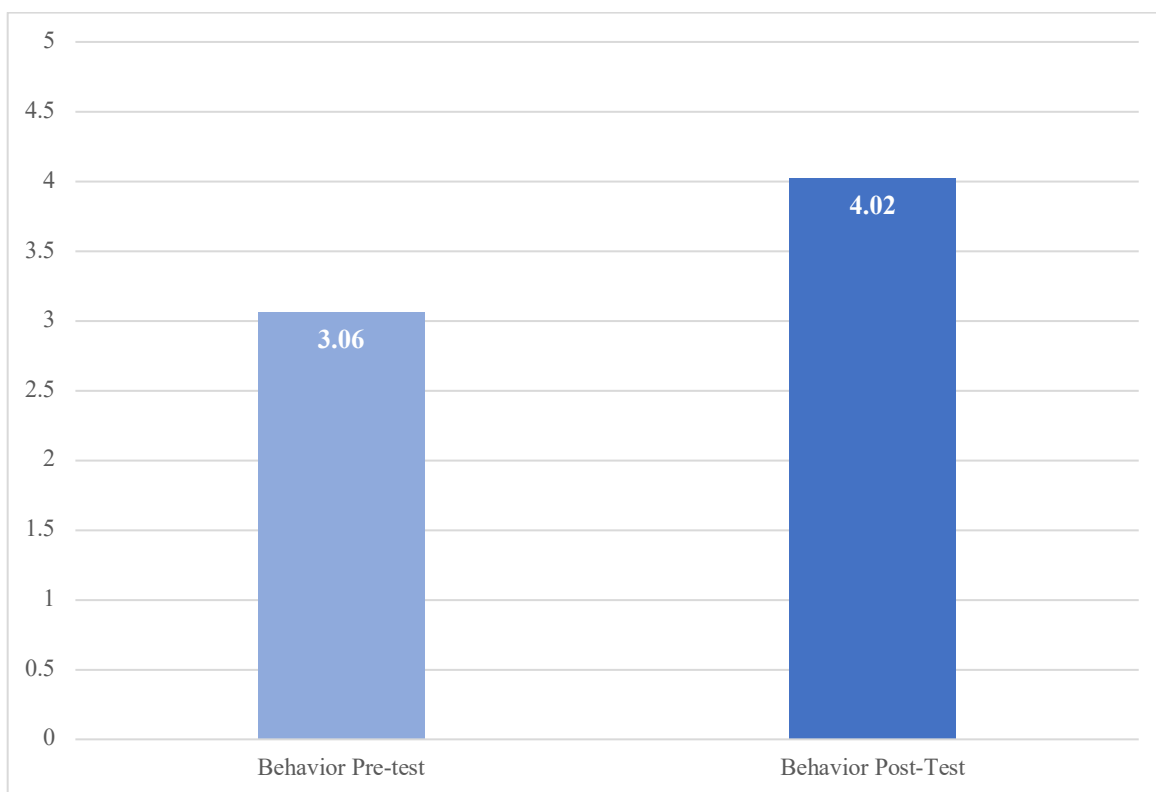


Figure 6. Outcome Measure: Pre- and post-intervention healthy behaviors reported on “Food Frequency and Lifestyle Habits Questionnaire” (n=8)

Appendix MM

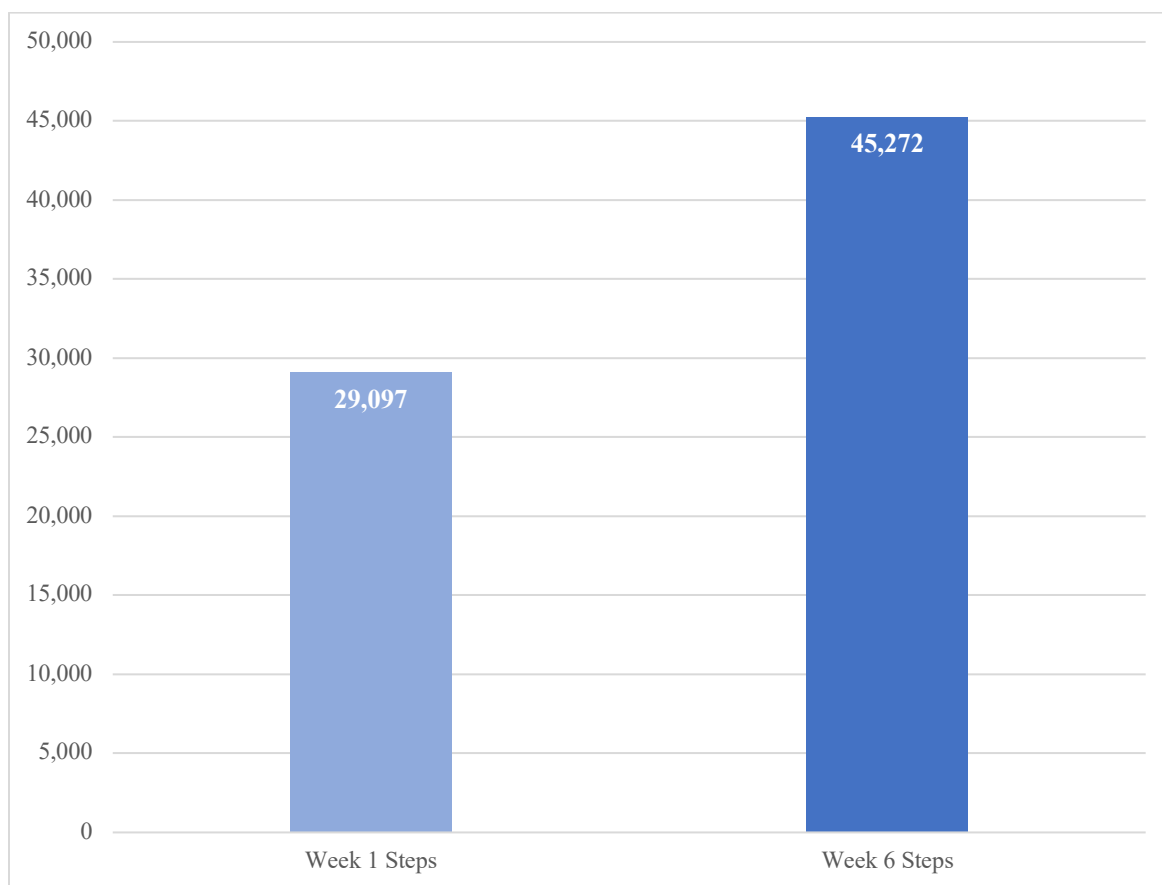


Figure 7. Outcome measure: Pre- and post-intervention steps reported on weekly fitness trackers (n=5)

