Development of a Community Based Pediatric Wellness Program to Influence Healthy Lifestyle Behaviors

By

Jessica K. Baugher

A Directed Scholarly Project Submitted to the Department of Nursing
in the Graduate School of
Bradley University in
partial fulfillment of
the requirements for the
Degree of Doctor of Nursing Practice.

Peoria, Illinois

2019

Approval Letter

Bradley University
Department of Nursing

Development of a Community Based Pediatric Wellness Program to Influence Healthy Lifestyle Behaviors

By
Jessica K. Baugher

has been approved

June 21, 2019

Approved: Karin Smith, DNP, RN, NEA-BC, CENP, CCRN-K 6/21/19
(DNP Project Team Chairperson name, credentials & date)

Approved: Erin Kennedy, MS 6/21/19
(DNP Project Team Member name, credentials & date)

Acknowledgments

I would like to take this time to thank all of the key players to my scholarly project. The devotion and dedication of time put forth towards this project would not have been possible without the help and loving support from my husband, Jeff Baugher. Jeff made the countless hours away from home and family life possible so I could make the commitment necessary to achieve success. I would also like to thank my children for forgiving me for missing countless hours and activities as I worked to achieve this academic goal. I could not have accomplished this project without my chairperson and lead professor Dr. Karin Smith from Bradley University. Dr. Smith provided guidance and the utmost attention to my project when necessary. Dr. Smith was always available and reassuring when timelines were tight and the nights were long. My mentor Erin Kennedy, MS, Exercise Physiologist and Director of Center for Healthy Lifestyles has also been a great asset to this scholarly project. Erin Kennedy, MS demonstrated strength and knowledge in leadership and program building throughout the scholarly project. These are just a few key individuals associated with the project. Several others that have made this project possible including exercise physiologists Matt Hanks and Brittany Walleck, and statistician David Wolf.

Abstract

Childhood obesity is a nationwide epidemic that is causing a multitude of comorbidities and increasing healthcare needs and costs. Teaching children and instilling lifestyle changes that are sustainable is a difficult and ongoing challenge, especially when parents are not involved or seeking change. Healthy Kids U program is a child-focused, family-centered community program that focuses on education and physical activity with the expectation of achieving ongoing progress and success for the participants. Healthy Kids U began as a pilot program started by a local hospital. The program was expanded upon and relocated to the local YMCA to facilitate further growth of the program and accommodate future growth of participant population. The programing changes promoted healthy lifestyle changes within the participants as well as their families. The ultimate goal of the program was to instill sustainable lifestyle changes that the children and their families could carry with them throughout their lives to bring forth an overall healthier well-being.

Keywords: childhood, obesity, pediatric, lifestyle

Table of Contents

Development of a Community Based Pediatric Wellness Program to Influence Healthy Lifestyle Behaviors

Chapter I: Introduction

Obesity is a rising epidemic nationwide (Fedewa & Davis, 2015; Yavuz, Ijzendoorn, Mesman, & Veek, 2015). Obesity nearly doubled in the United States between the years 1980 and 2013 (Centers for Disease Control and Prevention, 2017; Childhood Obesity Foundation, n.d.; Fedewa & Davis, 2015; Fruh, 2017; Simon & Stark, 2016; Snethen, Broome, Treisman, Castro, & Kelber, 2016). In 2012, more than one third of children in the United States between the ages two and 11 were found to be either overweight or obese (Annesi, Smith, Walsh, Mareno, & Smith, 2015; Fedewa & Davis, 2015; Hingle et al., 2015; Maidenberg, 2016; Rice, Jumamil, Jabour, & Cheng 2017). Being overweight or obese during the childhood or adolescent years is a strong predictor for being overweight or obese during adulthood (Annesi et al., 2015; Inman, Bakergem, LaRosa, & Garr 2011; Parks, Kazak, Kumanyika, Lewis, & Barg 2016; Pratt, Fossen, Cotto-Maisonet, Palmer, & Eneli, 2017; Tomayko et al., 2017; Walsh, White, & Kattelmann 2014; Xu et al., 2017). If we continue to allow this epidemic to escalate, children could be predisposed to living a medically complex and complicated life with comorbidities and costly healthcare programs (Childhood Obesity Foundation, n.d.). Early identification and delivery of weight management and health modification opportunities will allow for a healthier community with fewer co-morbidities and chronic health inequalities. Providers can begin the educational process when the child starts taking table foods to encourage healthy habits early in life. Forming the correct habits from the start will allow for a healthier pediatric population. Many efforts have been put

into place to provide successful and sustainable community programs such as after school programs, in school programs, and clinic based programs, to change practices after they have been established. However, the barriers and gaps still remain high, inhibiting long-term results (Annesi et al., 2015; Fedewa & Davis, 2015; Xu et al., 2017). Despite the existing barriers, wellness programs have been proven to increase physical activity in participants, help them maintain weight or achieve weight loss, improve eating habits, and improve healthy lifestyle behaviors. Participants have also learned to make better decisions, which results in a better emotional state and higher self-esteem (Fedewa & Davis, 2015).

Background and Significance

Obesity leads to a lifetime of chronic health issues such as diabetes, hypertension, heart disease, stroke, sleep apnea, increased risks of cancer, gastrointestinal complications, and increased surgical complications. It also can lead to decreased self-esteem and productivity (Annesi et al., 2015; Fedewa & Davis, 2015; Fruh, 2017; Hingle et al., 2015; Inman et al., 2011; Maidenberg, 2016; Rice et al., 2017 Snethen et al., 2016; Tomayko et al., 2017; Watson, Baker, & Chadwick 2016). Obesity is also becoming an enormous economic concern because it often results in a lifetime of increased physical and physiological healthcare expenditures. The medical costs of preventable diseases related to obesity in the United States are estimated to be $147 billion to $210 billion (Trust for America's Health, 2018). In addition to this annual expenditure is an additional increase in costs for employers related to a decrease in employee productivity and an increase in absenteeism (Trust for America's Health, 2018).

The American Medical Association has defined obesity as a disease process related to the comorbidities that come along with being overweight or obese (Madienberg, 2016). Pediatric obesity is defined as a body mass index (BMI) equal to or greater than 95% compared to other children of the same age and gender (Xu et al., 2017). The state of being overweight is different than childhood obesity. A child is said to have additional, unnecessary weight, or to be overweight, when their BMI status is 85% or greater compared to other children of the same gender and age (Snethen et al., 2016). Some populations are at greater risk of being overweight or obese compared to others. Inman et al. (2011), Parks et al. (2016), and Shin et al. (2015) state non-Hispanic blacks and Hispanics have a higher risk of being overweight or being obese. Annesi et al. (2015) state 35% of white non-Hispanic children between the ages of six and 11 are either overweight or obese and 40% of African American and Hispanic children of this same age are found to be overweight or obese. Poverty is another risk factor for higher body mass index (BMI) in children (Maidenberg, 2016).

Between 2011 and 2012, 22.8% of children in the U.S. between the ages of two and five were defined as being overweight or obese (Pratt et al., 2017). Pratt et al. (2017) state preschoolers who are obese are six times more likely to be obese teenagers and then continue on throughout life as obese adults. Early identification and change will allow for the most health-related benefits. Obesity is such an impacting epidemic it is one of the top indications for premature death; it can decrease life expectancy by five to 10 years (Fruh, 2017; Rice et al., 2017). Additionally, Fedewa and Davis (2015) state it is the first time in history that our children will have a shorter life expectancy then their parents due to this impacting epidemic.

In the state of Illinois, 15.5% of children between eighth grade and twelfth grade are overweight and 11% are classified as obese, using the BMI scale (Illinois Youth Survey, 2016). Located in central Illinois, McLean County, population 172,418, has statistics comparable to the state values (U.S. Census Bureau, 2017). Approximately 21.8% of the population in McLean County is under 18 years of age (U.S. Census Bureau, 2017). In McLean County 14.3% of the youth between the grades of eight and twelfth who were surveyed were found to be overweight and 9% obese (Illinois Youth Survey, 2016). The same sample of youth demonstrated that 10% of them never ate dinner as a family, 16.3% stated they consumed one fruit per day, and 18% stated they consumed one vegetable per day (Illinois Youth Survey, 2016). The same population sample indicated that 4.6% of the youth watched five or more hours of television in one days' time and 18.5% stated they watched an average of two hours of television per day (Illinois Youth Survey, 2016). Television time was documented separately from screen time on a computer, not related to schoolwork, or a video game device (Illinois Youth Survey, 2016). The survey demonstrated that 15% of the youth participated in screen time outside of television watching and school work five or more hours during the day (Illinois Youth Survey, 2016). Only 20% of the youth participated in 60 minutes of physical activity five days of the week as recommended by the American Heart Association (Illinois Youth Survey, 2016).

The Institute of Medicine (IOM) and the American Academy of Pediatrics (AAP) has referred to childhood obesity as a national health priority and has recommended that various organizations come together to help conquer the epidemic (Pratt et al., 2017 & Snethen et al., 2016). The government, public health agencies, schools, and community

organizations need to collaborate with one another and form multifocal programs to allow for change factors to occur within the homes of Americans (Snethen et al., 2016). Currently there are many organizations available to help distribute knowledge and resources to the general public, but what is often lacking within these programs is the continuity of support, encouragement, and enthusiasm to instill lasting personal motivating behaviors within a child and their family unit (Snethen et al., 2016). Snethen et al. (2016) states there was a large increase in programs from 1980 to 2002. The barrier that remains is that it is difficult to measure success. There is not one intervention that will allow successful change to occur; it requires a multitude of disciplines and practices to instill healthy behaviors within a family.

A pediatric patient requires family-focused care, which makes the care more complex. The care delivered needs to be personalized, not standardized. The first and foremost intervention is to ensure that the family identifies the need for a change in behavior (Grossklaus & Marvicsin, 2014; Xu et al., 2017). Identifying the need for change may be the biggest barrier to overcome. Once the family recognizes the need for change, the pediatric patient can establish goals and outcomes with the assistance and guidance of family and the health care provider (Grossklaus & Marvicsin, 2014; Xu et al., 2017). Once the recognition of required change behavior is acknowledged and the family is motivated, the enrollment process into a well-rounded program can begin. Many different program structures exist that will allow the child and their family to be successful.

With proper support, guidance, and self-motivating factors, positive behavior changes can be adopted for long-term successes. In well-organized programs, the gaps

often include failure to provide adequate support and lack of motivating behaviors. Families need these influences to embrace change and sustain the adapted behaviors. Healthy lifestyle programs do not need to be extensive and costly; with the proper education and techniques, changes will occur and be instilled within the family unit for a lifetime.

Problem Statement

Childhood obesity is a serious disease that negatively impacts health and increases medical care costs associated with increased office visits, hospitalizations, comorbidities, and additional complications that may have otherwise been avoided. Further, obesity can lead to premature death (Maidenburg, 2016; Xu et al., 2017). Childhood obesity has doubled in children and tripled in adolescents over the past 30 years (Maidenburg, 2016). If this trend continues, the health status of American children will continue to decline and health care costs will continue to climb.

Project Aim

This project attempts to determine if healthier eating habits and an increase in physical activity can be achieved through a free pediatric healthy lifestyle program. The program is introduced by the primary health care provider and uses an interdisciplinary approach that focuses on the patients as well as the family as a whole unit. The healthy lifestyle program, Healthy Kids U (HKU), is a five-week program that strives to impact families for a lifetime of healthier habits and choices. The HKU program is based on the 5210- Let's Go message developed by MaineHealth to encourage more physical movement, more water intake, and better sleep habits. The program also encourages participants to choose foods with a higher nutritional value (MaineHealth, 2018). The

message was formed to be easy, catchy, and adaptable to all situations (MaineHealth, 2018). The 5210 message stands for five or more fruits or vegetables in a day, two hours or less of recreational screen time per day, one hour of physical activity per day, and zero sugary drinks, which leads to a higher consumption of water intake (MaineHealth, 2018). HKU provides a positive influence to children between the ages of nine and 17 by providing a community-based exercise and nutrition program at the local Young Men's Christian Association (YMCA) while utilizing the 5210- Let's Go structure. The 5210 Healthy Habits Questionnaire is first introduced to the child at the primary care office to assist in the assessment for a need in change of behavior as well as facilitate education to the family. All families can benefit from the 5210 structure to improve lifestyle habits, not just children who have documented high BMI's. HKU strives to meet the following objectives:

1. Assess the knowledge gained as evidenced by 95% of the participants will be able to speak to the 5210-message statement by the end of week five of the HKU program.
2. Increase positive behavior changes and self-efficacy related to healthy lifestyle participation as evidenced by one or more positive health changes in physical activity or diet documented by 50% of the participants on the 5210 survey completed at the end of the five-week program.
3. Achieve a participation rate of 30% as defined by completion of 10 sessions by the enrolled participants within the five-week HKU program and continued commitment to physical activity as evidenced by a gym membership.

4 Achieve a 25% participation rate of parents/caregivers/support person through involvement in appointments, HKU activities or open gym activities over a four -month period.

5 Increase referrals from providers by 50% by expanding the referral opportunity to the Bloomington Family Practice as well as expand the age range to nine years of age through 17 years of age prior to November 2018.

6 Present all of the participants in the HKU program with an educational piece weekly on a healthy lifestyles topic including diet, exercise, healthy sleep habits, or stress reduction through a documented log.

7 Participants will increase their exercise performance and decrease their perceived exertion over the course of the five-week session as evidence by a record of repetitions or time, along with the participants' perceived exertion at the start of the program and again at the end of the program.

PICOT

A PICOT question is formulated fashion of writing a researchable question in a manner that allows for an easy evaluation process to determine if the implementation was successful (Riva, Malik, Burine, Endicott, & Busse, 2012). The letters represent the following identifiable parts of the question: P- the population being studied, I- the intervention being applied, C- the comparison population, O- the outcomes that ensue after the implantation process, and lastly the T- is time or the duration in which the process was evaluated (Riva et al., 2012). The PICOT question for this project is: In the pediatric population, ages nine to 17 (P), what is the effect of a Healthy Kids U Program

(I) compared to no healthy lifestyle changes (C) on knowledge of healthy lifestyle behaviors, self-efficacy, positive healthy lifestyle changes, and participation compliance (O) over a four month time period (T).

Congruence with Organizational Strategic Plan

HKU and the YMCA are both community-based programs that strive to facilitate positive lifestyle behaviors within the local youth and their families. Both programs encourage participation in physical activity, a healthy diet, and positive emotional well-being. HKU was a pilot program that was created to increase physical activity among the pediatric population in Mclean County to help prevent or assist in the management of chronic diseases, and improve mental health concerns in a social environment. During the pilot program, there was a noted decrease in BMI and cholesterol levels, as well as 100% positive personal statements from HKU participants. HKU was created because of the need for pediatric weight management as evidenced by nationwide statistics and local results of the Illinois Youth Survey. The Illinois Youth Survey (2016) documented that obesity and overweight rates in the Mclean County were comparable to the state level, with obesity at 9% and the childhood overweight population at 14.3%.

HKU Bloomington-Normal was established due to an identified need within the community. Childhood obesity is recognized as an epidemic both at the state and local level as demonstrated in the Illinois Youth Survey (2016). Providers at a pediatric medical office located in the Midwest identified a patient need and begin researching and collaborating with an already established HKU program nearby.

HKU is in accordance with the 2018 fiscal year strategic plan of the local acute care medical center. The goal of the medical center is to create superior clinical outcomes

and eliminate all preventable harm (OSF Healthcare, 2018). HKU meets each of the four objectives in the OSF Healthcare (2018) strategic summary: service excellence and patient experience, expanding the ministry through strategic growth, affordability and sustainability, and providing a community caregivers. In addition to the shared goals between the medical center and the YMCA, both have a focus on the pediatric population. The medical center in which HKU is a part of includes a national ranked children's hospital; therefore, they both have a vested interest in the pediatric population. A referral to HKU allows for patients to obtain a better state of overall health and is also an example of excellent service from the providers. Referring a patient to HKU establishes that the provider wants the absolute best overall healthy achievement for that patient.

HKU is part of the expanding medical center's integrated health system and will allow an impact on healthy lifestyle behaviors in children and families in a new, specialized approach. The partnership between the local acute care medical center and the YMCA will allow for a positive community relationship that will encourage healthy lifestyles in the youth and families within the community. Partnership with the YMCA is also a sustainable piece of the HKU program. The YMCA can provide the space, equipment, and resources that HKU needs in order to grow from the current pilot program and become a flourishing program for the youth and the community alike.

The YMCA is a nonprofit community-based program. The goal of the YMCA is to deliver and instill values on children, youth, and young adults that focus on development, healthy living, and social responsibilities. Both the YMCA and the local

acute care medical center strategically plan to work for the greater health and good of the community.

Synthesis of Evidence

The search strategy included the following databases: Cumulative Index of Nursing and Allied Health Literature (CINHAL) Plus, Elton B. Stephens Co (EBSCO), and Ovid Technologies. Keywords used to define the search included: obesity, children, pediatric, food, reward, classroom, behavior, mothers, employment, psychosocial feeding, diet, physical activity, parenting, parent-child relationship, obesity prevention, motivational interviewing, health behavior theory, and community-based participatory research. Using the various keywords and mixed combinations an abundant amount of literature was discovered. The literature was more thoroughly examined for articles that were similar to the Healthy Kids U program. Forty articles and four websites were evaluated and appraised during the literature review process. Limitations included English language only, publication within the last ten years, and full text availability. Inclusion criteria considered the population of focus, health outcomes, publish date, and publication language. Exclusions included commentary, publication date, and complex medical complications within the study population. Twenty-two of the forty articles evaluated were included in the synthesis of evidence with particular attention placed on six articles that were most comparable to the HKU program.

Pediatric obesity. The Childhood Obesity Foundation (n.d.) defines childhood obesity as abnormal or excessive fat accumulation that may cause health impairment. Maidenberg (2016) defines child as ages six to 11 years and adolescent ages 12 to 19. Obesity and being overweight are not the same by definition and should be not be used as

such. Fedewa and Davis (2015) define childhood obesity as measuring in the 95th percentile or higher on the body mass index scale (BMI). BMI is calculated by weight in kilograms divided by height in meters squared. Ferrara et al. (2017) explained obesity as being greater than the 95th percentile with appropriate age and gender adjustments; this is called a BMI Z score. Overweight is defined as being equal to or greater than the 85th percentile but less than the 95th percentile, with the same considerations of gender and age (Ferrara et al., 2017).

Adverse health outcomes. Obesity causes both immediate health risks as well as a lifetime of chronic health comorbidities, which lead to a vast increase in healthcare expenditure. Comorbidities and complications include but are not limited to diabetes, hypertension, heart disease, stroke, sleep apnea, increased risk of infections, increased risks of cancer, gastrointestinal complications, increased surgical complications. Obese children are at higher risk for decreased self-esteem and productivity, depression, and are more prone to bullying, and decreased productivity (Fruh, 2017; Hingle et al., 2015; Snethen et al., 2016; Xu et al., 2017). Fedewa and Davis (2015) also state that children who are found to have a BMI of 95% or greater are much more likely to have more behavioral issues compared to children who have a lower BMI percentage.

Causes of childhood obesity. Obesity rates in the United States have tripled within the last three decades (Ige, DeLeon, & Nabors, 2017). More recent numbers show 22.8% of children in the United States between the ages of two to five are overweight or obese (Pratt et al., 2017). The increased rate of childhood obesity is related to a multitude of changes that have occurred over the years. From 1981 to 1997 free play among children dropped by 25% (Grossklau & Marcicsin, 2014). This drop is directly

related to an increase in structured activities, an increase in sedentary activities, and safety concerns (Annesi et al., 2015; Inman et al., 2011). Yilmaz et al. (2014) determined the average American child is participating in four hours of screen time per day. These habits are often developed during the preschool years and then become more difficult to break as the child ages. Furh (2017) states that change is necessary for improvement and change as little as 5% can lead to overall better health outcomes.

Americans are also at risk for unhealthy behaviors complicated by a fast-paced society, filled with convenience foods and stress (Parks et al., 2016). Among these factors are an increased number of families that have both parents working outside of the home, which causes a decrease in physical activity time and lack of support and motivation (Parks et al., 2016; Swyden et al., 2017). Pratt et al. (2017) and Inmen et al. (2011) discuss community factors that contribute to childhood obesity. Some of the community factors include the lack of local playgrounds or sidewalks for outdoor play or the lack of safe outdoor areas. Other factors include increased prevalence of convenience stores and fast food restaurants causing food deserts (Pratt et al., 2017; Inmen et al., 2011).

Family-centered focus. Lifestyle and weight management change is not easily altered within an individual or a family unit. The process of change becomes even more complicated when considering the pediatric population. With the pediatric population, behavior modification and positive change needs to occur within the family as a unit and not on an individual basis. Early family recognition and involvement is a vital component to success (Annesi et al., 2015; Greves et al., 2014, Pratt et al., 2017; Snethen et al., 2016, Wiecha, Nelson, Roth, Glashagel, & Vaughan 2010; Xu et al., 2017). Higher success

rates have been demonstrated when families participant in some fashion (Annesi et al., 2015; Greves et al., 2014; Hingle et al., 2015; Snethen et al., 2017; Wiecha et al., 2010).

Family participation is a noted common strength between many community-based programs and allows for better success rates. Xu et al. (2017) a community based program actively involved parents who expressed concerns for their child's weight and there was an 82% completion rate within the program and a documented decrease in caloric intake, saturated fats, and sodium. Grow et al. (2014) also discussed the importance of family participation within their community-based ACT program. The ACT program found positive self reported improvements indicating an increase in physical activity, decrease in screen time, and appropriately modified food portions. These results can be compared to Ige et al. (2017) and the Children's Eating and Exercise Program (CHEE) where parents were not directly involved in the program but were provided handout education. The handouts consisted of food suggestions that were not being used within the participants' families due to the parents not actually receiving the handouts from their children. This process was discussed, as a limitation of the CHEE program and further suggestions for this barrier was to utilize a parents email opposed to paper handouts to be delivered by the child (Ige et al., 2017). Ige et al. (2017) also discussed many roadblocks that were encountered by the participants and further confirmation that children do not often times conduct the activities of their own health and wellness. Xu et al. (2017) discuses the needs for caregiver support to address obesity; however, few programs provide parent engagement due to high attrition rates when caregivers are involved.

Family participation within programs allows for endless advantages. Family participation permits parents to gain personal knowledge, promotes a more fostering home and food environment, allows for child participation in meal planning, and demonstrates areas in which parents can be better role models (Annesi et al., 2015; Greves et al., 2014; Snethen et al., 2016; Wiecha et al., 2010; Xu et al., 2017). Grieken, Renders, Gaar, Hirasing, and Raat (2014) believe home and family environment is the single most important factor in childhood obesity.

For a child to be successful they need to have an appropriate role model. Children learn much of what they know from their parents and/or caregivers. If the parent or caregiver doesn't understand healthy behaviors, good eating habits, and the importance of exercise, the child will less likely embrace the challenge themselves (Hingle et al., 2015; Ige et al., 2017; Pratt et al., 2017; Rhee, Boutelle, & McKenna, 2017). Parents or caregivers need education to improve their own health habits and to allow them to be successful role models for their children (Hingle et al., 2015; Ige et al., 2017; Pratt et al., 2017; Rhee et al., 2017). Maidenberg (2016) states the lack of social support given by parents and role models can inhibit a change factor to occur, which leads to obesity, due to decreased feelings of love and acknowledgement.

Parent involvement will encourage the food environment of the home to change (Annesi et al., 2015; Shin et al., 2015; Xu et al., 2017). A child will increase their fruit and vegetable intake if the foods are present within the home (Inman et al., 2011). Parents should be encouraged to provide healthy meals, have healthy snacks readily available, and pack fruits and vegetables in their children's lunch boxes (Ige et al., 2017).

Healthy lifestyle programs. Various programs involve families in diverse ways. Some programs allowed for parents and children to participate in all activities together, while other programs split the parents and the children for some activities and then reconvene at some point during the program. Few programs did not incorporate family participation but encouraged family care through handouts sent home with the children as well as personal goal statements made by the children and delivered to the parents (Ige et al., 2017). Programs that did not have direct parent involvement lack family support and encouragement. Some programs went as far as providing childcare for younger siblings to allow for parent participation without distractions (Greves et al., 2014).

Without successful modifications within the family unit, our society will continue to spiral into a further medically complicated and unhealthy state. Various organizations such as "Encourage, Practice, Inspire, Change" (EPIC) kids or "ACT! Actively Changing Together," have outlined appropriate interventions and activities to obtain a healthier lifestyle (Hingle et al., 2015; & Grow et al., 2014). The interventions seem easy for many individuals, despite the educational background or general knowledge of an individual: consume higher quantities of fresh produce, reduce processed foods and sugar intake, decrease screen time, and increase physical activity (Hingle et al., 2015). Most weight management programs provide the same basic curriculum; the difference lies in presentation and delivery as well as meeting the needs of the families and reducing and removing barriers.

The most effective programs bring change and support in many different ways. It is vital that programs offer family participation and family-centered care. Programs such as South County Food, Fitness, and Fun (SCFFF) along with various other programs

across the nation have shown the effectiveness of allowing for family participation, nutritional education, physical activity, as well as staff trained in motivational interviewing (Xu et al., 2017). Through the use of multifaceted programs such as SCFFF programs, are documented success stories of decrease in calorie intake, carbohydrates, saturated fat, and sodium, an increase in fruits and vegetable intake, an increase in fitness performance, and statements of enjoyment during participation in the program (Xu et al., 2017). Collaboration of the family as a whole and promoting healthy parent child relationships will allow for healthier life style changes for everyone in the family and will improve overall success rates (Pratt et al., 2017).

Stress. Many American families experience high levels of stress (Parks et al., 2016; Swyden et al., 2017). Stress within a family directly effects the food consumption and activity level of children and is directly related to the increasing number of two income families, single parent families, and single parent working families (Swyden et al., 2017). In 2016, 66% of married mothers were working and 71% of single mothers were working (Swyden et al., 2017) In 2010, mothers were found to be working an average of 36 hours per workweek (Swyden et al., 2017). Working mothers face a lot of stress: stress of providing for their children financially, emotionally, and physically. This stress is even higher for single moms who don't have the additional partner support (Swyden et al 2017).

The more stress added to a family dynamic is associated with childhood obesity and obesity promoting eating habits (Parks et al., 2016; Pratt et al., 2017; Swyden et al., 2017). Parks et al. (2016) does not offer a clear explanation for the correlation of stress and obesity but it is suspected that there is a connection between stress, eating habits of a

family, amount of physical activity, and hours of screen time. Parental stress also decreases healthy choices presented by the parents; therefore, causing poor modeling habits (Parks et al., 2016; Swyden et al., 2017). Children learn from the behaviors they are exposed to by their parents or caregiver. Allowing for parent/caregiver involvement allows for change factors to occur as a family unit and not within a single individual, lacking the needed support. It is also important that the parent/caregivers are involved in the educational processes and the activities. They create the food environment for the children; without change in the parent there cannot be change within the child (Annesi et al., 2015; Greves et al., 2014; Snethen et al., 2016; Wiecha, et al., 2010; Xu et al., 2017).

Many family stressors cannot be taken away; stress is part of the family dynamics due to various social situations. This confounding factor is one reason why family participation is so important. Parents/caregivers who participate in the healthy life style care of their children can become more self-aware of their own actions and make healthy changes within themselves (Hingle et al., 2015). Parents and caregivers are then more self-aware and can recognize stress and healthy ways to counterbalance stress for better role modeling (Hingle et al., 2015).

Physical activity. To allow for an improvement in lifestyle changes and behavior modification, physical activity as evidenced by an increase in heart rate needs to be incorporated into the plan. Fedewa and Davis (2015) and Xu et al. (2017) explain how childhood obesity is on the rise due to an increase in energy consumption and a decrease in energy usage. This is a direct relationship of larger food portions, foods high in sugar, trans fats, and carbohydrates, a decrease in fruits and vegetables, and a decrease in physical activity time (Annesi et al., 2017; Wiecha et al., 2010; Yavuz et al., 2015).

Families who exercise together grow together. Providing a healthy, fostering environment for families to exercise, free of judgment, will allow for self-efficacy and personal growth in many areas including exercise confidence and an increase in self-esteem.

Yilmaz et al. (2014) state American children between the ages of eight and 18 spend more than six hours a day on screen time, more than any other activity besides sleep. Yilmaz et al. (2014) states that one in four American children spend at least four hours per day engaged in screen time and this habit begins to form as early as the preschool years, far exceeding the recommendation by the American Academy of Pediatrics. The American Academy of Pediatrics (2018) now suggests that children under the age of 18 months only participate in screen time activities such as video chatting. Children between 18 months and 24 months should only engage in highly educational screen time along with the parents. Children between the ages of two and five years of age should only participate in one hour of screen time per day; again, it should be highly educational (American Academy of Pediatrics, 2018). Beyond five years of age parents should strictly monitor the use of screen time and incorporate screen-free time and activities into the child's daily activities (American Academy of Pediatrics, 2018).

Biddle, Bengoechea, and Wiesner (2017) and Yimaz et al. (2014) also identified that screen time causes an increase in weight twofold. The reduction of calorie utilization related to being sedentary is one factor for an increase in weight (Yavuz et al., 2015). Another factor is the increase in calorie consumption, associated with the habit of eating while participating in screen time, as well as the consumption of higher-calorie foods

promoted by advertisements (Maidenberg, 2016; Yilmaz et al., 2014). Maidenberg (2016) states that $866 million was spent marketing unhealthy drinks in the year 2013 by means of screen broadcasting. This is four times more money than any other healthy drink or water advertising.

Biddle et al. (2017); Maidenberg (2016); and Yilmaz et al. (2014) claim that there is an inverse relationship between the number of hours spent participating in screen time activities and the number of fruits and vegetables consumed daily. Parent education and behavior modification is yet again necessary for change to occur within the child's current practices and behaviors. Yilmaz et al. (2014) suggests that a decrease in screen time can be achieved by increasing the amount of family meal times with screens removed, removing screens from children's bedrooms, and replacing screen time with books. Parks et al. (2016) states that screen time is often made available to relieve parental stress by allowing for screens to entertain the children while parents/caregivers attend to other responsibilities. A reduction in screen time is the first step to increasing physical activity.

Hingle et al. (2015) stresses the importance of integrating physical activity into community weight-based programs. Programs that offer physical activity as part of the curriculum approach the need for physical activity in different ways. Participation in the program itself guarantees a specified amount of physical activity per week. In addition to the program fitness hours, the participants and their family members are also becoming more comfortable with the fitness equipment and environment, easing their fitness insecurities and misconceptions. Annesi et al. (2015) states only half of boys between the ages of six and 11 and one third of girls between ages six and 11 receive moderate or

intense physical activity for one hour five times a week, which is the recommendation made by the American Heart Association. Madienberg (2016) takes this statement even further by stating that one in three high school students do not achieve 20 minutes of physical activity three times a week.

Children are not receiving adequate physical activity due to a multitude of factors including safety concerns, financial constraints, weather limitations, family limitations, and schedule conflicts (Annesi et al., 2015; Burrows, Bray, Morgan, & Collins, 2013; Inman et al., 2011; Pratt et al., 2017). Parents are responsible for role modeling and encouraging healthy behaviors; however, it does not help that school fitness education often times meets the time requirement but does not encourage moderate to intense activity, allowing for the participant's heart rate to achieve effective perimeters (Annesi et al., 2015).

Physical activity not only provides physical benefits, it also comes with cognitive benefits (Fedewa and Davis, 2015). Allowing for children of all ages to obtain a physical fitness goal of at least 60 minutes of moderate exercise three times a week will provide overall lasting holistic benefits. Parents/caregivers should be encouraged to be active role models for their children to provide the best outcomes possible.

Greves et al. (2017) noted a self reported increase in physical activity within their program at the YMCA as well as a self reported decrease in screen time, the results were near significant with reports of less than two hours of screen time on most days increasing from 13.1% to 20.2%. Xu et al. (2017) discussed improvements made by the participants in some fitness areas but not all and again the results were not statistically significant. Only a few studies within a meta-analysis can demonstrate any values of

statically significant data when it comes to community interventions on activity and nutrition (Annesi et al., 2015).

Diet. Another important piece to success in a weight management program within the community is diet. Families need education and encouragement on how to improve upon their current eating habits. Greves et al. (2017); Pratt et al. (2017) and Xu et al. (2017) demonstrate the success of having a dietitian within weight management programs. Incorporating a dietitian into a weight management program allows for diet change in coordination with an increase of physical activity. This is a very important piece in behavior modification. Many of the participants lack the knowledge of a healthy food environment. A dietitian can provide group counseling or one on one counseling to facilitate education on proper eating habits.

Pratt et al. (2017) stresses the importance of family involvement on diet modification. Counseling sessions lead by dietitians for families can educate families to shop and cook healthier as well teach the parents/care givers how to motivate their children while modeling healthier behaviors. Changing the food environment in a family's home is challenging but necessary to become successful in weight reduction and improving lifestyle decisions (Annesi et al., 2015; Inman et al., 2011; Shin et al., 2015; Xu et al., 2017). More than eight out of ten adolescents eat less than the required five fruits and vegetables per day, this behavior cannot be changed by an adolescent independently, the parents must be a part of the change factor (Madienberg, 2016).

The over consumption of energy and decrease expenditure of energy is related to many confounding variables. Burrows et al. (2013) and Madienberg (2016) discuss how socioeconomic status widely impacts the food consumption of a family. Families who

come from a lower socioeconomic background also have decreased educational background; therefore, they lack the information needed to make adequate healthy eating decisions (Burrows et al., 2013; Maidenberg, 2016). Burrows et al. (2013) state a lower socioeconomic status directly corresponds with the intake of fewer fruits and vegetables. Shin et al. (2015) states lower socioeconomic areas are most often saturated with local convenience stores that lack fresh produce, which makes the consumption difficult for families.

Even families that are not impacted by economic concerns are consuming fewer fruits, vegetables, and whole grains and are consuming more sugary, processed, high fat food products (Annesi et al., 2015; Wiecha et al. 2010). Drinks high in sugar content are one of the leading factors for a higher consumption of sugar (Hingle et al., 2015). Another contributing factor for an increase in fat contact through fluids is the abuse of high fat milk. Many children over-consume milk products that contain high fat content (Maidenberg, 2016).

Parent education should focus on role modeling healthy food habits, changing their current shopping and cooking habits, and encouraging children to make healthier choices on their own. There are several different ways to assess the current diet practices of the family to determine barriers and knowledge deficits. Ige et al. (2017) discusses the use of "What's on my plate" and "What is in my fridge" activities. Fedewa and Davis (2015) also used food dairies for family surveillance and knowledge of gaps. Families can then be taught according to their individual needs. Ige et al. (2017) also discussed using the stoplight method to teach families what food good to consume in large

quantities, what food should be taken in with moderation, and what foods should be more restricted or consumed infrequently.

Dieticians can teach families many important factors that can lead to improve eating habits. Parents/caregivers should be educated on the importance of eating breakfast every morning and not skipping meals (Rice et al., 2017). Parents/caregivers also need to be encouraged to increase the amount of times that they eat together as a family, structured meal times, and portion control habits (Fruh, 2017; Greves et al., 2014; Ige et al., 2017).

Programs offered take home meal plans and recipe cards to help families develop better eating habits (Ige et al., 2017; Hingle et al., 2015; Parks et al., 2016; Xu et al., 2017). Some programs even offered light snacks for the parents/caregivers and/or children to allow for sampling of new foods (Greves et al., 2014).

Parents/caregivers should also be educated on how child and parent/caregiver stress can impact food intake and how to encourage healthier choices during stressful situations (Parks et al., 2016). Food is often times used as a reward for good behavior and successes for children of all ages. This practice extends into adulthood and causes inappropriate food relationships (Fedewa & Davis, 2015). Fedewa and Davis (2015) discuss the importance of providing children with rewards that are not food related and how this change can not only impact weight management but also impact behavior changes and cognitive abilities. As discussed previously, there are documented cognitive advantages to increasing physical activity just as there are cognitive advantages to developing healthier eating habits.

There are several different ways to encourage parent/caregiver involvement. Parents/caregivers can be taught alongside the children, in a round table setting amongst other parents/caregivers, or by means of one on one counseling sessions. The most important factor is that parents/caregivers are being educated on how to improve the food environment within the home and help the child to make healthy food choices (Annensi et al., 2015; Shin et al., 2016; Xu et al., 2017).

Sustainability. One of the biggest barriers to weight management programs is sustainability (Greves et al., 2014). Families need support and education that will carry them throughout their lifetime. A program that lasts for a limited period of time with no follow up offers no self-efficacy, motivation, or lasting improvements. Families need ongoing care, encouragement, and growth to be successful (Greves et al., 2014). Families need providers and interdisciplinary professionals to educate, motivate, and support their decisions (Yavuz, et al., 2015). The biggest limitation to weight management programs is attrition rate (Hingle et al., 2015; Xu et al., 2017). Attrition rate is high because personal life change is difficult (Hingle et al., 2015). It takes commitment, dedication, and support for a family to be successful. Another limitation of weight management programs is finding and maintaining key stakeholders and financial support when attrition rate is high (Inman et al., 2011).

Despite the difficulties that come with weight management programs there have been plenty of community-based programs that have documented successes. Greves et al. (2014); Hingle et al. (2015); and Rice et al. (2017) documented that YMCA-based programs allow for appropriate family-based care that was reflective on healthy lifestyle changes and not focused on weight loss. Additionally, YMCA programs have been

proven to stop weight gain and even allow for decrease in weight, improve eating habits, support normal growth and development, and promote physical activity. Burrows et al. (2013) determined that 80% of parents enjoyed after school programs such as YMCA-based programs opposed to weekend programs. Ige et al. (2017) supported the after school programs as well, due to the difficulty of adding healthy lifestyle programs in to the daily education of school programs.

Healthcare providers should initiate healthy lifestyle interventions. All well child visits and even some sick child visits should incorporate healthy lifestyle changes into the education for the parents/caregivers (Pratt et al., 2017). All children can benefit from adopting healthier behaviors in their lives even if there is no concern for weight management. In order for children to be successful, health care providers should be proactive and not reactive. Any child that is not responding to trial interventions in the clinic setting should be referred to a weight management program such as programs offered at local YMCAs (Fruh 2017; Yilmaz et al., 2014; Xu et al., 2017). All children deserve equal opportunity for weight management care. Successful weight management programs can allow for a breakthrough in the childhood obesity epidemic and result in a decrease in the need of health care services and expenditure.

Conceptual Framework

The Donabedian conceptual model was used to demonstrate the structures of implementation, the process completed, and the outcomes delivered. This framework triad can be used to evaluate the quality of healthcare, demonstrate what went well and show where barriers remain (Ayanian & Markel, 2016). The Donabedian conceptual model assesses the structure, process, and outcomes of the quality of care delivered. The

structure includes the facility, the providers, and the administration involved with the delivery of care; the processes are the components of care delivered; and the outcomes are the end results provided by the initiative (Ayanian & Markel, 2016).

Applying the Donabedian conceptual model, the structure of this project includes infrastructure, staff, technology, materials, equipment, and accessibility. A need was identified for further physical space for the HKU program along with additional programing alternatives, which required additional equipment. HKU was shown to be successful but was limited in growth and further opportunities due to physical space limitations at the current location. The selection of the new location required consideration of the participant population and accessibility. Additional staff was available for program growth in the form of local college undergraduate and graduate students with the ability to train them with the current staff. Further evidence based research aided in the development of additional hand out materials available to the participants for educational growth and technology was used to record data gathered from the program for analysis.

The process involved in this project included the movement of HKU to the YMCA, additional parent involvement, additional educational handouts, and program expansion by increasing the age eligibility and provider referral base. The movement to the YMCA allowed for more physical space for the participants as well as a large expansion of exercise equipment, an indoor track, an open gym, an exergaming room, and so much more. Along with the additional space and added equipment, the program would have the capacity to allow for parent involvement and participation to promote a healthy family dynamic and allow the parent to be an active role model within the

program. Additional evidence-based educational handouts provided to the participants encouraged the 5210 message. Again, because of the additional physical space and equipment the program would allow for growth in participation without compromising the quality and personal attention that the HKU program strived for.

Several outcomes were assessed within the quality improvement project. The evaluation of the participation rate, the attrition rate, and the level of involvement of participants and their families were assessed. Participants were also evaluated to determine if there was a change in behavior or diet. Along with behavior changes, knowledge gained around the 5210 message was also assessed. Participant feedback was considered to determine the satisfaction of the program as well as feedback provided by the medical providers. Upon completion of the program, the purchase of a gym membership represented sustainability. The financial coverage for the participants to utilize the YMCA was provided by a continuation of an agreement with the medical center's service line. See Appendix A for a complete diagram of the framework Donabedian conceptual development model.

Chapter II: Methodology

Needs Assessment

Childhood obesity increased 47% between the years of 1980 and 2013 (Snethen et al., 2016). High BMI percentages in the pediatric population have become a public health crisis that demands attention (Snethen et al, 2016). Obesity is an epidemic worldwide and a public health concern (Fruh, 2017; Watson et al., 2016; Yavuz et al., 2015). Weight management complications most often continue through the childhood and adolescent years and throughout adult years. Without positive change factors and

sustainability in child-based programs the nation will continue to grow in body fat percentage putting citizens at high risk of complex medical needs.

The state of being overweight or obese is now the fifth leading cause of death in the United States (Fedewa, & Davis, 2015). Obesity leads to a lifetime of chronic health issues such as diabetes, hypertension, heart disease, stroke, sleep apnea, increased risks of cancer, gastrointestinal complications, increased surgical complications, as well as decreased self-esteem and productivity (Annesi et al., 2015; Fedewa & Davis, 2015; Fruh, 2017; Hingle et al., 2015; Inman et al., 2011; Maidenberg, 2016; Rice et al., 2017 Snethen et al., 2016; Tomayko et al., 2017; Watson et al., 2016). On average, medical costs increase by 30% for the pediatric population that is obese, related to comorbidities and complications that arise (Xu et al., 2017). This increase in expenditure led the United States to spend an additional estimated $75 billion in 2003 in health care expenses related to obesity (Grossklaus & Marvicisn, 2014; Yavuz, et al., 2015). The health care expenditure continues to grow, indicating we continue to experience barriers in our efforts to change. The medical costs of preventable diseases related to obesity in the United States are estimated to be $147 billion to $210 billion (Trust for America's Health, 2018).

Within the pediatric population in the United States, 17.9% are obese (Shin et al., 2015; Xu et al., 2017). Annesi et al. (2015) states that 35% of children between the ages of six and 11 in the United States are either obese or overweight. Illinois is no exception to the nation wide epidemic. According to the 2016 Illinois Youth Survey, the population sample of children surveyed in Illinois between eighth grade and twelfth grade were found to be 15.5% overweight and 11% classified as obese using the BMI-Z scale

(Illinois Youth Survey, 2016). McLean County aligns with the national and state demographics. In McLean County 14.3% of the youth in eight through twelfth grade were found to be overweight and 9% obese (Illinois Youth Survey, 2016). Watson et al. (2016) predicts that if there are no effective, lasting changes that occur within the lifestyles of the current pediatric population by the year 2050, 25% of the pediatric population will be obese.

A need was recognized for intervention in McLean County. A local acute care Midwestern medical center operates a HKU program in a nearby county; however, geographically the location is not economically feasible or convenient for McLean County residents. After the need was identified, a pilot program was initiated by a local nurse practitioner in collaboration with a team of physicians that started the HKU program in the nearby county. The Center for Healthy Lifestyles (CHL) was selected for the location of the pilot program, on site at the local medical center, located in McLean County. The pilot program was initiated April of 2017. The pilot program has proven successes; however, barriers existed in meeting the demands and needs of the participant population. The HKU pilot program had a wait list of interested participants and had put through 13 successful participants prior to the project implementation. HKU was only accepting patients from providers at one local pediatric office, with potential and growth from expanding the provider referral database in order to reach more participants throughout the community.

HKU was restricted to one referring office due to many limitations. The pilot HKU location could not support additional referrals from other providers due to resource limitations, despite the need for life style interventions being present within the

community and being identified by local medical providers. The location of HKU offered limited space, equipment, and staff. The pilot model, space, and employee availability could not support more participants. The move of HKU to the YMCA allowed for population growth within the program as well as further development of the program by including further physical activities that were not logistically feasible at the previous location.

The CHL location for HKU did not have the physical space to take on a higher participation rate. The CHL gym space is a small one-room fitness area with limited equipment. The CHL gym is also utilized by the adult population who are participating in medical rehabilitation programs at the same time as the HKU program is in progress. The sharing of space not only makes the logistics of the program difficult but it also can cause for social anxiety amongst the participants who are already at high risk for psychological and behavioral comorbidities (Fedewa & Davis, 2015).

Many stakeholders supported the movement to the YMCA from CHL including physicians, nurse practitioners, registered nurses, exercise physiologists, and the children's hospital service line administration. The YMCA was presented with evidenced based research, detailed project plans, and past successes of the program, which allowed for buy-in and supportive participation by leadership and staff. This collective group of interdisciplinary members allowed for a comprehensive team all in favor of a common goal, to create a successful program to reduce pediatric obesity and instill healthy lifestyle habits.

Project Design

A quality improvement (QI) design was utilized to strengthen and build upon the pilot study. A QI project design can lead to better patient outcomes, improved system performance, and overall professional growth and development (Batalden & Davidoff, 2007). Successful change is a driven by evidence-based practice, content awareness, performance measures, planning, and strategic implementation (Batalden & Davidoff, 2007). The implementation processes strived to demonstrate knowledge in the 5210 message, behavior changes to facilitate healthy lifestyle choices within the family environment, encourage family participation, and increase participation rate by developing a larger referral base from community health care providers.

Setting

HKU is currently located at the Center for Healthy Lifestyles (CHL), at a local Midwestern medical center. CHL's mission statement is to help the community achieve healthier behaviors and help individuals make informed healthcare decisions (OSF Healthcare System, 2018). The CHL provides the community with a Fit Together Program for community members who are of the age 65 or older. The CHL also provides wellness resources for the community through education and health screenings. The CHL furthermore provides corporate wellness by bringing screenings to local employers to assist in employee health benefits and screenings (OSF Healthcare System, 2018). CHL is a great resource for the community as the program serves over 2,300 community members each year (OSF Healthcare System, 2018). HKU started as a pilot program in April of 2017 to increase physical activity in the pediatric population. Two exercise physiologists and two undergraduate interns in the exercise physiology program at Illinois State University facilitated HKU at CHL. HKU is currently trialing a graduate

assistant dietitian from Illinois State University ten hours a week as the newest addition to the program. The physicians or advanced practice nurse referred the first participants from a local pediatrics medical office.

The local YMCA was selected for the location of HKU growth and development due to the adherence of strategic planning with the medical center as well as the foundational goals of the YMCA. The YMCA has played a significant role in the McLean County community since 1855 (Bloomington-Normal YMCA, 2014). The YMCA has provided a non-profit partnership to deliver safe, positive behavioral and emotional changes to the youth. The Bloomington-Normal YMCA has impacted over four thousand lives annually within McLean County over the past 163 years (Bloomington-Normal, YMCA). The YMCA houses cardiovascular machines, weights, basketball courts, group fitness rooms, racquetball courts, an indoor track, an exergaming room, and childcare services (Bloomington-Normal YMCA, 2014).

Population

A total of 11 participants had participated in HKU since the pilot program began in April 2017, prior to the project initiation. Two individuals completed the five-week program twice; they enjoyed the program and wanted to repeat the experience for further growth. The participants were between the ages of 12 and 17 years of age. The pediatric medical office completes the referral processes into the HKU program. Once the referral is made by the provider and sent to the HKU team, an exercise physiologist initiates a phone call to begin the registration process into HKU. The referral process is through subjective and objective assessment made by the medical providers during scheduled office visits. An indicated need to increase in physical activity, with evidence of a high

BMI, and behaviors documented on the 5210 surveys initiates the referral process. Willingness to change current behavior practices is also a strong factor for participants to be referred to HKU.

The sample population for this project came from the pediatric population in Mclean County, Bloomington, Illinois. Bloomington, Illinois, has a population of 78,024. The median home income is $60,829, and 72.6% of the population is white and 10.6% of the population is black, non-Hispanic (City Data, 2018). Eligible participants are between the ages of nine and 17; this age group was expanded from the previous age range of 12 to 17 in the pilot program. Participants had a Z score BMI of 85% or greater or showed a documented need for intervention and desire for change as indicated on the 5210 healthy habits questionnaire. The patient population was referred from a local pediatric medical office and then the providers at a local family practice were added to the referring provider list after the move of HKU to the YMCA. All participants require a parental signed consent form (see Appendix B). The only exclusions were if parents did not sign consent for the child to participate in the study, the child does not agree to the assent, or families that do not speak fluent English.

Tools

The 5210 Healthy Habits Questionnaire ages 2-9 and 10-18 is administered to many patients during a well child visit to facilitate the assessment of the child's lifestyle. The patients that receive the tool are based off of provider preference. The 5210 Healthy Habits Questionnaire was made a part of HKU referral process made by physicians and advanced practice nurses in the primary care clinics as well as a pre-assessment tool for the project. Patients that did not complete the tool at their office visit were required to

complete the form during the registration process of HKU as a pre-assessment. The 5210 questionnaire was redistributed to all HKU participants at the end of their 10 sessions within the program as a re-evaluation tool. This tool was used to assess for changes within the child's daily behavior by comparing the pre-assessment tool to the post HKU program tool.

The 5210 Healthy Habits Questionnaire (see Appendix C) is an established tool adapted by the MaineHealth and Maine Medical Center from the High Five for Kids program in Massachusetts and Keep Me Healthy program in Maine (MaineHealth, 2018). MaineHealth (2018) provides free online access to the *Let's Go!* Healthcare Toolkit for providers, including use of the 5210 Healthy Habits Questionnaire. The *Let's Go!* Healthcare Toolkit is easy to use with a free printable PDF file as well as the ability to purchase a hard copy of the toolkit if desired (MaineHealth, 2018).

Specific reliability and validity results could not be established on the 5210 Healthy Habits Questionnaire; however, the 5210 message can be claimed as a successful message (Rodgers et al., 2013). Rodgers et al. (2013) completed a study between the years of 2007 and 2011 measuring health behavior, knowledge, and awareness on the 5210 message after a communication campaign and community based interventions. The study indicated positive change factors within the population. The results showed a statistical significance in parent awareness on the 5210 message and the children within the population documented and increase in fruit and vegetable intake as well as a decrease in sugary drinks (Rodgers et al., 2013).

Another tool used to evaluate success and improvement measures towards self-efficacy is the HKU report cards. The HKU report card (see Appendix D) is not an

established tool with reliability or validity. The HKU director, with the help of the exercise physiologists, developed the report card and has given permission to use the tool to evaluate participant success in this project. The report card consists of the participant's focus of the day, goal for the week, and any other pertinent comments for the week. Ige et al. (2017) stated that participants in healthy life style programs benefit from having documented goals to achieve.

An exercise physiologist at HKU developed the exercise log for the program (see Appendix E). The developer of this tool did so with the expectation that it would be used for this project, therefore, approval was provided by the author of this tool. This log was developed to help direct the exercise physiologist during the programing of the session as well as provide a record of what the participant completed with notations to indicate the ease or difficulty in which it was completed. This tool is multifunctional as it kept the project running smoothly, reminding the facilitators the next exercise to introduce as well as recording weight repetitions to assess level of improvement.

Project Plan

Parent participation. The HKU pilot program did not allow for parent participation. Parent participation was integrated into the program just before the move to YMCA. Prior to the move to the YMCA, after the parent involvement implementation, the parents were generally not involved. Few parents would stay during the session; most parents would drop off their child and then return for pick up. At that given time parents could participate in any manner if they desired to. After the relocation to the YMCA structure was brought to the parent participation. During cardiovascular workout sessions the participants and their family members had the option of working out alongside each

other. During the strength training and activity time the families were asked to separate and complete their own exercises away from the participants to allow for one-on-one time with the trainer. This one-on-one time allowed for personal motivation by the exercise physiologist and personal growth of the participant without parent interference.

Relocation. The HKU pilot program was transferred from the CHL and integrated into the community YMCA. The HKU relocation was a necessary change to allow for growth within the program. The pilot HKU program had high success rates of program completion, efficacy, and change factors within a very small population base and the move allowed for further growth and development of the program.

The YMCA provides a much larger physical space and allows for an expediential amount of growth in the development of the HKU program, which in turn allows for a larger referral base. Transferring the HKU program to the YMCA facility provides private space for the HKU program to provide personalized instruction. The YMCA houses several workout areas: a room with weights and cardiovascular equipment such as treadmills and stair steppers, open exercise rooms for group fitness programs, a pool, an exergaming room complete with a rock climbing wall, an indoor track, basketball courts, racket ball courts, and a kid friendly weight lifting room. The additional space and equipment allows for a more efficient and effective healthy lifestyle program by allowing a wide variety of programs and activities for the participants to engage in. The opportunities in physical activity choices at the YMCA will increase the likelihood of the participants finding personal joy, satisfaction, and growth from the physical activity that they are exposed to during the HKU program.

Referral process. Pediatric patients who are seen at the local pediatric office and the family practice office are assessed for the need for healthy lifestyle interventions that cannot be successfully completed by management and education performed within the clinic setting. The medical provider seeing the patient completes the assessment; this included medical doctors as well as advanced practice nurses. The pediatric population referred to the HKU program fit the following criteria: ages nine to 17, BMI- Z score of 85% or greater, or demonstrate the need for an increase in physical activity and education on living a healthier lifestyle as evidenced by conversations with the provider and the use of the 5210 Healthy Habits Questionnaire. The 5210 Healthy Habits Questionnaire is completed in the waiting room prior to a well child visit or sick visit.

The receptionist at the clinics have a knowledge of what tools each provider uses and delivers to the appropriate patients on a clipboard. This clipboard has all the documents required, depending on provider preference and age of the patient. The receptionists had informal education on how to help the families appropriately complete the forms, if the need arises. The parent and/or the child completes the tool depending on age appropriateness and the decision of the family. To date there have not been any questions by the families about the tool directed towards the receptionist or the medical provider. The providers look over the tool during the assessment of the child and offer education as needed, depending on the responses of the individuals. The tool is kept on file with the provider and a copy is given to the family to use a reference for personal growth in the home environment.

Unfortunately, at this time not all providers at the clinics have agreed to adopt the 5210 Healthy Habits Questionnaire. Some providers stated personal preference or time

constraints for rationale. If a provider refers a patient and chooses not to use the 5210 Healthy Habits Questionnaire, the Questionnaire is introduced to the participant during admission to HKU.

The referral, along with the 5210 Healthy Habits Questionnaire, if applicable, is sent directly to HKU staff. Once a patient is referred to HKU, the process of meeting lifestyle goals can begin. An exercise physiologist reviews the referral and contacts the family. It is the exercise physiologist's role to explain the program in its entirety and help the family determine if the program will be a good fit for them. If the family is willing to participate in the program, which is free of charge, they are given a program start date. The families can choose to register during their first HKU session or they can plan a day to register and visit the site and then determine a scheduled start date. At the time of registration, the parent/caregiver and participant are given a complete introduction to the program by an exercise physiologist. At this time the family is presented with the application for the program as well as the consent and assent for the study if they choose to participate. The exercise physiologists or myself, who are Collaborative Institutional Training Initiative (CITI) trained in responsible conduct of research, verbally explained the consent and assent to the family. Verbal confirmation of understanding was acknowledged before the signing of the consent.

Programming. A session with HKU is complete with a 45-minute exercise program alternating in cardiovascular fitness and strength training. The HKU program meets twice a week, every Monday and Thursday from 3:30 p.m. to 5:30 p.m. Each cohort meets for a total of five weeks, equaling 10 sessions. The YMCA allows for two dedicated hours for the HKU program to utilize designated rooms and equipment. Each

exercise physiologist can take up to five participants in a given session. Two sessions run back-to-back to allow for a total of 10 participants each Monday and Thursday. Both days consist of group fitness, strength training, cardiovascular fitness, and play-based activities such as basketball, racket ball, rock climbing, or exergaming. The activities promote participative movement throughout the duration of the program to allow for an increase in heart rate. The participants are exposed to a variety of fun physical activities in hopes of finding an activity that the participant can truly claim as their own hobby. HKU provided the personnel and resources to facilitate the move to the YMCA location. The YMCA was not responsible for the program, with the exception of the location, when the initial transfer of locations occurred. HKU supports two exercise physiologists that lead the fitness activities with the help of Illinois State University exercise physiologist student interns.

Education. Healthy lifestyle habits and diet education were provided to the participants in the HKU program by the exercise physiologists. The participants were given handouts and short educational pieces in conjunction with their physical activities for the day. The handouts were provided during the Monday session and were the educational focus for the week. The goal of the education is to instill healthier behaviors and provide examples and current alternatives to behaviors that are currently in the family's routine and related back to the 5210 message.

Participants are also expected to set a nutritional goal and a physical activity goal for the each week of the five-week program. These goals are communicated verbally between the exercise physiologist and the participant as well as by means of the HKU report card. If the parents choose not to participate in physical activity they are at the very

least involved in updates and educational pieces given by the exercise physiologist when they pick up their child at the end of the session.

Program Growth. In order to gain referrals from extending providers at the local family practice, the CHL office manager provided education during a work meeting. The meeting took place during the workday and included all providers, midlevel providers, registered nurses, and medical office assistance staff. Emails were sent to provide education for those who could not attend the meeting. The presented education focused on the structure of the HKU program and the benefits it can offer to their pediatric patients who demonstrate a need, with encouragement to utilize the program, free of charge to the patient and their medical facility. At the end of the meeting the audience was able to speak to the program, knew how to identify patients that could benefit from the program, understood how to refer patients to HKU, and were aware of the benefits that have been noted in previous participants.

Outcomes

The project outcomes are as follows:

1. Assess the knowledge gained as evidenced by 95% of the participants will be able to speak to the 5210-message statement by the end of week five of the HKU program.
2. Increase positive behavior changes and self-efficacy related to healthy lifestyle participation as evidenced by one or more positive health changes in physical activity or diet documented by 50% of the participants on the 5210 survey completed at the end of the five-week program.

3 Achieve a participation rate of 30% as defined by completion of 10 sessions by the enrolled participants within the five-week HKU program and continued commitment to physical activity as evidenced by a gym membership.

4 Achieve a 25% participation rate of parents/caregivers/support person through involvement in appointments, HKU activities or open gym activities over a four -month period.

5 Increase referrals from providers by 50% by expanding the referral opportunity to the Bloomington Family Practice as well as expand the age range to nine years of age through 17 years of age prior to November 2018.

6 Present all of the participants in the HKU program with an educational piece weekly on a healthy lifestyles topic including diet, exercise, healthy sleep habits, or stress reduction through a documented log.

7 Participants will increase their exercise performance and decrease their perceived exertion over the course of the five-week session as evidence by a record of repetitions or time, along with the participants' perceived exertion at the start of the program and again at the end of the program.

To assess the participant's knowledge of the 5210 statement, the participant was asked to speak to the statement at the end of the five-week/ten session program. The participant was asked to write out the meaning of the 5210 statement on the back of their final 5210 healthy habits questionnaire. The participants were given activities and education on this pneumonic throughout the five week/ten session program. Using the

5210 Healthy Habits Questionnaire, the participant's self-efficacy and positive behavior changes were assessed. The participants were required to have a 5210 Healthy Habits Questionnaire on file prior to the first HKU session and then again at completion of the program. The participants' questionnaires were compared to assess for any positive or negative behavior changes that occurred over the course of the five weeks/ ten sessions.

Each individual within the program was assessed for participation. Each participant must complete ten sessions to successfully complete the program. The program may be extended if the participant is unable to attend sessions. These dates are rescheduled on an individual basis as the program allows. Evaluation of the participation rate includes if the participant obtained a gym membership after completion of the program. The HKU program cannot fully claim success unless the participants have a sustainable plan to continue to grow in their fitness regimen. The parent participation rate was also documented to determine how much family participation was occurring. Family participation was not enforced but strongly encouraged.

The referral database was also assessed for growth. The age of the participants expanded to allow for further participation. Along with the age expansion the number of providers who can make referrals to HKU also grew by an entire practice. The HKU participation rate was compared to the previous participation rate when HKU was at CHL. Attendance was taken at each HKU session by means of the same patient identification number, documenting both the participant attendance and any parent or caregiver attendance. A CITI-trained exercise physiologist documented all attendance records.

Data Collection

Data collection started with the first cohort at the YMCA on August 27, 2018 and continued through November 29, 2018. An exercise physiologist, who is a leader in the program, assisted with the documentation for participation rate and the filing of the data in a secure manner that allowed for assessment of the information without any identifiers. This exercise physiologist had direct training on how to collect, de-identify the data, and file the data securely as well as obtain the required CITI training, as deemed necessary by the Community Institutional Review Board (IRB). Each participant was assigned an identification number. The number was a random number assigned to the participant and placed on their file folder. The patient identifiers were removed by whiting out the information and then making a copy of the whited out form. The original form was then shredded to ensure the name could not be associated with the data. The file folder housed copies of all of the documents for data collection: the 5210 Healthy Habits Questionnaire, the HKU report cards, and attendance record of both parent/caregiver, with all patient identifiers removed. The file folder was kept secured in the locked office at CHL and brought to the YMCA site at each HKU event by the CITI trained exercise physiologists.

Evaluation and Sustainability

A sustainability plan was agreed upon with the YMCA administrators prior to the transitional move. The YMCA is slowly adopting the HKU program. The initial transition of HKU was simply logistical location; the YMCA had no responsibility, other than coordinating the space for the activities. The YMCA hired a staff member who was trained and prepared to take over the HKU program. This staff member started working for the YMCA in January 2019 and was trained by the HKU exercise physiologists. The change factor of having the YMCA sustain and maintain the HKU program started

January 2019 with the support of the local medical center's leadership and personnel. To prepare the YMCA staff for ownership of the program, they were trained by the current HKU exercise physiologists and administrator in the administrative works of the program, the gaming and exercising aspect of the program, and the educational deliverables given to the participants. Another piece of sustainability included encouragement of the participants to maintain healthy activities after graduation of the HKU program by obtaining a gym membership after completing the five-week session with HKU. The gym membership was guided towards YMCA; however, success is noted with any local gym membership.

The data collection will be shared with the CHL and YMCA administrators, the exercise physiologists, the referring providers, and the children's hospital service line by a meeting during office hours, as well as an email for those who can not be in attendance. The data collected and shared demonstrates successes and barriers to the invested stakeholders. The children's hospital service line has already renewed their financial investment to the HKU program and committed to paying the financial responsibility for the participants through the end of 2019. The 5210 Health Questionnaire continues to be a part of the program as pre- and post program analysis to further log behavior changes that occur in relationship to the HKU program in hopes of documenting further successes for continued stakeholder buy-in.

Time Line

HKU moved to the YMCA in August 2018 after IRB approval was obtained and data collection began and continued through the end of November 2018. A children's hospital service line, which is affiliated with the integrated health system of the local

medical center, agreed to pay for the participants for six months and during that time HKU current staff continued to build a relationship with the YMCA and train the YMCA to take over the HKU program. In January 2019, the YMCA started training to obtain ownership of the program. See Appendix F for timeline and further details.

Data Analysis

I analyzed and recorded the pre- and post- 5210 Healthy Questionnaires after completion of data collection at the end of November 2018. Questionnaires were assessed for an increase in documented fruits and vegetables, an increased number of breakfasts throughout the week, and a decrease in fast food dining. Further assessment included removal of a television from the child's sleeping environment, an increase in physical activity/physical play, an increase in water intake and decrease in sugary drinks. Success was achieved if one positive behavior change was identified upon comparisons of the pre-and-post 5210 questionnaires. Knowledge gained on the 5210 pneumonic is recorded by the exercise physiologist that the participant is able to state what each number represents. Participation in the program was also evaluated. The data was secured in a Microsoft Excel spreadsheet on my personal computer and was password protected. The qualitative data included behavior changes noted on the 5210 Healthy Habits Questionnaires as well as positive statements noted on report cards. Quantitative data included the participation rate, the percentage in which parents/caregivers were involved, as well as the growth of the program. Tables in Microsoft Excel were created to depict and analyze the data results and relationships.

Institutional Review Board

The University of Illinois College of Medicine at Peoria IRB reviewed the project and confirmed IRB approval for expedited review on July 24, 2018 **(**see Appendix G). After IRB approval, consent and assent was obtained at the time of HKU registration by the exercise physiologist. The consent and assent forms (see Appendix B) were delivered and explained to the parent or guardian and participant at the time registration by an exercise physiologist who was trained on the documents, or by myself. The parent or guardian was given the opportunity to review the forms at home if more time was needed prior to making a decision; none of the families requested this extra time. The families also had the ability to withdraw from the program at any time without any barriers to finishing the HKU program. None of the participants in the program withdrew.

Chapter III: Organizational Assessment and Cost Effectiveness Analysis

Organizational Assessment

Readiness for change. The HKU pilot program was ready for growth and development. The previous environment of HKU became too small to support the program. The YMCA provided a memorandum of understanding (MOU) ensuring the partnership between the medical center and the YMCA. This collaborative effort indicated that the YMCA was an invested stakeholder of the program and was committed to encourage further change and growth of the HKU program.

Medical providers within the county, who were not a part of the current provider referral base, expressed a desire to refer patients to the HKU program. This is in addition to the waitlist that was already developing from current referring providers. The current staff at HKU stated they were ready to take on more participants and were willing to develop additional programming to meet the changes and needs of the community.

Anticipated barriers. Some of the foreseen barriers included logistical complications for participants due to the location change to the YMCA, priority of other obligations such as work that may interfere with participation, or lack of support or resources to make the commitment. The most significant foreseen barrier is sustainability. The program requires collaboration among many individuals from different entities. Everyone must come together as a team to allow for success within the program. Not only does effective team communication need to be maintained but there also has to be continued funding for the program to continue. The first six months of financing was supported by the children's hospital service line; following the six-month period the service line renewed the funding obligation through the end of 2019. After 2019, another contract will need to be developed with the service line or another institution or grant funding will need to be obtained.

Facilitators to implementation. The children's hospital service line is the primary facilitator for implementation. Without the funding, this program could not be made possible. In addition to the funding for the participants, the exercise physiologists are instrumental and the front-line source of this project. The exercise physiologists have the most impact on the participants. Their attitudes and investment can further encourage or discourage the participants and place a huge impact on their experience not only with the program but moving forward in life choices.

Risks. Some potential barriers and risks include; lack of primary care clinician buy-in; consistent distribution, review, and referral of qualified participants; and communication and collaboration among primary care clinicians and HKU personnel after structure and location of HKU program changes. Without primary care buy-in

participant referral would be limited; therefore, the program would not be sustainable or have the impact needed to promote healthy lifestyles. The success of the program must be communicated to the providers to ensure referrals. The providers must also be appropriately trained and encouraged to place referrals as well as be able to identify the appropriate participant for the program. The provider must also be connected by effective communication concerning their patients' progress and participation. The relationship between HKU and the primary care providers is of utmost importance. Any new providers within the facility must be made aware of the program. Without consistent education, the knowledge of the program may not be prevalent if there is turn over within the office. Another potential barrier would be lack of funding, if additional costs are accrued that were not considered in the planning of this program.

Interprofessional collaboration. From start to finish there are a multitude of disciplines that are involved and responsible for the success of the program. The process starts with the receptionist who delivers the 5210 questionnaires to the parents and patients in the waiting room. The medical providers, including physicians, midlevel providers, and registered nurses, must acknowledge the need and importance for the program and then express the success and importance to the participant so that they become involved and interested. The medical providers must also trust and believe in the program themselves. The exercise physiologists and student interns must also be enthusiastic, engaged, supportive, and motivational from the start of the program to the completion. The exercise physiologists are the face of the program. They must capture the parent at the first phone call as they explain the program and continue to engage them throughout the ten-session program. The exercise physiologists and the YMCA staff are

crucial to the program. If the participant is not engaged, motivated, supported, and encouraged, they are not going to find a personal need for physical activity and will not adopt the necessary changes to be successful for themselves.

Cost Factors

Costs of the expansion of HKU pilot program will be minimal, in fact it is a means to cost savings. The CHL manager and exercise physiologists were currently on staff at the CHL and investing at the very minimum ten hours per workweek on the HKU program prior to implementation. The implementation of this project took additional time for meetings and planning but did not change the physical work hours of the HKU program requirement. The hourly wage of these employees was left discrete for personal protection. On average, an estimated two hours per workweek was devoted above and beyond the regular ten hours between the months of May and November to plan and organize for implementation, that is a total estimate of sixty- four hours each employee: two exercise physiologists and a manager. The YMCA administration has plans to make budget changes to allow for YMCA staff to take over the HKU program, this will then free up additional time for the CHL staff to devote their workweek to other focuses.

The children's hospital service line agreed to pay $180 for every participant that completes the program to offset the cost accrued by the YMCA for six months, and then later extended the time period through the year 2019. During the project a total of ten participants participated and were funded by the service line indicating a total cost of $1,800. Additional indirect costs included copies and paper handouts, which was accrued by the CHL's budget. Please see Appendix H for additional budget information.

The population within the HKU program has already developed identifying factors associated with being overweight or obese. The partnership between the YMCA and the medical center is a positive relationship fostering the greater good. To prevent or decrease comorbidities is a lifetime of medical care savings. Early identification and care allows for the most success which leads to cost savings (Yavuz et al., 2015). Upon the completion of the HKU program, the family is considered financially responsible for the gym membership. If the family has financial concerns in which they cannot afford the agreed upon rate, they can apply for a YMCA scholarship to further reduce the price if they qualify based on need.

Chapter IV: Results

Analysis of Implementation Process

Data was collected from the participants of the HKU program from the move to the YMCA, which occurred on August 27, 2018, until the end collection date of November 29, 2018. All participants referred to the HKU from a local pediatric or family practice medical office were eligible for participation in the study. Participants who qualified for the HKU program were children between the ages of nine and 17 years of age who had a Z score BMI of 85% or greater or showed a documented need for intervention and desire for change as indicated on the 5210 Healthy Habits Questionnaire. Data from these participants were collected over a course of a ten-session program. The pre- and post- program questionnaire differences of various measures were collected from each participant and were analyzed to assess the efficacy of the program. The participants had to complete all ten sessions within the data collection time period, September 20, 2018 to November 29, 2018, as well as complete all of the objective data

collection forms to be a part of the study. The total sample size of the study was eight participants (n = 8).

In order for the HKU program to grow, the referring provider base also had to expand. The referral capability was extended to one additional office during the data collection phase. The addition of this office was made well into the data collection phase opposed to the initial plan. The thought was the extended provider base would be established and ready to refer at the time of relocation. The pushback of implementing this change was due to scheduling conflicts as well as wanting to give time to establish the program at the YMCA location prior to expanding the program and offering it to more participants. As the data collection phase progressed, new referrals started to come in, which indicated the extension to new providers was accepted and was being utilized but time constraints would not allow further data collection.

The data collection of this project was somewhat challenging. For consistency, it would have been beneficial for all of the referring providers to use the 5210 questionnaire in their assessment and referral process; however, some of the providers opted not to utilize the questionnaire. Physicians and midlevel providers have a lot to focus on when seeing a patient with a limited time period. The providers didn't want to add anything to their patient visit or change their current assessment methods. Due to this lack of consistency, some of the participants had a pre-assessment questionnaire completed prior to the HKU signup process and some did not. At times this was difficult for the exercise physiologists to remember to have the participant complete this form if it was not already on file at the initiation of the program.

In addition to the inconsistency in the 5210-pre-assessment questionnaire completion, there was a participant that had to be excluded from the project because a post 5210 assessment questionnaire was not on file. There were multiple attempts to reach this participant by phone and at the gym to obtain a copy of the tool; however, our attempts were not successful. Therefore, the participant's information was dismissed from the project.

The timeline of this project was altered and pushed back many times due to circumstances beyond control. Stakeholder buy-in takes time to develop. The administration at the YMCA required additional education and time before accepting the collaborative project. The most important lesson learned during this study was that timelines and deadlines often are written but are not met due to unforeseen circumstances. Another valuable lesson learned within this project is the amount of change that can occur when collaborating with multiple disciplines. Collaborating and forming community partnerships means establishing a congruent plan that had duel ownership.

Analysis of Project Outcome Data

Statistical analysis. In addition to the pre-post measure designation, covariates controlled for or otherwise included in the models were: participant age, participant gender, parental support of the program, television in the bedroom, computer in the bedroom, desired change through the program, and reason for referral to the program. Analysis was performed using R version 3.5.1. The mean, standard deviations, range, and medians were recorded for all continuous variables. For categorical variables, the frequency and percentage were recorded. All statistical tests were conducted against a

two-sided alternative hypothesis, with a significance level of 0.05. A mixed model linear regression was used to determine relationship between predictors and continuous outcomes while modeling both fixed and random effects. A mixed model linear regression allows for analysis with repeated measures from the same participants, as well as the inclusion of covariates and control of potential cofounders. A mixed model logistic regression was used to determine the relationship between predictors and categorical outcomes while modeling both fixed and random effects. This model also allows for analysis with repeated measures from the same participants, as well as the inclusion of covariates and control of potential cofounders.

The number of participants during the data collection phase equaled 10; however, not all 10 participants could be used in the data analysis. One of the participants completed all 10 of the required HKU sessions but did not complete the final 5210 Healthy Habits Questionnaire at the complication of the program. Efforts were taken to obtain this information within a reasonable time period after the program was over without successful efforts. The additional participants were not included in the analysis due to not completing the program in its entirety during the data collection period. Some participants were enrolled and had already started their 10 sessions when data collection started; others were still enrolled in the program when data collection ended.

The program consisted of 4 participants who had completed the full 10 sessions of the program along with all of the data collection requirements. These participants, 2 (50%) males and 2 (50%) females, no transgender or other sex identified, had an average age of 11.8 ± 1.4, ranging from 10 to 13 years (median = 12 years). Participants' parental support averaged 47.5% of the sessions attended, ranging from 0 – 100% (median =

45%). Two (50%) of participants had a television in their bedrooms, while 2 (50%) did not. No participants (0.0%) had a computer in their bedroom. The television and computer variable did not change during the duration of the HKU program (see Table 1).

Sample Description

Table 1

Patient Demographics

Variable	Mean ± sd (min, max) [median] -or- N (%)
Gender Female Male	 2 (50.0%) 2 (50.0%)
Age	11.8 ± 1.4 (10: 13) [med: 12]
Parental Support (% Sessions Attended)	47.5 ± 55.0% (0-100%) [med: 45.0%]
TV in Bedroom Yes No	 2 (50.0%) 2 (50.0%)
Computer in Bedroom Yes No	 0 (0.0%) 4 (100.0%)

Table 2

Summary of Pre-Post Statistical Outcomes

Variable	Mean ± sd (min, max) [median] -or- N (%)
Daily Servings Fruits/Vegetables Pre Post	 2.50 ± 1.08 (1.50 : 4.00) [med: 2.25] 3.25 ± 0.65 (2.50 : 4.00) [med: 3.25]

Weekly Number Family Meals Pre Post	 3.25 ± 3.30 (0.00 : 7.00) [med: 3.00] 4.62 ± 2.75 (1.00 : 7.00) [med: 5.25]
Weekly Number Breakfasts Pre Post)	 4.12 ± 2.32 (2.00 : 7.00) [med: 3.75] 4.12 ± 3.33 (1.00 : 7.00) [med: 4.25]
Weekly Servings Fast Food Pre Post	 2.38 ± 0.95 (1.00 : 3.00) [med: 2.75] 1.25 ± 0.96 (0.00 : 2.00) [med: 1.50]
Daily Screen Time Hours Pre Post	 4.50 ± 1.00 (3.00 : 5.00) [med: 5.00] 3.12 ± 0.63 (2.50 : 4.00) [med: 3.00]
Daily Active Play Hours Pre Post	 1.88 ± 1.03 (0.50 : 3.00) [med: 2.00] 1.25 ± 0.65 (0.50 : 2.00) [med: 1.25]
Knowledge of 5210 Pre Post	 0.00 ± 0.00% (0.00 : 0.00%) [med: 0.00%] 100.0 ± 0.00% (100.0 : 100.0%) [med: 100.0%]
Excitement toward Program Attendance Not wanting to come Didn't mind coming Looking forward to coming Super excited to come	Pre / Post 0 (0.00%) / 0 (0.00%) 2 (50.0%) / 1 (25.0%) 1 (25.0%) / 0 (0.00%) 1 (25.0%) / 3 (75.0%)
Experienced Physical Difficulty in Sessions I feel it was easy I had to put some effort into it Appropriately hard Too hard for me	 Pre / Post 0 (0.00%) / 2 (50.0%) 3 (75.0%) / 2 (50.0%) 1 (25.0%) / 0 (0.00%) 0 (0.00%) / 0 (0.00%)

Note. Covariates that were not detailed included reason for program referral, and changes desired through the program.

Mixed-effects, linear regression models with random intercepts for each participant was fitted to determine the effects of the program upon daily servings of fruits and vegetables, family meals consumed in one weeks time, number of breakfasts

consumed in one weeks time, number of fast food meals in one weeks time, daily screen time hours, daily active play time, excitement towards the HKU program, the perceived difficulty of the HKU program, and the number of gym memberships obtained after the completion of HKU program (see Table 2). Various factors (uniformity of responses across subjects, sample size, presence of more important covariates, and failure of model convergence) precluded controlling for all potential covariates. While controlling for age, gender, and parental support as fixed effects, the effect of the program was not significant ($p = 0.22$) in the changing of daily servings of fruits and vegetables. Although daily servings did increase from Pre- to Post-, the size of this increase (1.25 servings) was not enough to overcome the small sample size. No covariates evidenced significant effects.

The program did not develop significant ($p = 0.12$) results in the amount of meals eaten together as a family. Although the number of family meals did increase from Pre- to Post-, the size of this increase (1.37 meals) was again not enough to overcome the small sample size. No covariates evidenced significant effects. When analyzing for the number of breakfasts consumed in a week time, again the program was not significant ($p = 1.00$). Number of breakfasts did not evidence a discernible change from Pre- to Post-, statistically or in terms of raw numbers. No covariates evidenced significant effects. The program was significant ($p= 0.04$) in decreasing the amount of fast food meals consumed within a given week. From Pre to Post, servings of fast food decreased (1.13 servings). No covariates evidenced significant effects.

The program was marginally significant ($p =0.08$) for active play hours in an undesirable direction. Unfortunately, from pre- to post- active play hours decreased (0.63

hours). No covariates evidenced significant effects. The level of excitement for the HKU program was not significant ($p = 0.27$). Although excitement ratings did show increases from pre- to post-, the size of these increases was again not enough to overcome the small sample size. Again, covariates evidenced significant effects. The program was significant (p= 0.04) in changing the amount of daily screen time. From pre- to post-, screen time hours decreased (1.38 hours). No covariates evidenced significant effects (see Table 2 and Table 3).

A mixed-effects, cumulative link model with random intercepts for each participant was fitted to determine the effect of the intervention upon the ordinal outcome of experienced physical difficulty during program sessions. Various factors (uniformity of responses across subjects, sample size, the failure of model convergence) precluded controlling for any potential covariates. The univariate effect of the program was not significant ($p = 0.98$). Although difficulty ratings did show decreases from pre- to post-, the size of these decreases was again not enough to overcome the small sample size (see Table 2).

A mixed-effects, logistic regression model with random intercepts for each participant was fitted to determine the effect of the program upon the binary outcome of post-program gym membership enrollment. Various factors (uniformity of responses across subjects, sample size, the failure of model convergence) precluded controlling for all potential covariates. While controlling for gender, the effect of the intervention was not significant ($p = 0.99$). Although one participant did enroll in gym membership post-intervention, this was again not enough to overcome the small sample size. Gender evidenced no significant effect (see Table 2).

Of the participants within the program, none of them, 0%, had any prior education on the 5210 message. After completing the HKU 5 week, 10-session program, 100% of the participants could independently and fully speak to the 5210 message verbally or in writing without errors. This assessment occurred at the end of the last HKU session (see Table 2).

Table 3

Analysis of Screen Time

	Estimate	Std. Error	df	t value	Pr(>|t|)
(Intercept)	-12.7946	23.81271	3.26E-08	-0.537	1
Pre-Post (Pre)	1.375	0.375	3	3.667	0.0351*
Age	1.142857	1.804336	3.26E-08	0.633	1
Gender (Male)	1.25	0.938807	3.26E-08	1.331	1
Support	3.928571	4.835593	3.26E-08	0.812	1

Chapter V: Discussion

Findings Linked to Objectives

Objective one. The first objective of HKU program was to assess the knowledge gained as evidenced by 95% of the participants being able to independently speak to the 5210 message by the end of the HKU program. Data collection indicates that this objective was met in full. Of the participants entering the HKU program, none of them were aware of the 5210-health model and 100% of the participants could fully and

independently speak to this pneumonic at the end of the HKU program. This was a success in the education aspect of the program.

Objective two. The second objective of the HKU program focused on increasing positive behavior changes related to daily servings of fruits and vegetables, weekly number of family mealtimes, weekly number of days breakfast was consumed, weekly number of fast foods consumed, daily number of screen time hours, and daily amount of physical activity or play. The daily amount of fruits and vegetables consumed increased by 1.25 servings from the pre-questionnaire to the post questionnaire; however, due to the sample size it was not statistically significant. The weekly amount of family meals together increased by 1.37 meals in a week time. This increase is encouraging; however, not statistically significant due to the small sample size. No changes were noted in the amount of breakfast meals consumed during the week. The number of fast food meals decreased by 1.13 servings from the pre-questionnaire to the post-questionnaire, but again due to sample size this was not statistically significant. The daily amount of screen time decreased by 1.38 hours on the pre-questionnaire compared to the post-questionnaire. Again, this decrease in findings could not be taken as statistically significant due to the sample size. The daily amount of play or activity decreased by 0.63 hours from the pre-questionnaire to the post-questionnaire this could be related to lack of understanding or failure to record accurately. The pre-assessment tool may have had the help of the parent when completing if it was completed in the office setting. The post-assessment tool was completed at the completion of the HKU program and the parent was not involved. The perceived time spent may not have been accurate due to the personal logging of a child. Another consideration is that the child did not calculate the time spent

at HKU into the physical activity time logged. Therefore, the decrease in physical activity may or may not have been due to poor data collection or lack of an understanding. This objective was met with exceeding expectations. Of the participants, everyone (100%) documented at least one positive behavior change.

Objective three. Between the data collection dates of September 20, 2018 and November 29th, 2018 there were a total of five participants who completed the program in its entirety, all ten sessions. There were no other standing referrals or waitlisted participants at that time. No participants failed to complete the program in its entirety during the data collection period. One participant was removed from the data analysis due to the lack of a post 5210-questionnaire. The questionnaire was not completed due to poor communication or lack of education provided to the exercise physiologists on the data collection needs. There were three more additional participants in the program during the data collection period; however, they had not completed their ten sessions by the time of data collection cessation, so were not included in the data analysis. The program start date is different for every participant, there are not cohorts that start and end together; therefore, at all times participants would be mid-program regardless of the data collection stop date. Objective number three exceeded partial expectations by having 100% of the participants within the program complete the program in full during the data collection period; however the expectation of the objective was to have 30% of the participants complete the program in entirety and obtain a gym membership. Of the five graduated participants during data collection only one fulfilled a gym membership indicating a 20% participation rate opposed to the desired 30%.

Objective four. Objective four was to achieve a 25% participation rate of parents and/or caregivers through the involvement of attending any HKU session, appointment, or open gym. This objective exceeded expectations. Data collection provided evidence that a median of 45% of parents or caregivers were involved in active physical participation during the HKU session. This finding is a promising increase from the 0% participation that was occurring during the HKU pilot program. This objective was exceeded in expectation.

Objective five. Objective number five was to increase the referrals from providers by 50% by expanding the referral opportunity to the family practice as well as increase the age range of the participant eligibility. The age range of qualified individuals did expand during the project development to the ages of nine to 17. The referral group grew from one office to an additional family practice office to gain additional participants. The program grew by 60% during the time period of data collection compared, to a three month time period in the pilot program; therefore, this objective was met. Additional referrals were starting to come in from the new provider at the time the data collection stopped. The data that was analyzed included one participant that was under the previous age range and one participant that was referred by a new referring provider, indicating 50% of the participants analyzed were provided eligibility due to the expansion of the program.

Objective six. Objective six was developed to ensure that all participants were provided weekly education on life style changes. Each participant was provided with a weekly educational handout, which correlated with the focus of the goals and teaching pieces for the week. The handouts were adopted from the Let's Go! Program and were

distributed by the exercise physiologists. One handout was a generalized handout on the 5210 message, and the following handouts were dedicated to each corresponding pneumonic in the message. A handout was provided to every participant during the end of the sessions. If the participant was documented at being present that given session they received the handout. Further individualized goals related to the handouts were also in writing on the HKU report card which provided even further documentation that they had received education in the given subject area. An additional form of documentation of education completion was elected to not be used, as it would be redundant and unnecessary workload for the exercise physiologists. This objective was met by 100%; however, a more formalized documentation process in the future may need to be developed to verify the education was provided to each participant.

Objective seven. The exercise physiologist documented the perceived participant emotion and attitude towards the program as well as the perceived physical activity load. The excitement level entering the program was: 50% didn't mind coming to the program; none had a neutral feeling; 25% looking forward to the program; and 25% excited for the program. Upon completion of the program 25% of the participants didn't mind coming and 75% of the participants were excited to be a part of the program. At the initiation of the program 75% of the participants stated they had to put forth effort into the exercises and 25% said the exercises were appropriately hard. The post review on the physical endurance showed that 50% felt the exercises were easy and 50% felt that they had to put some effort towards it. As evidenced by the exercise logs, repetitions, weights, and perceived exertion at the start of the program compared to the end of the program this objective was met for every participant.

The program was most successful in instilling the 5210 message to the participants. The program also successfully produced a program in which the children had fun and were excited to return for further activities. The program required a lot of collaboration and coordination by many different interdisciplinary teams as well as many different groups of individuals throughout the community. While this collaboration made the project interesting, successful, and exciting, it also placed a lot of barriers in the timeline of the project. Barriers consisted of, scheduling conflicts, and time constraints related to the IRB process and approval and multiple interdisciplinary agendas to work around. The program continues to grow and develop beyond the scope of this project and continues to thrive in bringing education and healthier lifestyle habits to families across the area.

The YMCA leadership and administration was accepting of the program and were willing to transition to a point of more responsibility and accountability of the program. The participants were receptive to the logistical location of the program and enjoyed the program and the additional offerings the YMCA provided. The providers were accepting of the change and continued to promote the program to the appropriate patient population. The amount of referring providers expanded during the program. In the small sample size, one participant obtained a family gym membership, which is reassuring. As the program grows in participation, additional staff will be needed to sustain the project. The children's hospital service line has continued buy-in and participation in sustainability by extending the $180 participation coverage through the end of 2019. The relocation of the HKU program from CHL to the local YMCA went smoothly and was without any major issues.

Limitations

The biggest limitation to this project was the lack of participants or sample size. The lack of participants for this study was related to the ten sessions and five weeks or more if the participant had any missed sessions, in order to complete the entire data collection process. This process couldn't be initiated until after a provider placed a referral, the participant completed all the required documents, and the participant's schedule allowed for a start date. If the project design could be recreated, the data collection phase would extend for a year or more to increase the number of participants included for data analysis. Another limitation of the project was self-reported results provided by documentation by a pediatric population. The accuracy of the completed 5210 survey completed by the kids could be under or over estimated, indicating inaccurate results. One more noted limitation was the lack of documentation specifically indicating the education was delivered to the participant. If the participant was documented as being present they were noted to have received the education. If a participant left prior to the session being completed for the day, then it is possible they did not receive the education.

Deviations from Project Plan

The project implementation phase had many pieces to meet the stated objectives. The priority implementation was the movement of the HKU program from CHL to the YMCA with several program changes to follow. The movement of the program took time and collaboration between many multidisciplinary teams throughout the community. The program move date was pushed back several times related to the appropriate

disciplines not being ready to accept the program as well as the IRB process and delays. This caused for many changes within the timeline.

Once the program was moved to the YMCA location the programming flow changed. Initially, the plan was for the program to consist of weight training and cardiovascular exercise one day a week and active play such as basketball or dodge ball on the second day. The first several weeks of the program at the new YMCA location, the exercise physiologist focused on flow and made programming changes to meet the needs of the participants and to better utilize the new facility and available equipment.

After many trials and changes, the programing consisted of one-on-one interaction with an exercise physiologist for the first 20 minutes of the program while the participant completed cardiovascular exercise such as riding a stationary bicycle or walking/running on a treadmill. This time was used as a warm up to loosen the participant's muscles and increase heart rate. Simultaneously, the exercise physiologist would provide motivation and establish or foster a healthy relationship with the participant while exercising alongside them. The discussions were casual and unscripted. The exercise physiologist would discuss how the previous days had been for the participant as well as how previous goal accomplishment was going and new goals to focus on along with the 5210 message and other pertinent implications for the individual. Parents were allowed to use this time to exercise in the same room alongside their child. Next the participants would spend 15 minutes in the open gym completing paired strength training exercises. These grouped exercises would be completed with other participants when appropriate or with the exercise physiologist. During this time any parents who were participating in the program were asked to stay within the

cardiovascular equipment room or move to the indoor track. This allowed for the remainder of the session to be one-on-one with the participant without family distractions. The remaining ten minutes of the program the participants were moved to the exergaming room where they were given free time to play interactive video gaming programs or climb the rock wall. Again, during this time the parents remained within the cardiovascular equipment room or on the indoor track. Prior to leaving the exergaming room, a weekly goal would be written and discussed in a one-on-one fashion. On Mondays, before the participants left the gaming room, they were provided with a handout with education to share with their family. On Thursdays, this same topic was re-addressed with the participants.

Each week within the five-week program was a new topic focus geared around the 5210-message including overall review of 5210 message, increasing fruits and vegetable intake, limiting screen time, encouraging one hour of physical activity, and decreasing sugary drinks and drinking more water. The participant individual goals were written in correlation with the educational piece of focus that week or an identified personal goal that required additional attention. The use of the 5210 educational handouts were not a part of the initial program; they were an addition to the program after several weeks into the study.

Implications

Further research and development needs to be completed on follow up care in the HKU programs. After the ten-session program and graduation how do we continue to keep the graduates motivated and active? How do we assure they don't lose the

motivation and the desires to adapt to healthier lifestyles? How do we keep them involved at the gym if they commit to a gym membership?

Implications for practice. Recommendations for sustainability include quarterly HKU group sessions that could be developed, inviting all past graduates to participate in an open gym activity along with parent involvement. A healthy lifestyles newsletter could also be sent out routinely to provide further educational pieces post graduation. Quarterly office visits to assess the needs of the family with the medical provider may also be a way of staying in contact and providing additional support and follow through with the past participants. The participants along with their families could also be offered routine follow up appointments with the nutritionist to further develop and adopt healthy habits. This follow up may encourage further behavior change and/or facilitate continuation of changes adopted during the HKU program, so the participant and families don't slide back into their previous lifestyle practices.

In order to help encourage enrollment in a gym membership after graduating HKU a discounted gym membership could be offered. This lower rate in addition to already being present and comfortable with the gym experience may help encourage additional enrollments after completion of HKU. If a discount is not offered another alternative could be allowed for past HKU participants to use the gym for free once a month to continue encouraging exposure in hopes that a membership is one day achieved.

Presenting the program with the expectations of parent involvement can further encourage parent or caregiver participation. The anticipation would be that this conversation would start at the medical office when the program is first offered to the family. In addition to setting the expectation of parent/caregiver involvement, a

parent/caregiver contract could also be signed at the time of registration. This contract would explain the importance of parent involvement and positive role modeling throughout the program and throughout the child's life. A parent/caregiver contract may reveal to the parent/caregiver the responsibility they have on their own child's actions and achievable successes.

Quarterly newsletters could be distributed to the local medical providers outlining the current HKU news and success stories. The newsletter would not only place HKU in the spot light but it would also server as a gentle reminder of the offerings of this free program to the patients that fit the profile. As the program continues to grow, further additional measures can be taken to establish successes. These measures can include the use of heart rate monitors during exercise or the use of pre- and post- serum laboratory testing to evaluate objective physiological improvements.

Growth and development and the implementations made during this project involve promoting healthy lifestyles in children who are already experiencing the diagnosis of obesity at a very young age. Childhood obesity sets the child up for a lifetime of complicated medical and social comorbidities. Early identification of this patient population will allow for earlier intervention and change with the anticipation of avoiding further complications and advanced medical needs. Identifying these children early and helping them to make positive lifestyle modifications will save in overall medical expenses across their lifetime. HKU is a program that can easily be implemented within any given community. The need for reduction of childhood obesity is nationwide; many communities could benefit from such a program. The program model could be used at any local gym or school where there is physical space, gym

equipment, and staff that are willing to devote the time and have a true passion to want to encourage children.

Implications for future research. The program already consists of various interdisciplinary teams. One more additional collaborative team member that could be brought into the program to allow for further success rates would be a social worker or a counselor. A health professional, such as a counselor, could further promote behavior modification and healthy lifestyle habits to instill additional positive change into the participant's life. The counselor could promote overall healthy habits not only in exercise and food choices but also in cooperating healthy sleep habits, stress reduction, and socialization.

Additional PICOT questions could be formulated for future research in related areas. For example, an additional PICOT question of study would be; in the pediatric population, what effect does HKU, compared to no other lifestyle changes, have on increasing outside activity versus use of video games over one year? Or in the pediatric population, does breastfeeding during infancy, compared to formula feeding, have any impact on childhood obesity during the lifespan of ages two through twelve?

Further dissemination of this project will occur by meeting with the HKU staff and administration, YMCA staff and administration, medical providers in the area, and the children's hospital service line. The meeting will occur during office hours and will describe the project and results. The data results will also be shared with the administrative staff to allow for a formal historical record of the findings and discuss future plans of the HKU.

Implications for nursing. The effects of obesity during the early years of life sets one up for a lifetime of chronic health issues and complications. Nurses should be spending more time on preventative care actions such as impacting a child's lifestyle before it becomes too out of control or before the habits are too normalized and difficult to break. Impacting the daily wellness of a child can change the child's entire trajectory of life. Preventative community based care directly impacts nursing as it facilitates a healthier lifestyle within the population served.

I suggest that all registered nurses and advanced practice nurses as well as medical doctors address childhood obesity in their practice. Obesity correlates with many comorbidities and causes many additional complications throughout life that the diagnosis of obesity needs to be made and addressed just as any other diagnoses. A provider wouldn't dismiss a diagnosis of asthma so why dismiss a diagnosis of obesity when it is so impacting, affecting all body systems including the mental and psychosocial. If a child's BMI indicates obesity, a plan of care needs to be provided. This plan may be as simple as family recognition and guidance or it may take counseling or a community-based program such as HKU to further instill healthy lifestyle choices. Providers should also be encouraged to integrate healthy food choices, physical activity, and decreased screen time into their daily assessment of all children. This open discussion by the provider allows for the provider to become a healthy role model in the child's life and can expand their current knowledge on the given topics.

Implications for health policy. At all levels, community, state, and national, there are programs put into place to encourage healthy life choices by directing behaviors and health outcomes. The Center for Prevention and Disease Control's (CDC) Division

of Nutrition, Physical Activity, and Obesity (DNPAO) funds state level efforts to further prevent and control obesity. In the United States, 25 states are provided with grants to fund, develop, and implement projects to prevent childhood obesity; Illinois is one of the 25 states (CDC, 2017). These programs being carried out at schools and various other locations are beneficial and without them we may have even higher rates of obesity. Despite these programs and the successes that they do provide the statistics show there is still so much work to be done, maybe even more now then ever with the increasing use of technology and busy lifestyles. At all levels, more financial support could lead to further development and sustainability of such programs, allowing for a greater generalized positive health impact on the population.

Chapter VI: Conclusion

Value of the Project

Further development of the HKU program as the doctoral project implementation was valuable to the community. The Institute of Medicine (IOM) and the American Academy of Pediatrics (AAP) has referred to childhood obesity as a national health priority and has recommended that many organizations come together to help conquer the epidemic (Pratt at al., 2017; Snethen et al., 2016). Early identification and delivery of weight management and health modification opportunities will allow for a healthier community with fewer comorbidities and chronic health disparities. HKU is a program that identifies children at an early age during routine well-visits or episodic sick visits without additional initiatives required by the families. The targeted population is easily identified during a routine office visit with little additional work from the medical provider due to the limited amount of time available during office visits. Once the

targeted population is identified and the family is interested the referral is placed and the initiation of the HKU program express interest can begin. The HKU program provides education as well as on site physical activity to help promote and instill healthy lifestyle habits in both the participants as well as their family members alike. Adoption of healthy lifestyles provides a lifelong gift of health and reduced healthcare costs and needs.

This project offers an expanded program for patients and their families to participate in when the advanced care provider or medical provider is unable to meet the needs of the family in the medical office. Office visits are short in duration and providers have a lot of information to cover with the families, leaving the provider to prioritize their discussions and interventions. The knowledge deficits of the patients and families may require more intervention than the provider can allow for during an office visit. HKU provides a free service for the provider to which they can refer families, allowing a five week follow through, additional education, and supportive care to further instill healthy messages into the children and their families.

All medical providers should be conscious of every patient's BMI and need for further intervention or knowledge sharing. Generalized questions such as typical foods digested, fruit and vegetable intake, number of times the family eats out per week, the number of times the family consumes fast food, which drinks are consumed, participation in daily activities both physical and other non-physical, and the amount of screen time. A tool such as the 5210-questionnaire can be used to gather this information from the patient or the provider can involve these questions in their routine healthy child or sick child visits very easily in casual conversations. If a knowledge deficit is noted and there is a need for further education, all medical providers should be aware of local resources

available to them to share with their patients and their families to help them optimize and become responsible for their own health.

The Centers for Disease Control and Prevention (2017) discusses various programs that have been developed at the state and local level to help combat the childhood obesity rate, further prevent disease and comorbidities, and promote healthy lifestyles and habits. Illinois and the Public Health Institute has been awarded $922,990 in grant money to help combat the disparity of childhood obesity. The Public Health Institute is partnering with Chicago's Cook County, Jackson County, and Peoria County Health Departments, leaders in active transportation, food services, and early childhood academics to improve childhood outcomes within the poorer communities (CDC, 2017). Some of the programs that are provided at the state and local level include: High Obesity Program, State Physical Activity and Nutrition Program, and Active People, Healthy Nation (CDC, 2017). Despite these government-initiated programs along with many others at the government and local community level there remains many deficits and barriers to combating the obesity epidemic.

DNP Essentials

The American Association of Colleges of Nursing (AACN; 2006) has established *The Essentials of Doctoral Education for Advanced Nursing Practice*. These eight Essentials were created as guidelines to achieve within the doctoral degree academic structure. During the processes of this project development and implementation all eight essentials were demonstrated. Essential I: Scientific Underpinnings for Practice was demonstrated by using the conceptual framework, Donabedian model, to achieve a quality improvement processes and an analysis that was appropriate for the project.

Essential II: Organizational and Systems Leaderships for Quality Improvement was demonstrated by collaborating with disciplines such as physicians, midlevel providers, exercise physiologists, graduate students, a dietitian, and leadership both at the hospital and the YMCA. In addition to using collaborative efforts evidence based practice was identified and in cooperated into the community-based program. Essential III: Clinical Scholarship and Analytical Methods for Evidence-Based Practice were included in this project by researching and analyzing other documented related programs and using evidenced-based practice when programing planning. In addition to using evidence based practice ethically safe decision-making was required to ensure a venerable population of pediatric participants were kept safe. Essential IV: Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care was demonstrated by spending time with a statistician and using the program using R version 3.5.1 to further analyze the data collected. Technology was also used in the live data collection of program results. Essential V: Health Care Policy for Advocacy in Health Care was demonstrated by educating the exercise physiologist, YMCA staff and personal involved in the program, as well as the participants and their family members at the appropriate level. In addition to educating and leading others, I had involvement of meetings that could lead to additional funding and grants for the HKU program. The data collected from this project may also be used in the future to help attain future grant monies. Essential VI: Inter-Professional Collaboration for Improving Patient and Population Health Outcomes was demonstrated by collaborating with project mentor Erin Kennedy, hospital business leadership, YMCA business leadership, medical providers within the community, as well as the program

staff and various other professionals that paved the way. Essential VII: Clinical Prevention and Population Health for Improving the Nations Health was demonstrated by using nursing theory and evidence-based practice to promote healthy lifestyle changes in the community by encouraging environmental and behavioral changes to improve current and future overall state of health. Essential VIII: Advanced Nursing Practice was demonstrated by using evidence-based practice to further instill lifestyle changes to further improve overall health within the community in individuals who demonstrate a high need at a young age. Addressing lifestyle habits and choices at an early age can lead to the best possible outcome for the future.

Plan for dissemination. This scholarly project was developed, implemented, completed, and evaluated in accordance to the family nurse practitioner doctoral program at Bradley University in Peoria, Illinois. Dissemination of the project will be delivered to the organization and general public by a PowerPoint presentation. The deliverance of this project planning, programing, implementation, and evaluation will allow for professionals as well as the general public to realize the extent of the devastating need for lifestyle changes throughout our community within the pediatric population. Educating others on the vast need for change allows for a circulation of interventions to occur across different disciplines and geographic locations to achieve further successes for the health and future of children today. Attaining an overall healthier pediatric population will increase future productivity and life expectancy while decreasing healthcare expenditure.

Attainment of Personal and Professional Goals. The personal and professional goals that were developed during the ongoing process of this project are invaluable. Personal growth and development was achieved in programing, leadership,

and structure. During this project, I was able to work with an incredible collaborative team that incorporated many professionals including; exercise physiologists, physicians, advanced practice providers, registered nurses, leadership committee at the local YMCA, and the president of a children's hospital. I am very thankful for this experience of growth and opportunity. As addressed in the data analysis, the HKU program allows for promising outcomes; however, additional data collection and research is required to prove statistical findings and success of the program. Further research and development of this program could lead to promising results for the community.

References

American Academy of Pediatrics. (2018). *American academy of pediatrics announces new recommendations for children's media use*. Retrieved from https://www.aap.org/en-us/about-the-aap/aap-press-room/pages/american-academy-of-pediatrics-announces-new-recommendations-for-childrens-media-use.aspx

American Association of Colleges of Nursing. (2006). *The essentials of doctoral education for advanced practice nursing.* Washington, DC: Author.

Annesi, J., Smith, A.E., Walsh, S.M., Mareno, N., & Smith, K.R. (2015). Effects of an after-school care-administrated physical activity and nutrition protocol on body mass index, fitness levels, and targeted psychological factors in 5 to 8-year-olds. *Translational Behavior Medicine (6)*3. https://doi.org/10.1007/s13142-015-0372-6

Ayanian, J.Z., & Markel, H. (2016). Donabedian's lasting framework for health care quality. *The New England Journal of Medicine (37)*3, 205-207.

Biddle, S.J.H., Bengoechea, E.G., & Wiesner, G. (2017). Sedentary behavior and adiposity in youth: A systemic review of reviews and analysis of causality. *International Journal of Behavioral Nutrition and Physical Activity 14(43).* https://doi.org/10.1186/s12966-017-0497-8

Batalden, P. B., & Davidoff, F. (2007). What is "quality improvement" and how can it transform healthcare? *Quality & safety in health care*, *16*(1), 2–3. doi:10.1136/qshc.2006.022046

Bloomington-Normal YMCA. (2014) *The YMCA*. Retrieved from http://www.bnymca.org/index.php?src=&submenu=

Burrows, T., Bray, J., Morgan, P.J., & Collins, C. (2013). Pilot intervention in an economically disadvantaged community: The back-to-basics after-school healthy lifestyle program. *Nutrition & Dietetics (70)*4, 270-277. doi: 10.1111/1747-0080.12023

Center for Disease Control and Prevention. (2017). *Overweight and obesity.* Retrieved from https://www.cdc.gov/obesity/

Childhood Obesity Foundation. (n.d.) Obesity. Retrieved from http://childhoodobesityfoundation.ca/

City Data. (2018). *Bloomington, Illinois*. Retrieved from http://www.city-data.com/city/Bloomington-Illinois.html

Fedewa, A.L., & Davis, M.C. (2015). How food as a reward is detrimental to children's health, learning, and behavior. *Journal of School Health 85*(9), 648-658. doi: 10.1111/josh.12294.

Ferrara, C.T., Geyer, S.M., Liu, Y.F., Evans-Molina, C., Libman, I.M., Besser, R., … Becker, D.J. (2017). Excess BMI in childhood: A modifiable risk factor for type 1 diabetes development? *Diabetes Care 40, 698-701*.doi: 10.2337/dc16-2331

Fruh, S.M. (2017). Obesity: Risk factors, complications, and strategies for sustainable long-term weight management. *Journal of American Association of Nurse Practitioners 29,* S3-S14. doi: 10.1002/2327-6924.12510.

Grieken, A.V., Renders, C.M., Gaar, V.D., Hirasing, R.A., & Raat, H. (2014). Associations between the home environment and children's sweet beverage

consumption at 2-year follow up: The 'be active, eat right' study. *Pediatric Obesity 10,* 126- 133.

Grow, H.M.G., Hencz, P., Verbovski, M.J., Gregerson, L., Liu, L.L., Dossett, L., … Saelens, B.E. (2014). Partnering for success and sustainability in community-based child obesity intervention. Seeking to help families ACT! *Family Community Health (37)*1. 45-59. Doi: 10.1097/FCH.0000000000000010.

Grossklaus, H., & Marvicsin, D. (2014). Parenting efficacy and its relationship to the prevention of childhood obesity. *Pediatric Nursing 40*(2), 69-86. http://libproxy.osfhealthcare.org/login?URL=http://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,url,cookie&db=hch&AN=95718118&site=ehost-live&scope=site

Hingle, M.D., Turner, T., Kutob, R., Merchant, N., Roe, D.J., Stump, C., & Going, S.B. (2015). The EPIC kids study: A randomized family focused YMCA-based intervention to prevent type 2 diabetes in at-risk youth. *BMC Public Health (2015)*15. doi: 10.1186/s12889-015-2595-3.

Ige, T.J., DeLeon,P., & Nabors, L. (2017). Motivational interviewing in an obesity prevention program for children. *Health Promotion Practice 18(2) 263-274.* https://doi.org/10.1177%2F1524839916647330

Illinois Youth Survey. (2016). *2016 County Report*. Retrieved from https://iys.cprd.illinois.edu/UserFiles/Servers/Server_178052/File/2016/Cnty16_Mclean.pdf

Inman, D.D., Bakergem, K.M., LaRosa, A.C., & Garr, D.R. (2011). Evidence-based health promotion programs for schools and communities. *American Journal of Preventive Medicine. (40)*2, 207-219. doi: 10.1016/j.amepre.2010.10.031.

Maidenberg, M.P. (2016). Childhood, adolescent, and teenage obesity: Recommendations for community initiatives in central harlem. *National Association of Social Workers (41)*2. doi: 10.1093/hsw/hlw012

MaineHealth. (2018). *Let's Go.* Retrieved from https://mainehealth.org/lets-go/childrens- program/child-care-providers

OSF Healthcare. (2018). *Strategy summary.* Retrieved from FY 18 Strategy Map FINALv2.pdf

OSF Healthcare System. (2018). *Center for healthy lifestyles.* Retrieved from https://www.osfhealthcare.org/st-joseph/services/healthy-living/?utm_source=local&utm_medium=organic&utm_campaign=gmb

Parks, E.P., Kazak, A., Kumanyika, S., Lewis, L., & Barg, F.K. (2016). Perspectives on stress, parenting, and children's obesity-related behaviors in black families. *Health Educator & Behavior 43(6). 632-640.* https://doi.org/10.1177/1090198115620418

Pratt, K.J., Fossen, C.V., Cotto-Maisonet, J., Palmer, E.N., & Eneli, I. (2017). Mothers' perspectives on the development of their preschooler's dietary and physical activity behaviors and parent-child relationship: Implications for pediatric primary care physicians. *Clinical Pediatrics 56*(8), 766-775. https://doi.org/10.1177%2F0009922816684598

Rhee, K.K., Boutelle, K., & McKenna, M. (2017). Can a pediatrician effectively treat a 9-year-old obese girl? *Journal of Developmental and Behavioral Pediatrics (32)*9, 688-691. doi:10.1097/DBP.0b013e318235ee1a.

Rice, K.G., Jumamil, R.B., Jabour, S.M., & Cheng, J.K. (2017). Role of health coaches in pediatric weight management: patient and parent perspectives. *Clinical Pediatrics 56*(2), 162-170. doi: 10.1177/0009922816645515

Riva, J.J., Malik, K.M.P., Burine, Endicott, S.J., & Busse, J.W. (2012). What is your research question? An introduction to the PICOT format for clinicians. *The Journal of Chiropractic Association 56*(3). Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3430448/

Rodgers, V.W., Hart, P.H., Motyka, E., Rines, E.N., Vine, J., & Deatrick, D.A. (2013). Impact of let's go! 5-2-1-0 a community based, multisetting childhood obesity prevention program. *Journal of Pediatric Physology 38*(9), 1010-1020. https://doi.org/10.1093/jpepsy/jst057

Shin, A., Surkan, P.J., Coutinho, A.J., Suratkar, S.R., Campbell, R.K., Rowan, M., …Gittelson, J. (2015). Impact of Baltimore healthy eating zones: An environmental intervention to improve diet among african American youth. *Health Education & Behavior, (42)*, 975-1055. doi: 10.1177/1090198115571362

Simon, S.L., & Stark, L.J. (2016). Health-related quality of life in a community sample of preschool-aged children with and without obesity. *Children's Health Care, 45*(4), 376-385. http://dx.doi.org/10.1080/02739615.2015.1038717

Snethen, J.A., Broome, M.E., Treisman, P., Castro,E. & Kelber, T. (2016). Effective weight loss for children: a meta-analysis of intervention studies 2002-2015.

*Worldviews on Evidence-Based Nursing, (13)*4, 294-302. doi: 10.1111/wvn.12156.

Swyden, K., Sisson, S.B., Morris, A.S., Lora, K., Weedn, A.E., Copeland, K.A., & Degrace, B. (2017). Association between maternal stress, work status, concern about child weight, and restrictive feeding practices in preschool children. *Maternal Child Health Journal, 21,* 1349-1357. doi: 10.12715/apr.2015.2.12

Tomayko, E.J., Prince, R.J., Cronin, K.A., Parker, T., Kim, K., Grant, V.M., … Adams, A.K. (2017). Healthy Children, strong families 2: A randomized controlled trial of a healthy lifestyle intervention for American indian families designed using community-based approaches. *Clinical Trials, (14)*2, 152-161. doi: https://dx.doi.org/10.1186%2Fs12889-017-4498-y

Trust for America's Health. (2018). *The state of obesity.* Retrieved from https://stateofobesity.org/healthcare-costs-obesity/

U.S. Census Bureau. (2017). *Bloomington- Normal, Illinois*. Retrieved from https://www.census.gov/quickfacts/fact/feedback/bloomingtoncityillinois, normaltownillinois,IL/PST045216

Walsh, J.R., White, A.A., & Kattelmann, K.K. (2014). Using PRECEDE to develop a weight management program for disadvantaged young adults. *Journal of Nutrition Education and Behavior, (46)*2, S1-S9. doi: 10.1016/j.jneb.2013.11.005.

Watson, L.A., Baker, M.C., & Chadwick, P.M. (2016). Kids just wanna have fun: Children's experiences of a weight management programme. *British Journal of Health Psychology, (21)*, 47-420. doi: 10.1111/bjhp.12175

Wiecha, J.L., Nelson, R.F., Roth, B.A., Glashagel, J., & Vaughan, L. (2010). Disseminating health promotion practices in after-school programs through YMCA learning collaborative. *American Journal of Health Promotion, (24)*3. 190-198. doi:10.4278/ajhp.08022216.

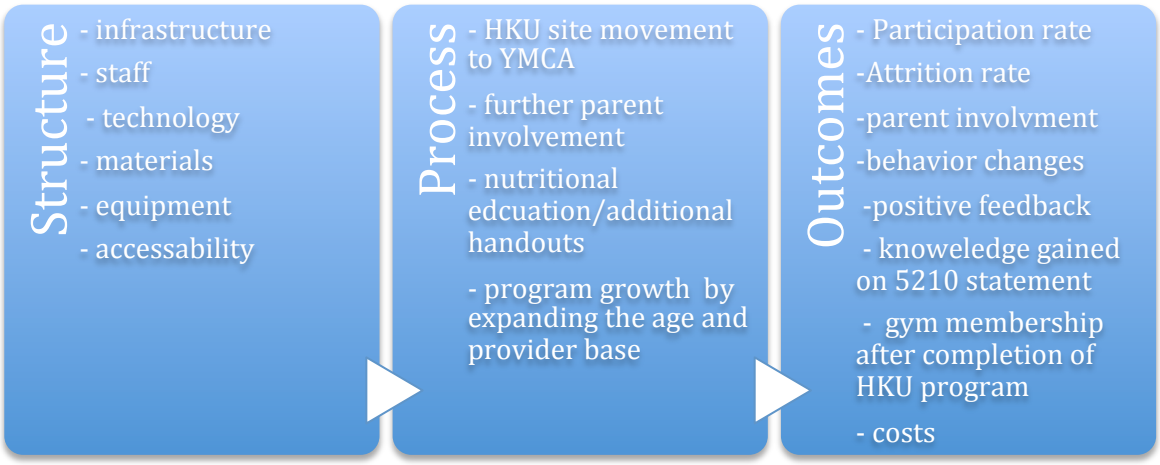
Xu, F., Marchand, S., Corcoran, C., DiBiasio, H., Clough, R., Dyer, C.S., ... Greene, G.W. (2017). A community based nutrition and physical activity intervention for children who are overweight or obese and their caregivers. *Journal of Obesity, 2017.* doi: 10.1155/2017/2746595

Yavuz, H.M., Ijzendoorn, M.H., Mesman, J., & Veek, S.V.D. (2015). Interventions aimed at reducing obesity in early childhood: a meta-analysis of programs that involve parents. *The Journal of Child Psychology and Psychiatry, 56*(6), 677-692. doi: http://dx.doi.org/10.1111/jcpp.12330.

Yilmaz, G., Demirli, N., & Karcan, C.D. (2014). An intervention to preschool children for reducing scree time: A randomized controlled trial. *Child: Care, Health, Development (41)*3, 443-449. doi: 0.1111/cch.12133

Appendix A

Conceptual Framework – Donabedian Model



Appendix B

Consent

Information and Consent Form
Bradley University

Children Making Healthy Lifestyle Changes: Community Based Pediatric Wellness Program

I. Invitation

You are invited to participate in a research study. In order to participate you must read and sign this form. The participation in the study is voluntary.

The purpose of this study is to determine the effectiveness of the HKU program and continue to grow and expand the program as needed based off of participant and family needs. If you choose to participate your child will be asked to complete two 5210 Healthy Habit Questionnaires, write out the 5210 description, share their progresses on the HKU report cards, and sign an attendance sheet all in which will be completed anonymously. All of the required documents will be filled out during the HKU sessions, with the exception of one 5210 Healthy Habits Questionnaire if it was completed at the child's primary care office. Any child that needs assistance can have the help of the parent/caregiver or a staff member to complete the forms. This will take approximately five minutes. There are no foreseeable risks or discomforts in correlation with this research. The study may help facilitate the best possible delivery of the HKU program. The participation in this study is voluntary. You do not have to participate and if you choose to you can choose to stop at any given time.

Please take the time to read this entire form and ask any necessary questions before deciding to participate in this research project.

II. What is the purpose of the study?

The purpose of this study is to determine the positive effects of a community based healthy life styles program.

III. What will happen if you take part in this study?

If you choose to participate in this study you will be asked to complete at 5210 Healthy Habits Questionnaire prior to the start of the HKU program/or give permission for the rights of the questionnaire filled out at your primary care office with the name and any other identifiers removed. You will also be asked to place a check mark next to an assigned identification number when you come to any HKU session to allow for us to track participation. Any parent/caregiver that participates for the day will also place a check mark to allow for us to determine family participation. This will be completed with each session that you attend. You also

provide us with permission to copy any HKU report cards that you may receive during the program with your name removed along with any other patient identifiers. This will be used to track personal success statements. You will be asked to fill out an additional 5210 Healthy Habits Questionnaire at the completion of the ten HKU sessions as well as write out the 5210 message on the back of the from. You will also be asked to provide documentation, again with identifiers removed, if a gym membership is purchased after the completion of the HKU program. There will be a total of two forms that will be completed; one may be completed at the primary care office prior to the HKU program. The total time spent will be approximately five minutes. There are no requirements outside of the HKU sessions. There will be no identifiers on any of the forms that are completed.

IV. What are the risks for participating in this study?
We do not believe there are any risks with participation.

V. What are the benefits of participating in this study?

This research may help to understand how to provide the most benefit to the

children and families that we serve.

VI. What other options are there if you choose not to participate in this study?
You may proceed on in the HKU program with no penalties. If you choose not to participate you will not be asked to fill out any further 5210 surveys, you will not be asked to share your report card responses, you will not need to participate in the attendance log, and you will not need to provide proof of a gym membership if you choose to purchase one.

VII. Costs
There are no associated costs with the participation of this study.

VIII. After the study what will happen to the data collected?
The information will be destroyed in November at the completion of this study.

IX. Your participation in this study is voluntary.
Taking part in this study is voluntary. You may choose not to take part in the study or you may choose to leave the study at any point in time. If you withdraw from the study before completion all of your data will be destroyed and will not be used in the study.

Your refusal to participate will involve no penalty or loss of benefits.

X. How will your information be protected?
We plan to publish this study. To protect your privacy we will not include any information that can directly identify you.

We are collecting the data anonymously. There is no link between your data and the research record.

XI. Who should I contact with questions or problems with the study?
If you have any questions please contact the research in charge of this study: Jessica Baugher BSN, RN, (309)-370-2263 jbaugher@mail.bradely.edu or the faculty advisor: Karin Smith DNP, RN, NEA-BC, CENP, CCRN-K (309)-677-4588 kbsmith@fsmail.bradley.edu

XII. Who do I contact with questions concerning my rights as a research participant?
If you have questions about your rights as a research participant, or wish to obtain information, ask questions, or further discuss any concerns with someone other than the researcher please contact :

Committee on the Use of Human Subjects in Research (CUHSR)
Bradley University
1501 W Bradley Avenue
Peoria, IL 61625
(309) 677-3877

XIII. Your Informed Consent
You are voluntarily making a decision to participate in this study. Your signature means that you have read and understood the information presented and have decided to participate. Your signature also means that the information on this consent form has been fully explained and all your questions have been answered to your satisfaction. If you think of any additional questions during the study, you should contact the researcher.

I have read this parental permission form and have been given the opportunity to ask questions. I give my permission for my child to participate in this study.

Parent/Guardian name: _____

Parent/Guardian signature_____ Date:_____

Child's Name:_____

Appendix C

5210 Healthy Habits Questionnaire

5210 Healthy Habits Questionnaire (Ages 2–9)

We are interested in the health and well-being of all our patients. Please take a moment to answer the following questions.

Patient Name: _____ Age: _____ Today's Date: _____

1. How many servings of fruits or vegetables does your child eat a day? _____
   One serving is most easily identified by the size of the palm of your child's hand.
2. How many times a week does your child eat dinner at the table together with the family? _____
3. How many times a week does your child eat breakfast? _____
4. How many times a week does your child eat takeout or fast food? _____
5. How many hours a day does your child watch TV/movies or sit and play video/computer games? _____
6. Does your child have a TV in the room where he /she sleeps? Yes ☐ No ☐
7. Does your child have a computer in the room where he /she sleeps? Yes ☐ No ☐
8. How much time a day does your child spend in active play (faster breathing/heart rate or sweating)? _____
9. How many 8-ounce servings of the following does your child drink a day?

100% Juice _____	Fruit drinks or sports drinks _____	Soda or punch _____
Water _____	Whole milk _____	Nonfat or reduced fat milk _____

10. Based on your answers, is there <u>ONE</u> thing you would like to help your child change now? Please check one box.

- ☐ Eat more fruits & vegetables.
- ☐ Take the TV out of the bedroom.
- ☐ Play outside more often.
- ☐ Switch to skim or low fat milk.
- ☐ Spend less time watching TV/movies and playing video/computer games.
- ☐ Eat less fast food/takeout.
- ☐ Drink less soda, juice, or punch.
- ☐ Drink more water.

READY, SET GO! 5 2 1 0
www.multicare.org/marybridge/5210

5210 LET'SGO!
www.letsgo.org

Please give the completed form to your clinician. Thank you.

Adapted by MaineHealth® and Maine Medical Center from the High Five for Kids in Massachusetts and Keep ME Healthy in Maine.

155-505-08 / 03-31-08

5210 Healthy Habits Questionnaire (Ages 10–18)

We are interested in the health and well-being of all our patients. Please take a moment to answer the following questions.

Patient Name: _____ Age: _____ Today's Date: _____

1. How many servings of fruits or vegetables do you eat a day? _____
   One serving is most easily identified by the size of the palm of your hand.
2. How many times a week do you eat dinner at the table together with your family? _____
3. How many times a week do you eat breakfast? _____
4. How many times a week do you eat takeout or fast food? _____
5. How many hours a day do you watch TV/movies or sit and play video/computer games? _____
6. Do you have a TV in the room where you sleep? Yes ☐ No ☐
7. Do you have a computer in the room where you sleep? Yes ☐ No ☐
8. How much time a day do you spend in active play (faster breathing/heart rate or sweating)? _____
9. How many 8-ounce servings of the following do you drink a day?

100% Juice _____	Fruit drinks or sports drinks _____	Soda or punch _____
Water _____	Whole milk _____	Nonfat or reduced fat milk _____

10. Based on your answers, is there <u>ONE</u> thing you would be interested in changing now? Please check one box.

- ☐ Eat more fruits & vegetables.
- ☐ Take the TV out of the bedroom.
- ☐ Play outside more often.
- ☐ Switch to skim or low fat milk.
- ☐ Spend less time watching TV/movies and playing video/computer games.
- ☐ Eat less fast food/takeout.
- ☐ Drink less soda, juice, or punch.
- ☐ Drink more water.

READY, SET, GO! 5210
www.multicare.org/marybridge/5210

5210 LET'SGO!
www.letsgo.org

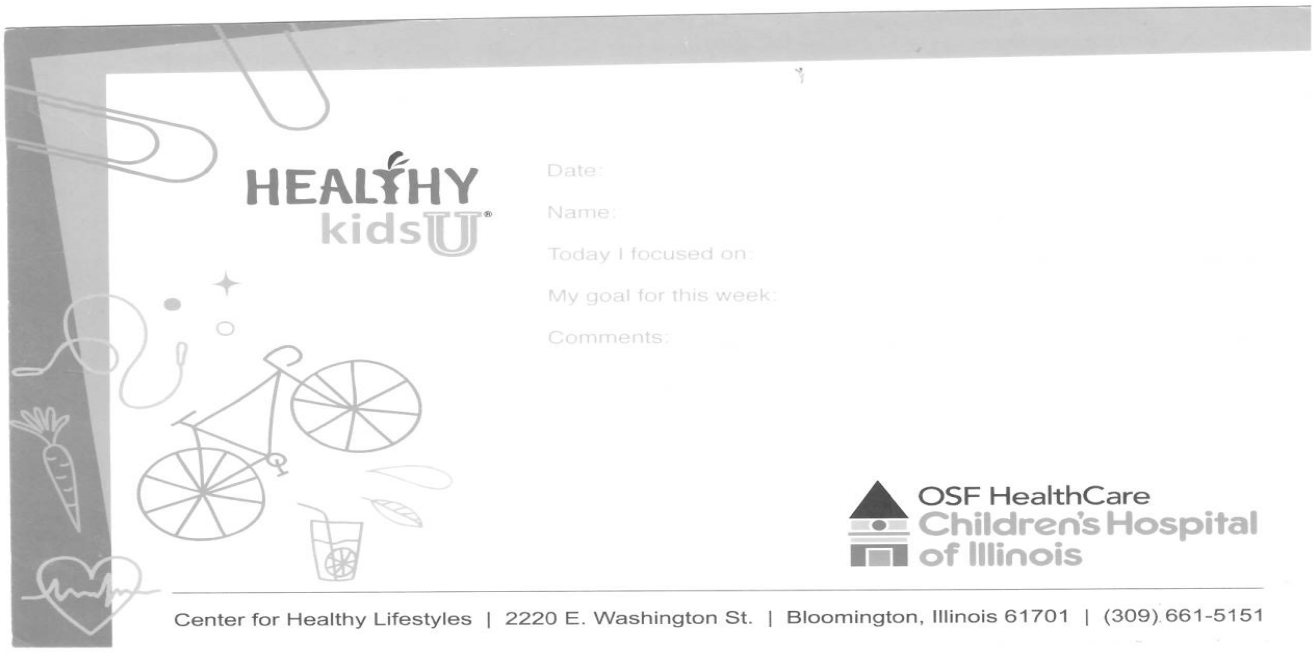
Please give the completed form to your clinician. Thank you.

Adapted by MaineHealth® and Maine Medical Center from the High Five for Kids in Massachusetts and Keep ME Healthy in Maine.

155-505-08 / 03-31-08

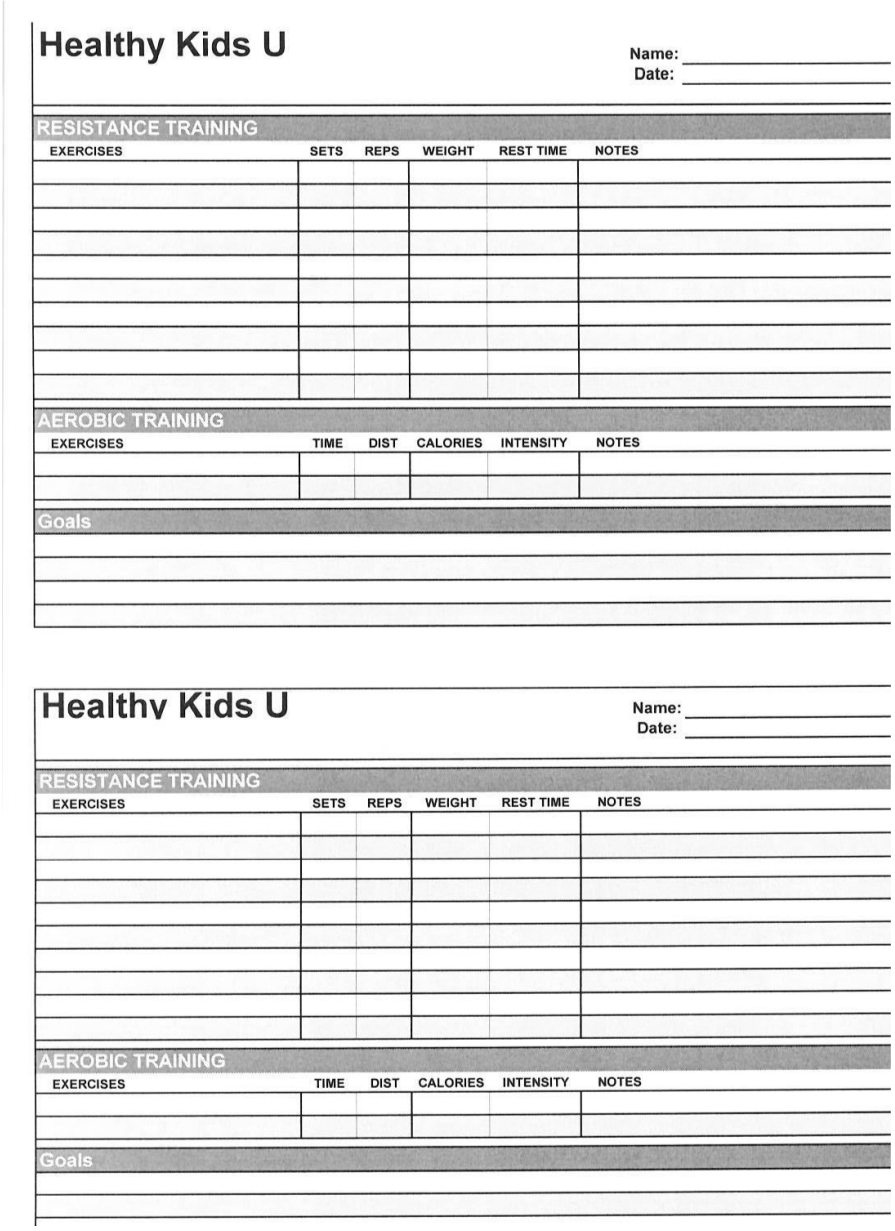
Appendix D

HKU Report Card



Appendix E

Exercise Log



Healthy Kids U

Name: _____
Date: _____

RESISTANCE TRAINING

EXERCISES	SETS	REPS	WEIGHT	REST TIME	NOTES

AEROBIC TRAINING

EXERCISES	TIME	DIST	CALORIES	INTENSITY	NOTES

Goals

Healthy Kids U

Name: _____
Date: _____

RESISTANCE TRAINING

EXERCISES	SETS	REPS	WEIGHT	REST TIME	NOTES

AEROBIC TRAINING

EXERCISES	TIME	DIST	CALORIES	INTENSITY	NOTES

Goals

Appendix F

Project Time Line

August 2018	October 2018	November 2018	January 2019
Parent involvement IRB Approval Site movement to YMCA Increase age range of participants Start Collecting Data	Increase participation by increasing referral ability to new office Addition of 5210 handouts to education process	Continue to collect data until the end of November 2018	YMCA prepared to complete training – movement towards YMCA ownership. YMCA sustain program with OSF oversight for guidance

Appendix G

IRB Approval

UNIVERSITY OF ILLINOIS
COLLEGE OF MEDICINE AT PEORIA

Institutional Review Board One Illini DriveBox 1649Peoria, Illinois 61656-1649

FWA 00005172

IRB #00000688 IRB #00000689

DATE:

TO: FROM:

STUDY TITLE:

IRB REFERENCE #: SUBMISSION TYPE:

ACTION: APPROVAL DATE: EXPIRATION DATE: REVIEW TYPE:

July 24, 2018

Jessica Baugher, RN, BSNUniversity of Illinois College of Medicine at Peoria IRB 1

[1234682-2] Development of a Community Based Pediatric Wellness Program to Influence Healthy Lifestyle Behaviors

Response/Follow-Up

APPROVEDJuly 24, 2018 July 23, 2019 Expedited Review

Approval has been granted for one year pursuant to 45CFR46.110(a)(F)(7) "Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research

employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies."

This approval covers the consent form protocol, attendance record, back of 5210 tool, the Healthy Habits Questionnaire for Kids ages 10-18, the Health Habits Questionnaire for Kids ages 2-9, the HKY Daily Exercise Log and the HKU Report Card.

This research meets the regulatory requirements for approval as specified in 45 CFR 46.111 and 21 CFR 56.111. Specifically, the risks to subjects are minimized and reasonable in relation to anticipated benefits to subjects and the importance of the knowledge that may reasonably be expected to result, and that written informed consent will be sought from each prospective subject or the subject's legally authorized representative.

The informed consent document meets the regulatory requirements as outlined in 45 CFR 46.116 [and 21 CFR 50.25].

This study represents research not involving greater than minimal risk [45 CFR 46.404, 21 CFR 50.51] (permission of only one parent is required).

PLEASE NOTE: Research must be conducted according to the proposal that was approved by the IRB. Any revisions to the previously approved materials must be approved by this office prior to initiation.

Please use the appropriate revision forms for this procedure.When your study is complete, please submit a Final Report to IRBNet.

Please retain copies of all records pertaining to this study for a minimum of three (3) years from study closure.

A Continuing Review will be requested prior to the end of one year of study. This study will expire: 7/23/19.This study will be reviewed at the 7/11/19 meeting of the IRB.A completed Continuing Review Form is expected by: 6/27/19.

Attached you will find the current IRB approved consent form stamped with the approval and expiration dates. Please use this version of the consent form in the consenting process.

Please remember that informed consent is a process beginning with a description of the study and insurance of participant understanding followed by a signed consent form. Informed consent must continue throughout the study via a dialogue between the researcher and research participant. Federal regulations require each

participant receive a copy of the consent document.

The University of Illinois College of Medicine at Peoria's (UICOMP) Office of Human Research Oversight (OHRP) will no longer accept local or non-local adverse events or safety reports for IRB review that do not meet the definition of an unanticipated problem involving risks to subjects or others (UPIRSO).

UPIRSOs are any incident, experience, or outcome that meets all of the following criteria:

a. are not expected (in terms of nature, severity or frequency) given (a) the research procedures that are described in the protocol-related documents (such as the research protocol and informed consent document); and (b) the characteristics of the subject population being studied;

b. are related or possibly related to participation in the research; and

c. suggest that the research places subjects or others at greater risk of harm (including physical,

psychological, economic, or social harm) than was previously known or recognized.

1. To qualify as an UPIRSO, an adverse event must either be : 1). serious, unexpected (in terms of either the nature, severity or frequency of its occurrence), and related or possibly related to participation in the research or 2). not serious, but unexpected, related or possibly related to the research and suggest that the research places subjects or others at a greater risk of physical or psychological harm than was previously known or recognized.

In accordance with the monitoring plan described in the IRB-approved protocol, adverse events occurring in a multicenter study (NON-LOCAL EVENTS) should be reviewed and analyzed by a monitoring entity that assesses whether the adverse event represents an unanticipated problem by applying the criteriafor a UPIRSO as described above. The monitoring entity should report such a determination to the investigator for prompt reporting to the IRB.

PLEASE NOTE: The UICOMP IRB will ONLY accept for review multicenter (non-local events) that have been determined to meet the definition of an UPIRSO by the monitoring entity.

In the absence of a letter from the sponsor or monitoring entity identifying the event as a UPIRSO, orby identifying that the event has met the above referenced three criteria, it is the responsibility of thelocal PI to determine the meaningfulness

of the reported event. If the investigator determines that the report is not useful or meaningful in the form presented, the IRB recommends contacting the sponsor and communicating this to them for further instruction. If the local PI does not contact the sponsor, it will be his/her responsibility to judge the meaningfulness of the report by relying on the sponsor's assessment and his/her own judgment as to whether the event meets the definition of a UPIRSO.

Local adverse events meeting the definition of a UPIRSO, per the PI, should be reported to the UICOMP IRB using the Unanticipated Problems Involving Risks to Others Form at:

http://peoria.medicine.uic.edu/departments___programs/institutional_review_board/PIRB_Forms/

Local adverse events not meeting the definition of an UPIRSO will be returned without IRB review.

Non-local adverse events lacking a UPIRSO determination from the monitoring entity will be returned without IRB review.

For additional information please refer to UICOMP UPIRSO policy at:
http://peoria.medicine.uic.edu/
UserFiles/Servers/Server_442934/File/Peoria/Departments%20and%20Programs/IRB/pp09.pdf

If you have any questions, please contact Mindy Reeter at 309 680 8631 or mreeter@uic.edu. Please include your study title and reference number in all correspondence with this office.

cc:

Appendix H

Budget