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# Intention to change lifestyle behaviors in 10- to 14-year-old children with obesity.

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## Abstract

**Background:** Pediatric obesity is a multifaceted disease that affects 19.7% of children. Obesity increases the risk of long-term health morbidity and costs billions of dollars annually for the United States healthcare system.

**Purpose:** The objective of this quality improvement project was to utilize the 5210 Healthy Children Campaign to facilitate behavior change in obese children. Potential outcomes include fostering health promotion and disease prevention, improving patient outcomes, decreasing morbidity and mortality, and easing the healthcare burden.

**Methods:** Intervention took place at Growing Kids Pediatrics and was conducted through four educational sessions involving the obese child and at least one caregiver. Lesson plans included (1) hydration, limiting sugary beverages, and sleep, (2) activity, exercise, and screentime, (3) diet and nutrition, and (4) wrap-up and sustainability of changes. The four sessions were held monthly from January 2023 to April 2023. Behavioral outcome measures were observed through the Adherence to Lifestyle Modification Advices Questionnaire (ALMAQ) and a five-item Supplemental Questionnnaire.

**Results:** Pre- to post-intervention ALMAQ scores displayed a statistically significant behavior change ($p = 0.03$). The supplemental questionnaire results did not show a significant change in behavior ($p = 0.3$).

**Discussion:** The 5210 education can be used to facilitate behavior change. Future implementation should employ longer follow-up times to observe if these sustained lifestyle modifications produce changes in anthropometric measurements (ie. weight, waist circumference, BMI).

*Keywords:* pediatric obesity, childhood obesity, lifestyle behaviors, diet or nutrition, activity or exercise

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**Intention to change lifestyle behaviors in 10- to 14-year-old children with obesity**

Obesity is a multifaceted disease with a plethora of contributing factors that play varying roles in the development of a diagnosis. Childhood obesity, or pediatric obesity, is classified when a child meets or exceeds the 95$^{th}$ percentile for their body mass index (BMI), which is based on their sex, age, height, and weight (U.S. Center for Disease Control and Prevention [CDC], 2021). Pediatric obesity is an epidemic affecting 14.7 million or 19.7% of children in the United States (CDC, 2022). Pediatric obesity can produce detrimental effects on long-term physical and psychological health outcomes (Obesity Action Coalition, n.d.). Not only can this health problem be a precursor for health morbidity, but it can also hinder self-esteem and school performance. Pediatric obesity can impact the cardiovascular, orthopedic, neurological, hepatic, pulmonary, and reproductive systems, as well as social, emotional, and intellectual well-being (Sahoo et al., 2015; as cited in Sanyaolu et al., 2019).

Though there is no single cause of pediatric obesity, it is known that one of the most prominent contributing factors is due to an imbalance of energy intake and expenditure (CDC, 2011; as cited in Sanyaolu et al., 2019). Children with obesity consume an average of 1,000 calories more than necessary for healthy bodily function and participate in more than six hours of daily electronic screen time (Sanyaolu et al., 2019). Childhood obesity is significant because obese individuals are more likely to develop hypertension, dyslipidemia, hypercholesterolemia, diabetes mellitus, heart disease, stroke, gallbladder disease, liver disease, sleep apnea, and various forms of cancer and mental health disorders (CDC, 2021). As this is a varied collection of diagnoses, it is understandable that obese individuals require frequent hospitalization for the management of these complications. The Duke Global Health Institute describes the lifetime cost of pediatric obesity in the United States as 19,000 dollars per obese child (2014).

Data from the Robert Wood Johnson Foundation revealed that Indiana ranked 24th in the nation for pediatric obesity with one in six children qualifying for obesity (Opinker, 2022). Though the 16.7% of obese children in Indiana is lower than the national average of 18%, there is certainly still a need for this health problem to be addressed locally. Addressing pediatric obesity could most easily be done within primary healthcare. Primary healthcare is a well-positioned setting in which to foster health promotion and primary prevention through lifestyle habits and healthy behaviors.

## Purpose and Specific Aims

The purpose of this quality improvement project is to utilize the 5210-education method to facilitate behavior change for children in the primary healthcare setting. The short-term goal is a displayed improvement in lifestyle behaviors. The long-term goals are to decrease BMI and adverse outcomes associated with the comorbidities of obesity in participating children. The potential impact includes fostering health promotion and disease prevention, improving patient outcomes, decreasing morbidity and mortality, and easing the healthcare burden. The aims are to increase fruit and vegetable intake, improve participation in physical activity, foster healthier sleep habits, and reduce screen time.

The 5210 Healthy Children Campaign is a diet and exercise-based intervention that encourages healthy lifestyle changes (Pennsylvania State University, n.d.). This method promotes five or more servings of fruits and vegetables, two or fewer hours of screen time, one or more hours of physical activity, and zero sweetened beverages each day. These guidelines were formulated using recommendations from the Dietary Guidelines for Americans, American Academy of Pediatrics, United States Department of Agriculture, National Association for Sport

and Physical Education, and Robert Wood Johnson Foundation for Healthy Eating Research (Pennsylvania State University, n.d.).

## Literature Review

In the preliminary literature review, several studies targeted the family unit using a combination of dietary and physical activity behavior modification interventions (Al-Khudairy et al., 2017; Mead et al., 2017; Jortberg et al., 2016; Taveras et al., 2017; Smith et al., 2021). Combination intervention methods displayed success in changing lifestyle behaviors and improving anthropometric measurements (ie. weight, BMI, waist circumference, etc.). Combination intervention methods displayed better results compared to behavioral modification or dietary modification alone (Griffiths et al., 2021; Fiechner et al., 2021). Despite combination intervention methods resulting in success, the anthropometric transformations following intervention seemed modest considering the amount of weight the children needed to lose to re-enter a healthy BMI range. Smith et al. (2021) suggested that the modest changes were due to the six-to-12-month post-intervention follow-up times, as this may not have been long enough to reflect ample anthropometric changes. For this reason, it is believed that longer follow-up times are ideal when measuring these outcomes.

Since many of the observed studies had a six-month post-intervention follow-up, the short follow-up times are likely the reason there was no statistically significant change in BMI at the end of some studies (Griffiths et al., 2021; Al-Khudairy et al., 2017; Mead et al., 2017; Sepúlveda et al., 2019). Though the literature found is of the highest levels of evidence, their value is diminished slightly due to the risk of attrition bias. Jortberg et al. (2016) noted that weight management programs have high attrition for all obese populations. This may be linked

to the fact that losing weight can be a slow, frustrating process and may relate to the long follow-up times mentioned previously.

Compelling evidence suggests the use of an intervention addressing a combination of behavioral, dietary, and activity modification involving both the child and the parent (Jortberg et al., 2016; Small et al., 2014; Smith et al., 2021). Additionally, Arnold et al. (2019) noted that most patients prefer a three-month program with in-person, group meetings lasting approximately one hour and occurring once to twice per month. The intervention and design for the proposed project have been guided by the conclusions drawn from the literature discussed in this section.

## Rationale

Dr. Christina Lane, owner of Growing Kids Pediatrics in New Albany, Indiana, expressed a desire to investigate the literature for best practices in the management of pediatric obesity. A chart review was conducted on 44 obese patients seen at Growing Kids Pediatrics from January 2021 to September 2021. The sample was evenly distributed between male and female patients ranging from two to 24 years of age. Race, ethnicity, and household income were unknown. The data highlighted that the most prevalent age for obesity at this site ranges from 10 to 14 years of age.

Considering the narrow timeframe for implementation, targeting the family via combination methods for behavior modification may produce the best outcomes and sustainability. Growing Kids Pediatrics serves a wide range of families in Southern Indiana and Louisville, Kentucky. Some families are of low socioeconomic status requiring Medicaid while other families possess higher income. In the United States, an observed 21.5% of youths that live in a household below the federal poverty line were obese (The State of Childhood Obesity,

2020). Therefore, household income could pose a potential factor that would inhibit sustainability following the conclusion of the intervention. Low income limits the ability to access fresh produce and other foods that contribute to a well-rounded diet. These caregivers often resort to fast-food options that are high in caloric value, trans and saturated fats, cholesterol, and sodium (Health Guides, 2019).

## Conceptual Framework

The theoretical framework guiding project development is the Behavior Change Wheel (Appendix A). This framework displays a "behavior system" that is "encircled by intervention functions" (Michie et al., 2011). The Behavior Change Wheel applies to the proposed project because the specific interventions are linked to the targeted behaviors within the domain of public health. Social and physical behavior change require education, incentivization, restriction, persuasion, and environmental restructuring intervention (Michie et al., 2011). Education entails increasing knowledge. Knowledge and persuasion empower the individual to take action and make informed decisions regarding their health. Incentivization includes rewards, which motivate the participant to work towards established goals and return for follow-up. Restriction and environmental restructuring involve creating daily reminders or prompts to limit targeted health behaviors (Michie et al., 2011). Knowledge empowers the individual to take matters into their hands and make informed decisions regarding their health. The proposed project utilizes these intervention techniques to target behavior change within a group of participants.

## Methods

### *Setting, Sample, and Design*

This quality improvement project was intended to improve the eating and activity habits of obese 10- to 14-year-old children with a BMI greater than the 95$^{th}$ percentile. The intervention

took place at Growing Kids Pediatrics. Growing Kids Pediatrics is a private pediatric practice that services children in and around New Albany, Indiana. The participants were identified for recruitment through a chart analysis during December 2022.

Lifestyle modification was conducted through education utilizing the 5210 Healthy Children Campaign (Pennsylvania State University, n.d.). A study conducted with pediatricians utilizing the 5210-tool displayed statistically significant differences in BMI and BMI percentile post-intervention (Polacsek et al., 2009; as cited in CDC, 2018). The 5210 daily recommendation guidelines served as the themes of each monthly session: hydration, exercise, and nutrition. Dietary and activity changes were observed through the Adherence to Lifestyle Modification Advices Questionnaire (ALMAQ). The ALMAQ has satisfactory internal consistency when analyzing lifestyle behaviors with a Cronbach alpha score of 0.9 (Dubasi et al., 2019). A comparison of pre-and post-intervention ALMAQ responses was used to evaluate diet and exercise changes throughout implementation.

***Intervention and Implementation***

A compiled list of eligible patients was provided by Growing Kids Pediatrics following a chart review in December 2022. Eighty-six patients qualified for the program. Recruitment took place two weeks prior to the first session. During recruitment, phone calls were made to the parents of obese 10- to 14-year-old patients. While on the phone, they were given a brief description of the three-month program and what it entails. Twenty-eight caregivers expressed interest in learning more about the program and were sent an email containing session information and the sign-up link. Thirteen caregivers declined participation following the interest phone call or did not have working phone numbers. Forty-five families did not answer upon initial or follow-up contact.

Following recruitment, seven participants signed up to partake in the program. Parental consent was obtained to receive text message reminders for the time and date of each meeting. Providers distributed informational fliers to three obese children that were encountered in the office after the chart review (Appendix E). However, none of these children joined the program.

Families were brought in for the initial visit in January 2023. They returned every four weeks until the end of April 2023 for a total of four visits. The themes of these monthly, one-hour sessions were guided by the 5210 recommendations. Implementation was conducted by the project lead utilizing the 5210-education tool. During these visits, the child and caregiver(s) participated in education regarding healthy nutritional choices, instruction on exercise activities, recommendations for screen time, and discussion regarding techniques to combat health barriers. Lesson plans include (1) hydration, limiting sugary beverages, and hygienic sleep (2) activity and exercise, (3) diet and nutrition, and (4) wrap-up and sustainability of changes (Appendix D).

Meetings were held on weekend days to allow parents to work and children to attend school normally. An incentive program was designed to aid in retention of participants throughout implementation. Each child was given an item that fits with the theme of each session; a water bottle for hydration, a jump rope for exercise, and a portion plate for nutrition. An additional incentive involved a randomized gift card drawing for 30 dollars at the end of the intervention. The children were eligible to enter for the drawing if they attend all four sessions.

***Measurement***

Demographic data included age, sex, race, ethnicity, number of children in the home, number of caregivers within the home, type of insurance, and household income (Appendix B). Demographic data was filled out by the accompanying caregiver. Outcome measures evaluated diet, activity, sleep, and screentime habits encompassed within the ALMAQ. A Supplemental

Questionnaire was added to the ALMAQ survey to inquire further about items that were included in the lifestyle education. These educational points included screen time, sleep, and additional dietary habits. The ALMAQ and Supplemental Questionnaire were completed by the participating child (Appendix C).

The ALMAQ is a 14-question survey that is scored on a five-point scale with 12 items that pertain to diet and two for physical activity (Dubasi et al., 2019). The possible score ranges from 14 to 70 with lower scores associated with healthy dietary and exercise habits while higher scores suggest unhealthy habits (Dubasi et al., 2019). Each item is scored on a scale with a=5, b=4, c=3, d=2, and e=1 with five representing an unhealthy behavior and one representing a healthy behavior (Appendix C). Due to the original survey originating in India, the wording and food choices have been modified to reflect that of a typical American diet. Five additional questions have been added that were helpful to analyze sleep (one item), screen time (one item), and other factors within the child's diet (three items). The Supplemental Questionnaire is demarcated from the ALMAQ questions by a blue box. The added questions were scored on a five-point scale separately from the ALMAQ with a score range from 5 to 25. The point values for each item were scored identically to the ALMAQ (Appendix C). Demographic data were collected only at the first session, and ALMAQ responses were collected at each session to evaluate how different interventions affect lifestyle habits.

## Ethical Considerations and Permission

It is also important to consider any unintended harm that may come from intervention. Psychological harm to the child may include self-consciousness surrounding their weight and health behaviors. Similarly, psychological harm to the parents may involve feelings of shame for

their child becoming obese. There is also the possibility of economic harm that could come from the need for transportation to the office or spending money on new food items.

HIPAA standards were maintained throughout recruitment and the data collection process. Data was compiled in an Excel spreadsheet on a password-protected computer. Printed materials did not have any identifying patient information and were stored in a safe. Data spreadsheets were completely de-identified. The data collected was then entered into Microsoft Excel for analysis. This quality improvement was submitted to Louisville IRB and approved for implementation in December 2022.

## Data Analysis

The demographic information obtained contained both nominal and ordinal data. This was analyzed using inferential statistics. Demographics were utilized to observe differences between children's ALMAQ scores from the beginning and end of intervention. Responses to the ALMAQ and Supplemental Questionnaire were scored on a five-point scale and were analyzed using central tendency. Lower scores were associated with healthy dietary and exercise habits while higher scores suggested unhealthy habits. Scores were evaluated from session to session to observe how each intervention affects responses to the questionnaire form. The changes in the children's ALMAQ scores throughout the intervention were observed through a paired t-test.

## Results

Seven families participated in project. The make up of the children consisted of two males and five females from 10- to 14-years-of-age. Every child was White, non-Hispanic. Parents completed the demographic questionnaire to reveal that most children had two caregivers and private insurance. Only one child had a single caregiver and was on Medicaid. Two participants were only children in the household and five participants had at least one sibling.

Two families had a household income greater than $150,000 annually, three had a household income of $100,000-149,999, one had a household income of $70,000-99,999, and one had a household income of $30,000-69,999.

One child attended the first meeting and was later lost to follow-up so their responses to the ALMAQ and Supplemental Questionnaire were not used in the analysis. The survey scores for the children that completed the program are listed in Table 2. These data were analyzed by paired t-test.

**Table 2**

***Survey Data***

| | **Session 1** | | **Session 2** | | **Session 3** | | **Session 4** | |
|---|---|---|---|---|---|---|---|---|
| | ALMAQ | Supp. | ALMAQ | Supp. | ALMAQ | Supp. | ALMAQ | Supp. |
| **Participant 1** | 48 | 19 | 49 | 19 | 45 | 21 | 30 | 17 |
| **2** | 43 | 15 | 40 | 13 | 39 | 14 | 40 | 13 |
| **3** | 48 | 13 | 52 | 12 | 46 | 11 | 39 | 12 |
| **4** | 45 | 16 | 53 | 16 | 38 | 15 | 38 | 16 |
| **5** | 50 | 15 | 49 | 14 | 40 | 16 | 37 | 17 |
| **6** | 38 | 12 | 38 | 11 | 39 | 10 | 39 | 10 |
| **Mean** | 45.3 | 15 | 45.2 | 14.2 | 41.2 | 14.5 | 37.2 | 14.2 |

Data analysis of ALMAQ responses indicates that there was a statistically significant change in lifestyle behavior from pre- to post-implementation ($p = 0.03$). Child ALMAQ scores changed the most dramatically between session two and session three, which was after the children received education regarding exercise and screen time ($p = 0.04$). A similar change in

ALMAQ means occurred between the third and fourth sessions, but it is unclear if there was statistical significance due to a higher variance. The Supplemental Questionnaire did not display a statistically significant change in any behavior from pre- to post-implementation ($p = 0.25$).

## Discussion

The purpose of this project was to utilize 5210 Education to facilitate behavior change for obese children in the primary care setting. The aims related to exercise and fruit and vegetable intake were met. The data supports that behavior change occurred in these categories with statistical significance on the pre- to post-ALMAQ ($p = 0.03$). The ALMAQ data was also statistically significant at the third meeting ($p = 0.04$). This implies that this intervention could be performed in three sessions instead of four, which would be more cost-effective in future implementation.

The Supplemental Questionnaire was not able to reflect behavior change, so it remains uncertain if the sleep and screen time aims were met ($p = 0.25$). It will be important to modify the answer choices on the Supplemental Questionnaire to more achievable options. For example, a child would have to adjust their sleep or screen time by at least an hour before they would be able to change their answer. This is likely the reason that there was no observed behavior change on the questionnaire. From interaction with the children, they stated that they were going to bed 30 minutes sooner and spending less time behind a screen. These changes in habits were not reflected in the results because they had not exceeded the one-hour threshold which signified a behavioral change on the questionnaire.

In the literature review, Smith et al. (2021) suggested that a 12-month follow-up is the most narrow window able to observe statistically significant anthropometric changes. Future implementation should utilize a longer intervention period to determine if sustained behavior

change from 5210 education will result in significant anthropometric change. The retention rate of this project was a remarkable 86% after losing one child to follow-up. It will be interesting to see if the implemented retention program works similarly with longer follow-up times.

This project seemed to have had value to the participating children and their caregivers. Many parents reached out with their gratitude and astonishment about the mindful changes their children made after receiving the 5210 education. The children took away knowledge that will stay with them as they become more independent and continue to build their dietary and physical habits. Dr. Lane at Growing Kids Pediatrics was pleased with the turnout and involvement of patients with obesity seen at her practice. She plans to continue her efforts in obesity management by utilizing the 5210 Health Children Campaign.

***Limitations***

There wasn't any diversity in the families who decided to participate in the project. All of the children analyzed were White, non-Hispanic, and had two caregivers. Interestingly, the only child lost to follow-up was the only child with learning disabilities and a single caregiver. Healthcare providers must evaluate their patient population when determining how they wish to implement a study such as this. Providers may need to perform one-on-one education with a flexible schedule instead of set meeting times in a group. Though the group sessions worked well in this study, not all families can accommodate as easily which is why this particular child was lost to follow-up.

Also, there was a deviation from the meeting plan during the second session due to extreme weather causing road closures and flash floods. As a result, there were two smaller group sessions and a child who was met individually virtually using the Teams application. This departure from the original meeting plan was unavoidable to maintain the safety of all

participants. In addition, this was the best alternative as opposed to interfering with the proposed intervals between each point of data collection.

Though the changes made in the participating children are individually sustainable, the feasibility of reaching new children is questionable since many families do not often attend weight checks in the office. If there is time during the well child check, the provider may give 5210 handouts or touch on a few educational points, but this would not be able to get billed for. Similar programs such as this project could be operated by a nurse, which would be more cost-effective than a provider (ie. medical doctor, nurse practitioner, physicians associate). This could occur right after a scheduled appointment or other services sought at the office on occasions

## Conclusion

The high prevalence of pediatric obesity warrants additional action by primary care. This quality improvement was useful in the primary care setting to promote healthy habits. The findings imply that education utilizing the 5210 Health Children Campaign can facilitate targeted behavior change. In the long term, this would foster health promotion and disease prevention. Future implementation should execute longer follow-up times to observe if these lifestyle modifications produce positive change in anthropometric measurements (ie. weight, waist circumference, BMI). Additionally, future implementation should modify the option choices on the Supplemental Questionnaire to 30-minute increments so that changes in behavior are more readily observed by changing scores.

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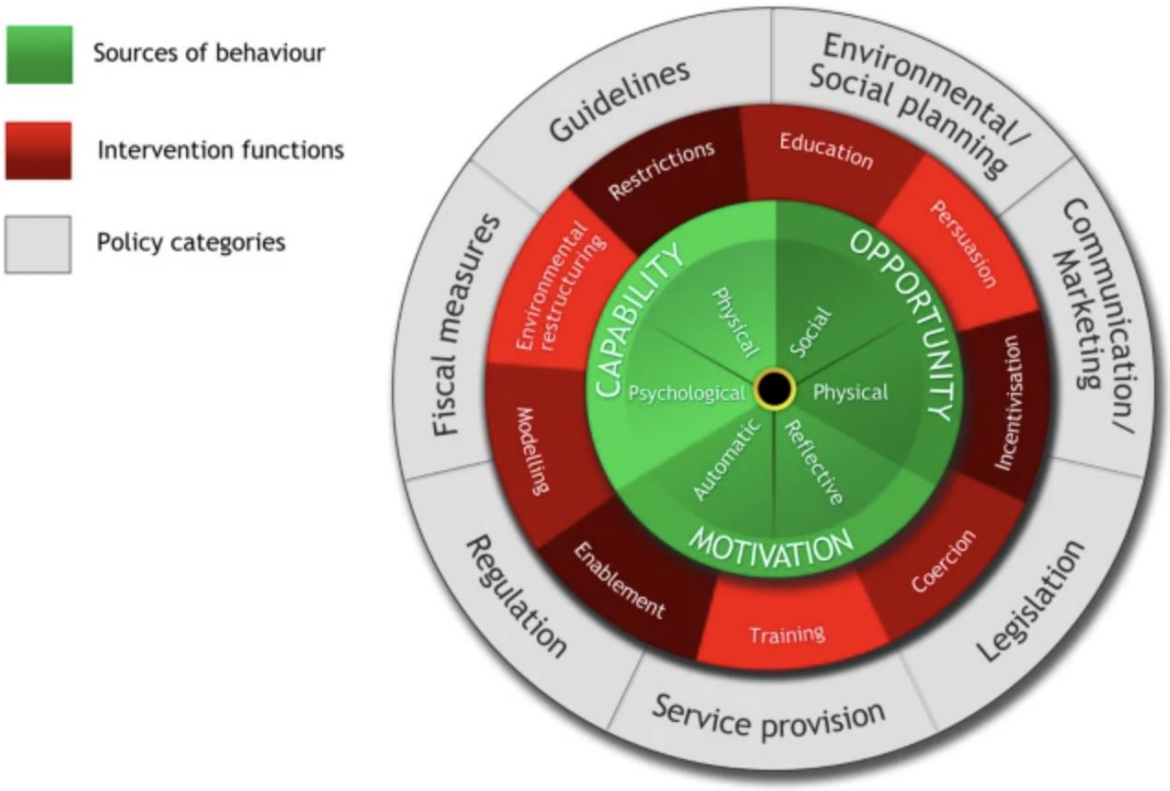
Appendix A

The Behavior Change Wheel



# Appendix B

## Demographic Questionnaire

Age of child:

Child's sex: Male Female Other

Child's race: American Indian/Alaska Native Asian Black or African American
Native Hawaiian or Other Pacific Islander White More than one race
Unknown or not reported

Child's ethnicity: Hispanic or Latino Not Hispanic or Latino

Number of children in the home:

Number of caregivers in the home: One Two

Type of insurance: Medicare Medicaid Private Insurance Other _____

Household income: <30,000 30,000-69,999 70,000-99,999 100,000-149,999 >150,000

# Appendix C

## Adherence to Lifestyle Modification Advices Questionnaire (ALMAQ)

Initials: _____ Birthday: _____

1. How often do you eat meals in a day (including tea, coffee, fruits, salads, snacks)?
    a. >6 times
    b. 6 times
    c. 5 times
    d. 4 times
    e. 3 times
2. How often do you drink sweetened beverages such as soda, juice, etc.?
    a. At least 1 per day
    b. 3-6 times per week
    c. 1-2 times per week
    d. 2-3 times per month
    e. 1 or less per month
3. How often do you eat sweets such as chocolate, cake, cookies, ice cream, etc.?
    a. At least 1 per day
    b. 3-6 times per week
    c. 1-2 times per week
    d. 2-3 times per month
    e. 1 or less per month
4. How often do you eat fried foods such as chicken nuggets, French fries, corn dogs, etc.?
    a. At least 1 per day
    b. 3-6 times per week
    c. 1-2 times per week
    d. 2-3 times per month
    e. 1 or less per month
5. How often do you eat salty snacks such as potato chips, pickles, pretzels, etc.?
    a. At least 1 per day
    b. 3-6 times per week
    c. 1-2 times per week
    d. 2-3 times per month
    e. 1 or less per month
6. How often do you consume sugar or honey in tea, coffee, hot chocolate, etc.?
    a. At least 1 per day
    b. 3-6 times per week
    c. 1-2 times per week
    d. 2-3 times per month
    e. 1 or less per month
7. How often do you eat fruit or salad?
    a. <1 time per week
    b. 1 time per week
    c. 3-4 times per week
    d. At least once a day
    e. Nearly every meal
8. How often do you eat green veggies?
    a. <1 time per week
    b. 1 time per week
    c. 3-4 times per week
    d. At least once a day
    e. Nearly every meal
9. How often do you eat saturated fats such as steak meat, cheese, etc.?
    a. At least 1 per day
    b. 3-6 times per week
    c. 1-2 times per week
    d. 2-3 times per month
    e. 1 or less per month
10. How often do you eat refined foods such as bread, pizza, cereal, microwave meals, etc.?
    a. At least 1 per day
    b. 3-6 times per week
    c. 1-2 times per week
    d. 2-3 times per month
    e. 1 or less per month

11. How often do you eat butter, whip cream, mayonnaise, etc.?
    a. At least 1 per day
    b. 3-6 times per week
    c. 1-2 times per week
    d. 2-3 times per month
    e. 1 or less per month
12. How often do you eat out of the house (restaurant, drive-thru, party, etc.)?
    a. >3 times per week
    b. >1 time per week
    c. 2 times per month
    d. 1 time per month
    e. <1 time per month
13. How many days in a week do you do an activity (faster breathing, higher heart rate, or sweating)?
    a. Not at all
    b. 1-2 times per week
    c. 3-4 times per week
    d. 5-6 times per week
    e. Every day
14. How long is your activity when you do?
    a. <10 minutes
    b. 10-20 minutes
    c. 20-30 minutes
    d. 30-40 minutes
    e. >40 minutes

## Supplemental Questionnaire

1. How many hours per day do you spend watching TV, playing video games, or scrolling on your phone/computer that is not for schoolwork?
    a. >3 hours per day
    b. 3 hours per day
    c. 2 hours per day
    d. 1 hour per day
    e. <1 hour per day
2. How often do you eat while doing other things like watching TV, doing homework, standing in the kitchen, etc.?
    a. All the time
    b. Often
    c. Sometimes
    d. Almost never
    e. Never
3. How many times per week do you sit at the table with you family to have a meal?
    a. <1 time per week
    b. 1-2 times per week
    c. 3-4 times per week
    d. 5-6 times per week
    e. Every day
4. How many hours of sleep do you normally get at night?
    a. <8 hours
    b. 8 hours
    c. 9 hours
    d. 10 hours
    e. >10 hours
5. How many times per week do you eat breakfast?
    a. <1 time per week
    b. 1-2 times per week
    c. 3-4 times per week
    d. 5-6 times per week
    e. Every day

## Scoring

A = 5 points
B = 4 points
C = 3 points
D = 2 points
E = 1 point

High score = unhealthy behaviors
Low score = healthy behaviors

# Appendix D

## Lesson Plans

### (1) HYDRATION

~ 1 hour

**PREP**

Recruitment and session reminders

At least 1 caregiver and participating child

**TOPIC**

Introduction to program- eligible for $30 gift card after 4th meeting if all meetings attended

Importance of hydration and sleep

Anticipation of next meeting

**SUPPLIES**

Data- demographic sheet, ALMAQ surveys, pens

Keepsake/incentive- water bottle

Activity- clear solo cups, sugar to place in cups, paper cut outs of drinks for guessing, bottles of discussed drinks for display

**ACTIVITIES**

Several cups filled with various amounts of sugar- water, apple juice, fruit punch, Gatorade, Coca-Cola, Mountain Dew, Red Bull, chocolate milk

Child and caregiver work together to guess which cup is which drink

**DISCUSSION**

Ways to make water exciting- lemon, flavored water

Sleep hygiene

Goal setting- increase water intake every day (specific # of bottles), limit sugary drinks to 1 per week (or eliminate completely), 1 sleep goal

### (2) EXERCISE

~ 1 hour

**PERP**

Session reminders

Child needs tennis shoes and clothes that are comfortable to play in

**TOPIC**

Recap on hydration

Purpose of exercise- health benefits, different ways to increase heart rate

Anticipation of next meeting

**SUPPLIES**

Data- ALMAQ surveys, pens

Keepsake/incentive- jump rope

Activity- my jump rope, stopwatch

**ACTIVITIES**

Mini jump rope lesson- single bounce, backwards bounce, side swing, crisscross, double under

Teach them how to count their heart rate, jump rope for 90 seconds straight, count heart rate again

**DISCUSSION**

How often exercise is necessary

How to fit it into the day- swap screen time, filler for commercials

Goal setting- 30-60 minutes of activity every day, <2 hours of screen time outside of schoolwork, continue hydration efforts and limiting sugary beverages

### (3) NUTRITION

~ 1 hour

**PERP**

Session reminders

Request food allergies if any

**TOPIC**

Recap on hydration and activity

Function of calories- complication with excess

Anticipation of final meeting

**SUPPLIES**

Data- ALMAQ surveys, pens

Keepsake- portion plates

Activity- rice cake, 1 serving peanut butter, 2 apple slices, 10 cheerios, 2 blueberries, 2 slices of banana, 1 carrot sliver, paper plate, plastic knife to spread peanut butter, baggies/containers for each item

**ACTIVITIES**

Child and parent create a healthy snack together

**DISCUSSION**

Portion control- with and without portion plates, satiety queues (takes 20 minutes to feel fullness), eating at restaurant vs eating at home

Importance of breakfast on the rest of the day

Importance of fiber and protein on feeling satisfied longer- carbs and sugars aren't great snacks, recap on wasted calories in sugary beverages

Goal setting- 5 servings of fruit/veggies per day, use of portion plates, listening to body, choosing snacks wisely, continue hydration and exercise efforts

### (4) WRAP UP

~ 30 minutes

**PERP**

Session reminders

**TOPIC**

Recap on hydration, exercise, and nutrition

**SUPPLIES**

Data- ALMAQ surveys, pens

Incentive- $30 gift card, slips of paper for entry into drawing if eligible

**DISCUSSION**

Successes to celebrate

Explore difficulties

Longevity of these changes in their behavior

Goal setting- continue efforts of all previous sessions, challenge to create new goals as old ones become habit

Appendix E

Informational Flier Template

# INVESTING

# IN YOU!

EARN THE CHANCE TO WIN A $30 GIFT CARD!

Free gifts and prizes while learning new ways to take control of your health!

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SATURDAY, MONTH AND DATE
10:30AM - 11:30AM
GROWING KIDS PEDIATRICS
3321 BALLARD LANE

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Sign up at:
https://www.surveymonkey.com/r/YKV89G2