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Behavioral Modification Program to Control Obesity among School Children in Knott County, Kentucky

Samjhana Shakya
University of Kentucky

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Samjhana Shakya, Student

Mark Swanson, PhD, Committee Chair

Corrine Williams, ScD, MS, Director of Graduate Studies

Behavioral Modification Program to Control Obesity among School Children in Knott County, Kentucky

Capstone Project Paper

A paper submitted in partial fulfillment of the
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Samjhana Shakya
Lalitpur, Nepal

Lexington, Kentucky
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Chair: Dr. Mark Swanson

Committee Member: Dr.Corrine Williams

Committee Member: Dr. Robin Vanderpool

Behavioral Modification Program to Control Obesity among School Children in Knott County, Kentucky

I. Target Population and Need

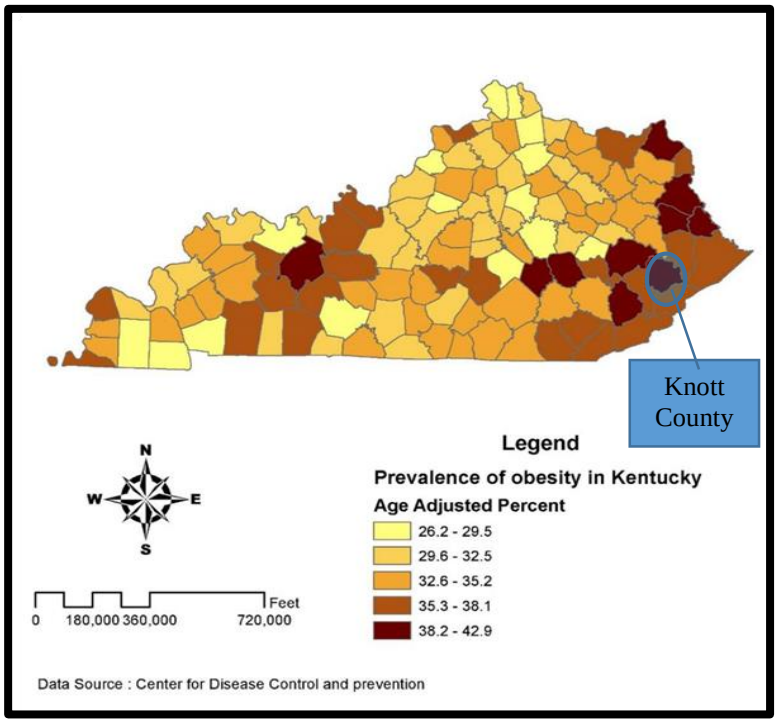
Childhood obesity is a major public health issue globally. In 2010 there was an estimated 170 million children overweight worldwide[1].The global prevalence of childhood obesity and overweight has increased from 4.2% in 1990 to 6.7% in 2010[2]. In the United States (U.S.) alone, obesity among children and adolescents (6-11 years) has increased from 17.4% (2001-2004) to 17.9% (2009-2012) [3]. One of the Healthy People 2020 target goals aims to reduce childhood obesity to 15.7% through promoting healthful diets and maintaining healthy body weights in order to prevent chronic diseases [4].

Obesity is a risk factor for chronic diseases such as diabetes, cardiovascular diseases and cancer [5, 6]. It has been shown that consuming a healthy diet and performing regular exercise can reduce the risk of obesity and its complications [6].Childhood obesity creates acute and chronic complications in children. Obese children have a greater likelihood of developing cardiovascular disease risk factors such as high blood pressure, high cholesterol, and impaired blood glucose [7].They are at the increased risk of developing breathing and gastrointestinal problems [7].Moreover, childhood obesity increases risk of impaired social, physical and emotional wellbeing [7]. Childhood obesity also increases the risk of obesity status as an adult, which then increases risk for cardiovascular diseases, cancer and many other poor health outcomes [7].

Kentucky is ranked 12th in the U.S. in obesity with a rate of about thirty two percent [8]. The prevalence of obesity among children 2 to 5 years of age in Kentucky was 15.7% (US average 8.4%) and 17.6% (US average 17%) among adolescents with childhood obesity in Kentucky being higher than the national averages [8, 3]. Similarly, physical inactivity is higher in Kentucky than the national average (29% Vs 22.9%) [9].

A map (Figure 1) based on the BRFSS data in Kentucky (2012), which shows that the highest rates of prevalence are in the eastern counties of Kentucky [10]. The most recent Behavioral Risk Factor Surveillance System (BRFSS -2014) data shows Knott County is tied with Breathitt County for the highest obesity rate (41%) in the state [11].

Figure1 Prevalence of Adult Obesity in Kentucky-2012[11]



Knott County is one of Kentucky's 120 counties and is geographically situated in the eastern region of the state. According to the County Health Rankings Report 2015, Knott County is ranked 114th in health outcomes and 112th in the health behavior out of the 120 Kentucky counties [9]. The population of Knott County is 15,693 and predominantly comprised of white (98.1%) followed by black (0.9%) and Hispanic (0.8%) [12]. One fourth (23.1% Vs. Kentucky

average 18.8%) of population of this county live below the federal poverty level and per capita income is $18,448, which is lower than the state average of $23,462[12]. There are 8 public schools, 3 private schools, and 2 higher education institutions in Knott County [13]. There are no hospitals in the county, and essential public health care services are provided by the Kentucky River District Health Department.

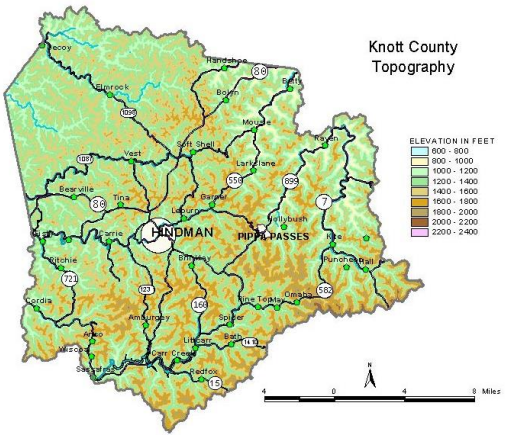


Figure 2 Map of Knott County [16]

Now inferring adult obesity to childhood obesity, these obesity rates are related to adults, parental obesity is one of the major risk factors for obesity among children and is therefore pertinent when considering childhood obesity prevalence [14].The prevalence of early childhood obesity in Knott County is 15.5%, which is almost double in compare to national average (8.4%)[15].Although there is a lack of county-level data on obesity among school children in Kentucky, we can infer a high childhood obesity rate in those counties parallel to the high overall obesity rates and activity patterns.

Childhood overweight and obesity are measured by an individual's body mass index (BMI). BMI is calculated by using formula, $\frac{Weight\ in\ Kilogram}{(Height\ in\ Meter)(Height\ in\ Meter)}$ .According to the CDC, "childhood overweight is defined as a BMI at or above 85th percentile for children and teens of the same age and sex. Obesity is defined as a BMI at or above the 95th percentile for children and teens of the same age and sex [14]. "

Understanding the complex causes of childhood obesity provides the framework for establishing prevention efforts. Anderson and Butcher suggest that changes in the food environment, access to transportation, family environment and the built environment are all contributing factors of childhood obesity[17].Increasing availability of energy-dense, high calorie foods and drinks are also major culprits for increasing childhood obesity. Moreover, children today walk less and spend more time watching television, leading decreased physical activity [17].

Table 1: Comparison of Obesity and Related Disease Conditions

Indicators	**United States**	**Kentucky**	**Knott County**
Adult Obesity	34.9%	32%	41%
Access to exercise opportunity	77%	72%	48%
Prevalence of Diabetes among adults	9.7%	12%	14%
Prevalence of Hypertension among adults	29.1%	39 %	41%
Source : [9]			

Table 2 Eating, Screen Time and Physical Activity Behavior of the Students at the High School

Eating, Screen Time and Physical Activity Behavior	**Kentucky**	**United States**
Fruit and Vegetable Consumption		
Did not eat fruit or drink 100% fruit juices	8.0 %	5.0 %
Did not eat vegetables	6.2 %	6.6 %
Physical Activity		

Were not physically active at least 60 minutes per day on 5 or more days	60.2 %	52.7 %
Screen Time		
Played video or computer games or used a computer 3 or more hours per day	34.5 %	41.3 %
Watched television 3 or more hours per day	26.7 %	32.5 %
Source: Centers for Disease Control and Prevention , Youth Online: YRBS,2013[18]		

Compared to state and national averages, the prevalence of adult obesity, diabetes and hypertension rank particularly poorly in Knott County (Table 1). Similarly, residents of Knott County have little to no access to exercise available through locations for physical activity, such as parks, private or public gyms, YMCAs and community centers [9].

Youth Risk Behavioral Survey (YRBS) data is based on self-reported information in which participants report their behavior of last seven days. The YRBS data illustrated in a table 2 shows children in Kentucky eat less fruit and vegetables in compare to National average. Moreover they are less physically active than their counterparts. In addition, about one third of children spend 3 or more hours every day in front of television or other screened devices. It reflects the poor eating physical activity and screen time behavior among children in Kentucky.

There are several important reasons to implement a population based childhood obesity control program in Knott County. First, the county has the highest rate of prevalence of adult obesity in the state in addition to the highest rate of physical inactivity (40%) in the state[9].Second, it falls within a cluster of counties (Breathitt, Perry, Letcher, Floyd) which also

have high rates of obesity. This geographic location will allow a public health intervention program in Knott County to serve as a foundational program that can be expanded to neighboring counties to address overall childhood obesity in eastern Kentucky. The Kentucky River District Health Department has already established a school health program, which includes school health nurses and establishes connections with Registered Dieticians, Nutritionists and Health Educators. This program can be used as a resource during implementation of our program if further support is needed. While the school health program currently focuses on ensuring emergency care and regular medication, the grant funding will be used to leverage these existing resources to expand its scope.

The proposed project, Behavioral Modification Program to Control Obesity among School Children in Knott County, Kentucky (hereafter referred as " the behavioral modification program"), will help control obesity among Knott County children by implementing an intervention program targeting eating, physical activity and screen time behavior of children at the school, family and community level. The program models the evidence-based program "Switch, What you Do, View, and Chew" (SWITCH)[19]. This obesity control program is tailored to children ages 8 to 10 years old and are in grades 3 to 5. Over 1000 participants participated in the program in Cedar Rapids, Iowa [19]. It was a controlled trial where five schools were assigned to the experiment and five schools from Lakeville, Minnesota were in the control group. It focused on three key proven behavioral risk factors: physical activity, nutrition and screen time. The original SWITCH program lasted for eight months and was then evaluated using a post- intervention survey and follow up survey after six months, collecting data from both parents and children separately.

Table 3 Differences between experimental and control schools at immediate and at 6 months post-intervention

Variables	**At immediate post-intervention**			**At 6 months post-intervention**		
	Experimental Schools	Control Schools	Cohen's d	Experimental Schools	Control Schools	Cohen's d
Screen Time						
Child report (hours/week)	32.5	31.2	.69	27.8	29.1	.67
Parent report (hours/week)	22.8	24.6	1.26	23.7	25.7	1.38
Fruit and vegetable consumption						
Child report (servings/day)	4.4	4.2	.52	4.1	4.0	.26
Parent report (servings/week)	24.9	22.6	1.36	22.5	21.3	1.01
Physical activity						
Pedometer (steps/day)	12,250	11,840	1.83	11,442	11,231	.26
Body mass index						
Body mass index (kg/m^2)	19.0	19.0	.38	19.4	19.5	.15
Note: Cohen's d = 0.2 small effect size , 0.5= medium effect size and 8.0=large effect size [20] Data Source :Evaluation of a multiple ecological level child obesity prevention program[21]						

(Table 3) displays the treatment effects of the SWITCH program on key outcome variables. The effect sizes range from small Cohen's d .15 for BMI to 1.38 for the parent-report screen time reduction. Similarly, parent-reported fruit and vegetable consumption is also increased after 6 months using the post-intervention survey among the experimental group. Pedometer data revealed increased physical activity per day (350 steps more per day Cohen's d large effect 1.83) among the experimental group [21]. In both the post intervention and 6 months follow up survey, there were no differences in mean BMI between the intervention and control group, but one year was considered too early to see a difference in BMI. In conclusion, the

intervention group fared better and sustained their healthy behavior until the 6 month follow up. The child-reported data showed a marginally significant (p-value<0.06) increase in fruit and vegetable consumption [21]. In the 6 month follow up survey, the experimental schools sustained parent-reported lower screen time and child-reported increased consumption of fruit and vegetables (all p-values < 0.05)[21].

The behavioral modification program will be primarily implemented in the elementary schools of Knott County and will incorporate home and community intervention components. A total of 326 students from grades 3, 4 and 5 of Hindman Elementary School, Beaver Creek Elementary School and Emmalena Elementary School are the potential participants (See Table 4). We aim to enroll at least 80% of potential eligible participants by utilizing effective recruitment and retention strategies. Detail of recruitment and retention strategies are explained in a section of the program approach below.

Table 4 Number of participants in the proposed program from the defined schools

Name of the School	**Enrollment by Grades**			**Racial Make Up**		
	3rd	**4th**	**5th**	**W**	**H**	**AA**
Hindman Elementary School	61	59	54	98.4%	1.3%	0.3%
Beaver Creek Elementary School	27	24	27	99.6%	------	0.4%
Emmalena Elementary School	23	22	29	99.1	0.4	0
Source : Kentucky School Report Card [22] W-White, H-Hispanic, A-Asian Americans						

II. Program Approach

The proposed project is a multilevel intervention, theoretically based on the Bronfenbrenner's Ecological Model (hereafter referred to as "the ecological model") [23]. The ecological model is used to understand the complex interaction of multiple factors which affect an individual's behaviors and lifestyle. The given model (Fig.3) comprehensively reflects sociocultural and environmental factors that influence eating, screen time behavior, and physical activity patterns of the child. Children's behavior is highly influenced by the behavior and sociocultural determinants of family, peers, siblings, school, and neighborhoods because they spend the majority of their time at home and in school. A multilevel intervention is a scientific approach that not only intervenes among the youth, but also intervenes at the different leveraging factors in their society and environment as a whole.

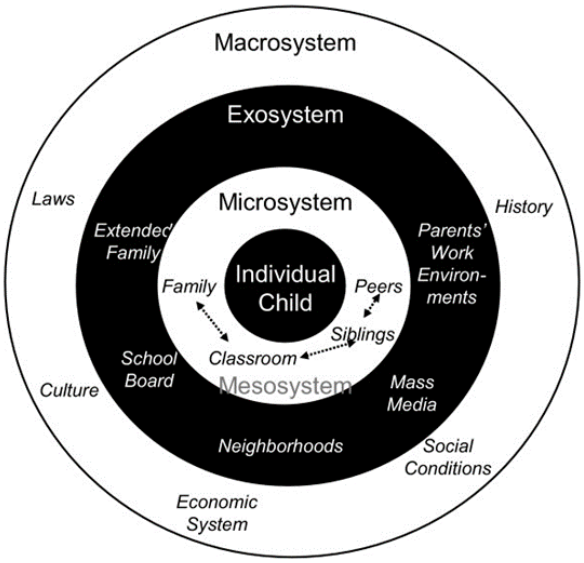
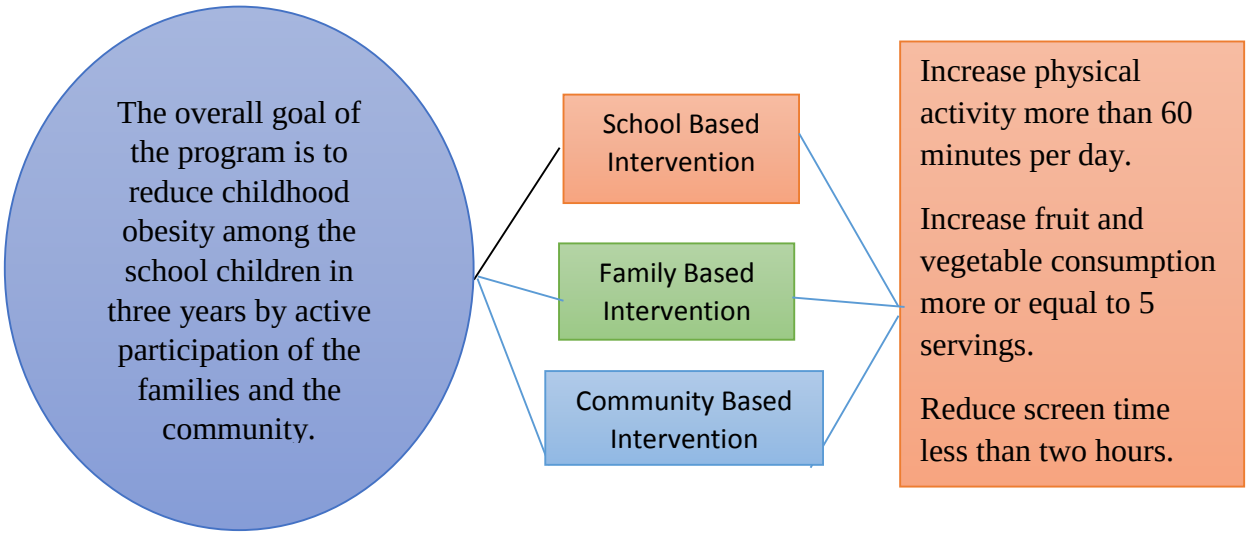


Figure 3 Overview of Childhood Obesity in Ecological Model [23]

A meta-analysis in the U.S showed that multi-level school health programs that combined physical activity and diet interventions were effective strategies in controlling childhood obesity [24].Three common strategies for reducing childhood obesity are reducing caloric intake, increasing physical activity, and reducing sedentary behavior [24]. Research has demonstrated an association between limited physical activities, high levels of screen time, and overweight status among children [25]. Similarly, research shows an association between high-energy-dense diets

(eg. sugar-sweetened beverages, such as soda and non-fruit juices) and a higher risk for excess body fat during childhood [26].

Figure. 4 Strategic Framework the proposed program



The overall goal the behavioral modification program is to reduce childhood obesity among school children in Knott County. The proposed program targets the following objectives by the end of the program. (1) Increase physical activity among the school children by 5 % of baseline physical activity (footsteps/per day), (2) increase fruit and vegetable intake (servings per day) by 5 %, and (3) reduce composite screen time among the school children by 5% (hours per day).

A pilot project will be implemented in the Emmalena Elementary School. The purpose of the pilot project is to adapt the SWITCH program and tailor it to the rural community before expanding the full program to other schools. In conjunction with the elementary schools, we will work closely with the families of the participants, as well as community partners and stakeholders to achieve program goals (See Figure 4).

The behavioral modification program at the schools will be delivered in four phases; 1) baseline survey, 2) reinforcing activities,3) family activities, and 4)skills training. The first phase includes a baseline survey that measures physical activity, eating and screen time habits of children. The second phase implements reinforcing activities in schools by incorporating SWITCH educational materials in the existing school curriculum. For example, students will practice a calorie calculation in math class, design meal planning in social science class , learn top ten alternate entertainment activities to screen time in language arts and learn aerobic exercises, as well as bone and muscle strengthening exercises once a week in the physical education class. Class teachers will be provided with a monthly packet of SWITCH materials and trained on how to incorporate these materials into their existing curriculum. However, school teachers will not be forced to incorporate SWITCH activities, but, there will be a monthly feedback system, and a checklist to record accomplished activities. Teachers will be provided with a $25 gift card each month upon submitting a brief monthly report to the project team. These reinforcing activities will encourage the participants to continue healthy eating habits, increase physical activity and decrease screen time. Children will be rewarded with incentives (gift items, stickers, t-shirts, and hats) for demonstrating healthy behaviors. In the third phase, families will be provided with a monthly SWITCH packet, which includes a list of monthly goals on healthy eating, physical activity, and limiting screen time. The packet will also include educational materials (family handouts, brochure, and magnet) and healthy behaviors tools (shopping list, meal planner, and activity guide) to establish healthy eating behaviors at home. Parents will be offered an orientation program before delivering family activities. In the fourth stage, students are taught healthy behaviors and skill sets (eg. exercise techniques, nutrition education, preparing healthy recipes like smoothies) in school which can be maintained

throughout life. In addition, there will be a monthly Fitbit challenge, in which a students with highest footsteps for the month in a class and among the participants will be recognized (display his/her name in a billboard for a month) and awarded with gifts worth≤ $20. Furthermore, participants will have a "Shut Your Tele Week" in the 8th month of the program. Participants will completely shut off all the scree devices for that week. Last but not least, participants will celebrate the successful completion of the program by organizing picnic in coordination of participating schools and the project team.

Plan of Action

Table 5 Tentative Plan of Action of the Proposed Behavioral Modification Program

Timeline in Months	**Major Activities**
Preparation Phase(February 2017 to July 2017)	
1	● Meeting Stakeholders and Partners ● Formation of Community Advisory Group (CAG)
2-3	● Recruitment of staff ● Focus group discussions(with teachers and parents) ● Procurement of supplies
4	● Review and adaptation of SWITCH materials
5-6	● Teacher's Training
Pilot Project Phase(August 2017 to May 2018)	
7	● Intervention: Emmalena Elementary School ● Enrollment of the participants ● Parent's Orientation
8	● Baseline Survey in school (among teachers, parents and participants)
8-15	● Incorporate SWITCH materials in classroom and families

16	● End line Survey(School and Community) ● Celebration (School picnic , participants, family , teachers)
17-18	**Regroup**
Implementation to the Beaver Creek and Hindman Elementary Schools and Community (August 2018 to November 2019)	
19	● Implement program to the Beaver Creek Elementary School and the Hindman Elementary School ● Baseline Survey to Schools ● Baseline Community Survey (Random Digital Dialing) ● 5 Community Education Sessions (September 2018 – March 2019)
20	Participate in Knott County Gingerbread Festival
22	Follow-up Survey at the Emmalena Elementary School
28	End line Survey (Schools and Community)
34	Follow-up Survey (Schools)
35-36	**Data Analysis and Report Writing Data Compilation , analysis, report writing and dissemination**

Preparation Phase (February 2017 to July 2017)

- Approaching the stakeholders
- Formation of community advisory group
- Focus Group Discussions
- Review and adaptation of SWITCH materials
- Teachers training

<u>Approaching the stakeholders:</u>

The first six months will be a preparatory phase. We will meet with stakeholders, project partners, gatekeepers (Board of Education, School Principals, stakeholders and parents) and parents through extension of the leadership of the director of KyRDHP who will offer a

PowerPoint presentation in the issue. The presentation will highlight the purpose of program, the consequences of and reasons for controlling childhood obesity, in addition to addressing potential community resources and roles of stakeholders to curb this issue in Knott County.

We will participate in school programs to interact with the potential partners and family members before implementing the program by setting an educational booth in participating schools during their parent orientation program (e.g. curriculum orientation day) in the month of August. Parents and stakeholders will be provided with a brochure on childhood obesity which will describe the purpose of program, and the importance and measures of controlling childhood obesity. These preliminary community interactions will be monitored by keeping a record of number of meetings, number of people participating and number of brochures distributed.

Formation of a Community Advisory Group (CAG):

A community advisory group (CAG) will comprise of members from schools, parents, community stakeholders and experts from the University of Kentucky to sustainably implement the proposed behavioral modification program. The CAG will be responsible for mobilizing the community resources and providing quarterly feedback on the progress of the proposed project. With the help of the CAG member team, we will decide the venue and target population for offering the public education program. The CAG will participate in reviewing the SWITCH materials and provide feedback for adaptation. The members will be accountable with a memorandum of understanding (MOU) which will clearly illustrate the roles, responsibilities, and rights of each board member.

Table 6. CAG members and the rationale for their participation

CAG member	**Rationale**
Superintendent of Knott County Public Schools	He will provide administrative assistance to implement program in elementary schools.
Knott County Cooperative Extension Agents – 2	They will contribute in establishing relationship with community partners and stakeholders.
Director of the Hindman Knott County Community Development Initiative	He will play an important role in connecting us with the community to implement community intervention components of the proposed project.
Professor from the University of Kentucky	She will provide us with the advice on adaptation of SWITCH materials, program design, implementation and interpretation of statistical analysis of the program.
Principals from participating schools (3 schools)	They will facilitate in providing training to the teachers, coordinating a parent awareness program, recruiting participants (students) of the program, and evaluating the program.
Representative from the teachers (3 schools)	They will have a major contribution in implementing the proposed program at the school and within the families.
Representatives from the parents (3 parents)	The CAG will consist of a representative from the parents of the elementary schools. Each school has a Parent-Teacher Association (PTA), and each PTA will be asked to elect a representative to serve on the CAG. A major role of the representative parent will be to coordinate a parent awareness program in each school to help parents realize that childhood obesity is a public health problem in Knott County.
Representatives from the students (3 students)	These student advisors will help us to adapt the original program. They will provide feedback on student's perspective on the program. For example, what do they like and dislike about a log book?
Director of the WKCB radio	A representative of the local WKCB radio station will assist in implementing the mass media campaign in the Knott community.
Knott County Judge-Executive	The county judge executive is one of the vital members from the community, who can not only make a positive impression on the program, but also guide the community through law and policy issues.

A community advisory group will consist of 19 members, comprising members of different organizations, teachers, parents and students. The CAG members should be committed to meet quarterly in the Kentucky River District Health Department to review a quarterly report and provide necessary feedback on this progress report. Furthermore, there would be a virtual meeting facility (e.g. Teleconference, Skype, Facetime) to increase the participation in case of anyone's inability to meet in-person, in order to fulfill a quorum and help the group make quick shared decisions. There will be total of 12 CAG meetings in 3 years. Agenda of meetings will vary by stage of proposed project. Some of the agenda items for CAG meetings are listed below.

- ✓ Finalize the brochure and flyers of the project
- ✓ Adapt monthly SWITCH activity packet for the teacher and the family
- ✓ Hire needed staff members
- ✓ Conduct employ performance review of current staff members
- ✓ Identify the target population for community education
- ✓ Develop MOU for project partners
- ✓ Provide quarterly feedback in response to progress update

Focus Group Discussion

There will be two focus group discussions with the parents and the teachers during the preparatory phase of the program in order to gain deep insight of the potential barriers in adapting the evidence based program in Knott County. A standard methodology will be followed to conduct these focus group discussions [27].We are inviting approximately 10-12 parents from three schools to the focus group. These parents will be recruited in coordination with the parent teacher association (PTA). The PTA will help us establish a pool of potential participants for the focus group. Initially, we will send a letter to the parents through the PTA by email, which will explain the purpose of the focus group, potential time and date, and information on the

requirement of audio taping the discussion and the proposed incentives for the participants. The purposes of the focus group with the parents are; 1) to assess the readiness of the parents to participate in the proposed program, 2) to assess the potential barriers of reducing composite screen time (CST), increasing fruit and vegetable (FV) consumption and physical activity (PA), and 3) to identify the motivational strategies for the participants and family to successfully execute the program. We have developed about 15 questions to facilitate the focus group discussion. For example; what kinds of incentives will be preferred by the children? How often do your children spend time in front of a computer/television/iPad/mobile phone screen per day? How often do you play with children? How do you limit the screen time of your children? Would you like to participate in play and other physical activity with your children? Whom your children prefer to play the most in outdoor, parents, sibling or friend? Is there any safe areas nearby your residence, where you and your children can walk and play safely? What are the common fruits and vegetables that your family eats?

Similarly, a focus group will be conducted with the teachers (12-15 teachers) of the three target schools. The purpose of the focus groups with school teachers are: 1) to identify the facilitators and barriers of implementing the proposed program in a classroom settings by the class teachers, 2) to identify the motivational factors for school children to help them increase PA, FV consumption, and decrease ST, and 3) to identify the potential barriers for the school children in using the Fitbit, a physical activity monitoring device and that would provide regular data for study purposes. We have developed about 15 guiding questions to moderate the focus group, some of which include; what are the potential challenges of incorporating the proposed

SWITCH materials to the existing curriculum? What are some common activities children like to do during recess hours? What would be the potential barriers to using Fitbits among children?

Both of these focus groups will be conducted in the Kentucky River District Health Department's meeting hall. Each of these focus groups will take about 2-3 hours. The participants will be provided with an incentive of $30 and refreshments during discussion. The project coordinator will prepare for the discussion (eg. room, audio tape record, refreshments, invitation to the participants, sending a follow up letter prior to a week or ten days of the focus group etc.). The discussion will be audio taped. The project coordinator will moderate the focus group. The nursing administer will take notes of the discussion. The focus group data will be triangulated (audio tape, notes and opinion of the research team) and analyzed by a project director who will then write a report to be discussed among the CAG. Data will be used to make necessary adaptations to tailor the evidence based program to the Knott county community.

Review and adaptation of SWITCH materials

While the SWITCH was successfully implemented in sub-urban area of Iowa, we will make necessary adaptation in the proposed program to tailor it in a rural context of Knott County. Since an original program was developed in 2005, one of the purposes of adaptation will be to address the changes occurred in media , technologies and guidelines (nutritional, activity and screen time) in the last decade. An adaptation process will occurred in an active participation of school teachers, parents, community advisory group members and project team.

Extensive review and adaptation of SWITCH materials (flyers, brochures, educational packets for teachers which contains lesson plans, the educational packet for parents which

contains meal planning, shopping list, suggested family activities, survey instruments) will be performed by a selected group of teachers, parents ,students and project staff. This adaptation will incorporate the findings of the focus group discussions and feedback from the community advisory group.

Utilizing recent technology, we are replacing the pedometer with the Fitbit wristband to make it easy to use for children. In original SWITCH program, a data reporting on the footsteps was not satisfactory and the research team identified the pedometer as unsuitable device to measure footsteps among children [19]. In contrary, the Fitbit is easy to use, is similar to a wrist watch; so we hope the children will not forget to use it or lose it [28]. Nevertheless, we are aware of the chance of losing Fitbit but in case of lose, we won't be able to replace the item to prevent uncommendable change in a budget plan. We will do data analysis only on the basis of available data. We are using a screen time manager, a small device which can easily be secured in televisions, to monitor and limit screen time. There are different kinds of the screen time managers. The BOB[29] is one among them, that we are proposing for the participants, however they can have their own choice for a screen time manager tailored to their screen devices or preferences as long as they within a given budget. Since, screen time manager will not only monitor but also limit the screen time, it may give added treatment effect in reducing screen time. Subsequently, pretesting of SWITCH materials, physical activity monitoring devices and screen time monitoring devices will be conducted among a few teachers, parents and students from Emmalena Elementary School.

Addressing recent changes in nutrition, physical activity and screen time guidelines, and another important purpose of adaptation is to adapt the contents of SWITCH materials according

the recent guidelines. The original SWITCH program was based on 2005 Dietary Guidelines for Americans, but this guideline had been revised twice in 2010 and 2015[30, 31, 32].A proposed behavioral modification program will consider the changes made in the dietary guidelines in these years, however, there are not much differences in key messages other than recommended strategies to successfully implement given guidelines in population. In the 2005 dietary guideline [30], the emphasis was given for the amount for each food groups, for example, recommended fruit and vegetable consumption was 4.5 cups. The 2010 dietary guideline [31] recommended for increasing healthy foods (eg fruit and vegetables) and decreasing unhealthy foods (e.g. saturated fats, sugar). The 2015 dietary guideline [32] is broad in compare to previous guidelines. It highlighted the importance of following a healthy eating pattern across the lifespan, making healthier food and beverage choices and promote healthy eating pattern for all. Reviewing changes in these guidelines, in a proposed program, we still consider a recommendation for consuming the 5 servings of fruit and vegetable per day, although, we will incorporate the key messages from the 2010 and 2015 dietary guidelines. For example, how children can switch to the healthy foods and beverages? What are the foods they should increase or decrease?

Similarly, we are considering the 2008 Physical Activity Guidelines for Americans (PAG) in the proposed program [33]. According to the 2008 PAG, children and youth are recommended to be physically active (moderate to vigorous) for 60 minutes or more each day. In addition, as a part of that physical activity, they should incorporate bone strengthening activities (jumping, tennis etc.) and muscle strengthening activities (weight lifting, resistance band etc.) three days per week. Likewise, a recommended screen time (less or equal to 2 hours per day) in the original SWITCH program was adopted a guideline published by the American Academy of

Pediatrics (AAP) [34]. AAP has recently changed a screen time guideline in 2015 in order to address a dramatic changes occurred in media in terms of development of technologies and media habits of population in these last 10 years [35]. Recent AAP guideline still suggests to limit screen time from 1-2 hours per day for children and adolescents, but they strongly emphasize to monitor the quality of the contents (violence, explicit sexual content etc.) of media including time limits. So, the proposed program will consider the recent AAP guideline and will add a couple of SWITCH: what you view activities in which parents, teachers and participants will identify good and bad contents in the current media programs.

Teacher's Training

In the summer of each academic year, class teachers, physical education teachers and school nurses will be trained on integrating SWITCH educational materials into the existing curriculum in the classroom/school setting. The project director and the nursing administrator will conduct the training guided by the SWITCH training module for teachers, which describes the components of the monthly educational packet and how to use those materials in the classroom.

For example, in the language arts class, on the topic ' Invention of the Television', the students will be encouraged to discuss the adverse health effects of watching television for more than two hours each day. At the end of the training, the teachers will be able to deliver the educational materials, engage students in learning activities and reinforce them to continue the positive health behaviors (eg, healthy eating, being physically active and limiting screen time). Moreover, teachers will also develop skills on how to use the Fitbit and screen time monitoring devices. Parents will be given an option to make a choice from three devices (BOB, Token timer

and TV Allowance) according to the television set they have and the strategy they prefer. The basic features of these devices are that they can be easily fit into the television set, and parents can pre-set a screen time and monitor it. For example, with the BOB device, screen time can be limited digitally on the device, whereas the token timer has the token to spend on the machine which allows 35 minutes of screen time. A post-test will be conducted at the end of training to ensure that teachers have met the learning objectives. Teachers will be compensated with a $50 gift card for participating in the training.

Figure 5. BOB screen time manager [36]

Pilot Project

- Recruitment
- Parent Orientation
- Baseline Survey (Students, Parents, Teachers)
- School Intervention Components
- Family Intervention Components
- End line Survey(Students, Parents, Teachers)

<u>Recruitment of the participants</u>

In an academic year of 2017, we will implement a pilot project to the Emmalena Elementary School among 74 students in grades 3-5. In the following academic year we will implement the program throughout the rest of the two schools. Respective school principals of the target schools will be sending the opt-in consent forms (child assent form and a consent from parent/guardian) to all the parents/guardians. Each consent form will describe the main purpose of the program, a brief description of the program design and duration, the expectations from the

participant and family, a withdrawal right of the participants, the proposed incentives and the benefits of the program to the participants. A consent form will comprise of a check box for participation, the name and an authorized signature of the consent provider. The consent forms should be returned within two weeks and consented forms will be valid for one academic year for the consent provider unless they change their decision. The consent forms will be sent with an introductory package detailing the program. The introductory package will be in an enclosed envelope imprinted with the program name and a slogan that includes a flyer describing the program. The brochure will describe childhood obesity, and a program magnet printed with a program name and a slogan (I'm a part of it) will be provided. Consent forms and an introductory program package will be sent and collected by respective class teachers. As this program needs active and long-term participation from the participants and their family, we are making the program design engaging, interesting and beneficial for the participants in order to minimize possible obstacles for participation. An incentive will be provided for the participants upon returning the granted consent forms. An enrolled participant can make a choice from five physical activity promoting gift items (each cost < $10) ; a paddle catch and toss, a badminton set for the kids, a jump rope, a hula hoop, or a frisbee. A follow-up letter will be sent to the parents who have not returned the form after the first deadline and they will be allowed to make a decision within two weeks of the first given deadline. Any consent form returned after two weeks of the first deadline will not be considered in order to make the implementation process feasible.

Parent Orientation

The project director and nurse administrator are providing a one-day orientation training for the parents of participants in the respective schools. We are using a training manual developed by the SWITCH program. The training module includes, but is not limited to, an introduction of childhood obesity, its adverse effects and measures to control it, a description of materials included in the monthly family packet and tips to efficiently use them, and added components on using the Fitbit and screen time managers. Training methods will be provided in a lecture (Microsoft PowerPoint presentation) and should include demonstration (Fitbit, setting up Bob in a television set) and participation from the parents (developing a sample meal plan and shopping list, setting up Bob to the television set etc.) which will impart knowledge and skills required to successfully implement family components of the project. After completion of parent orientation, an evaluation test will be done to make sure that parents have achieved learning objectives of the orientation training.

Child, parent and teacher surveys

At the beginning of the pilot project implementation, we will survey teacher, families and the participants to collect the baseline data for the multilevel ecological model. In the survey we are measuring the primary outcome variables (physical activity, fruit and vegetable consumption and screen time behavior) as well as several variables of secondary importance. The original SWITCH program adapted survey questions from the General Media Habits Questionnaire and the Adult Involvement in Media questionnaire, the Teacher Ratings of Aggressive and Prosocial Behavior Scale and the Youth Risk Behavioral Surveillance [37, 38]. We are using the questionnaires used by the SWITCH program, however we expect to make some changes in an

original survey questionnaire, for instance, taking off violence and aggression related questions. The original survey questionnaires are described as below.

"The children's baseline survey comprised 49 items that measured the following: Children's television violence exposure, children's violent video game exposure, parental monitoring and rules regarding children's television and video games, TV and video games in the bedroom, weekly TV time, weekly video game time, weekly online time, children's attitudes about how much time they spend with TV and video games, amount of daily pleasure reading, incidence of physical fights in the prior year, amount of sleep, snacking habits, attitudes about their physical activity levels, fruit and vegetable consumption yesterday, and self-report of their average school grades. Many of these items were adapted from the General Media Habits Questionnaire and the Adult Involvement in Media questionnaire [23] ".

"The parents' baseline survey comprised 64 items that measured the following: The target child's media habits (e.g., frequency of having TV on while doing homework), family media habits (e.g., frequency of having TV on during meals), child and family activities (e.g., frequency of playing games together), parental monitoring and rules regarding children's television and video games, parental consistency with rules for children's media use, TV and video games in the bedroom, children's weekly TV time, weekly video game time, weekly online time, attitudes about how much time the target child spends with media and in physical activity, amount of sleep, snacking habits, the target child's fruit and vegetable consumption over the past week, the child's average school grades, and family demographic variables. Again, many of these items were adapted from the General Media Habits Questionnaire and the Adult Involvement in Media questionnaire[23]".

"The teachers' baseline survey comprised 28 items. Teachers will complete one survey for each participating child in their classroom, measuring the following secondary variables: the target child's incidence of physical aggression, relational aggression, and prosocial behavior toward peers, the child's frequency of physical victimization, relational victimization, and prosocial support from peers, the child's attention problems in school, the child's average school grade, and some demographic variables. The aggression and prosocial items were adapted from the Teacher Ratings of Aggressive and Prosocial Behavior Scale [23]".

Anthropometry

The school nurses will measure the height and weight of the participants and calculate their BMI according to the standard procedures [39]." *Standing height will be measured using a portable stadiometer (Seca Road Rod). Body mass will be measured using a strain gauge scale (Lifesource MD). The body mass index (BMI, kg/m^2) will be calculated from measurements of standing height and body mass. Overweight and obesity were determined based on age- and sex-specific reference values developed by the International Obesity Task Force [33] which are anchored to adult values for overweight and obesity at the age of 18 yrs and back-extrapolated. Waist circumference (WC) will be measured above the superior border of the iliac crest as an indicator of central adiposity using a Gullick tape to the nearest 0.1 cm. Prior to data collection, the nurses were trained by the PI and intra- and inter-observer measurement error will be determined. In addition, measurement error will be also determined during data collection by duplicate measures of every 25th subject [23]".*

Implementation of school intervention component

The school based intervention component will be focused on the exchange of information, reinforcement of positive behaviors in the participants and family, and collection of data. The classroom setting will serve as a platform for combining the efforts of reinforcing and maintaining the SWITCH message between family and the participants. Activities for the participants are guided by the SWITCH materials; the teacher's packet and the family's packet. These packets include four modules for each month till 8 months. According to those materials, a participant sets goals, do activities to accomplish goals, record their activities in a logbook and report it to the class teachers. They will get a points according to their accomplishment (Please refer Appendix for detail information). Described below in a table is an example of how the program functions at the different level?

Table 7Example of the proposed program

Participation from the different Levels	Activities
Participants	Week 1 "Switch what you DO" • Goal: I will go for a walk for 15 minutes every day. Week 2 "Switch what you VIEW" • Goal: I will go for a walk for 15 minutes every day and will watch television for 2 hours only. Week 3 "Switch what you CHEW" • Goal: Added to walk and limiting my screen time, I will eat at least two servings of vegetables each day. Week 4 "You Rule! Try all 3 goals!"
School	Incorporate SWITCH activities guided by module to help participant achieve their goals. Eg. In the language art class they will explore alternate entertainment activities to watching television.
Family	According to guidelines from the family packet, they will also do supportive activities in home. Eg. Develop a healthy food shopping list and take the participant for groceries.
Community	People will be aware of the issue. They will probably interact about the program in work place, public places creating supportive environment.

Teachers will be provided with a monthly teacher's packet to assist in planning the activities to incorporate into the existing curriculum. There are a total of 8 teacher's packets for 8 different months which include varieties and good enough amount of suggested activities ensuring enough activities throughout the program period. The teachers' packets include the following materials:

- ✓ Posters for the classroom
- ✓ Bulletin board ideas
- ✓ Activity/puzzle handouts for children
- ✓ A copy of the monthly calendar sent to families

We will implement reinforcing activities in the school to encourage healthy eating habits, increase physical activity and decrease screen time. Physical Education (PE) teachers will incorporate exercise components described by SWITCH materials once a week (a total of one hour) in the PE class. Class teachers will integrate SWITCH activities into the existing class curriculum. Students will be provided with puzzle handouts to do in their free time while at school (puzzle handouts will have health education messages, terms, etc.). Students will discuss and identify alternate entertaining activities to replace/reduce screen time.

Each week the participants will present their logbook to the class teacher. The logbook will contain their weekly record of screen time, fruit and vegetable intake and physical activity in hours. Students will also record their weekly footsteps in the logbook, based on Fitbit data. A project staff member will visit the school every week and collect Fitbit data from the students and put it in the computer given to the school. Parents will be encouraged to help the participants to complete their logbooks. Students will receive an incentive (cash, shirt,cap,water bottle, stickers, stationery etc.) for turning in their weekly reports.

In addition, there will be a Fitbit challenge for each month, in which the student with the highest number of footsteps in that month will be rewarded. Fitbit data will be verified by the Fitbit application on smartphones or computers. A computer technician from the KRDHD will visit the school every week and collect Fitbit data from the students. Participants will participate in "Shut Your Tele Week" in the last month of the intervention and celebrate the completion of program by going a picnic in a nearby park.

Implementation of family intervention component

The goal of the family participation portion of the proposed multi-level intervention is to introduce the child and the parents/guardians to the SWITCH intervention, and to facilitate a supportive environment in order to sustain healthy behaviors. A monthly SWITCH family packet will engage and enable family members to create a supportive household environment for the child. The goals of the family targeted activities are to increase physical activity more or equal to one hour/day, increase consumption of fruit and vegetables to more or equal to 5 servings/day and decrease screen time to less than two hours/day. The participants choose at least one to three goals (1 for each target behavior change) from a list of ten suggested goals for each month. Some examples include: fill half of your plate with fruits and vegetables, drink water instead of soda/sugary beverages, walk for one hour each week, remove television from the bedroom, etc. Participants are provided with an activity jar, which contains multiple easily achievable specific physical activity tasks to accomplish. Some examples include: dancing for 10 minutes, taking 30 stair steps etc. The monthly family packet is delivered to the participant's family by mail for 8 months from September to April of the given academic year. The monthly SWITCH family packet includes the following materials.

- A printed brochure describing the project
- A log book reflecting SWITCH “Do, View and Chew” goals for the month
- An activity jar for increasing physical activity
- A packet of screen time tickets for the child/parent to track screen time
- A meal planner for two weeks with a suggested list for grocery shopping
- A printed calendar for the month to help motivate and facilitate parents to plan daily activities in order to achieve goals for reducing screen time, increasing fruit and vegetables and physical activity

Besides SWITCH materials, families will install a screen time manager in their television sets. Parents will set the screen time limit for the children. In addition, parents will give the participants screen time tickets to monitor other screened devices (smart phones, iPad, tablet). Composite screen time will be calculated by parents summing up the screen time from all of the devices, and they will help record it in the participants’ logbook.

Parent's involvement is vital for successfully implementing the family components of the proposed program. One of the challenges we have recognized is an insufficient or lack of parent's involvement in the program which may negatively impact the participation of the children. For example, we have a reward and recognition for the participants who successfully meet their goals, but a child may struggle to accomplish his goals if parents are not involved. In such cases, some students may never achieve the goals, which will negatively impact the psychology of the participants (inferiority feeling, frustration) and the program outcome. So, we are recruiting the parent volunteers from the PTA. They will weekly visit school and help the participants in need. For example, they can help fill up a log book, help them set the goals etc.

It will be definitely challenging to maintain continuous parental involvement in the proposed program. So we have an incentivized ($50 gift card) parent orientation program, indirect periodic incentives to their children (incentive for participants), child friendly log book

which can be independently filled up by grade 3-5 children, and supports from the parent volunteer support to overcome that challenge.

Post-Intervention Survey and Follow up Survey

The same survey questionnaire will be used for the baseline survey, post intervention survey and follow up survey. While the baseline survey will be conducted at program implementation (usually in September), the post-intervention survey will be conducted at the end of the program (after 8 months of program duration, usually in May) and the follow-up survey will be conducted six months after the end of the implementation cycle (usually in November). The procedure for conducting surveys will be discussed in the performance measurement and outcome evaluation section.

Regroup

After the completion of the pilot project in the first school, there will be a regroup phase for two months. The purpose of the regroup is to review the goals, implementation process and progress made in the pilot project. It will also allow reflection on the lessons learned from the pilot project for the strategic planning of further implementation of the program in the additional schools. In this phase, a brief report will be developed by the project director in collaboration with the project team based on data analysis. The advisory group will meet to discuss lessons learned and to develop strategies for implementing the program's next phase. For example, we anticipate adopting new strategies that would increase participants' compliance in providing weekly logbook data in tracking screen time, physical activity and fruits and vegetable consumption.

Implementation of program in other schools and the community

Project Implementation to other schools

After the regroup period, in August 2018, we will implement the school intervention program into the rest of the two participating elementary schools in Knott County, with modifications guided by lessons learned from the pilot project. Other than that, the program model will be the same as discussed in the pilot project.

Implementation of community intervention component

The purposes of community intervention are to create a supportive environment for the participants to accomplish their goals, to increase an awareness in community and to facilitate the sustainability of the program. The community intervention has following components.

- Community Presentation
- Poster Distribution
- Public Service Announcement
- Bill boards
- Educational booth at the Knott County gingerbread festival

Community components include public education strategies to increase knowledge and awareness about preventing and controlling childhood obesity in Knott County. We are offering a public education presentation to community stakeholders. They include religious leaders, health care professionals, business leaders and other key members of the community. A presentation will be given at a community wide event, in coordination with community extension agencies by the director of KRDHD. The nursing administrator will deliver the public education presentation in different workplaces throughout the community. We aim to deliver 5 public

education presentations in each SWITCH intervention cycle, with each public education session targeting 20-30 participants.

Similarly, we are distributing a poster explaining the problems of childhood obesity to all community organizations in Knott County. There are about 45 organizations in Knott County that include social services organizations, nursing homes, churches, veteran organizations, etc. Likewise, the WKCB radio station will produce and broadcast a PSA. Since WKCB has a media analyst in their system, they will evaluate the impact of the program and provide a biannual report to the KRDHD. They will collect the community's response to the PSA from telephone surveys. Furthermore, we are displaying two bill boards in Hindman, Knott County. A content of the bill board will be developed by the project team while the design and the production will be done a private marketing organization, the LAMAR Advertising.

In addition, we plan to participate in the Knott County Gingerbread Festival, which usually occurs in September and lasts for 2-3 days. This festival is the largest community gathering in Knott County. Multiple booths are set up, which include food, arts and crafts in addition to holding a parade, a live music event, a 5k running race, a 2k walk and a bike rally. People from multiple sectors participate include many entrepreneurs, people from the food industry, health and safety sectors. We plan to establish an educational booth at the festival where we will distribute childhood obesity brochures, exhibit educational posters and interact with the community. We will keep a log of the total number of visitors and number of brochures distributed. The community intervention will be evaluated by the community survey. A detail of the survey is explained in the performance measure and outcome evaluation section.

Although the proposed program is promising as an effective method to control childhood obesity, we anticipate potential barriers, and propose strategies to overcome them. Our primary challenge is to meet the target enrollment (80% of the total students from grade 3-5); however, by reinforcing activities such as meetings, distribution of educational brochures and program information (with contact information) and incentive delivery, we will help overcome this challenge. We are also aware of potential late enrollment from participants. In order to minimize such problems, incentives and a last deadline date will be explicitly provided from the beginning. Moreover, a couple of reminder letters will be sent prior to the deadline. Another challenge could be the compliance of participants in providing data. There will be training for the participants and their parents regarding how to collect and report data to the elementary teachers. There will be rewards for each time they provide data. In addition, we may have to troubleshoot some technical issues for the various technologies (Fitbit, BOB, Laptops, and Desktops etc.). All of our devices will be under a replacement warranty for two years, which will serve as a backup for issues that cannot be resolved first hand.

We are using three strategies to improve the retention of the participants: participant education, reinforcement activities and rewarding incentives. We are educating students and their families to understand the importance of healthy eating, increasing physical activity, and decreasing screen time to ensure healthful living. We will provide incentives (money, gifts, stickers of acknowledgement etc.) for the participants. We want to make the program fun-filled and engaging. Every day, participants can participate in an activity with family members and will be provided with monthly challenges. We will also make the program flexible for the participants. Participants will not be removed from the program for not submitting a logbook.

Similarly, participants' status will not be affected by decreased participation from parents. For example, parents may not attend the orientation program but the child can still be a participant in the program with a continuous support of parent volunteers.

Evaluation and dissemination of information

The last two months of the grant period will be compilation, analysis and interpretation of data, followed by report writing. The findings will be disseminated to the community through a town hall meeting, and to the funding agent and scientific colleagues through publication in a peer-reviewed journal. A town hall meeting will be hosted by the KRDHD in coordination with the Knott County Cooperative extension. The purpose of the town hall meeting is to appreciate the community's effort to ensure program success, share study findings, discuss the strengths and weaknesses of the program and maintain team spirit and program excitement in order to expand the program in the future. Similarly, presentations will be made in PTA meetings and annual Kentucky Public Health Association (KPHA) meeting.

Fidelity

The proposed behavioral modification program is based on the evidence-based program the "Switch® what you Do, View and Chew." We are adapting survey questionnaires, monthly program materials, brochures, training manuals etc. from the SWITCH program. We are utilizing a couple of strategies to maintain a fidelity of the program. First, there will be an orientation and training for the staff members, teachers, students, and parents. Second, we are emphasizing in continuous monitoring of the program. We are developing and following a protocol for carrying out all activities. We are hiring a school liaison who will continuously participate in the activities

of the program and monitor them. For example, she will participate in all of the community talk programs, will visit schools to observe the structured exercise program, and attend some nutrition education sessions. We have a plan to make a random home visits by a school liaison. It has to be decided that exactly how many home visits we can make throughout the program, but we will do some home visits to observe how family members are utilizing the SWITCH materials and are they using screen time manager etc. Third, we are developing job descriptions that will explain in detail the roles and responsibilities of the teachers, trainers, physical education instructors and others involved in the program. There will be a checklist to ensure that all the detailed activities are delivered according to the evidence based program. Forth, we are establishing a feedback system from the project partners. Class teachers will provide a monthly feedback on the program by submitting a monthly progress report to the project team. Parents will provide feedback via responding emails sent by a school liaison. Last but not least, we will have an audio and video records of the program, which will be evaluated by the project team.

Sustainability

Most importantly, the proposed project will provide a county level data on obesity among school children which will serve for development of similar programs in future. In addition, an effectiveness of the SWITCH program in Knott County which will serve as a scientific foundation for expanding this program. We are developing materials and training the teachers which will reduce the cost for continuing the program, as once teachers are trained, they will only need "refresher" courses. Furthermore, strong collaboration and community partnership will play a great role in bringing further grants to this project. Immediately after completion of the three year grant period, the KRDHD will work in partnership with the Hindman Community

Initiative to raise funds so that the program can continue and expand to the rest of the elementary schools of Knott County.

Existing Survey Questionnaire Review and Adding Some Questions

We have reviewed the 2015 Middle School Youth Risk Behavior Survey. Within were some useful and important questions related to obesity, screen time and physical activity, which can be used in the proposed project, however, we would like to add a couple of questions for the proposed program.

Added Questions related to my project

1. Anthropometric Measurement (will be measured by a school nurse following standard method described in the program approach)

a) Height in Centimeter: _____
b) Weight in Kilogram: _____
c) BMI: _____

2. Measuring mandatory screen time (e.g. for doing homework): On question 44 onwards, we would like to assess the time required for the students to use the computers or other electronic devices to accomplish their assignments or homework.

On an average school day, how many hours do you use a computer for something that is related to school work? (Calculate time spent on things such as online homework, project work you do on a computer or electronic devices)

a) I do not use a computer to do school work
b) Less than 1 hour per week
c) 1-2 hours per week
d) More than 2 hours per week

III. Performance Measure and Evaluation

The proposed program will be continuously evaluated under the leadership of the project manager in order to assess and ensure the meaningful use of resources, fidelity of the program, and outcome of the behavioral modification program. All of the implementing partners (school, family, and community) and project team members will be actively involved in different roles and responsibilities to maintain continuous measurement of the performances and evaluation of the program. The school will report periodic data on logged participant screen time, healthy eating behavior, and physical activity. The participants, family and the teachers will participate in the periodic paper-based surveys. A data on major program outcomes (Table.8) will be separately measured from the parents (parent reported data) and the participants (child reported data) in order to reduce possible response bias pertaining to the self-reported data. For example, a child may over report the data to compete in a class.

There will be the random digital dialing surveys at the beginning and the end of the program. Similarly, CAG members will provide quarterly feedback on the progress of the program.

Implementation Evaluation

We will be continuously monitoring the activities and periodically collecting data throughout the three years of the grant period to timely achieve the preset objectives. Collected information will be promptly analyzed, the findings will then be discussed among the CAG and the project members and will be used to make informed decisions during program implementation. The project coordinator will take attendance to monitor the participation status and draft minutes to make informed decisions throughout meetings (stakeholders, CAG, project

members). The project coordinator will regularly communicate with the potential focus group discussion participants to increase participation and keep a record of the number of participants in each discussion to assess the participation rate and validate findings. Similarly, during teachers' trainings and parent orientation sessions we will keep a record of the number of teachers who participated in the training and will decide if we need to conduct more training sessions to train all the teachers related to the project. We will create a posttest to make sure that teachers learned what they were supposed to learn. We will continue to use that information to reinforce teachers during the program implementation phase.

The program manager and the fidelity monitor will be responsible for checking for fidelity during the adaptation of SWITCH materials. We are developing a checklist to make sure that all of these materials are adapted properly for the Knott County community. We will keep a record of the number of flyers, brochures, training manuals, survey questionnaires and log books produced. We will also keep a record of how, when, where and to whom they will be distributed.

Outcome Evaluation

Table 8. Short-term and long-term outcome evaluation

Major Program Outcomes	**Short-term Outcome Evaluation**	**Long-term Outcome Evaluation**
Increased Physical Activity	Weekly Fitbit data for 8 months	Baseline, End line and Follow-up survey
Increased Fruit and Vegetable Consumption	Weekly log book of fruit and vegetable consumption for 8 months	Baseline, End line and Follow-up survey

Reduced Composite Screen Time	Weekly log book of screen time for 8 months	Baseline, End line and Follow-up survey
Reduction in obesity	Monthly calculation of BMI for 8 months	Baseline, End line and Follow-up survey
Increased community awareness	Number of public education sessions per month PSA airtimes per month	Baseline and End line random digital dialing survey

Short Term Outcome Evaluation

Short-term outcomes for physical activity, fruit and vegetable consumption and screen time will be monitored by a weekly logbook. Participants are provided with monthly goal sets which will be included in a monthly family packet. Participants will set at least 3 weekly goals for 3 target behaviors among 10 suggested goals for the month. Achievement of those goals will be reflected in a weekly logbook where they record their physical activity, fruit and vegetable consumption and screen time. For example, a participant may choose a goal of doing 500 hula-hoops in one week. He/she will set the goal at the beginning of the week, do it within a week and reflect the accomplishment in a weekly logbook. Participants will be provided with an incentive each week upon returning a logbook. Some examples of other weekly goals are eating 20 serving sizes of fruits and vegetables, playing 500 counts of jumping rope, no screen time for one day etc. These goals are based on the SWITCH's target to make the children physically active for at least 60 minutes/day, increase FV consumption to 5 servings/day and reduce CST to two hours/day. There will be an achievement chart displayed in the participant's classroom, where students will get points as they achieve the goals and are recorded in the chart. Each month, the

highest scorer of the class will win a cash prize of $20 and a magnet encrypted "Winner of the Month". There will be an inter-school competition each month and we will determine which school has achieved the highest number of goals. A cash prize of $20 will be provided to the winner, his/her class teacher, physical education teacher and school nurse. Similarly, there will be a monthly Fitbit challenge day and the person with the highest number of footsteps will be awarded a cash prize of $20. Project staff will make weekly visits to the schools and collect Fitbit data from the participants. A school nurse will measure height and weight of the participants each month and calculate the BMI.

Long Term Outcome Evaluation

Evaluation of School Program: Every month, a school nurse will compile the data from the school and send it to the graduate research assistant of the University of Kentucky. Then it will be recorded in a statistical system, analyzed and interpreted. Similarly, the baseline, post-intervention and follow-up surveys will be conducted in the schools and then completed surveys will be sent to the statistician at the University of Kentucky for analysis.

Besides, major program outcomes mentioned above (Table.8), we expect to see improvement in indirect indicators of overall wellbeing in school, family and community. For example, less absenteeism could be one among possible indirect outcomes. With a positive impact of the program, children will have a better health, which will be reflected in an attendance rate of the school. Similarly, we hope, there will be more involved and aware community, family and school in Knott County (please refer Appendix 1: Logical Framework for detail information).

Evaluation of Community Program: Each year, the survey research center at the University of Kentucky will carry out a digital dialing survey to assess the impact of program in the community. In this survey, there will be 5 to 10 questions related to the familiarity to the program, changes in eating and screen time habits among children, changes in physical activity, and the community's perception of the program and readiness of to continue the program.

We are contracting the Survey Research Center at the University of Kentucky to carry out the community survey and analyze and interpret the data. We are hiring a statistician from the University of Kentucky for the statistical analysis of data. We are also hiring a graduate assistant to assist with statistical work. Data will be reported to the KRDHD by the statistician, the survey research center and WKCB radio quarterly. A project director will compile all the data and develop a quarterly report, which will be discussed at the CAG meeting and will be submitted quarterly to the funding agent and presented in quarterly meetings with partners.

Possible Obstacles:

Participants may not provide periodic data, so the program will be competitive and we are providing incentives. We will replace any Fitbits that are lost by participants. Due to possible irritation to skin, we will swap the Fitbit with the Digi walker (pedometer) if any participant develops a skin rash. We expect to have some technical issues with the Fitbit and BOB, but with coverage of a two year replacement warranty from the companies, the devices can be replaced. In such cases of technical issues, screen time and physical activity data will be manually recorded in a logbook. Participants may watch television on other's screen time, television time will be double tracked in a logbook if this is the case. Participants will report both their own screen time showed by the screen time manager and other additional television time in a

logbook. There may be low recruitment due to lack of awareness on childhood obesity and requirement of parents' involvement. Some of the strategies to overcome this problem are to lessen the paperwork for parents, reduce the number of mandatory parental participation events and increase awareness programs. Similarly, parents and teachers may not turn in surveys. We are sending $10 cash with each survey packet for the baseline, end line and follow up survey of the parents and teachers. Students will take part in the survey at school and will choose from the five gift items mentioned previously. Likewise, severe weather conditions may hinder implementation of the program. In the academic year 2014/15, Knott County schools lost 26 days due to snow, but since 2015/2016 these schools have had non-traditional instructional programs implemented. In this non-traditional instructional program, students are given an online assignment and instructions to cover the lessons over the snow days. The instructors send emails, make telephone calls and respond to the calls or emails of the students. Students without access to the internet will be sent a printed copy of online materials known as a snow packet. Teachers will deliver SWITCH materials through the non-traditional instructional program during snow days [40].

School health policies and the proposed program

The proposed program does not conflict with existing school health policies. Indeed, it will support the wellness policies of the school required by the Child Nutrition and WIC Reauthorization Act of 2004 for school districts participating in federal meal programs. Wellness policies mandate physical education requirements, health education requirements and healthy meal programs in schools. School health programs in Knott County are regulated by the School Health Advisory Council under the Knott County Board of Education (KCBE). The proposed

program has obtained a letter of support from the KCBE. We are also taking approval from the KCBE to incorporate the school based intervention component in an existing curriculum. Similarly, we are taking approval from the KCBE to involve school staff members and parents in the proposed project.

Training on Trauma Informed Care and Prevention of Stigma

During staff training, the Trauma Informed Approach will be discussed and all necessary precautions will be taken and resources allocated to prevent traumatic events. If any kind of stigma is experienced and reported by any participant, it will be immediately reported to the school team, the researchers and the parents of the affected participant, and there will be further investigation. A school counselor will provide counseling services for the affected participants. During the development of the survey questionnaire and the research project related forms and documents, caution will be taken in choosing language. The data collector will not pass any judgmental comments on any data. For example, if one of the participants is watching more television than the rest of the group, we will not disclose that information. Participants that are obese will be referred to the Knott County Family Healthcare (KCFH) in Hindman. Currently, they have a weight loss and daily workout program for adults, and provide services to children in coordination with local pediatricians.

IV. Capacity of Applicant Organization

The proposed program will be primarily applied by the Kentucky River District Health Department (KRDHD), a regional health department which serves seven counties (Knott, Lee, Leslie, Letcher, Owsley, Perry, and Wolfe) in the region with the following mission statement:

“It is the mission of the Kentucky River District Health Department to protect, maintain, and promote the health of the people of the community. We have a variety of preventive health programs for children and adults which ensures the ongoing good health of our citizens. We are a source of information and services for individuals and families who need assistance with medical care, nutritional counseling, health screening, immunizations, family planning and environmental protection [24]." It has been implementing various public health programs at the individual, family and community level to promote the health and wellbeing of its residents of Kentucky River District. It has 19 adult health programs (eg. diabetes, cardiovascular disease, and health education), 10 child health programs (eg. nutritional counseling, HANDS) and 23 environmental health programs (eg. food service program) [41]. The Kentucky River District Health Department is governed by a 21-member District Board of Health with representation from each county’s local board of health. The board is comprised of county judge executives, physicians, nurses, pharmacists, veterinarians, businessmen and citizen members. "KRDHD’s Administrative Services Department recognized improved efficiencies by managing a challenging financial year in which we had budgeted a 1.39M deficit. Instead of ending the year with a deficit, the agency reduced expenditures over the course of the year primarily in salaries, fringe, and contracts, and ended the year with a $511,524 surplus. This was done in the face of revenues decreasing by 5% ($872,875) over last year, while expenses increased by 1% ($88,112). At the end of the fiscal year, after adding in that surplus, our fund balance, which includes restricted and unrestricted funds, totaled $5,905,637 [42]."

We recognize obesity as one of the major public health threats to our community and acknowledge that a community based program like the proposed behavioral modification

program could address this problem. We make efforts to continue to offer information to our community to raise awareness about obesity and prevent obesity related poor health outcomes.

The school health program is one of the recognized KRDHD programs that provides preventive and curative health care for the youth population of the community and maintains continuous connection with the community through students. The Knott County Board of Education (KCBE) is our primary partner in implementing school based programs. Currently, the health department in collaboration with KCBE recruits school nurses for all the schools in Knott County. The school nurses provides first aid and prescribed medicine, and offers nutrition education to the students with the special health needs. For instance, we have two students in Knott County with Type-I diabetes who have been taking insulin. We have been in the process of expanding the role of the school nurse beyond the curative services in order to promote preventive health care among students. The proposed behavioral modification program is a great opportunity to expand the health promotion role of the school nurse.

KRDHD has been regularly participating in different school programs. In 2014, we had an information desk titled "Science behind Healthy Food and Exercise' in the annual inter-school science fair in the Hindman Elementary School in collaboration with the PTA. A total of six elementary schools in Knott County participated in the science fair and about 5oo parents and other visitors visited the fair. Nearly 200 visitors visited our educational booth. It was a great opportunity for us to interact with parents and understand their concern for healthy food and exercise for their children. KRDHD implemented an exemplary fitness program named "Boot Camp" in all the public elementary schools of Knott County and other schools in surrounding counties. The program has currently on hold because of funding issues, but the Boot Camp has

left a sustainable impact on the community because it successfully trained 10 physical education (PE) teachers in the elementary schools of Knott County. Three of the PE teachers who will be participating in the proposed school program are among those who were trained in the Boot Camp. Besides developing manpower, it provided a learning experience of engaging stakeholders and establishing partnership with community members. In addition, we closely work with the community via the Health Access Nurturing Development Services (HANDS) program for mothers. In the HANDS program, a HANDS visitor visits the home of new parents and provides necessary information and guidance for healthy parenting, ensuring a conducive home environment and the holistic wellbeing of the mother and baby.

All the programs of the KRDHD are either data driven or evidence based. We use Behavioral Risk Factor Surveillance System (BRFSS) data with statistical adjustment (because of underrepresentation of our counties in the BRFSS) to plan our public health programs. We regularly interact with the community, gather qualitative and quantitative data from them and triangulate it with existing surveillance data. Moreover, registration and records of clinics and preventive programs serve to provide substantial data to design and implement need based programs. KRDHD has not been in the process of accreditation yet, but we have a promise from board members to achieve it within 5 years and we are working on assembling resources for accreditation. Our objective is to be accredited by 2017.

KRDHD has committed staff members who have made contributions in different aspects of health promotion (See Figure 6). In an organizational chart presented below, the staff members highlighted in a given box are directly involved in the proposed project. A detail information about the project team members will be discussed under the section of project management.

KRDHD has experts in implementing school based public health intervention programs. The nursing administrator, Lucy Hollingsworth, has just received a grant for implementing a HPV vaccine program in Knott County. She is implementing a school based intervention program to the high school students to increase HPV vaccination rate. Her capacity of working with schools, students and parents is well equipped with the proposed program.

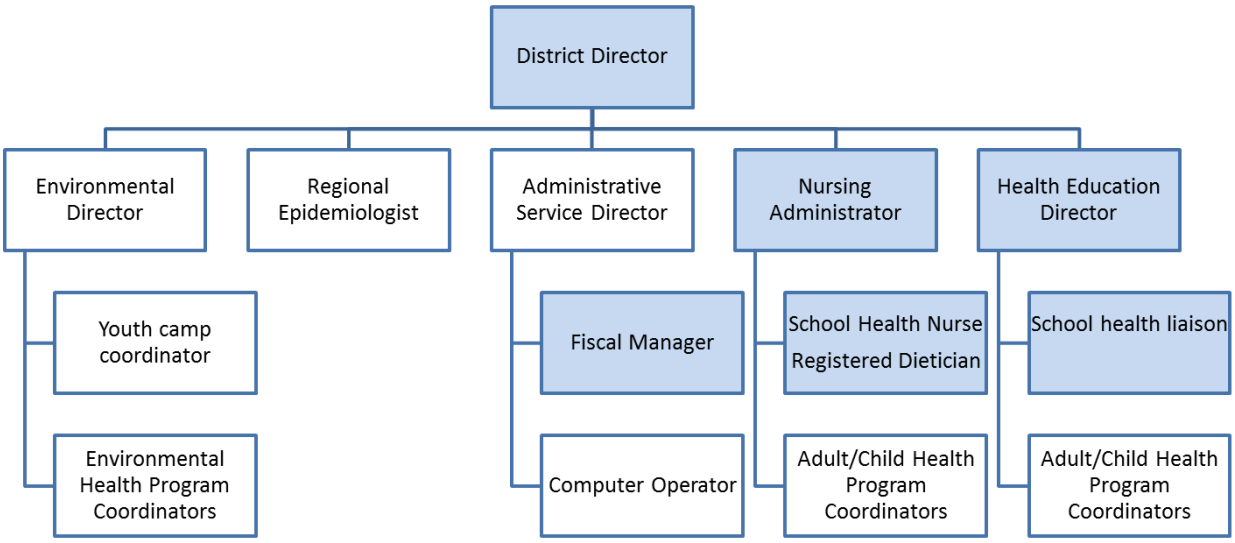


Figure 6: Organizational Chart of the Kentucky River District Health Department

She is primarily contributing as a trainer for the proposed program. The behavioral modification program will be implemented under the leadership of project director Mrs. Samjhana Shakya. She is a health education director of the KRDHD. She has five years of work experience in the KRDHD. Her expertise are developing community based public health programs, training healthcare workers (particularly on diet and nutrition), and establishing partnership and program evaluation. She was a key trainer and a coordinator of the workshop “Low income, High chronic

disease" in Knott County in 2013, in which 30 health care professionals had participated from the seven counties under KRDHD.

KRDHD has been successful in securing grants and funding for innovative public health approaches other than federally funded programs. It supports 50% of funding for programs like emergency preparedness, environmental safety and health. Moreover, we are implementing a telemedicine program for providing counselling to teenage girls to reduce teen pregnancy in collaboration with Baptist Health. In that project, gynecologists from Baptist Health consult with teen girls from our counties to discuss contraceptives and healthy sexual behaviors. We have consulted 339 girls up to this point.

KRDHD has successfully demonstrated strong partnership and collaboration with other institutions and community members. University of Kentucky (UK) is one of the strong partners. In collaboration with the College of Agriculture, Food and Environment (CAFE), KRDHD is leveraging promotion of healthy school meals by using organic products from local farmers in schools. The partnership with the University of Kentucky for this proposed program will expand institutional capacity of KRDHD. We are hiring a statistician and a graduate research assistant from UK and we are utilizing the survey research center of UK. We are also accessing library resources from UK.

KRDHD highly values its relationship with community and institutional partners, within and outside of its regional counties. According to our 2015 Strategic Plan, we are governed with following strategic initiative to establish and maintain strong partnership.

Strategic Initiative: KRDHD will identify partners, develop strategic collaboration and maintain partnership with stakeholders, local community and local organizations to identify public health issues and combat with those issues as a team.

KRDHD has a sustainable and highly productive workforce. Every year we carry out staff performance evaluations, which is a testimony of the excellence of human resources in this department. We have a very low staff turnover, with a mean turnover rate of 6.2% in 2015.

The health department provides regular training to build capacity of its staff members. One of the prioritized training program for the staff members is a training on unconscious biases. Recently, 30 staff members have taken this training. The purpose of this training is to enable staff members to identify their unconscious biases and eliminate discrimination and disparities in terms of race, gender, disability, color, national origin, religion in the place where they live, work and play. Additionally, KRDHD has a strong policy that prohibits sexual harassment and violence in the workplace. It is mandatory that all the staff members complete an online training course on sexual health before renewal of tenure each fiscal year.

V. Partnership and Collaboration

The proposed program is founded on strong existing partnerships and collaborations that exist to implement the existing public health programs in Knott County. In addition, we are forming new partnerships as a way to efficiently and sustainably execute the proposed program.

In implementing the proposed program, collaborations with the following partners are being established (See Figure.7).

1. Knott County Cooperative Extension

2. Hindman Community Initiative
3. Knott County Board of Education
4. University of Kentucky
5. Local Media Board of Knott County
6. Kentucky Department of Education

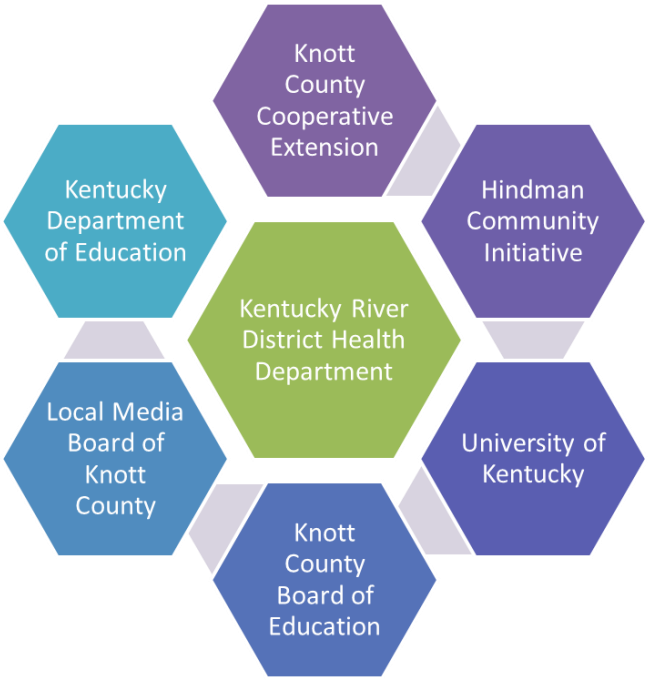


Figure 7. Partnership and Collaboration

The Knott County Cooperative Extension (KCCE):

The KCCE is part of the University of Kentucky (UK) and Kentucky State University (KSU), and connects these universities to the off-campus information network in Knott County. The extension service is based on the broad-based participation of local people. It functions with the Extension advisory council system which consists of members who represent each of the four Extension program areas (Agriculture, Home Economics, 4-H/ Youth Development, Community

Development), Extension district board members and community stakeholders. Our partnership with the KCCE opens up an avenue for establishing networks within the Knott County community. We plan to work closely with the community development agents and 4-H/Youth Development agents.

The KCCE has recognized obesity as a priority public health issue in Knott County and implemented short-term programs to address this issue. A 2015 annual report highlights 1677 individuals involved in programs that addressed adopting a healthy lifestyle (diet, exercise and stress management) in order to improve the health of Knott County. In 2015, KCCE implemented a program named Get Moving Emmalena to address obesity among elementary school staff. A total of 20 staff members participated in the seven-week program. The Family and Consumer Science Agent offered information on healthy eating habits using My Plate (a model food plate which illustrates how our major meal looks like , i.e. half vegetables, one fourth protein and one forth carbohydrates), and addressed the importance of exercise, having healthy biometric numbers (blood pressure, cholesterol, BMI) and other related topics. The program successfully reduced 10% of body weight among 20 participants. Similarly, KCCE implemented "the 4H Cloverbuds: Where Does Our Food Come From?" program among elementary school students at the Hindman Elementary School. An extension agent facilitated the discussion among students on where common supermarket foods come from. Students were also taught to plant their own tomato plants and to make jam from seasonal fruits. A total of 180 students participated in the program [43].

A key role of KCCE in the proposed project is to connect program staff with the local community and facilitate in conducting community based intervention components (eg. offering public talks, connecting with stakeholders, and disseminating the report etc.).

Hindman/Knott County Community Development Initiative (CDI):

The CDI is the 2004 Governor's Award winning initiative established in 1997 by a group of volunteers made of leaders and community members from Knott County. Primarily, the group contributes to heritage restoration and infrastructure development in Knott County. Their theme is "Using our heritage to build tomorrow's community." They have recently received $20 million in funding for an infrastructure development project. Their current projects include: construction of a new city hall and welcome center and renovation of a downtown building into the Kentucky Appalachian Artisan Center. Knott County CDI will contribute to the proposed project as a main community stakeholder. They will create and coordinate community events for implementing community components of the proposed school health program. Another key role of CDI will be to facilitate implementation of the community awareness program during the Knott County Gingerbread Festival. They contribute to the dissemination of our education materials (posters, brochures) to governmental and non-governmental organizations as they have already established an inter-institutional network system with other organizations in Knott County. Moreover, the CDI consists of many parents who can leverage to establish relationships with family members of student participants, so that the proposed program will be a sustainable family and community led program in Knott County. In the long term, this proposed project hopes to utilize CDI capacity to increase community-based exercise opportunities in Knott

County by through expanding their construction goals to building sidewalks, parks and fitness centers (Reference: Hindman Settlement[44]).

Knott County Board of Education:

The Knott County Board of Education (KCBE) will help coordinate with targeted elementary schools in Knott County. In 2015, it played a vital role in implementing the HPV vaccination program in Knott County high schools. It was also a main player in establishing healthy school programs such as the Boot Camp and the healthy meal program in Knott County.

The University of Kentucky (UK):

The University of Kentucky (UK) will be approached through the Knott County Cooperative Extension. The University of Kentucky has already established a community based program for nutrition promotion and youth development in Knott County through which a number of community based awareness programs are targeted to youth health and career development. Likewise, a professor from the UK College of Public Health serve as advisor for the proposed project. She will consult on study design, adapting evidence based community health intervention theories and the statistical design of the study. A statistician and a graduate research assistant will be hired from UK. The graduate research assistant's responsibility will be to compile and analyze the data from schools. He/She will check for the data outliers and refer back to the data source. Since, University of Kentucky is a highly resourced organization, we look forward to collaborate for organizing educational booth in the Knott County Gingerbread Festival. They will help set-up, manage, and provide materials and staff/student volunteers for an educational booth at the Knott County Gingerbread Festival. Survey Research Center (SRC)

at UK will conduct the random digit dial survey to evaluate the community based intervention activities associated with the proposed project.

Local Media Board of Knott County (LMBKC):

We are partnering with the LMBKC, a coalition of local media in Knott County. Knott County has a local television station (Hometown 24), three radio stations (WKCB-FM, WKCB-AM, and WWJD-FM), and a locally owned and operated newspaper, Troublesome Creek Times. LMBKC has played an important role in raising awareness about tobacco control, prevention of teen pregnancy and the promotion of the HPV vaccine through its media partners. LMBKC will help us to distribute our PSA to local radios and in the newspaper. The local radio stations of Knott County have been producing and broadcasting many PSAs to raise awareness on various issues. We are hiring the WKCB radio to design a PSA for our program. We are designing two PSAs, 15 second (30-35 words) each. The impact of the PSA will be obtained from an evaluation report of radios and newspapers. Airtime is donated by local radios. They will provide us with the number of times they broadcast the PSAs on the radio. In the PSA they will provide the audience with a toll free number to contact. They will keep a record of the number of telephone calls received before and after implementation of the PSA.

Kentucky Department of Education (KDE):

We are in the process of obtaining a letter of support from the Kentucky Department of Education.

VI. Project Management

Described below are the staff members of the proposed behavioral modification program and their work expertise, work experience and role/responsibilities for the proposed project. All project team members will have at least 5 years of work experience with the exception of the graduate research assistant from UK.

Stephen Jackson, Director of the Kentucky River District Health Department: Mr. Jackson has a director of the KRDHD for 8 years. He was Director of the Division of Emergency Management of Lexington, Kentucky for 5 years before he joined the KRDHD. He still serves on the Fayette Emergency Planning Committee. His expertise on executing public health programs, leadership experience and knowledge of collaborating with diverse partners at varying levels (community, institutional and policy) will be an asset for the proposed program. He will be responsible for coordinating board members, calling meetings, supervising performance evaluation, and signing the grant agreements with partners on behalf of the KRDHP.

Samjhana Shakya, Project Director and Health Education Director: Ms. Shakya will serve as the Project Director for the proposed program. She has her Master in Public Health degree from the University of Kentucky. She has been working with KRDHD for 10 years, and has expertise working with rural Kentucky, mobilizing local communities, forming community coalitions, and conducting community research in rural settings. She served as a project director for the previous project "Boot Camp", a structured physical activity program implemented in Knott County public schools and other counties under KRDHD. Her major contribution for this project will be planning and implementation of the program, ensuring fidelity checks, making necessary

adaptations of the evidence based program, developing a quarterly report compiling all levels (school, family, and community), reporting progress reports to funding agencies and partners, and efficiently utilizing funds. Her responsibilities include recruiting staff members, conducting performance evaluations, and providing necessary supervision to the staff members. She will be vigilant in assessing and motivating the team to achieve both short and long-term goals.

Lucy Hollingsworth, Nursing Administrator: Ms. Hollingsworth will be responsible for coordinating, managing and training the school teachers and school nurses. She has her PhD in Nursing from the University of Kentucky. After earning a Bachelor's degree in Nursing, she gained an MPH in Health Behavior from UK, and worked at UK Chandler Hospital from 2004 to 2010 as a registered nurse. Her expertise is in implementing school health programs. She was one of the key project members in implementing the "Boot Camp" in Knott County. Currently, she serves as a project director for the Human Papillomavirus (HPV) Vaccination Program in Knott County high schools. Her expertise will be utilized in the proposed project to coordinate and train school nurses, conduct community talk programs and to adapt the SWITCH materials.

Maya Miller, School Liaison: Ms. Miller has expertise in working as a project coordinator in federally funded programs. She served as a project coordinator for the Child and Adult Care Food Program in Tennessee for five years. She also has experienced in community work in Michigan, as a project assistant of Head Start, a federally funded program for promotion of early child education, health and nutrition. Moreover, she has been working as a project coordinator for the HPV vaccination program in Knott County. She also served as a local program evaluator for a school based intervention program of the Ohio Drug Use Prevention and Control Foundation. She joined the KRDHP as a program evaluator for the HPV vaccination program.

Miller earned her Bachelor of Education degree from the Ohio State University. Her responsibilities in the proposed project are to carry out the day-to-day activities of the program, provide background literature and research for the program, and to assist the project director. She will work in collaboration with the project director and be authorized and responsible for carrying out the fidelity check of the program. She will develop checklists, participate in and monitor all possible activities. She will visit schools, attend talk programs and make random home visits (of participants). She will carry out the pretesting of all technical devices (Fitbit, BOB etc.).

Eric Stoner, Financial Manager: Mr. Stoner will primarily be responsible for planning the budget, implementing and tracking short-term and long-term expenses, and ensuring project activities are delivered on-time, within budget and ensuring quality. He will closely work with the project director, will oversee day to day expenses, develop the quarterly financial report, and assist in an annual audit of the project. He will ensure that all award spending is consistent with the funding agent's financial guidelines and procedures.

School Nurses (TBD): There are three school nurses working in the target schools. They are responsible for measuring the height and weight of participants every month. They will calculate the BMI for the participants. They are responsible for collecting the monthly logbook from class teachers and compiling the school report and forwarding it to the project coordinator. They are responsible for identifying obese participants and referring them to Family Health Care in Knott County for treatment.

Besides staff members from the KRDHD, the proposed project consists of staff members from other implementing partners. Described below are key members involved in the proposed

project. Most of them are participating voluntarily, however, we are hiring a professor, a statistician and a graduate assistant from UK and we are providing monetary incentives to the class teachers, the PE teachers and the school nurse.

School Principals (Volunteer contribution): The school principal is responsible for sending consent forms and invitation letters to the parents to participate in the program. She will monitor the classroom and physical education class, and will coordinate with other participating schools. The school principal will represent her school in her school's monthly Fitbit challenge, in which we will assess which school has the highest collective number of footsteps (number of participants will be adjusted as it varies one school to another).

Class Teachers (TBD): Class teachers of grades 3, 4 and 5 are responsible for engaging students with SWITCH educational activities in the classroom. We have scheduled this activity for once a week, incorporating it within the existing school curriculum. Class teachers will help troubleshoot if the participants encounter any problems with Fitbits or bob devices, and will help replace them if necessary. Class teachers will collect the monthly logbook and provide students with incentives.

Physical Education Teachers: The physical education teacher is responsible for conducting an hour of structured physical activity program once a week. The purpose of the structured physical activity program is to engage and reinforce students to be more active. He or she will plan the activities according to the SWITCH materials.

Professor from the University of Kentucky: She provides consultation for the project. She is responsible for checking the fidelity, and for adaptation of the evidence based program.

She is consulted for overall evaluation of the program, and will provide feedback on the progress report to the project team.

Biostatistician (TBD): We are hiring a biostatistician from the University of Kentucky. The specific roles for this position are to revise the survey questionnaires to ensuring the appropriateness for statistical analysis, handle data, check data quality, analyze and interpret the data. He/she will work closely with Ms. Shakya, the project director, to produce the quarterly analysis report. He/she is assisted by a graduate research assistant at the University of Kentucky. In the first year, we plan to analyze data from the pilot project, and if required, he/she will make changes in the data handling process before we proceed to collect data from the remaining schools. He/she will provide timely reports on the impact of the project by analyzing and comparing (inter and intra schools) data from the schools.

Graduate Research Assistant (TBD): For this project, UK will recruit a graduate research assistant for project management. He/She will be responsible for collecting data from the project coordinator and entering it in the statistical system. He/She will also assist in the literature review and report writing.

President, Hindman Community Initiative (Volunteer contribution): This individual will be responsible for coordinating community events, facilitating the community intervention and facilitating community focus group discussions.

President, Knott County Public School Board (Volunteer contribution): This individual is responsible for coordinating with schools.

President, Parent Teacher Association (Volunteer contribution): This individual is responsible for leveraging PTA meetings, parent's orientation and home-visits.

Director of Local Radio (Volunteer Contribution): This individual is responsible for designing the PSA and incorporating the proposed project's components into existing radio programs. For example, this may include inviting key stakeholders for interviews or covering news on project activities. Moreover, he evaluates the effectiveness of the radio programs.

Recording and Reporting System

Regularly tracking and reporting on progress is one of the important strategies to monitor the program and maintain effective communication among partners. We have a scheduled recording and reporting system which ensures open communication between partners, ensures team member accountability with assigned responsibilities, identifies barriers in a timely fashion and helps the project run smoothly.

Weekly /Monthly Reporting: The participants will report a weekly log-book to the class teacher. A fidelity monitor will visit schools each week and collect Fitbit data from the participants. During the last week of each month, the log-book and the Fitbit data will be delivered to the school nurse. Every month, the school nurse will collect anthropometric data from the participants, compile it with rest of the data collected from the school, and report it to the project coordinator. The project coordinator will send the documents to the graduate assistant at the University of Kentucky every month for data entry. Besides these, each implementing partner will submit a monthly progress report to the project coordinator.

Quarterly Reporting: A statistician from UK will provide a quarterly data analysis report to the project director. She will write a quarterly report compiling the data, accomplished activities and plans for the next quarter. It will be discussed and ratified among CAG members. The approved quarterly report will be submitted to the funding agent by the 15th of January, April, July and October.

Reducing Staff Turnover

Kentucky River District Health Department and its partner organizations have a very low turnover rate and this can mostly be attributed to the organization's favorable retirement benefits offered to employees. In the proposed project, the recruitment process will be selective in hiring the right person for the right position. There will be justifiable payment and benefits for the involved staff. In addition, the flexibility of working hours will encourage staff members to contribute their productivity in the project. There will be regular performance reviews, feedback exchange, and we will be sure to cultivate and nurture respect in the workplace.

In case of emergency turn over, there will be a balance created by cross training working knowledge in the key aspects of the project among different staff members. For example, the project director will take over the job responsibilities of any vacant position until it is filled from the staff pool or a waiting list.

Training for the project team

The project team will be offered a monetary incentive to take an online professional development course, the Allison Diploma in project management course, in order to orient/refresh basic project management skills. The course will take 10-15 hours and the trainee

should maintain an average of 80% in all exams. Moreover, there will be a two day project refresher workshop every year for team members. The workshop agenda will include, but is not limited to, conflict management, motivational interviewing, and data handling. The described training program and workshop experience will enable the project team members to efficiently adapt into changing roles, minimize conflict and excellently execute the project. (Resource https://alison.com/courses/Diploma-in-Project-Management)

Meeting Schedule

Meeting regularly is one of the most important communication strategies among project partners. Besides in person meetings, we will be continuously in communication with our partners through emails, video conferences (if necessary) and periodic newsletters.

Meeting in KRDHD: Involved staff members of the KRDHD will meet each week on Mondays to plan activities, assess program progress, develop future plans, identify obstacles and discuss possible solutions to overcome identified obstacles.

Meeting in Schools: Involved staff members in each school will meet once a week on Mondays to share learned experiences and to discuss the following weeks' lesson plan.

Project director's meeting with partners: The project director will have a monthly partners meeting, in which she will meet with each of the implementing partners (schools, radio, and community) separately. Each partner will be responsible for submitting a monthly progress report and plan for the upcoming month. Partners will discuss challenges (for example, snow days) and develop strategies to overcome them.

CAG meeting: Quarterly board meetings will occur as mentioned in the program approach.

Meeting of implementing partners: A large, multi-partner meeting from the different level interventions will be hosted by KRDHD bi-annually. These meetings serve to update the partners on the overall program progress, develop future plans, identify obstacles and discuss possible solutions to overcome identified obstacles.

Evaluation and Report Writing

The project director will be responsible for carrying out the program evaluation. Program evaluation will be based on periodic reports. Reports will be developed quarterly and submitted to the funding agent. The quarterly report will consist of a project narrative, a financial narrative, a project financial report form, an updated milestone table of project activities, an employee time tracking document, and relevant photos and videos. Upon program culmination, we will disseminate our report to the community, neighboring counties, and publish in it a peer-reviewed journal.

Note: Please refer the appendix for detail information on the logic model, the work plan, the tentative budget and budget justification, and logbook.

Appendix 1: Logic Model
Appendix 2: Work Plan
Appendix 3: Budget and Budget Justification
Appendix 4: Logbook

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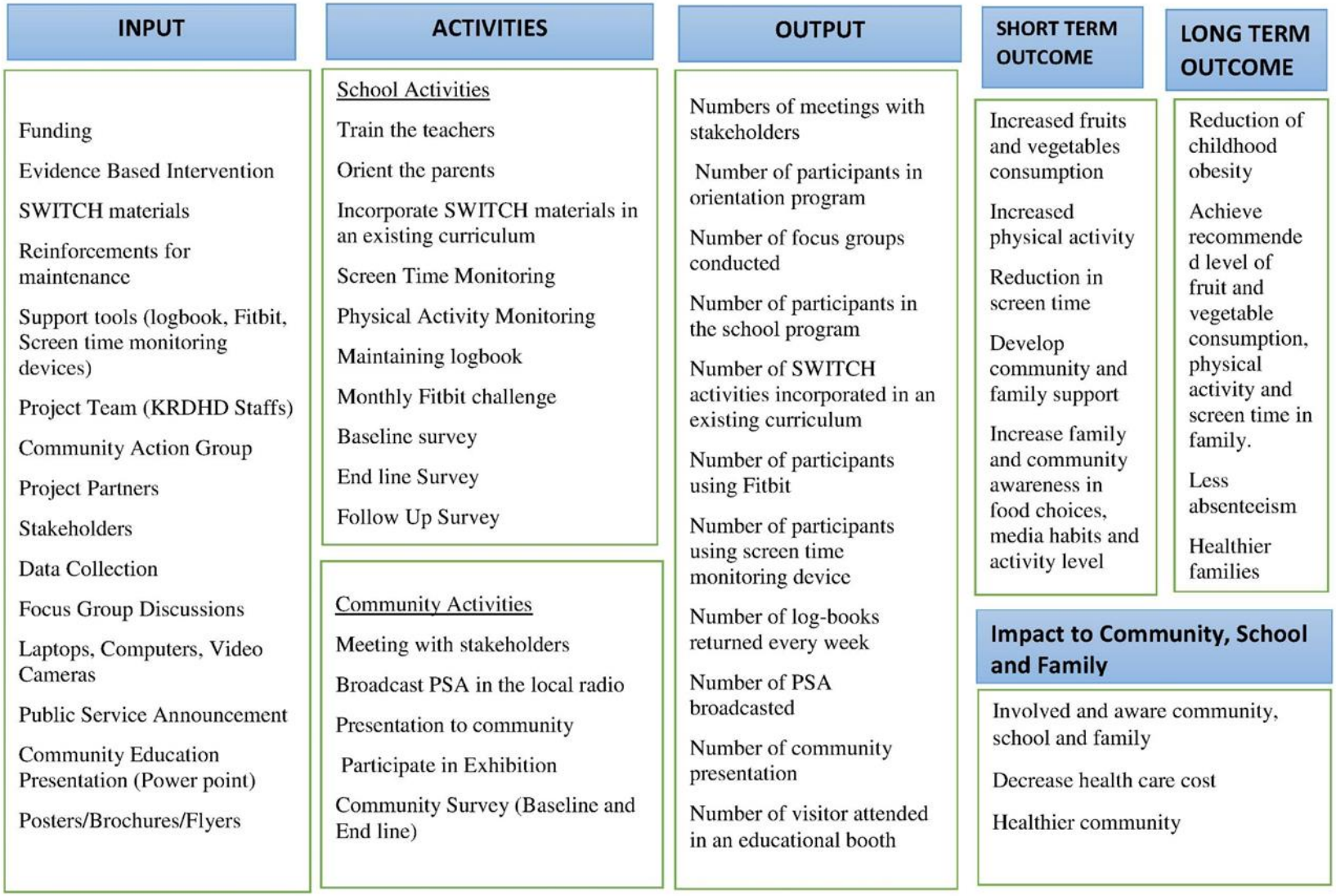
Appendix-1: Logic Model of the Behavioral Modification Program to Control Obesity among School Children in Knott County, Kentucky



Appendix-2: Behavioral Modification Program to Control Childhood Obesity among School Children in Knott County, Kentucky

Annual Action Plan-2017

February 1, 2017 – January 31, 2020

Grantee Name: Kentucky River District Health Department Funds Requested: $ 1,493,859

Goal: The overall goal of the Behavioral Modification Program to Control Childhood Obesity is to reduce childhood obesity among school children in Knott County through a multilevel intervention at the school, family and community levels by targeting three major risk behaviors via increasing physical activity, fruit and vegetable intake and reducing screen time among school children from January 2017 to December 2019.
Objective 1: To increase physical activity among the school children by 5 % of baseline data. **Objective 2**: To increase fruit and vegetable intake by 5% of baseline data. **Objective 3**: To reduce composite screen time among school children by 5% of baseline data. **Objective 4:** To increase community awareness by implementing a mass media campaign through broadcasting a PSA on local radio, delivering a community talk program and interacting with community through an educational booth in the Knott County Gingerbread Festival.
Objective 1: PHYSICAL ACTIVITY

Rationale of Objective 1: Regular physical activity will help reduce childhood obesity by balancing the energy expenditure and reducing the screen time by engaging them in outdoor activities.		
Measures of accomplishment for objective: It will be monitored by using the Fitbit, a wristband that monitors physical activity by measuring number of footsteps by each participant each week.		
Activities in Support of Objective 1	Person/agency responsible for Accomplishing Activities	Activity Timeline
1.1.Structured Physical Education Class	The physical education (PE) teacher will conduct 15 sessions of structured physical activity each week according to the SWITCH manual in the school.	It will be implemented by the class teacher from September 2017 to February 2018. The PE teacher will record the number of sessions carried out and report it to the project coordinator.
1.2.Monitoring physical activity	The participants will use the Fitbit, physical activity monitoring wristband from 7am to 8pm each day.	It will be implemented by the participants from September 2017 to February 2018. They will record and report the number of footsteps each week to the class teacher via logbook.

1.3.Physical Activity Jar	The participants along with their family members choose and complete an activity from the physical activity jar provided by program each day after school.	It will be implemented by class teacher from September 2017 to February 2018.The participants will report the number of completed activities in a week through logbook.
1.4. Monthly Fitbit Challenge	Participants will take part in the Fitbit challenge, a competition to reach the highest number of footsteps for that day among the participants.	It will be done in the last day of each month. The winner will be selected by reported footsteps, verified with the Fitbit device.
Objective 2: FRUIT AND VEGETABLE CONSUMPTION		
Rationale of Objective 2: Increased fruits and vegetables intake will help children understand the importance of healthy eating and decrease the consumption of high fat foods.		
Measures of accomplishment for objective 2 The consumption of fruits and vegetables will be measured by serving size and calculated as the total number of serving sizes consumed each week.		

Activities in Support of Objective 2	Person/agency responsible for Accomplishing Activities	Activity Timeline
Weekly meal plan	The participants will develop a weekly meal plan in participation with their family members.	It will be implemented by the participants and family from September 2017 to February 2018. The participants will report the total servings of fruit and vegetables consumed in a week through logbook to the class teacher.
Objective 3: SCREEN TIME		
Rationale of Objective 3(Reducing Screen Time): Watching television increases the risk of obesity in many ways. First, children are exposed to numbers of fast food advertisements. Second, screen time reduces outdoor play time of children and third, lack of physical activity reduces metabolism calories burned.		
Measures of accomplishment for objective 3 It will be measured as the composite screen time, which is the summation of the time spent in front of television and screen devices. Participants will report composite screen time to the class teacher through weekly logbook. It will be recorded as the hours spent in front of screen per week.		

Activities in Support of Objective 3	Person/agency responsible for Accomplishing Activities	Activity Timeline
3.1. Increase awareness among school children about importance and ways of limiting screen time by classroom activities.	A class teacher will incorporate classroom activities and facilitate discussion about limiting screen time according to the SWITCH manual in a weekly nutrition education class.	It will be implemented by class teacher from September 2017 to February 2018. A fidelity monitor will monitor the class and fill out the checklist to make sure that all the activities recommended by the manual are delivered well.
3.2. Monitor and limit screen time by installing BOB Screen Time Manager in the home television set. Monitor the screen time of other screen devices (tablets, mobile phone).	The family of the participants will install BOB in home and help set a time limit and keep a record of composite screen time in the logbook and send it to school every week. Installing BOB will provide feedback to the parents about screen time	It will be implemented by family of the participants from September 2017 to February 2018. Each week, the participant will submit a composite screen time in hours/week to the class teacher through the logbook.

	behavior of the participants and help them modify behavior.	
3.3. Participants will participate in the "Shut Your Tele Week" challenge.	The participants will be committed and the family and the schools will reinforce the participants to shut off the television and all screen devices for a week.	It will be implemented in January 2017. The participants will report a checklist which reveals whether they successfully shut off the screen time devices each day for a week.
Objective 4: Community Awareness		
Rationale of Objective 4: It will create a reinforcing environment for the children to motivate them to develop healthy eating and screen time habits and increase physical activity.		
Measures of accomplishment for objective: The Survey Research Center at the University of Kentucky will be hired to carry out the Random Digital Dialing Survey to assess the overall impact of community awareness program.		
Activities in Support of Objective 4	Person/agency responsible for Accomplishing Activities	Activity Timeline
4.1. Mass media campaign	The WKCB radio will develop and broadcast a PSA targeting school children	It will be implemented in September 2017 and continued till December 2019.

	to reinforce healthy eating and screen time habits and be physically active at least 60 minutes each day.	WKCB will keep a record of the number of broadcasts of the PSA.
4.2. Community Talk Program	The nursing administrator and project director will deliver the community talk programs in different community venues (workplace, community town hall) to raise community awareness on importance and ways of controlling childhood obesity.	Every 3-5 years community talk programs will be implemented in Knott County.
4.3. Community Interaction	The KRDHD staff members through the leadership of the director of KRDHD will set up an educational booth in the Knott County gingerbread festival.	It will be implemented in the month of September every year for 2-3 days. A fidelity monitor will keep a record of total number of visitors to the booth and number of brochures distributed.

Appendix 3

Table 9.Tentative Budget of the Proposed Project

Budget Title	Year 1	Year 2	Year 3
A. Personnel	257,730	308,8550	269,830
B. Training and Orientation	6,395	18,795	----------
C. Supplies	31,767	104,839	----------
D. Contractual • WKCB Radio(PSA -2) • Survey Research Center • LAMAR Advertising (Billboards- 2)	---------- -	84,000	24000
E. Travel (Conference, meetings, Data Collection , Community presentation, Educational booth)	9,500	10,500	10,500
F. Recruitment/Retention	18,695	35,160	8,800
G. Other	2,000	2,000	2,000
Total budget of the project : 1,493,859	**583,825**	**553,764**	**356,270**

Tentative Budget: Year I

Table 10. Tentative Budget of Year I

Budget Title	Effort	Annual Basic Salary	Annual Salary from Project	21% Fringe Benefits	Total Budget
Personnel					
Stephen Jackson	10%	90,000	9,000	1,890	10,890
Samjhana Shakya	60%	75,000	45,000	9,450	54,450
Lucy Hollingsworth	40%	80,000	32,000	6,720	38,720
Maya Miller	100%	65,000	65,000	13,650	78,650
Eric Stoner	10%	80,000	8,000	1,680	9,680
School Nurse	50%	60,000	30,000	6,300	36,300
Dr. Vani Cornell	10%	100,000	10,000	2,100	12,100
Biostatistician	5%	80,000	2,000	420	2,420

Graduate Assistant	25%	48,000	12,000	2,520	14,520
Training and Orientation					
Teacher's Training					700
Parent Orientation					3,700
Project Team Orientation					600
Refreshment					1,395
Supplies					
Fitbit					11,100
Screen Time Manager					7,400
Postage/Mail Service					1,165.6
Video Cameras					800
Laptop					2,000
Computers					1,000
Contractual					
Survey Research Center					
WKCB Radio					
Travel X 3 person					9,500
9SWITCH Materials					
Brochures					600
Flyers					300
Monthly Teacher's Packet					560
Monthly Family's Packet					5,920
Teacher's Survey Questionnaire					42
Participant's Survey Questionnaire					444
Parent's Survey Questionnaire					444
Recruitment/Retention					
Enrollment Incentives					740
Survey Incentives					2,220
Focus Group Discussion Incentives					1,350
Refreshment for FGD					405
Weekly Incentive for log-book					2,220
Monthly Fitbit Challenge Winner Prize					160
CAG Incentives					6,800
Monthly Incentives for teachers					2,800
Implementing Partners Incentives					2,000
Miscellaneous					2,000
Total					**583,825.6**

Tentative Budget: Year II

Table 11. Tentative Budget of Year II

Budget Title	Effort	Annual Salary	Annual Cost	21% Fringe Benefits	Total Budget
Personnel					
Stephen Jackson	10%	90,000	9,000	1,890	10,890
Samjhana Shakya	60%	75,000	45,000	9,450	54,450
Lucy Hollingsworth	40%	80,000	32,000	6,720	38,720
Maya Miller	100%	65,000	65,000	13,650	72,600
School Nurse	100%	60,000	60,000	12,600	78,650
Eric Stoner	10%	80,000	8,000	1,680	9,680
Dr. Vani Cornell	10%	100,000	10,000	2,100	12,100
Biostatistician	5%	80,000	2,000	420	2,420
Graduate Assistant	50%	48,000	24,000	5,040	29,040
Training and Orientation					
Teacher's Training					2,100
Parent Orientation					12,600
Project Team Orientation					
Refreshment					4,095
Supplies					
Fitbit					37,800
Screen Time Manager					25,200
Postage/Mail Service					3,969
Video Cameras					800
Laptop					
Computers					2,000
Contractual					
Survey Research Center					30,000
WKCB Radio					30,000
LAMAR Advertising					24,000
Travel X 3 person					10,500
SWITCH Materials					
Brochures					

Flyers	
Monthly Teacher's Packet	1,680
Monthly Family's Packet	20,160
Teacher's Survey Questionnaire	126
Participant's Survey Questionnaire	1,512
Parent's Survey Questionnaire	1,512
Recruitment/Retention	
Enrollment Incentives	2,520
Survey Incentives	7,560
Focus Group Discussion Incentives	0
Refreshment for FGD	
Weekly Incentive for log-book	7,560
Monthly Fitbit Challenge Winner Prize	320
CAG Incentives	6,800
Monthly Incentives for teachers	8,400
Implementing Partners Incentives	2,000
Miscellaneous	2,000
Total	**553,764**

Tentative Budget: Year III

Table 12. Tentative Budget of Year III

Budget Title	Effort	Annual Salary	Annual Cost	21% Fringe Benefits	Total Budget
Personnel					
Stephen Jackson	10%	90,000	9,000	1,890	10,890
Samjhana Shakya	60%	75,000	45,000	9,450	54,450
Lucy Hollingsworth	40%	80,000	32,000	6,720	38,720
Maya Miller	100%	65,000	65,000	13,650	78,650
School Nurse	100%	60,000	60,000	12,600	78,650
Eric Stoner	10%	80,000	8,000	1,680	9,680
Dr. Vani Cornell	10%	100,000	10,000	2,100	12,100
Biostatistician	10%	80,000	4,000	840	4,840

Graduate Assistant	50%	48,000	24,000	5,040	29,040
Contractual (Billboards-2)					24,000
Travel					10,500
CAG Incentives					6,800
Implementing Partners Incentives					2,000
Miscellaneous					2,000
Total					**356,270**

Budget Justification

A total fund requested for this project is $1,493,859 for a three grant period. Majority of budget is required for hiring manpower to implement this project. Project team members will have different proportion of contribution to the proposed project according to their responsibilities. A total budget of the year II is the highest in three years because we are reaching majority of target population in this year. Described below are detail descriptions of the different budget title.

Personnel and Fringe Benefit

Stephen Jackson, Director of Kentucky River District Health Department: Mr. Jackson has been a director for the KRDHD for 8 years. He was a director of the Division of Emergency Management of Lexington, Kentucky for 5 years before he joined the KRDHD. He still serves on the Fayette Emergency Planning Committee. His expertise on executing public health programs, leadership and working in collaboration with diverse partners at the different levels (community, institutional and policy) are an asset for the proposed behavioral modification program. He will be responsible for coordinating with the board members, calling meetings, supervising performance evaluation, and signing the grant agreements with partners on the behalf of the KRDHP.

Samjhana Shakya, Project Director: Ms. Shakya will serve as a project director for the proposed behavioral modification program. She has her Master in Public Health degree from the University of Kentucky. She has been working with KRDHD for 10 years. She has expertise in working with rural Kentucky, mobilizing the local communities, forming community coalitions, and conducting community research in rural settings. She served as a project director for the previous project "Boot Camp", a structured physical activity program implemented in the public schools of Knott County and other counties under KRDHD. Her major contribution for this project will be planning and implementation of the program, ensuring fidelity checks, making necessary adaptations of the evidence based program, developing a quarterly report compiling all levels (school, family, and community), reporting the progress report, and efficiently utilizing funds. She will be vigilant in assessing and motivating the team to achieve the short term and long term goals. She will be responsible for recruiting the staff members, conducting performance evaluations, and providing necessary supervision to the staff members.

Lucy Hollingsworth, Nursing Administrator: Ms. Hollingsworth will be responsible for coordinating, managing and training the school teachers and school nurses. She has her PhD in Nursing from the University of Kentucky. After earning a Bachelor degree in Nursing, she gained an MPH in Health Behavior from the University of Kentucky. She has been working in the KRDHD since 2010. She was employed at the UK Chandler Hospital from 2004 to 2010 as a registered nurse. Her expertise is in implementing school health programs. She was one of the key project members in implementing the "Boot Camp" in the Knott County. Currently, she is serving as a project director for the Human Papillomavirus (HPV) Vaccination Program in the high schools of Knott County. Her expertise will be utilized in the proposed project to coordinate

and train school nurses, conduct community talk programs and provide adaptation of the SWITCH materials.

Maya Miller, School Liaison: Ms. Miller has expertise in working as a project coordinator in federally funded programs. She served as a project coordinator for the Child and Adult Care Food Program in Tennessee for five years. She also has experienced in community work in Michigan, as a project assistant of Head Start, a federally funded program for promotion of early child education, health and nutrition. Moreover, she has been working as a project coordinator for the HPV vaccination program in Knott County. She also served as a local program evaluator for a school based intervention program of the Ohio Drug Use Prevention and Control Foundation. She joined the KRDHP as a program evaluator for the HPV vaccination program. Miller earned her Bachelor of Education degree from the Ohio State University. Her responsibilities in the proposed project are to carry out the day-to-day activities of the program, provide background literature and research for the program, and to assist the project director. She will work in collaboration with the project director and be authorized and responsible for carrying out the fidelity check of the program. She will develop checklists, participate in and monitor all possible activities. She will visit schools, attend talk programs and make random home visits (of participants). She will carry out the pretesting of all technical devices (Fitbit, BOB etc.).

School Nurses (TBD): There are three school nurses working in the target schools. They are responsible for measuring the height and weight of participants every month. They will calculate the BMI for the participants. They are responsible for collecting the monthly logbook from class teachers and compiling the school report and forwarding it to the project coordinator. They are

responsible for identifying obese participants and referring them to Family Health Care in Knott County for treatment.

Eric Stoner, Financial Manager: He will be primarily responsible for planning the budget, implementing and tracking short-term and long-term expenses, and ensure project activities are delivered on-time, on-budget and on quality. He will closely work with a project director, oversees day-day expenses, develop quarterly financial report, and assist in an annual audit of the project. He will ensure that all award spending s are consistent to the funding agent's financial guidelines and procedures.

Professor University of Kentucky: She will provide consultation for the project. She will be responsible for checking the fidelity, and adaptation of evidence program. She will consult for overall evaluation of the program. Provides feedback on the progress report to the project team.

Biostatistician (TBD): We are hiring a biostatistician from the University of Kentucky. The specific roles for this position will be to revise survey questionnaire for ensuring its appropriateness for statistical analysis, handle the data, check for data quality, analyze and interpret the data. He/she will work closely with Ms. Shakya, a project director to produce quarterly analysis report. He/she will be assisted by a graduate research assistant at the University of Kentucky. In a first year, we are analyzing data from the pilot project, and if required he/she will be responsible for making changes in data handling process before we collect data from two more schools. He/she will provide timely reports on an impact of the project by analyzing and comparing (inter and intra schools) data from the schools.

Graduate Research Assistant (TBD): A graduate research assistant will be recruited by the University of Kentucky for this project. He/she will be closely work with the biostatistician and the professor of the UK. He/She will be responsible for collecting data from the project coordinator, coding, and entering it in the statistical system. He/She will also assist in the literature review and report writing.

Training, Orientation and Workshop

Teacher's Training: We are training total of 28 staff members (class teachers, PE teachers, school nurses and principals) from the participating three schools. In the first year of the grant period, 7 staff members from the Emmalena elementary school will be trained and rest of the 21 staff members will be trained in the second year. Trainees will be incentivized by $100 for participating in a one-day training.

Parent Orientation: We are providing a one-day orientation program for the parents of the participants. In the first year, we will orient 74 parents in two orientation sessions. In the second year, we will orient 252 parents. Each orientation session will include not more than 40 participants. The parents will be provided with $50 (for 1 student) for the participation.

Project Team Orientation: We are conducting one day workshop for the project team members (schools, UK, KRDHD). There will be 12 participants and they are provided with $50 incentive for their participation.

Refreshment: Foods and beverages will be provided on trainings, orientations and workshop. We allocated an average expense of $15 for each participant. Tentative budget for refreshment is 5,500 for an entire grant period.

Supplies

Fitbits: Fitbit Wrist Bandsare devices that assess the physical activity of the participant. It measures the footsteps, calculates burned calories and records the heartbeat of the user.

We are buying total of 326 Fitbit wrist band. Each of them cost $150.

Screen Time Manager: Screen Time Manager is a device to monitor screen time of television. It will measure the duration of screen time (watching television and playing video game) in home. It is an efficient device which not only measures duration but is also able to automatically shut down the television by the end of preset screen time. Moreover, it facilitates the measurement of the screen time of six different people, which aids to separately calculate the screen time of the participants apart from his/her other family members. We are providing $100 allowance for the family of each participants to buy suitable screen time monitoring device for them.

Postage/Mail Service: We are sending the family survey and the monthly family packet to the participant's mailing address. We are sending total of 9 mails to each participant. Each mailing fee will cost an average of $1.75. Mails which include survey will be paid for return postage fee (pre-paid envelope) too.

Video Cameras: We are buying **Sony Handycam PJ 440 (includes 32 GB memory card) ($ 400 per unit X 4= 1,600)** to keep the record of significant activities (PE class, Nutrition class, Meetings, Orientations etc.) related to the program implementation for evaluation purposes. We handover one of these video cameras to each participating school. A one of them will be used in KRDHD for program record and evaluation.

Laptop ($ 1,000 per unit X 2 = $ 2,000): One laptop will be provided to the project director and another to the project coordinator.

Computers ($ 1000 per unit X 3 = $ 3,000): One computer will be given to each school to carry out the activities related to the proposed project.

Contractual: $84,000

We are contracting the survey research center for community assessment, which will cost $30,000. We are also contracting the WKCB radio to design and broadcast PSAs, which will cost $30,000. We are contracting the LAMAR Advertising Pvt. Co. for designing and producing two bill boards.

SWITCH Materials (33,300)

It includes, but not limited to, brochures, flyers, monthly teacher's packet, monthly family packet, survey and survey questionnaires.

Recruitment and Retention (62,745)

Budget under the title of recruitment and retention are allocated for providing incentives for the participants, CAG members, and food and beverages for the meetings.

Table 13: Description of Recruitment and Retention

Budget Title	**Unit**	**Unit Cost**	**Total Cost**
Enrollment Incentives	**326**	**10**	**3260**
Survey Incentives	**326**	**30**	**9870**
Focus Group Discussion Incentives	27	50	1350
Refreshment for FGD	**27**	**15**	**405**
Weekly Incentive for log-book	**326**	**30**	**9780**
Monthly Fitbit Challenge Winner Prize	**24**	**20**	**480**
CAG Incentives	**204**	**100**	**20400**

	(12 X 17 Members)		
Monthly Incentives for school staff members	**224 (28 X8months)**	**50**	**11200**
Biannual implementing partner's meeting	**6**	**1000**	**6000**
Total	**---**	**----**	**62,745**

Appendix 4: Logbook

Logbook (SWITCH track sheet)

Participant's ID: _____ **Age/Sex:** _____ **Grade:** _____ **Week:** _____

Goal of the Week	Do						
	View						
	Chew						
Activities	Date	Date	Date	Date	Date	Date	Date
Do-Activities	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
15minutes							
15minutes							
15minutes							
15minutes							
> 60 minutes							
Footsteps							
Color the reward Star if ≥ 60 minutes	☆	☆	☆	☆	☆	☆	☆
View-Activities	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Television(minutes)							
Computer(minutes)							
Cell phone/Tablets(minutes)							
Others (minutes)							
Total (minutes)							
Color the reward Star if < 2 hours	☆	☆	☆	☆	☆	☆	☆
Chew-Activities	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Serving 1							
Serving 2							
Serving 3							
Serving 4							
Serving 5							
>5 Servings							
Total servings							
Color the reward Star if ≥ 5 Servings	☆	☆	☆	☆	☆	☆	☆

Total Points (Each star = 1 point): _____ Total Foot Steps: _____Parent's Signature_____ Teacher's Signature _____