PEDIATRIC WEIGHT MANAGEMENT IN PRIMARY CARE PRACTICE

by

Kaseymichelle Qualman

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As members of the DNP Project Committee, we certify that we have read the DNP project prepared by Kaseymichelle Qualman, titled Pediatric Weight Management in Primary Care Practice and recommend that it be accepted as fulfilling the DNP project requirement for the Degree of Doctor of Nursing Practice.

_____ Date: May 15, 2020
Leslie S. Ritter, PhD, RN, FAAN

Patricia Daly
_____ Date: May 15, 2020
Patricia Daly, PhD, FNP-BC, ENP-BC, FAANP

Cindy J Rishel
_____ Date: May 15, 2020
Cindy J. Rishel, PhD, RN, OCN

Final approval and acceptance of this DNP project is contingent upon the candidate's submission of the final copies of the DNP project to the Graduate College.

I hereby certify that I have read this DNP project prepared under my direction and recommend that it be accepted as fulfilling the DNP project requirement.

_____ Date: May 15, 2020
Leslie S. Ritter, PhD, RN, FAAN
DNP Project Committee Chair
College of Nursing

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DEDICATION

I would like to dedicate this project to the children I hope to help as an advanced practice pediatric nurse practitioner. I have always believed that children are a byproduct of society's willingness to prioritize pediatric healthcare. With this in mind, I hope to be a healthy, positive influence in the future lives I touch, with my degree and knowledge.

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ABSTRACT

Background: In the United States 13.9% of children between the ages of 2 to 5 years old are considered to be obese (CDC, 2018a). It is crucial for primary care pediatric nurse practitioners (PNPs) to screen, educate, treat and implement evidence-based interventions to decrease pediatric obesity rates.

Purpose: This project examined parent and guardian knowledge of pediatric obesity and weight management behaviors, before and after a pediatric obesity education intervention.

Method: An evidence-based educational intervention regarding pediatric obesity and weight management behaviors was delivered after well-child and post condition well-child follow-up visits, at a small, private medical practice. The data was collected using a pre- and post-test survey to assess parent and guardian knowledge before and after the educational intervention.

Aim: To increase knowledge among parents or guardians with a child between the ages of 2 to 5 years old, using evidence-based obesity management recommendations.

Results: Two-tailed paired t-tests (parametric); percentages, means, and standard deviation (SD) were used to analyze the data. Demographic data was analyzed by counting the number of participants (N=9) who chose each category. Overall post scores were not significantly different; however, eight of the nine participants increased their scores with an average increase of 29%.

Conclusion: The results of the project indicate parents and guardians are able to increase their understanding of pediatric obesity and level of confidence in implementing weight management practices, with a 10-minute educational intervention during well child or post condition well-child follow-up visits. Therefore, the results stress the importance of PNPs providing families

with obesity prevention information to aid in their understanding of pediatric obesity and what they can do to prevent and manage this in their child.

INTRODUCTION

There is an escalating rate of obesity in children and adolescents in the United States. According to the Centers for Disease Control and Prevention (CDC, 2018a), 18.5% of children and adolescents between the ages of 2 to 19 years old are considered obese. Obesity is defined as having a body mass index (BMI) at or above the 95th percentile for children and teens of the same age and sex (CDC, 2018b). Overweight is defined as a BMI at or above the 85th percentile and less than 95th percentile (CDC 2018b). As children grow older, their prevalence for obesity increases, with a 13.9% prevalence in 2 to 5 year olds, an 18.4% prevalence in 6 to 11 year olds, and a 20.6% prevalence in 12 to 19 year olds (CDC, 2018a). Hispanic children have the highest rate of obesity at 25.8% and non-Hispanic blacks have the second highest rate of obesity at 22.0% (CDC, 2018a). Non-Hispanic white children and non-Hispanic Asian children have the lowest rates of obesity at 14.1% and 11%, respectively (CDC, 2018a). Obese children are at increased risk for comorbid health conditions such as heart disease, stroke, diabetes, and hypertension. Additional factors that influence obesity include socioeconomic, cultural, parental, child, environmental, and genetic factors.

Predictors of Obesity

Socioeconomic Factors

Socioeconomic status is a significant determinant of obesity. According to the CDC (2018a) 18.9% of children from low-income families, 19.9% from middle-income families, and 10.9% from high-income families are obese. This data portrays how individuals of certain socioeconomic classes are more affected by obesity. Juonala et al. (2019) examined socioeconomic status and its' impact on pediatric obesity. Socioeconomic variables within this

study included neighborhood, education, occupation, economic resources and relative socioeconomic advantage and disadvantage. It was found that higher family education, occupation, relative socioeconomic advantage, and neighborhood walkability were associated lower BMIs, waist circumferences, and body fat percentages (Juonala et al., 2019).

Cultural Factors

Culture is another factor that impacts BMIs in children. Children of Latino, Black, and American Indian heritages are most likely to be obese due to cultural factors and socioeconomic disadvantages (Zilanawala et al., 2015). Research suggests that within these cultures, there are various perceptions of a normal weight, food portions, food choices, and physical activity and eating behaviors that correlate to higher or lower BMIs (Hubbard et al., 2016). These cultural perceptions and behaviors may hinder the development and success of weight management programs (Hubbard et al., 2016). For example, African American and Latino children often consume traditional foods high in sodium and saturated fat (Hubbard et al., 2016). Both of these actions are contrary to current health recommendations that encourage consuming less than 1,500 mg of sodium and 10% of total calories from saturated fat per day for children between the ages of 2 to 5 years old (U.S. Department of Health and Human Services and U.S. Department of Agriculture, 2015). Falbe and colleagues (2015) also found that within the Latino culture, overweight children are perceived to be healthier; food is often used as a reward or an expression of love, and there is reluctance to deny additional helpings of food.

Martinez and colleagues (2017) state the Latino culture often views “chubby” as healthy, encourages finishing everything on a food plate, and is not supportive of physical activity. The idea that “chubby” is healthy comes from the perception that children with lower weights are

malnourished (Martinez et al., 2017). When children are expected to finish everything on their plate this relates back to family upbringing of the parents and the idea that food is wasted if a plate is not empty after a meal (Martinez et al., 2017). Additionally, Latino families living in the United States often work to assimilate themselves into American culture, which includes a faster paced routine that leaves little to no time for cooking healthy meals and including physical activity (Martinez et al., 2017). These cultural barriers are crucial to keep in mind when treating the Latino family and attempting to understand their perception of weight.

There are also distinctions in how various cultures monitor their child's food intake, pressure their child to eat, and use restrictive feeding practices. Monitoring food intake refers to how parents oversee children's dietary consumption. Pressure to eat represents how parents encourage their child to eat healthy foods, and restrictive feeding highlights how parents limit access to various foods (Blissett et al., 2013; Gu et al., 2017) For example, South-Asian and Black Afro-Caribbean parents have a higher tendency to pressure their children to eat, participate in emotional feeding, and utilize instrumental feeding (Gu et al., 2017). Blisset and colleagues (2013) found that U.S. parents of African-American and Latino backgrounds are more controlling with feeding behaviors than Caucasian families. Lastly, similar to Latino culture, U.S. Asian-Indian parents place precedence on ensuring that their children eat everything on their plate to reduce waste (Gu et al., 2017). Gu and colleagues (2017) also found ethnic minority parents were more concerned about their child being over or under weight, compared to Caucasian parents. These studies reveal how various cultures approach eating in unique ways that positively and negatively affect their weight.

Parent Factors

Parental practices impact their children's view of and approach to weight management. Parenting practices relate to context-specific behaviors of parents influencing a child's behavior. These include practices such as availability of healthy foods in the home, discussion of nutritional food values, use of food in response a child's emotional distress, engagement of children with food preparation, eating healthy in the presence of their child, eating regular meals together, accessibility of healthy options, pressuring the child to eat healthy food (Gerards & Kremers, 2015).

Parents are the nutritional gatekeepers and healthy lifestyle role models that help form children's beliefs, attitudes, and behaviors about food and physical activity (Natale et al., 2014). This was demonstrated in a study by Natale and colleagues (2014) where children increased consumption of fruit and vegetables, decreased their consumption of junk food, and increased their daily energy expenditure when they observed their parents modeling positive, healthy behavior. Gerards and Kremers (2015) explored general parenting and specific parenting practices crucial to the development of childhood obesity. They defined general parenting as the parenting style and child rearing practices. These authors found that children who had a positive relationship with their parents, had a lower weight, healthier eating habits and were more physically active. Whether the parenting practice is positive or negative, effects how children eat and view food. These researchers postulated that parents should be well informed on how to positively coach weight management strategies with their children.

Child Factors

Children's behaviors that impact weight gain include consuming excessive amounts of food and beverages high in calories and low in nutrients; involvement in sedentary activities such as sitting, watching television or using screen devices; and decreased overall physical activity (CDC, 2016). Sahoo and colleagues (2015) postulate obesity is caused by a discrepancy between how much energy children conserve and expend, while accounting for differing lifestyle and dietary preferences unique to each child and family. Increased portion sizes and high caloric snacking were also found to be contributing factors for obesity (Sahoo et al., 2015). These researchers found a correlation between consuming sugary drinks and weight gain. These authors also found that children who spend more time watching television had an increased consumption of advertised goods such as candy, sugary beverages, sweetened cereals, and salty snacks (Sahoo et al., 2015). In an attempt to remedy this outcome, American Academy of Pediatrics (AAP; 2016) recommends television and screen time be limited to less than one hour per day of high-quality programs for children between the ages of 2 and 5 years old.

Environmental Factors

Communities where children reside are crucial in helping to provide opportunities for physical activity and access to affordable and healthy foods (Xu & Xu, 2016). The CDC (2016) has identified community factors can influence a child's risk for obesity. These include schools, childcare centers, and recreational facilities that provide opportunities for physical activity and healthy food and beverage choices (CDC, 2016). These environments can either support or inhibit healthy habits depending on the options provided. Similarly, the cost of healthy food

selections, marketing and promotion, peer and social assistance, and community policies influence healthy habits (CDC, 2016).

Subica and colleagues (2016) examined low-income and minority populations who have ethnic and racial health disparities that create challenges for health promotion opportunities. Individuals living with these disparities are often burdened by societal stressors such as disadvantaged schools, dilapidated, unsafe neighborhoods, housing insecurity, community violence, discrimination, extreme poverty; as well as a lack of healthy, affordable food and safe options for physical activity (Dawson-McClure et al., 2014; Subica et al., 2016). These stressors restrict equitable access to health promotion resources such as knowledge, jobs, health-care, and the capacity or power to make positive changes (Subica et al., 2016). The listed stressors suppress family income and the ability to meet basic health needs. They impact educational resources, limiting access to higher quality teachers, facilities and safe community recreational areas for physical activity. The community generally has little or no access to businesses that provide healthy, affordable foods (Subica et al., 2016). Because stress is linked to obesity, community-based efforts are essential for supporting families confronted with obstacles that interfere with raising healthy children (Dawson-McClure et al., 2014).

Xu and Xue (2016) discuss how children's eating habits and physical activity are molded and influenced by the time spent in the home environment. Eating meals as a family at home, reducing time spent with technology devices, providing access to healthy food and beverage choices, and spending time participating in physical activity all aid in promoting positive behaviors (Xu & Xue, 2016). Woodward-Lopez and colleagues (2018) examined relationships between community characteristics, community programs and policies (CPPs), and dietary

intake. The study findings demonstrate that region, urbanicity, community-level income, and community level race or ethnicity affect childhood obesity prevention efforts and dietary intake. Findings from this research suggest that a larger number of environmental strategies should be implemented to effectively reach various populations with unique needs, characteristics, and abilities to respond to obesity prevention methods.

Genetic Factors

Genetics are a vital factor that can impact a child's weight (CDC, 2018a; Styne et al., 2017). Findings from genome-wide association studies have found that the central nervous system expresses genes near loci that regulate total body mass; and fat distribution genes are enhanced in adipose tissue (Goodarzi, 2018). Additionally, unique loci determine a child's birthweight and early-onset obesity (Goodarzi, 2018). Genetic factors have been studied in genetically identical monozygotic twins and they have a 70 to 90% similarity rating for fat mass; while non-identical dizygotic twins have a 35 to 45% similarity rating (Srivastava et al., 2016). Various gene mutations to leptin, leptin receptor, proopiomelanocortin, and melanocortin, as well as certain Mendelian syndromes have been found to cause obesity (Srivastava et al., 2016). Genetic factors linked to obesity are still being studied, and prevention is still the most effective strategy to conquer the obesity epidemic (Srivastava et al., 2016).

Consequences of Obesity

Obesity affects a child's overall health and longevity. Awareness of obesity is vital for parents and their children (Styne et al., 2017). Health consequences of obesity include, but are not limited to, hypertension, dyslipidemia, insulin resistance, prediabetes, obstructive sleep apnea (OSA), nonalcoholic fatty liver disease (NAFLD), musculoskeletal pain, anxiety,

depression, low self-esteem, and disordered eating (CDC, 2016; Gurnani et al., 2015; Sastre et al., 2019; Williams et al., 2015). Stankute and colleagues (2019) found that hypertension was more prevalent in children, adolescents, and young adults who were overweight and obese (40.6% & 65.6% respectively) compared to those who had a normal weight (25.6%). Dyslipidemia, which means high cholesterol or lipids in the blood, is also linked to pediatric obesity and the future development of coronary heart disease (CHD) and type 2 diabetes mellitus (T2DM) (Lopez-Sandoval et al., 2018; Styne et al., 2017). Insulin resistance is another consequence of obesity, and it is linked to CHD and T2DM, chronic systemic inflammation, increased oxidative stress, and development of prediabetes (Lopez-Sandoval et al., 2018; Styne et al., 2017). Obstructive sleep apnea (OSA) is another consequence of pediatric obesity. Alonso-Alvarez and colleagues (2014) examined 248 children (42.5% of girls & 37% of boys) between the ages of 3 and 14 years old with a BMI greater than or equal to the 95th percentile and found signs and symptoms of OSA. Additionally, Gurnani and colleagues (2015) found that OSA is four to six times more prevalent in obese children than non-obese children, and recommended screening for OSA in children at-risk for or who have obesity (Alonso-Alvarez et al., 2014). In a systematic review by Gurnani and colleagues (2015), overweight and obese children between the ages of 1 and 19 years old demonstrated a higher prevalence of non-alcohol related fatty liver disease (NAFLD) compared to children of normal weights (12.5%, 36.1%, 2.3% respectively). Another consequence of pediatric obesity is musculoskeletal pain, which is 26% higher in children who are overweight compared to children of a normal weight (Paulis et al., 2014).

Lastly, mental health and psychosocial factors are problematic in children who are overweight or obese. This can include a multitude of consequences such as anxiety, depression,

low self-esteem, disordered eating, being stereotyped, excluded, teased, or bullied (Sahoo et al., 2015; Small & Aplasca, 2016; Williams et al., 2015). These consequences ultimately affect a child's confidence, overall body image, and academic performance (Sahoo et al., 2015; Small & Aplasca, 2016; Williams et al., 2015).

Barriers to Obesity Management

Notable barriers to discussing and managing a child's weight include parent perceptions and support, lack of time, cultural perceptions of weight, language barriers, not showing up for follow-up visits, visit intervals, insurance status, and a lack of patient resources (Sastre et al., 2019). A study by Turer et al. (2014) revealed that Latino parents did not receive important information about their child's overweight status, weight management plan and when to schedule follow up visits due to language and cultural barriers. Sastre et al. (2019) concluded that parent support, and the provider's resources and knowledge of nutrition education are key to successfully managing a child's weight. With this in mind, it is vital to educate parents about obesity prevention to include proper nutrition, healthy eating practices, and physical activity. These factors help to decrease the prevalence of obesity (Dudley et al., 2015; Pandita, 2016). Education and implementation strategies for children should include access to health education classes, daily physical education classes, healthy foods and beverages, and school meal programs that meet the USDA nutritional standards (Nihiser et al., 2013). Parents should also receive information on suggested healthy foods and beverages that their child should consume. Where to purchase these items at an affordable cost. In addition, physical activities to increase movement such as the walk-to-school program (Nihiser et al., 2013).

Role of Primary Care Providers in Obesity Prevention

Pediatric primary care providers are usually among the first to recognize when children and adolescents are obese or overweight (Sastre et al., 2019). Additionally, primary care pediatric providers can guide discussions on preventative actions and treatments (Sastre et al., 2019). Preventative actions and treatments include guidance on including healthy foods, excluding unhealthy foods, limiting sodium, fat and sugar, understanding nutrition labels, increasing physical activity and limiting screen time (Sastre et al., 2019). The dynamics of the provider and patient/family interaction plays a key role in obesity management. Uy and colleagues (2019) explored parent preferences for how providers should approach diet and weight-related topics with children. Semi-structured interviews found that the most important discussion tactics were tone and approach, ability to avoid judgment, ability to regard parental expertise, knowing how to time the discussion with parents, and the ability to equip parents with concrete and individualized recommendations (Uy et al., 2019). This study encouraged future studies to focus on developing communication tools to guide weight management discussions with parents and their children. Sastre et al. (2019) examined the process and how medical providers addressed and managed diverse, low-income children with obesity. These researchers found most providers were comfortable initiating weight discussions and using motivational interviewing (Sastre et al., 2019). Counseling was also successful and highlighted that parents and the home environment (Sastre et al., 2019) mostly affected patient behavior. Primary care providers have a key role in the prevention and management of childhood obesity. This role starts by accounting for the child's developmental age, family schedule, and nutritional and physical activity preferences (Pandita, 2016; Perrin et al., 2007).

Local Problem

Arizona ranks number 12 (from lowest to highest) among all 50 states in children who are overweight or obese (America's Health Rankings, 2019). In Arizona, approximately 13.3% of children in the state between the ages of 2 to 4 years old are obese, and 15.4% are overweight (CDC, 2019). Children who have weight problems are more likely to be overweight or obese as adults (America's Health Rankings, 2019). Primary care pediatric providers are an ideal setting to identify potential weight problems and to implement strategies to prevent, manage and/or treat (Rhee et al., 2018). Additionally, it is crucial for stakeholders and policy makers to support education and the implementation of school events, programs, and environments that encourage healthy eating and physical activity (Chan & Woo, 2010; Nihiser, Merlo, & Lee, 2013).

Obesity Identification and Management

A program that has guided primary care providers in the implementation of childhood weight management guidelines is the *Six to Success* program. The *Six to Success* program focuses on appropriate intake of fruits, vegetables, water, low-fat calcium, sugar drinks, and recommends minutes for physical activity and screen time. Cygan and colleagues (2014) postulated that the *Six to Success* program would aid in the identification, assessment and provision of prevention strategies for overweight and obese children during well-child visits. This was explored using pre- and post-implementation chart audits on pediatric patients with a BMI percentile at or above the 85th percentile (Cygan et al., 2014). After implementing the *Six to Success* program, pediatric providers improved in three identification measures, 11 out of 16 assessment measures, and five prevention strategies (Cygan et al., 2014). These authors found that *Six to Success* is a statistically and clinically significant method to increase the number of

children who are correctly diagnosed as overweight or obese, thus increasing the likelihood of receiving appropriate health counseling.

Childhood obesity is a preventable problem that accounts for over 14 billion in lifetime direct medical costs that equate to $19,000 per child with obesity (America's Health Rankings, 2019). With these factors in mind, primary care pediatric providers play a crucial role in the prevention and management of childhood weight problems. This is due to their ability to collaborate and build relationships with families and patients over an extended period of time, utilize a family-centered perspective, and offer reliable and developmentally appropriate health guidance (Daniels & Hassink, 2015). It is important to examine parents and guardians' knowledge of healthy lifestyle behaviors that may affect their child's weight and overall quality of life. The proposed quality improvement project explored these variables at a small pediatric primary care medical facility in Scottsdale, Arizona.

Stakeholders

Stakeholders for this DNP project included both internal and external members. Internal stakeholders are individuals who are already committed to serving an organization (The Denver Foundation, 2019). This included a primary care pediatrician, a pediatric nurse practitioner student, and medical assistant. External stakeholders are individuals who are impacted by the project (The Denver Foundation, 2019). This included children between the ages of 2 to 5 years old, as well as those who interact with the child such as parents, guardians, siblings, childhood friends, and teachers.

Purpose and Aim of the DNP Project

The purpose of this quality improvement project was to educate parents or guardians who have a child between the ages of 2 to 5 years old about adopting healthy eating habits and physical exercise in the management of childhood obesity. The aim of this project was to increase knowledge among parents or guardians, using evidence-based obesity management recommendations.

For the purposes of this DNP project, the only barrier examined was parent or guardian education about pediatric weight management. However, in future studies, it is crucial to understand the many barriers discussed within this paper, as pediatric obesity is a multifaceted health problem (Moore, 2018).

Project Question

In children between the ages of 2 to 5 years old who receive primary care services at a small, private medical practice in Scottsdale, Arizona (P), does the inclusion of a 10-minute discussion during their well child or post condition well-child follow-up visit about healthy eating habits and physical activity practices for weight control (I), increase the parent's or guardian's knowledge of the importance of healthy eating and physical activity practices (O), by the end of the well child or post condition well-child follow-up visit (T)?

Theoretical Framework

The Health Belief Model (HBM) was the framework that provided guidance for this evidence-based DNP project. The HBM explains and predicts individual health behavior changes by focusing on individual beliefs about various health conditions (Rural Health Information Hub [RHIB], 2019). Tenets of the HBM were used to understand parent or guardian and child

thoughts concerning weight management, their understanding of how to manage weight, and how it affects a child's health. The HBMs six constructs that influence health behaviors include perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action and self-efficacy (RHIB, 2019; Skinner et al., 2015). These six constructs predict if and why people take-action to prevent, detect, and control certain health conditions (Skinner et al., 2015).

Constructs

Perceived Susceptibility

Perceived susceptibility refers to an individual's subjective perception of how vulnerable they are to acquiring a disease or illness (Boston University School of Public Health [BUSPH], 2018). This concept refers to a parent or guardian's assumption of how vulnerable their child is to developing obesity. The perceived susceptibility may be low if their child is meeting normal percentiles on CDC growth charts. However, the perceived susceptibility of becoming obese may be high if the child is well above average on CDC growth charts and there is a history of obesity in their family. The HBM accounts for these susceptibility perceptions to predict whether behaviors changed in favor of weight management.

Perceived Severity

Perceived severity refers to an individual's personal feelings on how consequential it is to develop or not treat a specific disease or illness (BUSPH, 2018). Medical and social consequences are most often considered (BUSPH, 2018). In this project, perceived severity was the amount of concern parents or guardians have about the consequences of childhood obesity. Parental understanding of the health consequences, both physical and psychosocial, associated with obesity promotes the development of a health-conscious individual. An informed medical

understanding encourages parents or guardians to take-action in recognizing that weight management is crucial to the healthy growth and development of their child for life. The goal is to translate this understanding into changed behaviors at home such as reduced screen time, increased physical activity, reducing fast foods, increasing healthy family meal and snack times, implementing appropriate portions of food, and focusing on good health rather than attaining a specific weight.

Perceived Benefits

Perceived benefits include an individual's perception of available actions to cure or reduce the threat of disease or illness and the benefits of these actions (BUSPH, 2018; Skinner et al., 2015). Individuals accept a recommended health action if it is viewed as advantageous. Preventative health actions to manage childhood obesity include eating healthier, increasing physical activity, and making an entire family effort to modify habits that contribute to weight gain (Davis et al., 2007). These actions help guard against physical and psychosocial consequences. The family needs to perceive weight management actions as advantageous to the health of their child and the entire family; with a higher perceived benefit of implementing decisive action versus passively not actively implementing any actions and contributing to their child's overweight or obese issue.

Perceived Barriers

Perceived barriers include the obstacles an individual may face when attempting to perform a recommended health action (BUSPH, 2018). Barriers to positive health actions can include cost, unpleasantness, discomfort, and time inconvenience (BUSPH, 2018). The perceived benefits are measured against the perceived barriers, while accounting for personal experiences.

This process allows one to determine if adopting the health action is worth the risk. Perceived barriers can include the cost of healthy foods, the time it takes to prepare healthy meals, a child's distaste for healthy foods, a lack of knowledge about local physical activities, the Arizona heat that discourages outside physical activity, and a lack of community resources (Nepper & Chai, 2016). However, evidence shows that parents are resourceful and have strategies around these barriers. For example, parents can learn to cut down on the time it takes to prepare food by sticking with meals they know can be made in 30 minutes or less, using a crockpot, and by meal planning and prepping at the beginning of the week (Nepper & Chai, 2016). Additionally, parental understanding of child behavior when positively introducing healthy foods, along with consistency of only providing healthy options, reduce their children's requests for unhealthy options (Nepper & Chai, 2016). Finding physical activities for children, working around the Arizona heat, and finding supportive community resources are barriers that can be overcome with education tailored to the family's location and personal preferences. The goal within this concept is to understand the barrier as a pediatric provider and assist the family with an individualized plan to circumvent perceived obstacles.

Cues to Action

Cues to action include the stimulus needed to accept a health action through the triggering of an individual's decision-making process (BUSPH, 2018). These cues can be internal or external. Internal cues may include the child's increasing BMI, placing them within unhealthy percentiles, the diagnosis or pre-diagnosis of a secondary health condition in the child, or other family members experiencing health issues due to unhealthy weight management practices. External cues may include school district policies, promoting a healthy lifestyle to

prevent childhood obesity, pediatric primary care providers recommending weight management tactics, and social media or news articles enlightening the crisis around childhood obesity. The cues to action can help trigger a family's decision to make healthy lifestyle changes.

Self-Efficacy

Self-efficacy refers to an individual's confidence level in being able to competently perform a desired behavior to achieve a health outcome (BUSPH, 2018). Additionally, self-efficacy applies directly to preventative health behaviors (Skinner et al., 2015). This concept is influenced by guidance from the pediatric primary care provider, goal setting, modeling desired behaviors, and reducing anxiety about making necessary changes (Skinner et al., 2015). Primary care providers can support self-efficacy by encouraging parents to reach out to them with concerns and questions about weight management, modeling health behaviors such as drinking water throughout the day and staying active, and reducing change anxiety by providing simple changes families can incorporate into their lives. Primary care providers can also encourage parents to create a routine of having healthy low-calorie foods available in the home setting.

Major Concepts

The major concepts for this DNP project are as follows:

Body Mass Index (BMI)

BMI is a person's weight in kilograms divided by the square of height in meters. For children, BMI referred to as BMI for-age and is age and sex specific.

Overweight

Overweight is defined as a BMI at or above the 5th percentile and less than 95th percentile.

Obesity

Obesity is defined as a BMI at or above the 95th percentile.

Parent

In the context of this DNP project, a *parent* is the mother or father of a child. The parent looks after, raises, and takes care of the child by guiding them towards adulthood.

Guardian

For the purposes of this DNP project, a *guardian* is any individual who looks after and is legally responsible for the care of a child. This individual does not have to be directly related to the child.

Child

A *child* is an individual who is under the legal age of 18 years old. Children can fall into various developmental stages (newborn, infant, toddler, preschooler, school-aged, adolescent). For the purposes of this DNP project, the toddler and preschool age range (2 to 5 years old) were studied.

Pediatric Primary Care Provider

A *pediatric primary care provider* is a health care practitioner who provides comprehensive care to children and their parents about health promotion, disease prevention, health maintenance, counseling, patient education, diagnosis and treatment of acute and chronic illnesses related to children.

Weight Management

For the purposes of this DNP project, *weight management* encompasses the techniques used to help an individual attain and maintain a certain weight. This includes long-terms lifestyle strategies for healthy eating and physical activities.

Obesity Prevention

In the context of this DNP project, *obesity prevention* is defined as lowering a child's BMI and decreasing the rate at which children enter the upper end of the BMI distribution. Obesity prevention can be accomplished with weight management techniques.

Literature Review

The purpose of this review of evidence is to review the existing literature regarding (a) the inclusion of educational weight management interventions in pediatric primary care practice, (b) the strengths and limitations within current research, and (c) the gaps within current research. Additionally, the evidence-based findings allowed the author to develop a deeper understanding of implications for clinical practice and future research.

Presentation and Critical Appraisal of Prior Evidence

Extensive evidence-based research on the topic of overweight and obesity in children exists in the literature. This research has generated the development of strategies and interventions to solve the epidemic of overweight and obesity within pediatrics as a whole. Despite pediatric providers' best efforts to discuss weight management strategies, the problem of overweight and obesity in children continues to grow.

A systematic literature search was conducted with the PubMed, CINAHL, and EMBASE search engines; to yield credible, evidence-based articles. Search terms included weight

management, obesity, obesity interventions, children, and primary care providers. The following inclusion criteria were selected to identify relevant articles: publications within the last five years, English language, human species, and preschool children (ages 2 to 5 years old). PubMed yielded 196 articles, CINAHL yielded 11 articles, and EMBASE yielded 160 articles. Articles were excluded if they did not address or provide specific interventions for pediatric weight management and if they were not implemented in primary care. Articles were included if they addressed weight management interventions in pediatric primary care practice and included both the child and parent. Of the studies found, 10 were retained (Appendix A). The key themes identified in the review of literature were behavioral interventions that can help improve weight management behaviors: providing educational information, using cognitive behavioral therapy, family focused lifestyle changes, treating obesity as a chronic condition, advising about weight related health issues during well-child visits, and motivational interviewing.

Recommendations for Pediatric Obesity Interventions

The U.S. Preventative Task Force (USPTF) recommends pediatric primary care providers screen all children over the age of 6 years old yearly, for obesity and offer behavioral interventions to improve their weight status (Grossman et al., 2017). The American Academy of Pediatrics (AAP) agrees with these recommendations, and further advises providers to begin educating parents on promoting healthy weight starting at the 2-year-old well-child check (Grossman et al., 2017). These recommendations encourage providers to frequently assess and provide pediatric obesity education to parents before it becomes a health problem (Small et al., 2014).

Interventions for Pediatric Obesity

Behavioral Interventions

Behavioral interventions are the recommended form of weight management education to be used with parents and their children (Grossman et al., 2017). The USPTF explains this can include a variety of the following components: a) sessions targeting both the parent and child, and b) education about healthy eating, exercise, reading nutrition labels, stimulus control, and goal setting. The literature supports educating parents and children about these proposed weight management behavioral interventions, so families may include them into their daily lives.

A study by Small and colleagues (2014) examined a parent-focused primary care program for overweight and obese children. Parents were assigned to either the treatment or control condition with their child. The treatment group received four sessions of educational information on healthy habits, nutrition, physical activity, sedentary activity time, and age-specific information on a child's response to change. Parents in the control received four sessions with age-appropriate health and safety information, such as first aid, sun protection and pool safety. These authors found that both groups had significant decreases in BMI from baseline to three months post-intervention. Waist circumference and weight for height ratio also significantly decreased in the treatment group children (Small et al., 2014). These results suggest weight management discussions with parents in primary care have the potential to make anthropometric changes in overweight and obese children.

Militello and colleagues (2016) assessed correlations between activity and nutrition knowledge, healthy lifestyle beliefs, perceived difficulty, and healthy lifestyle behaviors in parents of overweight and obese preschool children. A cognitive behavioral therapy-based

intervention was delivered during in-person clinic visits and supported by text messaging. The intervention included nutrition and physical activity information, problem solving skills, goal setting, effective communication, positive self-talk and positive thinking (Militello et al., 2016). These researchers found the following significant findings: as healthy lifestyle beliefs improved, healthy lifestyle behaviors improved, and as the perceived difficulty of engaging in such behaviors decreased; parents with stronger healthy lifestyle beliefs and less perceived difficulty in engaging in healthy lifestyle behaviors, had lower response rates to supportive text messages. The findings suggest it is not enough to only provide parents with weight management information, but providers need to target parent beliefs regarding healthy lifestyle behaviors to actually change pediatric weight management behavior.

Wylie-Rosett and colleagues (2018) discuss the importance of using current evidence-based standards of care from the AAP: family focused lifestyle changes, treating obesity as a chronic condition, and advising about weight related health issues. The authors in this study then assessed how pediatric BMIs and metabolic parameters were affected by the standard of care alone, compared to the standard of care in addition to an enhanced program in primary care. The enhanced program intervention added skills building core and post-core support sessions, with food preparation, physical activity, healthy living discussions, check-ins, and a multidisciplinary staff. The authors found both groups had a significant decrease in BMI. The standard of care plus enhanced program group had greater improvements in metabolic parameters (Wylie-Rosett et al., 2018). Parents in the study reported the components added to the standard of care improved their child's eating and physical activity habits. Parents also noted the following constitution of barriers to making changes: time constraints, cost of healthy foods, transportation challenges,

lack of family support. The study findings support that pediatric providers are at the front line to initiate discussion and educate parents and children about weight management in primary care settings.

Primary care is an opportune setting for providers to target family health behaviors and parent feeding techniques. For example, parents often use food as a reward or mechanism to control children. These techniques can cause children to overeat, engage in emotional eating, or become overweight or obese (Jansen et al., 2018; Tucker et al., 2019). Tucker and colleagues (2019) explore these concepts with a parent-based, primary care intervention. The intervention included health behavior conversations during well-child visits and four monthly visits with a registered dietitian to evaluate, educate and implement improved feeding habits and nutritional choices (Tucker et al., 2019). The control in this study included well-child baseline anthropometric assessments and the usual medical care. Results indicate significantly improved obesogenic health behaviors, parent-feeding habits, and screen time for children in the intervention group; but no improvements in BMI were observed. This suggests a primary care intervention may effectively improve parent-feeding behaviors.

Motivational interviewing (MI) is an essential clinical skill linked to better health outcomes. This type of patient-provider communication is patient-centered and focuses on assisting with patient behavioral changes (Carcone et al., 2016; Resnicow et al., 2015). Resnicow and colleagues (2015) provide an example of MI in a primary care-based obesity intervention for parents of children with obesity between the ages of 2 to 8 years old. Topics in this study focused on weight affecting behaviors such as snack foods, sweetened beverages, fruits, vegetables, screen time, and physical activity. Providers focused on positive behaviors parents were already

incorporating and behaviors that could be modified. The study revealed that patients receiving usual care, with standard educational materials for parents, saw a 1.8% BMI difference after two years. Patients who received usual care from primary care practitioners (PCP) who had two days of training in motivational interviewing (MI) and behavior therapy, as well as three scheduled counseling sessions saw a 3.8% BMI difference after two years. Lastly, patients who received usual care from a PCP who had two days of MI and behavior therapy training, three scheduled counseling sessions from their PCP, and six MI-based counseling sessions from a trained registered dietitian saw a 4.9% BMI decrease after two years. Findings from this study indicate children whose parents participated in a primary care-based obesity intervention using motivational interviewing for parents and children significantly reduced their BMI percentiles.

Forsell et al. (2019) discuss the implementation of a four-year treatment program for obese children. The program highlights diet and physical activity changes towards a healthier lifestyle. Children and their families received the intervention in a primary care facility with non-stigmatizing communication, motivational interviewing, and cognitive-behavioral therapy (Forsell et al., 2019). This treatment program significantly decreased the total number of children with obesity and revealed weight management in primary care is of significant value.

Strengths

A strength of the current research on obesity prevention in pediatrics identifies parent-child-provider weight management discussions are valuable to include during well-child exams. The research indicates that these discussions play a critical role in educating families about overweight and obesity before it becomes a problem for the child. Another strength among the studies is that behavioral interventions were always included in some form, with positive impacts

on weight management behaviors. Four studies had significant decreases in BMI when behavioral interventions were used (Forsell et al., 2019; Resnicow et al., 2015; Riggs et al., 2014; Small et al., 2014). Additionally, each reviewed study accurately defined overweight and obesity according to the CDC standards. This conceptual definition of overweight and obesity is a strength because it clarifies how the researchers understand, define, and measure the ideas in their study (Polit & Beck, 2018). Four of the studies utilized for this review were randomized control trials (RCTs) (Militello et al., 2016; Resnicow et al., 2015; Small et al., 2014; Wylie-Rosett et al., 2018). This is considered a strength because RCTs are considered the gold standard of research, and provide cause and effect type relationships (Polit & Beck, 2018). This is important to the research question in order to determine if conversations between providers, parents, and children encourage weight management habits. RCTs also have high internal validity, due to their group randomization that eliminates the need for conflicting explanations of group differences (Polit & Beck, 2018). Another strength was the overall low rate of attrition in six of the reviewed studies (Christiana et al., 2017; Forsell et al., 2019; Resnicow et al., 2015; Small et al., 2014; Tucker et al., 2019; Wylie-Rosett et al., 2018). A low rate of attrition indicates the rate of retention, or the percentage of participants who stay throughout the study, was high (Polit & Beck, 2018). This is beneficial because the studies reduce their risk of losing participants who have unique characteristics that are valuable to the studies (Polit & Beck, 2018).

Limitations

A major limitation throughout the studies is the lack of consistency with behavioral interventions used. This may be due to the wide variety of possible behavioral interventions available and how each one is implemented differently. A weakness of the reviewed studies is

that while four of the studies were RCTs, the other six were not. This impacts the ability to determine if a 5 to 10-minute weight management discussion during well-child visits has an impact on the parent's and child's understanding of healthy eating and physical activity, versus a shorter or no discussion. Power was an issue for six of the studies (Forsell et al., 2019; Small et al., 2014; Tucker et al., 2019; Turer et al., 2014; Uy et al., 2019; Wylie-Rosett et al., 2018). Being underpowered reduces a study's ability to detect true relationships, and validity of statistical conclusion (Polit & Beck, 2018). Small sample size was a significant limitation for eight of the reviewed studies (Christiana et al., 2017; Forsell et al., 2019; Militello et al., 2016; Small et al., 2014; Tucker et al., 2019; Turer et al., 2014; Uy et al., 2019; Wylie-Rosett et al., 2018). A small sample size can be a weakness within research because it increases the risk for bias and sampling errors (Polit & Beck, 2018). These small sample sizes limited the diversity of participants and impacts generalizability (Polit & Beck, 2018). Generalizability refers to how findings within research can be applied to individuals other than those who took part in the actual study (Polit & Beck, 2018). Various factors affect generalizability in health-related research: sample size, ethnic diversity, age, gender, clinic location, and socioeconomic status. Lastly, self-reporting was used in most of the reviewed studies. This research technique is a common method of data collection; however, parents may be more inclined to over inflate or exaggerate their actions to support their child's weight (Christiana et al., 2017). This can occur because of social desirability, where participants answer questions in a way that seems favorable to others (Althubaiti, 2016). Similarly, participants need to be able to recall past events in order to provide accurate information for researchers to interpret (Althubaiti, 2016). Self-reporting requires a certain level of motivation and recall that may eliminate populations who are not as motivated to

contribute to the study, but who have increased difficulties with weight management (Riggs et al., 2014).

Gaps in Literature

Various gaps in the literature on pediatric obesity exist. There are several gaps in the literature worth noting: the specific amount of weight loss associated with clinically essential health benefits; the most effective behavioral interventions for childhood obesity; long-term follow-up on intervention effectiveness; behavioral interventions in more diverse populations and in children younger than five years old; and, use of evidence-based guidelines for the management of obesity (Grossman et al., 2017). As pediatric obesity continues to increase in the population, it is crucial for providers to follow weight management discussion guidelines and utilize evidence-based interventions in the primary care setting. This quality improvement project contributes to nursing understanding about the impact of evidence-based obesity education on parent and guardian knowledge of healthy eating and other healthy lifestyle behaviors.

This DNP project helps confirm that a primary care educational intervention increases parent or guardian's awareness of obesity and encourages them to use weight management strategies at home. While pediatric obesity is an issue that needs to be addressed with a collaborative team, advance practice nurses (APNs) should initiate conversations about healthy eating, physical activity, weight management behaviors in children during well-child visits (Rhee et al., 2018).

METHODS

Project Design

The design of this DNP project was a one group pre- and post-test educational intervention that examined the effects of an evidence-based obesity education on parent or guardian's knowledge regarding the necessity of healthy eating and physical activities in obesity prevention.

Setting and Sample

The setting of this DNP project was a small, private medical practice in Scottsdale, Arizona. The intervention occurred during well-child or post condition well-child follow-up visits during the University of Arizona spring 2020 semester. Up to 20 participants were included through convenience sampling. Convenience sampling entails selecting participants who are readily available to the project leader (Polit & Beck, 2018).

The project sample included parents and guardians of children between the ages of 2 to 5 years old being seen for a well-child or post condition well-child follow-up exam. This age range was selected because: a) the literature supports studying pediatric obesity in children between the ages of 2 to 5 years old (Militello et al., 2016; Resnicow et al., 2015; Tucker et al., 2019; Uy et al., 2019); b) the CDC uses the range 2 to 5 years old to report pediatric obesity (CDC, 2018a); and c) children between 2 to 5 years old are not likely yet to be influenced by peers (Ward et al., 2016). The two specific types of well-child visits were selected because pediatric primary care providers are encouraged to: a) initiate healthy weight education for parents and guardians at well child exams (Grossman et al., 2017); and b) frequently assess and offer pediatric healthy

weight education to parents and guardians whenever possible before it becomes a health problem (Small et al., 2014).

Parents or guardians of all children within these ages presenting for a primary care well-child or post condition well-child follow-up visit at the small, private medical practice were introduced to an opportunity to participate in a quality improvement project, examining parent knowledge of obesity and weight management. Parents or guardians were introduced to the project with a script (Appendix K) that the front desk staff recited to the parents or guardians. The front desk staff placed written information about the project in the check-in packet (Appendix F). Only one parent or guardian needed to participate. However, if both parents or guardians wanted to participate that was acceptable and was noted on the pre-test. The parents or guardians were only allowed to complete one test at pre- and post-educational intervention.

Inclusion Criteria

To be included in the project the child was: a) between the ages of 2 to 5 years old, b) accompanied by a parent or guardian, c) being seen for well-child or post condition well-child follow-up visit, and d) considered to have a normal, overweight, or obese BMI.

Exclusion Criteria

Individuals were excluded from the project if: a) they were under the age of 2 years old; b) they were 6 years old and older; c) a parent or guardian was not present during the well-child visit; d) the child was being seen for an exam other than a well-child or post condition well-child follow-up visit; and e) the child had a BMI under the normal range for their height and weight.

Intervention

A 10-minute evidence-based teaching intervention was delivered to parents or guardians during their child's well visit or post condition well-child follow-up visit. The intervention was delivered using a printed handout that explained obesity and healthy eating choices and the MyPlate.gov website to create a tailored plan for how much the child should eat within each food group based on their daily calorie allowance for age, sex, and physical activity level (Appendix H & I). Blue or black ink pens were provided to write with. The MyPlate.gov website was brought up on a password secured laptop provided by the project leader (PL). The parents were allowed to keep the handout and open the MyPlate.gov website at home on their own computer. The educational intervention was structured to include information on: a) the definition of BMI and associated weight categories; b) which weight category the child falls into; c) the importance of overweight and obesity prevention; d) recommendations for daily nutritional intake of fruit, vegetables, grains, protein, dairy, and water; e) recommendations for sodium, sugar, and fat; f) how to read a nutrition label; and, g) recommendations for screen time and physical activity.

Learned healthy living practices included: a) understanding BMI, weight categories, and the child's current weight category; b) understanding why overweight and obesity prevention is important; c) how to determine a child's daily intake of food groups and water; d) understanding nutritional recommendations for sodium, sugar, and fat; e) knowing how to read a nutritional label; and, f) knowing how much daily screen time and physical activity a child should have.

Measures

A demographic questionnaire was obtained to better understand the characteristics of the participants and included participant variables such as the child's age, gender, anthropometrics,

ethnicity; parent's or guardian's education level and their occupation (Appendix E). Anthropometric data was obtained and filled in by the PL during the child's check-in process. The demographic questionnaire was printed on white computer paper and participants were provided with blue or black ink pens to write with.

Participants completed a 15-question pre-test focused on assessing the parent's or guardian's knowledge about overweight and obesity, weight management, and necessary lifestyle changes to prevent childhood obesity (Appendix B). After completion of the educational intervention, participants completed a 15-question post-test to determine the impact of the educational intervention on parents' or guardians' knowledge about overweight and obesity, weight management, and necessary lifestyle changes (Appendix C). The pre- and post-tests were identical except for question 15 on each. Question 15 measured the parents' or guardians' perceived level of confidence before and after the educational intervention, which might reflect self-efficacy. The pre- and post-tests were printed on white computer paper and participants were provided with blue or black ink pens to write with.

Recruitment

Participants were recruited with the approval of the pediatrician at the small, private medical practice, during the University of Arizona spring 2020 semester (Appendix G). The PL was in contact with the front office staff about when potential well-child or post condition well-child follow-up exams were scheduled so the PL could be present in the office. The PL was in contact by calling the front office at least once a week for the well-child or post condition well-child follow-up exam schedule. Flyers were placed in the office lobby with brief information about the project and the PLs contact information for potential participants to inquire for more

information (Appendix J). The front desk staff provided each participant who met inclusion criteria with a scripted greeting to introduce the project and they placed written information about the project in the check-in packet (Appendices F & K). Participants who were interested in participating in the project informed the front office check-in staff who informed the PL of their interest. The PL met with the parent or guardian and provided an overview of the project. Participants who expressed desire to participate and whose child met inclusion criteria were informed participation is voluntary, and anonymity and confidentiality would be maintained.

Participants' willingness to participate in the project was implied by their completion of the demographic and pre-intervention test. Participants were informed they could end participation at any time; however, any information they provided prior to their withdrawal was used in the project.

Data Collection

Demographic and pre- and post- test intervention measures were collected. These tests were developed by the PL. The front office desk staff provided participants with the pre-test and demographic questionnaire. The PL provided participants with the post-test.

The demographics questionnaire consisted of seven questions used to gain an understanding of the participants' characteristics. The pre- and post-education tests each consisted of 14 identical questions, plus 1 additional question on each to measure perceived level of confidence, possibly reflecting self-efficacy. These two tests were used to assess parents or guardian's knowledge of obesity and obesity management, as well as their ability to incorporate healthy living practices for weight management. Participants were asked to complete the pre-intervention test while in the waiting room before the well child or post condition well-child

follow-up exam. This test was collected by the PL upon completion by the participant. Participants were asked to complete the demographic questionnaire in the waiting room before the well-child or post condition well-child follow-up exam. This questionnaire was collected immediately by the PL upon obtaining anthropometric information about the child during their well exam check-in. Participants received weight management education in the exam room for 10 minutes after the physical exam component of the well-child or post condition well-child follow-up exam using the handout they could keep and the MyPlate.gov website. Participants were asked to complete the post-intervention test in the exam room after their educational intervention and conclusion of their well-child or post condition well-child follow-up exam. The PL, upon participant completion, collected the post-intervention test immediately. A copy of the University of Arizona determination form was provided to the small, private medical practice before recruiting participants. Additionally, aggregate results were provided to the providers at the small, private medical practice during a coordinated virtual staff meeting.

Data Analysis

Descriptive statistics were used to analyze the data and describe the characteristics of the participants. A paired *t* test was utilized because the data was parametric. This paired t-test allowed the PL to evaluate the two means obtained from the pre- and post-intervention test data.

The data was initially reviewed and then analyzed with percentages, means, standard deviations, and counting the number of participants who chose each category within the demographic data. The PL and DNP project committee reviewed the data obtained prior to the project's final submission.

Sources of Materials/Data Management

Data for this project was derived from participant's self-report data measures. The project material obtained from participants included responses to the demographic assessment and pre- and post-assessments. Data was used explicitly for the proposed project and was destroyed following data analysis. The data collected from the assessments was extracted from the tests and input into Excel, on a password-protected computer. All information related to this DNP project was secured on the PLs password protected computer. The password-protected computer was secured in the PLs home.

Ethical Considerations

The University of Arizona College of Nursing Departmental Review Committee, The University of Arizona Institutional Review Board, and the small, private medical practice site approved this project prior to the implementation and data collection (Appendices G & L). A disclosure statement was provided for participants to read before participating in the project (Appendix F). To ensure anonymity, participants were not required to put their names on the tests. Instead, participants created a unique identifier with the following information: last four digits of their social security number, last two letters of their mother's maiden name, and year they were born (YYYY). This identifier allowed each individual's pre-test answers to match the post-test answers; and reduced the risk of a participant forgetting their unique identifier. Parents identified their role as parent and guardians identified their role as guardian.

Respect for Persons

Respect for persons was maintained by ensuring each participant in the project had the right to make his or her own weight management decisions for their family, child, or self.

Beneficence

Beneficence was monitored by ensuring the risk of participating in the project was minimal, compared to the benefits the parents or guardians would receive from learning about weight management for their child. The intent was to reduce harm that can occur to a child when they become overweight or obese.

Justice

Justice allowed every family who met the project participant requirements to participate in the project. Additionally, participation in this project was justified because weight management is crucial to the healthy development of children.

Institutional Review Board

Prior to implementation and data collection, approval of this DNP project was obtained from the University of Arizona Institutional Review Board (Appendix L). In addition, a letter of approval to conduct the project at the small, private medical practice was obtained from the primary pediatrician (Appendix G).

RESULTS

Data Collection Process

The data collection process went mostly as planned. The PL was in contact with the primary pediatrician's medical assistant on a daily basis both in person and over the phone to obtain the daily patient schedule. Due to the COVID-19 pandemic and before the office closed for non-essential appointments, a few modifications were made to the recruitment process: a) upon patient arrival, participants were immediately escorted into a private exam room by a staff member who provided potential participants with information about the project, and the pre-test

and post demographic questionnaires; and, b) participants filled out the pre-test and demographic questionnaires in the exam room instead of the waiting room.

Description of Sample

The sample included parents and guardians, with a child between the ages of 2 to 5 years old, being seen for a well-child or post condition well-child follow-up visit. All children were patients at the small, primary care medical practice in Scottsdale, Arizona. Ten participants agreed to participate in the project. One parent withdrew due to their child being "too wild to continue." Therefore, nine participants completed the entire project.

Parents and guardians (participants) were asked about demographic information for themselves and their child. The demographic data is presented in Table 1. More than half of the participants were mothers or included a mom. Interestingly, over half of the participants were college educated or higher and there was a wide range of occupations. More than half of the children were male. The participants described their children as mostly Caucasian; several participants identified their children as multi-ethnic.

To optimize enrollment, the project included parents of children between 2 to 5 years of age. As a result, parents of five 2-year-olds, one 4-year-old, and three 5-year-old children were recruited. Biometrics were obtained for each child whose parent or guardian participated in the project. Height, weight and BMI percentiles were in the normal range for six of the nine children; and the remaining three children had higher than considered to be normal BMIs (Table 2).

TABLE 1. *Demographic data (total N=9).*

Parent/Guardian Participating	**N**
Mom	4
Dad	2
Both	2
Guardian	0
Mom + Grandma	1
Child's Gender	
Male	6
Female	3
Other	0
Prefer not to say	0
Child's Ethnicity	
More than 1 ethnicity	3
Asian	0
Black/African	1
Caucasian	7
Hispanic/Latino	2
Native American	1
Pacific Islander	0
Prefer not to answer	0
Other	0
Parent/Guardian Highest Level of Education	
No formal education	0
Elementary school	0
High school diploma	1
College degree	5
Vocational training	0
Master's degree	0
Professional degree	0
Doctorate degree	2
Other	1
Parent/Guardian Occupation	
Stay at home parent	2
Doctor	1
Graphic designer	1
Licensed massage therapist	1
No answer	1
Auto claims adjuster	1
Attorney	1
Nurse	1

TABLE 2. *Child biometrics.*

Child's Age (Years)	Weight (kg) Mean +/- SD	Height (cm) Mean +/- SD	BMI (kg/m^2) Percentile Mean +/- SD
2 (N = 5)	27.2 +/- 2.49	34.2 +/- 1.4	80.7 +/- 8.8
4 (N = 1)	37.4 +/- 0	39 +/- 0	90 +/- 0
5 (N = 3)	50.2 +/- 6.09	45.8 +/- 2.58	38.8 +/- 28.3

Each participant received a pre- and post-test with 14 identical questions. All nine participants included in the data analysis answered all 14 questions. The number of correct responses on six questions (questions 2, 3, 6, 8, 10, 14) increased significantly from the pre- to post-test ($P< 0.05$) (Table 3). Questions 2 and 3 were about what BMI percentile is considered to be overweight and obese for a 2 to 5-year old child. Questions 6 and 8 were about sugar and fat nutritional recommendations for 2 to 5-year old children. Question 10 asked participants to state which food group should be half of a child's plate during mealtime. Lastly, question 14 asked how much physical activity a 2 to 5-year old should aim for each day.

TABLE 3. *Description of individual question responses from pre- and post-survey.*

Pre Q #	MEAN Correct	% Correct	Post Q #	MEAN Correct	% Correct	Increase/Decrease from Pre to Post	P-value
1	9	100%	**1**	9	100%	+0	8.54
2	4	44%	**2**	8	88%	+4	0.004*
3	5	55%	**3**	8	88%	+3	0.001*
4	8	88%	**4**	9	100%	+1	2.21
5	9	100%	**5**	9	100%	+0	8.54
6	6	66%	**6**	9	100%	+3	0.0002*
7	7	77%	**7**	9	100%	+2	6.32
8	7	77%	**8**	8	88%	+1	0.0001*
9	3	33%	**9**	7	77%	+4	0.02
10	6	66%	**10**	8	88%	+2	0.0003*
11	8	88%	**11**	9	100%	+1	2.21
12	9	100%	**12**	9	100%	+0	8.54
13	7	77%	**13**	9	100%	+2	6.32
14	6	66%	**14**	8	88%	+2	0.0003*

**Post value significantly different than Pre-value $p < 0.05$*

Each pre and post-test also contained a 15th question that measured the level of perceived confidence in the participants ability to implement weight management behaviors in their child's daily routine. For this question, the data was analyzed for eight participants because one participant did not complete the question. Interestingly, all eight participants had a relatively high level of confidence before the intervention (Tables 4 & 5). Importantly, all eight participants responded their level of confidence in implementing weight management behaviors after the intervention was higher than before the intervention (Tables 4 & 5).

TABLE 4. *Summary of survey responses to question 15 (level of confidence) (N=8).*

Pre Q15 Choices	# of Answers	Post Q15 Choices	# of Answers
Low	0	**Lower**	0
Moderate	4	**The same**	0
High	4	**Higher**	8

TABLE 5. *Individual participant responses to question 15 (level of confidence).*

Participant	Pre Answer	Post Answer
8969LE1979	High	Higher
1983AN1977	High	Higher
5435ON1986	High	Higher
1911AM1989	High	Higher
7865RA1984	Moderate	Higher
3745ER1992	Moderate	Higher
2340SM1976	Moderate	Higher
1234RH1974	Moderate	Higher

Each participants pre and post-test was also analyzed to determine if their post-test score increased from the pre-test score. While the overall post scores were not significantly different, eight of nine participants increased their scores and of these, the average increase was 29% (Tables 6 & 7).

TABLE 6. *Description of individual participant survey scores.*

Participant	Pre # Correct	Post # Correct	Increase/Decrease from Pre to Post	% Increase/Decrease from Pre to Post
8969LE1979	8	14	+6	60%
1983AN1977	10	13	+3	30%
5435ON1986	10	14	+4	40%
1911AM1989	10	14	+4	40%
5627TP1985	11	10	-1	-10%
7865RA1984	12	13	+1	10%
3745ER1992	10	14	+4	40%
2340SM1976	11	14	+3	30%
1234RH1974	12	14	+2	20%

TABLE 7. *Summary of participant survey scores.*

Pre # correct Mean +/- SD	Post # Correct Mean +/- SD	P value	Mean Increase of Scores in Participants Who Increased their Score (%) (N=8)
10.4 +/- 1.17	13.3 +/- 1.25	1.14	29%

DISCUSSION

Pediatric obesity is an ongoing problem in the United States (CDC, 2018a). One way to combat this problem is by providing education to parents and guardians about weight management strategies for their children. This quality improvement project is helpful because it determines if a specially designed educational intervention affects parent or guardian knowledge of pediatric obesity. Additionally, this project focuses on parents and guardians whose child is being seen for a longer visit, such as well-child and post condition well-child follow-up visits. These longer visits allow the primary care provider ample time to discuss key problems to be aware of during childhood such as pediatric obesity. This is important because pediatric primary care providers are key players in recognizing obese and overweight children, and providing guided discussions on weight management strategies (Sastre et al., 2019). Therefore, the purpose of this DNP project was to educate parents and guardians who have a child between the ages of 2

to 5 years old about adopting healthy eating habits and physical exercise in the management of childhood obesity. The aim was to increase parent and guardian knowledge of pediatric obesity so it can be prevented before it becomes a lifelong problem.

Modifications to Recruitment Process

Initially, this DNP project attempted to recruit parents and guardians with a child between the ages of 2 to 3 years old who were being seen for a well-child visit. This strategy proved to be problematic when no participants were meeting the project's inclusion criteria. It was determined the 2 to 3-year-old age range was not large enough, especially for a small, private medical practice. Therefore, the project expanded its inclusion criteria to 2 to 5 years old. This larger age range was justified by the CDC who uses this age range to report pediatric obesity, the unlikelihood that children in this age range are influenced by their peers, and the literature, which supports studying pediatric obesity using this age range (CDC, 2018a; Militello et al., 2016; Resnicow et al., 2015; Tucker et al., 2019; Uy et al., 2019; Ward et al., 2016). The project was also expanded to include post condition well-child follow-up exams because the children being seen for these exams are well, and parents and guardians are usually open to addressing other aspects of their child's health such as weight management. Additionally, it is crucial to assess a child's weight and offer education about weight management whenever possible (Small et al., 2014). The recruitment process was further modified by engaging the front office staff to recruit participants with a scripted introduction before providing them with the initial materials in their check-in packet. Due to the COVID-19 pandemic, participants received their scripted introduction and initial materials in the exam room, not the waiting room. These refined methods to the recruitment process proved to be successful because data from 10 participants was

obtained in two weeks. Unfortunately, the recruitment process ended at 10 participants due to the COVID-19 pandemic.

Review of Results

After reviewing the demographic data various key points stood out. Interestingly, while only nine of the 10 participants completed the entire project, every participant commented in some way that they enjoy receiving nutritional and weight guidance for their child. It is also interesting that seven of the nine participants had the mom involved in some form. This involvement may mean moms are more likely to be the target audience when taking their child to any type of well-child visit.

It is also important to understand that the small, private medical practice is in a predominately Caucasian, socioeconomically advantaged community. Therefore, it makes sense that seven of the nine participants described themselves as Caucasian, and eight of the nine participants were college educated or higher. In line with this information, most of the children had normal BMIs. These findings support the background knowledge that higher education levels and socioeconomic advantage are associated with lower BMIs (Juonala et al., 2019). It is also supported by the CDC (2018a) which states non-Hispanic white children have lower rates of obesity.

Another crucial aspect to discuss is the change in age range from 2 to 3 years old, to 2 to 5 years old. This is important because when the age range was set to 2 to 3 years old it was difficult to obtain any participants. However, when the age range increased to 2 to 5 years old, 10 participants were rapidly obtained in two weeks. Therefore, this change was beneficial to the project's recruitment strategy. It is also encouraging to note most of the children were in the

normal range for height, weight and BMI, which may mean parents and guardians are already practicing healthy weight management guidelines. This is further supported by all participants indicating they had a relatively high level of confidence in implementing weight management behaviors to start, and they enjoy learning about weight management for their child. Gerards and Kremers (2015) and Natale and colleagues (2014) support these findings through their findings that parents who are well informed about weight management strategies are more prepared to foster positive weight management behaviors in their children for a lower weight.

When looking at each individual question there were a few crucial points. First, correct answers about overweight and obese BMI increased significantly. This increase may show providing parents with the definition of BMI, obese and overweight helps to increase their understanding. Additionally, the increase in correct answers for sugar and fat intake, may mean providing daily nutritional intake recommendations, specific to a child's age, helps to boost knowledge on these topics. Because correct answers increased for the food group that should be half of a child's plate at each meal, it can also be assumed that providing a meal plan specific to the child's age and activity level on the MyPlate website was beneficial. Lastly, the number of correct answers for how much physical activity children need increased. Interestingly, this was because all the wrong answers were due to participants thinking their child needed more physical activity than the daily recommendation. Because participants indicated their children should have reduced screen time and increased physical activity it can be assumed that, in line with previous research, these actions promote healthier BMIs in children (Xu & Xue, 2016).

The 15th question was remarkable because all participants started out with a relatively high level of confidence in their ability to implement weight management behaviors. This may

mean parents have a good grasp on weight management guidelines for their child. All participants stated their level of confidence after the educational intervention was higher. This is powerful because it means participants learned something from the weight management intervention.

Lastly, eight of the nine participants increased their overall scores, which means the intervention was clinically significant in enhancing parent and guardian knowledge of pediatric obesity. A correlation between parent and guardian understanding of pediatric obesity and weight management in children has been found to be a very crucial component in the approach to obesity prevention in children (Anderson and Keim, 2016; Mitello et al., 2016). Based on these findings, there was an increase in parent knowledge, which may contribute to the potential reduction of the 13.7 million children affected annually by childhood obesity in the United States (CDC, 2018a).

Summary

The results indicate parents and guardians are able to increase their understanding of pediatric obesity with a 10-minute educational intervention during well child or post condition well-child follow-up visits. This understanding is crucial to helping prevent obesity in children (Militello et al., 2016; Styne et al., 2017). These results were not surprising because according to Militello and colleagues (2016), study on healthy lifestyle education for parents and guardians, educational interventions help to increase understanding and awareness of pediatric obesity and the healthy lifestyle behaviors that can help to prevent pediatric obesity.

Additionally, current clinical practice guidelines recommend providing education for parents and guardians in pediatric primary care about healthy eating and physical activity

behaviors to prevent childhood obesity. This project demonstrates the feasibility of conducting an obesity education intervention during well child type visits. These findings also suggest providing parents and guardians with adequate education about childhood obesity and weight management practices may help families understand they can play an active role in managing their child's healthy weight.

Integration of the Health Belief Model

The Health Belief Model (HBM) was the theoretical framework that guided this project. This theoretical framework is supported by the project's overall design and findings. The measured constructs of this framework were perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action and self-efficacy. In this project, (1) parent and guardian knowledge of their child's current BMI and weight status in relation to an overweight or obese status (perceived susceptibility), (2) parent and guardian understanding of the health consequences overweight and obesity can have on their child (perceived severity), (3) parent and guardian understanding of why healthy eating and lifestyle behaviors are advantageous to their child's overall health (perceived benefits), (4) parents and guardians learning nutritional recommendations specific to their child (perceived barrier), (5) parents and guardians feeling inspired by internal and external cues to utilize weight management tactics (cues to action), and (6) parents and guardians feeling confident in their ability to make changes in the home environment to support a healthy weight in their child (self-efficacy) were used to assess, educate, and encourage change in how parents and guardians view and manage their child's weight during an educational intervention on pediatric obesity.

The findings from this project may reflect many of these constructs. For example, parents of the overweight children all commented that their child was just big boned or tall. This might reflect the perceived susceptibility and severity of their child's higher than normal BMI percentile. Parents also stated they appreciate receiving nutritional and weight guidance for their child, which may indicate they understand the perceived benefits and barriers of receiving weight management education. Future studies should attempt to understand the connection between these constructs and pediatric weight management education.

Additionally, question 15 on the pre- and post-test specifically measured parent and guardian perceived level of confidence, in implementing weight management strategies learned, at home; and this might reflect self-efficacy. Based on the findings, the educational intervention helped to increase parent and guardian confidence level. This increase in self-confidence might reflect an increase in level of self-efficacy, possibly indicating the two go hand in hand.

Strengths and Limitations

There were several strengths within this project that include: (a) improved parent and guardian knowledge of pediatric obesity, (b) improved parent and guardian knowledge of healthy eating and lifestyle habits after an educational intervention, and (c) improved level of confidence in implementing weight management strategies. Additionally, the pre- and post-test format increased the probability that the newly acquired knowledge was a result of the educational materials and interventions provided. Another strength within this project was the rate of attrition, which was seen by nine of the 10 initial participants completing the entire project.

This project has a few limitations. Polit and Beck (2018) explain limitations have the ability to impact the integrity of the results. Due to the nature of a quality improvement

project, convenience sampling and small sample size precludes the generalizability of the results. An increase in the number of participants and a more diverse population would have strengthened this project. The pre- and post-tests allowed participants to self-report, which impacts the reliability of data found. Additionally, some of the participants required another individual to help them verbally complete the questionnaire as they struggled to maintain control of their children while simultaneously participating in the project. This assistance may have impacted reliability of the results, due to parents not having full focus on the questionnaires. Internal validity was also affected due to the one group design with no comparison group. This was problematic because the improvement of scores from the pre-test to the post-test were determined from this one design project. Testing effect is another limitation that may have threatened internal validity. This means the pre-test may have sensitized the parent and guardian participants and tainted their performance on the post-test. This may be due to the amount of time participants spent on the pre-test, and not based on the educational intervention itself. Lastly, external validity was impacted by generalizability, due to the small sample size from one geographical city setting in Arizona. Additionally, the sample was a homogeneous sample of parents and guardians with children between the ages of 2 to 5 years old; and therefore, is not generalizable to parents and guardians with children of other ages. Lastly, the project was limited by the fact that the PL did not obtain expert approval on the DNP project education, outside of the DNP project committee.

Implications for Advance Practice Nurses

Pediatric nurse practitioners (PNPs) are advanced practice registered nurses (APRNs) who are at the forefront of helping families address pediatric obesity. PNPs work in primary care

where they create close relationships with children and their parents or guardians to address, educate, treat, and monitor children who are overweight or obese. Primary care PNPs are often the first individuals to recognize when children are on a path to becoming overweight or obese. Therefore, screening for pediatric obesity and educating families about pediatric obesity is crucial. PNPs might use the findings from this project to educate all families with children about obesity and weight management during well child and follow up visits. PNPs might also use the findings from this project to provide timely weight management education with the educational handout, to families with children between the ages of 2 to 5 years old. The goal is to prevent obesity in children before it becomes a lifelong problem, as this is the most effective strategy to conquer the obesity epidemic (Srivastava et al., 2016).

The findings from this project support the feasibility of including a 10-minute weight management educational intervention during well-child and post condition well-child follow-up exams in primary care to increase understanding and awareness in parents and guardians. APRNs are responsible for providing evidence-based practice, which includes ongoing assessment of obesity risks and healthy nutrition and encouraging other pediatric providers to the same, due to their higher level of education, training and scope of practice (Malloch, 2017). Additionally, APRNs are entrusted with continuing to advance the nursing profession, researching and implementing evidence-based practices, and helping to disseminate evidence-based practices into system infrastructure (Malloch, 2017). By continuing to research and implement pediatric weight management clinical practice guidelines, there may be a decrease in the overall national number of pediatric obesity cases in the United States.

Implications for Future Studies

This project addressed parent and guardian knowledge of pediatric obesity and weight management for children in Scottsdale, Arizona with a small sample of participants. In order to determine the short- and long-term effects of the project, a longer and larger full-scale randomized-controlled project is needed. A longitudinal project is essential to determine if consistently educating parents or guardians who have a child between the ages of 2 to 5 years old about pediatric obesity during well-child and post condition well-child follow-up exams, reduces rates of overweight and obesity as these children grow older.

The challenge pediatric providers face in primary care is a lack of time with the patient and their family to provide weight management education. Sastre and colleagues (2019) found this to be true in their study about educating parents in primary care about obesity and weight management. Therefore, an educational handout explains BMI, nutrition, and activities that support a healthy weight can help providers educate about weight management for children in a timely manner. This project provided education for 10-minutes. In future studies it would be interesting to determine how long PNPs need to spend on weight management education for pre- and post-test scores to improve.

Another point to be mindful of is the project population was limited. This project only included parents with children between the ages of 2 to 5 years old. However, PNPs work with children between the ages of birth to 21 years old; and the AAP recommends starting obesity education at 2 years old when BMI is first calculated. It would be interesting to determine how parents and guardians of other aged children react and perform on pre- and post-tests with an age

specific educational intervention and associated handout. Additionally, future studies a more diverse variety of ethnicities and socioeconomic populations.

The findings were presented to the small, private medical practice during a brief, virtual meeting and can be disseminated into primary care pediatric practice. The goal is to have the health care providers at the small, private medical practice implement more obesity education into their well-child visits. Additionally, the goal is the findings from this project encourage future pediatric APRNs to study and implement further obesity education into primary care practice.

Conclusion

In summary, this DNP project assessed parent and guardian knowledge of pediatric obesity and weight management using a pre-test and post-test survey design. The pre-test was followed by the educational intervention at a small, private medical practice, which was followed by the post-test assessment of knowledge gained. Through this project, it was concluded that a brief educational intervention can impact parent and guardian knowledge on pediatric obesity and the necessary actions to help children between the ages of 2 to 5 years old maintain a healthy weight. Despite these findings, further research is needed to determine if parents and guardians actually applied their acquired knowledge to daily life. Additionally, further research is needed to determine if 10-minutes of weight management education, during yearly well-child visits and post condition well-child follow-up exams, helps to reduce rates of overweight and obesity as the children age. If these 10-minutes of obesity education are integrated into primary care well child and post condition well-child follow-up exams, there could be a reduction in the 13.7 million children and adolescents who are obese in the United States (CDC, 2018a).

APPENDIX A:

EVIDENCE APPRAISAL TABLE

Reference	Type of Study	Sample & Setting	Methods for Data Collection & Data Analysis	Findings	Credibility & Grade of Evidence, Design, and Theoretical Framework
Christiana et al. (2017)	Prospective cohort study	**Sample:** Parents with children being seen for a well-child visit. Intervention n=38; control n=33 **Setting:** Sole pediatric medical office in Appalachian Mountains of Western North Carolina.	**Data Collection:** Surveys – baseline, 1 month, 3 months: • Demographic variables in baseline. • PA + outdoor PA assessed using Youth Risk Behavior Surveillance System. • Godin Leisure-Time Exercise Questionnaire. • Sedentary behavior. • Time spent outside. • Use of intervention materials. **Data Analysis:** IBM SPSS Statistics version 24	**Findings:** Categories and subcategories emerged from the data: • PA and outdoor PA means decreased from baseline to 3-month follow-up in both groups. • Sedentary activity decreased on weekdays; and stayed the same for intervention group on weekends but increased for control on weekends. • 70% of parents used at least 1 intervention material. • 44% of parents said prescribed outdoor activity encouraged their child to participate in it. **Barriers** PA levels can change depending on weather	Credibility: Impacted by limited information about data analysis. Transferability: Transferable to other environments. **Grade of the Evidence:** Type of Evidence-Prospective cohort; Moderate **Final Grade of Recommendation**: B
Forsell et al. (2019)	Longitudinal cohort study	**Sample:** 64 pre-pubertal children with obesity.	**Data Collection:** • Height • Weight • BMI	**Findings:** • NDPT and NDT group= severe obesity from 4 to 3,	**Trustworthiness:** Transferability was high due to a high inclusion rate.

Reference	Type of Study	Sample & Setting	Methods for Data Collection & Data Analysis	Findings	Credibility & Grade of Evidence, Design, and Theoretical Framework
		Setting: 4 primary care study centers	12-question questionnaire at 4-year follow-up. **Data Analysis:** • International Obesity Task Force to define weight status • Fisher's Exact test (dichotomous) • Mann-Whitney U-test (continuous variables) • ANCOVA to test baseline changes • SAS 9.3 program was used for statistical analysis.	obesity from 50 to 37, overweight from 2 to 14 and NW from 0 to 2 p = 0.015 • NDPT group (n = 27) the number of children classified as severely obese were 1 at baseline and 0 at follow-up, those classified as obese had changed from 25 to 19, the overweight category from 1 to 7, and the NW group from 0 to 1, respectively (within-group change, p = 0.0078) • NDT group (n = 29) were: severe obesity from 3 to 3, obesity from 25 to 18, overweight from 1 to 7 and NW from 0 to 1, respectively (p = 0.092) • BMISDS from baseline to the 4-year follow-up was 0.37 (SD 0.73) in the two randomized groups combined. In the NDPT group the	The study is generalizable because it can be integrated into various pediatric clinical settings. **Grade of the Evidence:** Type of Evidence-Longitudinal cohort study (moderate) **Final Grade of Recommendation**: B

Reference	Type of Study	Sample & Setting	Methods for Data Collection & Data Analysis	Findings	Credibility & Grade of Evidence, Design, and Theoretical Framework
				change was 0.50 (SD 0.73), 95% CI 0.78; 0.21, p = 0.002 within- group, and 0.26, (SD 0.73), 95% CI 0.54; 0.02, p = 0.057, in the NDT group • The responses to the questionnaire did not differ between the NDPT and NDT groups	
Mitello et al., (2016)	Randomized Control Trial	**Sample:** Convenience sample of 15 parent-preschooler dyads. Children had to be between 3 to 5 years old and have a medical diagnosis of overweight or obese. Parents needed access to a phone with text-messaging, be between the ages of 18 to 45 years old, and give consent for participation. **Setting:** Three primary care pediatric offices	**Data Collection:** Demographics questionnaire, 16-item questionnaire to assess healthy lifestyle beliefs, 12-item questionnaire to assess perceived difficulty, 23-item healthy lifestyle behaviors questionnaire. **Data Analysis:** Assumptions of correlation tests were verified. Data was monotonic, confirmed by scatterplot. Spearman's rank order correlation was used to determine associations	**Findings:** AIM 1: At baseline parental beliefs on healthy lifestyles correlated to parents' healthy lifestyle behaviors (rs = 0.545, p < .05). As parent beliefs on healthy lifestyles increased, the perceived difficulty of engaging in healthy lifestyles decreased (rs = 0.598, p < .05). At posttest, belief scores improved, parental perceived difficulty decreased (rs = 0.696, p < .010), and self-reported healthy lifestyle behaviors	**Trustworthiness:** Limitations: Due to the small sample size, only a small amount of variance can be accounted for between variables. Replication: Future studies can implement this study into other primary care settings. Conclusions: Parents were often unaware of their child's weight status and once they became aware they were interested in learning about how to help their

Reference	Type of Study	Sample & Setting	Methods for Data Collection & Data Analysis	Findings	Credibility & Grade of Evidence, Design, and Theoretical Framework
			among study variables.	improved (rs = 0.653, p < .010). Parental healthy lifestyle belief scores significantly correlated with perceived difficulty (rs = 0.598, p < .05) and healthy lifestyle behaviors (rs = 0.545, p < .05). AIM 2: Participant response to static messages (with automatic feedback response generated) was significantly inversely associated with both belief scores (rs = 0.522, p < .05) and perceived difficulty scores (rs = 0.677, p < .01) at posttest.	child. Targeting cognitive beliefs is key for behavior change interventions. Also, as parental beliefs toward their ability to engage in healthy choices for their family increased, their response rate and subsequent feedback to the static SMS lessened. **Grade of the Evidence:** Type of Evidence-Randomized Control Trial (high) **Final Grade of Recommendation**: A
Resnicow et al. (2015)	Randomized Control Trial	**Sample:** Children between the ages of 2 to 8 with a BMI at or above the 85th and 97th percentile. N=645 Group 1: usual care n=198 Group 2: provider only n=212 Group 3: provider+RD	**Data Collection:** • BMI at baseline and 1 and 2-year follow-ups in combination with different MI dose interventions among groups. **Data Analysis:** Mean and standard deviations. The study	**Findings:** Group 1 had a 1.8 difference, Group 2 had a 3.8 difference, Group 3 had a 4.9 difference in BMI percentiles at the year 2 follow-up. Study group/MI dose = (SE) BMI change • Group 1= 1.7	Credibility: High due to approval obtained from University of Michigan and American Academy of Pediatrics. Multiple researchers approved the research found. Transferability: Affected by a lack of ethnically diverse

Reference	Type of Study	Sample & Setting	Methods for Data Collection & Data Analysis	Findings	Credibility & Grade of Evidence, Design, and Theoretical Framework
		n=235 **Setting:** 42 practices from the Pediatric Research in Office Settings Network of the American Academy of Pediatrics.	was powered to detect a 3-point difference in BMI percentiles between any pair of study groups.	• Group 2 low dose=3.2 • Group 2 high dose=4.2 • Group 3 low dose=4.6 • Group 3 high dose=5.5	populations included. Generalizability: Affected due to a 30% loss of the baseline sample and only PROS practices that had previously completed a research protocol. Confirmability: Enhanced by training the PCPs and office assistants. **Grade of the Evidence:** Type of Evidence- Randomized Control Trial (high) **Final Grade of Recommendation**: A
Riggs et al. (2014)	Case series	**Sample:** Eligible families (n=326) Families (n=38) with children who had a BMI of 25 or higher. 34% boys; 50% white, non-Hispanic. 95% female parents;	**Data Collection:** Eligible families identified via EMR. Approved families were mailed an invitation letter. Parent and child: • BMI and child quality-of-life data were collected at baseline and at	**Findings:** Categories and subcategories emerged from the data: • Increase in use of key behavioral skills. • Reduction in BMI for both parents and children • Increase in Child quality-of-life	Confirmability: Limited due to self-reported interview and survey information. Transferability: Limited to primary care practices. Triangulation: Used to ensure weight and

Reference	Type of Study	Sample & Setting	Methods for Data Collection & Data Analysis	Findings	Credibility & Grade of Evidence, Design, and Theoretical Framework
		66% married; 50% had college degree or higher; 63% had annual income of $50,000 or more. **<u>Setting:</u>** 2 GH clinics near Seattle, WA. GH is a consumer-governed, nonprofit health delivery system located in the Pacific Northwest.	program completion. • Weight and height recorded weekly, 3 times at baseline, and 3 times after treatment. Self-administered parent survey on: • Child quality of life (Pediatric Quality of Life Inventory) • Behavioral skills (Likert scale) 60-90-minute post treatment interviews. **<u>Data Analysis:</u>** • Descriptive statistics • Welsh's independent samples t test • Wilcoxon matched-pairs signed rank tests • Paired t tests • Fisher exact test • Stata version 12.1 One author reviewed group session audio tapes and assessed for treatment fidelity.	composite score. • Social support was key to success. **<u>Barriers</u>** • No control group + incomplete follow-up = limited evidence. • Low number of contact hours. • Motivation level of participants. • Self-reported information.	height data was analyzed by multiple researchers. It was impacted because only 1 researcher reviewed audio tapes. **<u>Grade of the Evidence:</u>** Type of Evidence- Case series; low Data collected on a single group of patients without a comparison group. **Final Grade of Recommendation**: C

Reference	Type of Study	Sample & Setting	Methods for Data Collection & Data Analysis	Findings	Credibility & Grade of Evidence, Design, and Theoretical Framework
Small et al., (2014)	Randomized Control Trial	**Sample:** Parents with children who were overweight or obese. 67 parent-child dyads were included. **Setting:** 14 primary care offices that serve a diversity of patients.	**Data Collection:** Anthropometric measures of each child (height, weight, waist circumference, BMI), questionnaires, diet diaries **Data Analysis:** Data were analyzed using SPSS (version 20). Significance was set at P = .05. Descriptive characteristics of the parents and children are presented as means and standard deviations. A series of analysis of variance (ANOVA) models were conducted to compare the change in means from T1 (baseline) to times 2 to 4 across the intervention and control groups. Each model tested the treatment group x time interaction, time main effect, and treatment group main effect.	**Findings:** A medium effect size on mean waist circumference of the children whose parents participated in the treatment intervention. The only significant difference between means at baseline was with control mothers working significantly more hours outside the home than treatment mothers. The number of hours a parent worked was not correlated with any anthropometric measures. Child BMI percentile: No significant treatment group time interactions predicting change in child BMI percentile means from T1 to T2-T4. The main effects of time were significant, suggesting that an overall decrease in child BMI percentile occurred for both the treatment and control groups from	**Trustworthiness:** Generalization: Included both interpretation of patient and provider giving more perspective of incidence and treatment of depression. Intervention fidelity was difficult to track in both treatment and control interventions because goal setting and goal achievement occurred at different rates. Potential recruitment bias from providers or from parents seeking study involvement. Conclusion: A primary care–based, parent-focused overweight/obesity treatment program is feasible and demonstrates positive preliminary effects for improving children's overall health.

Reference	Type of Study	Sample & Setting	Methods for Data Collection & Data Analysis	Findings	Credibility & Grade of Evidence, Design, and Theoretical Framework
				T1 (M = 96.06) to T2 (M = 94.22; F = 6.37, P = .01); for T1 (M = 96.06) toT3 (M=91.32;F=20.49,P=.00); and for T1 (M= 96.06) to T4 (M = 94.87; F = 6.23, P = .02). The significant time main effects of child BMI percentile had medium to large effect sizes ranging from 0.31 (95% CI = 0.07 < f < 0.70) to 0.64 (95% CI = 0.27 < f < 1.32). The main effects of the treatment group were not significant. Child waist circumference: Significant treatment group time interaction effect occurred (F = 4.75, P = .03), suggesting that waist circumference significantly increased in the control group from T1 to T2. Waist circumference did not significantly increase in the treatment group	**Grade of the Evidence:** Type of Evidence-Randomized Control Trial (high) **Final Grade of Recommendation**: A

Reference	Type of Study	Sample & Setting	Methods for Data Collection & Data Analysis	Findings	Credibility & Grade of Evidence, Design, and Theoretical Framework
				from T1 to T2. The effect size for treatment group time effect was 0.33 (95% CI = 0.08 < f < 0.74), indicating a medium effect. No significant main effect of time on treatment group was found when comparing baseline with T3. A significant main effect of time was found (F = 6.44, P = .01) when comparing T1 with T4, suggesting that the child waist circumference for all children irrespective of group increased from baseline (T1 M = 27.93) to 6 months after the intervention (T4 M = 29.31) and the main effect of treatment group was not significant. Child weight and height ratio: Significant treatment group time interaction effect occurred (F = 5.71, P = .02), such that WHtR significantly decreased in the treatment group	

Reference	Type of Study	Sample & Setting	Methods for Data Collection & Data Analysis	Findings	Credibility & Grade of Evidence, Design, and Theoretical Framework
				from T1 to T2, whereas WHtR in the control group remained fairly constant from T1 to T2. Effect size for treatment group time effect was f = 0.35 (95% CI = 0.09 < f < 0.78), indicating a medium effect. No significant main effect of time or treatment group was found from T1 to T4. No significant treatment group time interaction effects, time main effects, or treatment group main effects were found when comparing T1 with T3 and T1 with T4.	
Tucker et al., (2019)	Non-randomized Control Trial	**Sample:** Convenience sample of 165 parent/child dyads recruited at well-child visits. Children were between the ages of 2-5 years old who had an elevated or rapidly increasing BMI. Treatment group (*n* = 93) and control group (*n* = 72).	**Data Collection:** Baseline data (demographics, anthropometrics, child/family behaviors) was collected via questionnaire. A 20-question family nutrition and physical activity screening tool. A 40-item Feeding Practices and Structure questionnaire.	**Findings:** Baseline behavioral measures: • Similar between treatment and control groups for sleep, physical activity, and screen time. • Behavioral measures for FNPA was higher/healthier among controls (p = 0.002).	**Trustworthiness:** Provided that PHq-9 is a reliable indicator of adolescent depression. To minimize attrition bias, all available data was included in as-treated analyses, regardless of treatment participation, and included an intention-to-treat analysis which

Reference	Type of Study	Sample & Setting	Methods for Data Collection & Data Analysis	Findings	Credibility & Grade of Evidence, Design, and Theoretical Framework
		Setting: Four private pediatric offices in West Michigan assigned as control ($n = 2$) or intervention ($n = 2$) sites.	**Data Analysis:** Descriptive characteristics were expressed as means, standard deviations, and frequencies. Differences in baseline characteristics between treatment groups were assessed using independent t-tests for continuous variables and chi-square for categorical measures. Within-group changes in patient characteristics from pre-intervention to post-intervention were evaluated using dependent t-tests. Differences between treatment and control group changes were assessed using two-way repeated measures analysis of variance (RM-ANOVA). Alpha was set at 0.05, and SAS software.	• Patient BMI, %BMI p95, and BMI z-score did not differ between treatment and control patients at baseline. • For FPSQ scores, feeding practices were similar between treatment and control parents with the exception of overt restriction ($p < 0.001$), which was lower/healthier among controls, and structured meal timing ($p = 0.012$), which was higher/healthier among controls. During the study: • Control patients did not have a significant change in any behaviors. • Treatment patients, FNPA increased 4.6 points (95% confidence interval [CI]: 3.8, 5.8) ($p < 0.001$) and screen time decreased 0.9	substituted baseline values for missing outcomes at follow up. Limitations: • Potential selection bias from using a non-randomized control design to group treatment and control patients based on their primary care provider. To limit this bias, researchers selected sites based on similar patient demographics and patient characteristics compared at baseline were similar across groups. • Generalization: study outcomes can only be generalized to patients who attend primary care well-child visits, and who are interested in participating in a health-behavior treatment program. Included families who were mostly white and well-educated.

Reference	Type of Study	Sample & Setting	Methods for Data Collection & Data Analysis	Findings	Credibility & Grade of Evidence, Design, and Theoretical Framework
				h/day (CI: −1.3, −0.4) ($p < 0.001$). • Behavior changes for treatment participants improved FNPA ($p < 0.001$) and reduced screen time ($p < 0.001$) significantly more than control patients, while changes in sleep and physical activity did not differ. • BMI decreased by −0.2 kg/m2 (CI: −0.4, −0.0) ($p = 0.028$) among all participants, but BMI changes did not differ between groups. • BMI z-score decreased, on average, among all patients (mean: −0.09 (CI: −0.17, −0.02)) and among treatment patients (mean: −0.13 (CI: −0.23, −0.02), but not among control patients (mean: −0.05 (CI: −0.16, 0.06)). BMI z-score changes between treatment	• Social-desirability bias: Self-reported parent feeding practices and child behaviors. To minimize this bias, outcomes were collected using the same methodology across all sites, including anthropometry and survey administration in primary care offices by staff members who were not involved in the program. Concluded that a low-intensity, primary care intervention can be effective in improving parental feeding behaviors. **Grade of the Evidence:** Type of Evidence- Non-randomized Control Trial (moderate) **Final Grade of Recommendation**: B

Reference	Type of Study	Sample & Setting	Methods for Data Collection & Data Analysis	Findings	Credibility & Grade of Evidence, Design, and Theoretical Framework
				and control groups were not significant (p = 0.332). • %BMI p95 did not significantly change during the intervention (mean: −0.6 (CI: −1.5, 0.4), and %BMI p95 changes did not differ between treatment (mean: −0.8 (CI: −2.1, 0.5)) and control groups (mean: −0.3 (CI: −1.6, 1.0)) • For feeding practice changes, treatment parents reported greater decreases in non-responsive feeding practices compared to controls, including a larger reduction in distrust in appetite (p = 0.015) and reward for behavior (p = 0.006). • One structure-related feeding practice, structured meal timing, also improved more among treatment vs.	

Reference	Type of Study	Sample & Setting	Methods for Data Collection & Data Analysis	Findings	Credibility & Grade of Evidence, Design, and Theoretical Framework
				control families ($p <$ 0.001). • Based on ITT results, screen time decreased 0.6 h/day (CI: −0.9, −0.3) among treatment patients vs. an increase of 0.2 h/day (CI: 0.0, 0.4) among controls ($p <$ 0.001), and FNPA increased 2.6 points (CI: 1.7, 3.5) in treatment patients vs. 0.1 point (CI: −0.7, 0.8) in controls ($p <$ 0.001). • For feeding practices, treatment parents reported greater decreases in distrust in appetite ($p =$ 0.024) and reward for behavior ($p = 0.013$), and greater increases in structured meal timing ($p = 0.015$) using ITT, similar to as-treated results.	
Turer et al. (2014)	Cross-Sectional Study	**Sample:** Pediatricians, children, and parents. Children were Latino and	**Data Collection:** Pre-visit surveys: sociodemographic characteristics, language	**Findings:** The pediatrician communicated child overweight in 81% of	**Trustworthiness:** Generalizability: Impacted by only including Latino

Reference	Type of Study	Sample & Setting	Methods for Data Collection & Data Analysis	Findings	Credibility & Grade of Evidence, Design, and Theoretical Framework
		overweight with a BMI greater than or equal to the 85th percentile for age and gender. **Setting:** 2 primary care clinics in academic and community settings in Dallas.	proficiency, and LI (parent with LEP and provider with limited Spanish proficiency). BMI, weight, height. Digital video and audio recorders secretly placed in exam room. **Data Analysis:** • Recorded visits were viewed/listened to and transcribed. • Visits conducted in Spanish were reviewed, transcribed, and corrected twice by a bilingual medical student and bilingual research assistant trained in medical Spanish. • Transcripts analyzed with margin coding and grounded theory • Thematic coding and constant comparison method used to identify communication themes. • 3 trained coders	visits, a weight-management plan in 50%, a culturally relevant dietary recommendation in 42%, a recommendation for a follow-up visit in 65%, and nutrition referral in 50%. Growth charts were used in 62% of visits but significantly less often in LI (13%) versus language- congruent (83%) visits (P<.001).	children/families from urban clinics in academic and community medical centers. Additionally, these families had lower educational attainment. Credibility: Enhanced by having more than 1 researcher review the visit recordings. **Grade of the Evidence:** Type of Evidence-Cross-Sectional study (low) **Final Grade of Recommendation**: C

Reference	Type of Study	Sample & Setting	Methods for Data Collection & Data Analysis	Findings	Credibility & Grade of Evidence, Design, and Theoretical Framework
			independently reviewed transcripts, listed major themes and subthemes in the margins, and identified dialogue that best illustrated major themes. • To validate thematic coding, coders met to compare results and develop a taxonomy of themes/subthemes. Differences among coders were resolved using consensus. • Descriptive statistics used to summarize sample characteristics, proportions receiving each communication-content area, and the proportion of parents who reported that the pediatrician communicated with them regarding their child's weight status.		
Uy et al. (2019)	Qualitative study	**Sample:** 40 parents with	**Data Collection:** Researchers were	**Findings:** Five overarching	**Trustworthiness:** Limitations: The sample

Reference	Type of Study	Sample & Setting	Methods for Data Collection & Data Analysis	Findings	Credibility & Grade of Evidence, Design, and Theoretical Framework
		preschoolers between the ages of 2 to 5 years old who take their child to primary care providers. **Setting:** University of Minnesota	trained in standardized interview protocols and conducted semi-structured interviews with parents using questions designed to understand parent-child interactions around food and feeding as well as questions to determine who parents went to for advice about their child's weight and diet, and how parents wanted that advice delivered to them. Broad, open-ended questions along with permissive prompts were used to facilitate each semi-structured interview. Interviews were done on campus and over the phone. **Data Analysis:** Audio-recorded interviews were transcribed verbatim and coded using an inductive thematic analysis using NVivo10 software. Using open coding, researchers first read each interview in	themes: (1) Tone and Approach are Important, (2) Avoid Judgment, (3) Have Regard for Parental Expertise, (4) Consider the Timing of the Discussion with Parents, and (5) Equip Parents with Concrete and Individualized Recommendations. • (50%) indicated that they wanted physicians to be honest and straightforward with their concerns about their child's weight and diet. • (15%) also encouraged physicians to display sensitivity and be aware of the words and phrases they used during discussions about weight and diet. • (15%) want physicians to direct the focus on their child's health and behaviors, not their weight.	of parents were predominantly white, higher income, with greater access to economic resources. There was approval from the IRB. Generalization: This study is not representative of the population at large. **Grade of the Evidence:** Type of Evidence-Qualitative study (moderate) **Final Grade of Recommendation**: B

Reference	Type of Study	Sample & Setting	Methods for Data Collection & Data Analysis	Findings	Credibility & Grade of Evidence, Design, and Theoretical Framework
			its entirety to obtain the full story from participants. Then, researchers read each transcript line-by-line to establish initial codes and capture key thoughts and concepts. Afterwards, researchers reduced the broad categories into subcategories, and major concepts were identified. Major concepts were further defined, developed, and refined into overarching themes and subthemes.	• (17.5%) also wanted their child's physician to avoid negatively reacting to their parenting practices. • (22.5%) wanted physicians to avoid potentially offensive and inappropriate weight-related terms and revealed words that they thought would negatively affect their child's self-esteem and body image. • (47.5%) wanted physicians to consider and understand their views about their child's weight and diet. • (12.5%) wanted their child's physician to be proactive, initiate discussion, and intervene earlier than later when concerned about the child's weight and diet. • (10%) also wanted discussions about	

Reference	Type of Study	Sample & Setting	Methods for Data Collection & Data Analysis	Findings	Credibility & Grade of Evidence, Design, and Theoretical Framework
				weight to be continuous and ongoing, as opposed to a "one and done" type of conversation. • (12.5%) preferred to discuss concerns about their child's weight and diet without the child present due to concerns about eating disorders and poor body image. • (35%) preferred their child's physicians to present relevant information visually during a conversation. • (75%) indicated that their child's physicians should be prepared to provide parents with feasible suggestions to implement and appropriate resources for action and prevention. • (30%) wanted their child's physician to clearly explain the rationale behind their	

Reference	Type of Study	Sample & Setting	Methods for Data Collection & Data Analysis	Findings	Credibility & Grade of Evidence, Design, and Theoretical Framework
				recommendations and concerns.	
Wylie-Rosett et al. (2018)	Randomized Control Trial	**Sample:** Families (n=323) with children who had a BMI $\geq 85^{th}$ percentile (n=366). **Setting:** Safety-net pediatric primary care setting in Jacobi Medical Center (Bronx, New York, United States)	**Data Collection:** Baseline and 12-month post-randomization measures were obtained for all outcomes; BMI was assessed at 3, 6 and 9 months. Parent/guardian and child health history and demographic information were obtained via questionnaires. **Data Analysis:** Continuous scale demographic and metabolic parameters were numerically summarized using mean, standard deviations and frequency count and percentage for categorical variables. Comparisons of baseline characteristics between treatment arms were performed using Student t-test or Wilcoxon rank sum test for continuous	Children in the Standard Care Alone and Standard Care + Enhanced Program arms achieved a significant decrease in BMI Z-score during the 12-month intervention period. The addition of an Enhanced Program to the Standard Care intervention did not result in significantly greater decrease in BMI Z-score after the 12-month intervention period.	Credibility: The research was registered to Clinical Trials and distributed under the Creative Commons Attribution 4.0 International License. Procedures had IRB approval from the Albert Einstein College of Medicine and Tufts University. **Grade of the Evidence:** Type of Evidence- Randomized control trial; High **Final Grade of Recommendation**: A

Reference	Type of Study	Sample & Setting	Methods for Data Collection & Data Analysis	Findings	Credibility & Grade of Evidence, Design, and Theoretical Framework
			variables and chi-square test for categorical variables.		

APPENDIX B:

PRE-TEST

PRE-TEST

Questionnaire: Pediatric Weight Management

1. **Please indicate your decision to either participate or withdraw from the project.**
   a. I agree (participate in project and take test)
   b. I disagree (withdraw from project and end test)

2. **Please make a unique identifier with the following information:** last four digits of social security number, last two letters of mother's maiden name, and year you were born (YYYY). (Fill in the blank). _____

3. **Individual(s) in attendance with child:** Mom _____ Dad_____ Both _____Guardian _____

Pre-Test:

P1Q1. BMI (Body Mass Index) is a measure of body fat based on height and weight.

a. True
b. False

P1Q2. A 2 – 5 -year-old child is considered overweight if his/her BMI is _____ percentile.

a. ≥95th
b. ≥85th
c. ≥75th

P1Q3. A 2 – 5 -year-old child is considered obese if his/her BMI is _____ percentile.

a. ≥95th
b. ≥85th
c. ≥75th

P1Q4. It is recommended that a 2 – 5 -year-old child include the following regularly for hydration (select all that apply):

a. Fruit flavored drinks
b. Water
c. Soda

P1Q5. I know how to read nutritional labels:

a. Yes
b. No

P1Q6. It is recommended that a 2 – 5 -year-old child eat no more than _____ grams of sugar per day.

a. 25 grams
b. 50 grams
c. 75 grams

P1Q7. It is recommended that a 2 – 5 -year-old child eat no more than _____ grams of salt per day.

a. 2,300 mg
b. 1,500 mg
c. 3,000 mg

P1Q8. It is recommended that a 2 – 5 -year-old child eat no more than ____ of calories from fat per day.

a. 5%
b. 35%
c. 85%

P1Q9. I understand how to determine a 2 – 5 -year-old child's daily intake of the following based on his/her age (circle all that apply):

a. Fruit
b. Vegetables
c. Grains
d. Protein
e. Dairy

P1Q10. Half of every plate I serve a 2 – 5 -year-old child should be _____.

a. Protein
b. Fruit and vegetables
c. Whole grains
d. Dairy
e. Dessert

P1Q11. It is important to eat meals as a family at the table on a regular basis.

a. Yes
b. No

P1Q12. Eating while watching TV is good for digestion.

a. Yes
b. No

P1Q13. It is recommended that a 2 – 5-year-old child have _____ of "screen time" per day.

a. Less than 1 hour
b. Less than 2 hours

P1Q14. A 2 – 5 -year-old child should aim for at least _____ of physical activity per day.

a. 60 minutes
b. 2 hours
c. 15 minutes
d. 30 minutes

P1Q15. My current level of confidence in being able to implement weight management behaviors into my child's daily routine to achieve and maintain a healthy weight is _____.

a. High
b. Moderate
c. Low

APPENDIX C:

POST-TEST

POST-TEST

Questionnaire: Pediatric Weight Management

1. **Please indicate your decision to either participate or withdraw from the project.**
   a. I agree (participate in project and take test)
   b. I disagree (withdraw from project and end test)

2. **Please make a unique identifier with the following information:** last four digits of social security number, last two letters of mother's maiden name, and year you were born (YYYY). (Fill in the blank). _____

3. **Individual(s) in attendance with child:** Mom _____Dad_____Both _____Guardian _____

Post-Test:

P2Q1. BMI (Body Mass Index) is a measure of body fat based on height and weight.

a. True
b. False

P2Q2. A 2 – 5 -year-old child is considered overweight if his/her BMI is _____ percentile.

a. ≥95th
b. ≥85th
c. ≥75th

P2Q3. A 2 – 5 -year-old child is considered obese if his/her BMI is _____ percentile.

a. ≥95th
b. ≥85th
c. ≥75th

P2Q4. It is recommended that a 2 – 5 -year-old child include the following regularly for hydration (select all that apply):

a. Fruit flavored drinks
b. Water
c. Soda

P2Q5. I know how to read nutritional labels:

a. Yes
b. No

P2Q6. It is recommended that a 2 – 5 -year-old child eat no more than _____ grams of sugar per day.

a. 25 grams
b. 50 grams
c. 75 grams

P2Q7. It is recommended that a 2 – 5 -year-old child eat no more than _____ grams of salt per day.

a. 2,300 mg
b. 1,500 mg
c. 3,000 mg

P2Q8. It is recommended that 2 – 5 -year-old child eat no more than _____ of calories from fat per day.

a. 5%
b. 35%
c. 85%

P2Q9. I understand how to determine a 2 – 5 -year-old child's daily intake of the following based on his/her age (circle all that apply):

a. Fruit
b. Vegetables
c. Grains
d. Protein
e. Dairy

P2Q10. Half of every plate I serve a 2 – 5 -year-old child should be _____.

a. Protein
b. Fruit and vegetables
c. Whole grains
d. Dairy
e. Dessert

P2Q11. It is important to eat meals as a family at the table on a regular basis.

a. Yes
b. No

P2Q12. Eating while watching TV is good for digestion.

a. Yes
b. No

P2Q13. It is recommended that a 2 - 5-year-old child have _____of "screen time" per day.

a. Less than 1 hour
b. Less than 2 hours

P2Q14. A 2 - 5-year-old child should aim for at least _____ of physical activity per day.

a. 60 minutes
b. 2 hours
c. 15 minutes
d. 30 minutes

P2Q15. After participating in this project, my level of confidence in being able to implement weight management behaviors into my child's daily routine to achieve and maintain a healthy weight is _____.

a. Higher
b. The same
c. Lower

APPENDIX D:

PRE- AND POST-TEST ANSWERS

Pre-Test and Post Test Answers

Q1. BMI (Body Mass Index) is a measure of body fat based on height and weight.
Answer: A, True

Q2. A 2 - 5-year-old child is considered overweight if his/her BMI is _____ percentile.
Answer: B, ≥85th

Q3. A 2 - 5-year-old child is considered obese if his/her BMI is _____ percentile.
Answer: A, ≥95th

Q4. It is recommended that a 2 - 5-year-old child include the following regularly for hydration (select all that apply):
Answer: B, Water

Q5. I know how to read nutritional labels:
Answer: A, Yes

Q6. It is recommended that a 2 - 5-year-old child eat no more than _____ grams of sugar per day.
Answer: A, 25 grams

Q7. It is recommended that a 2 - 5-year-old child eat no more than _____ grams of salt per day.
Answer: B, 1,500 mg

Q8. It is recommended that a 2 - 5-year-old child eat no more than ____ of calories from fat per day.
Answer: B, 35%

Q9. I understand how to determine a 2 - 5-year-old child's daily intake of the following based on his/her age (circle all that apply):
Answer: A, Fruit; B, Vegetables; C, Grains; D, Protein; E, Dairy

Q10. Half of every plate I serve a 2 - 5-year-old child should be _____.
Answer: B, Fruit and vegetables

Q11. It is important to eat meals as a family at the table on a regular basis.
Answer: A, Yes

Q12. Eating while watching TV is good for digestion.
Answer: B, No

Q13. It is recommended that a 2 - 5-year-old child have _____ of "screen time" per day.
Answer: A, Less than 1 hour

Q14. A 2 - 5-year-old child should aim for at least _____ of physical activity per day.
Answer: A, 60 minutes

P1Q15. My current level of confidence in being able to implement weight management behaviors into my child's daily routine to achieve and maintain a healthy weight is _____.
Answer: A, High; B, Moderate; or C, Low

P2Q15. After participating in this project, my level of confidence in being able to implement weight management behaviors into my child's daily routine to achieve and maintain a healthy weight is _____.
Answer: A, Higher; B, The same; or C, Lower

APPENDIX E:

DEMOGRAPHIC QUESTIONNAIRE

Demographic Questionnaire

Please answer the following questions.

DO NOT WRITE YOUR NAME OR CHILD'S NAME ANYWHERE ON THIS FORM.

1. **Unique identifier:** last four digits of social security number, last two letters of mother's maiden name, and year you were born (YYYY). (Fill in the blank). _____
2. **How old is your child? Please check appropriate range:**
   2 years _____ 3 years _____ 4 years _____ 5 years _____
3. **Child's Gender:** Male _____ Female _____ Other _____ Prefer not to say _____
4. **Child's** Weight_____ Height _____ BMI (Body Mass Index): _____
5. **Child identifies with the following ethnicity:**

   Asian _____

   Black/African _____

   Caucasian _____

   Hispanic/Latino _____

   Native American _____

   Pacific Islander _____

   Prefer not to answer _____

   Other _____
6. **Parent/Guardian's highest level of education:**

   No Formal education _____

   Elementary school _____

   High school diploma ____

College degree ____

Vocational training _____

Master's degree _____

Professional degree _____

Doctorate degree _____

Other _____

7. **Parent/Guardian occupation: _____**

APPENDIX F:

DISCLOSURE STATEMENT

Pediatric Weight Management in Primary Care Practice

Kaseymichelle Qualman, MS-RN, DNP-PNP student

This survey is part of a DNP project to assess parent and guardian knowledge regarding weight management in children at East Scottsdale Medical Care. You will be asked to complete a survey consisting of 15 questions before and after an educational intervention. It will take you approximately 10 minutes to complete each survey and 10 minutes for the intervention. There are no foreseeable risks associated with participating in this project, and you will receive no immediate benefit from participating. Participation in this survey is voluntary and survey responses are anonymous.

If you choose to participate in this project, you may choose to discontinue participation at any time without penalty. You may skip any question that you choose not to answer. By participating, you do not give up any personal legal rights that you may have as a participant of this project.

For questions, concerns, or complaints about the project, you may call Kaseymichelle Qualman, MS-RN at (650)-922-8383 or via email at kqualman@email.arizona.edu.

By taking this survey, you agree to have your responses used for this project.

APPENDIX G:

SITE AUTHORIZATION

East Scottsdale Medical Care
10565 N 114th St
Scottsdale, AZ 85259

03/03/20

University of Arizona Institutional Review Board
c/o Office of Human Subjects
1618 E Helen St
Tucson, AZ 85721

Please note that Ms. Kaseymichelle Qualman, UA Doctor of Nursing Practice student, has the permission of East Scottsdale Medical Care to conduct a quality improvement project at our facility for her project, "Pediatric Weight Management in Primary Care Practice."

Ms. Kaseymichelle will conduct a survey of parents at East Scottsdale Medical Care who have a child between the ages of 2 and 5-years old who are being seen for a well-child visit or a post condition well-child follow-up visit. She will recruit parents by placing flyers about the study in the office lobby, checking with staff once a week to identify upcoming potential participants so that she can be present at these scheduled appointments, providing the front office desk staff with a verbal script to introduce the study to parents, and placing written information in the check-in packet. Parents will receive a written description of the project, what they will be asked to do, and the time involved. Ms. Kaseymichelle's activities will be completed by the University of Arizona Spring 2020 semester.

Ms. Kaseymichelle has agreed to provide to my office a copy of the University of Arizona Determination before she recruits participants. She will also will provide aggregate results to the providers at a coordinated staff meeting.

If there are any questions, please contact my office.

Signed,

Tracey Drummond, MD and co-owner of East Scottsdale Medical Care

APPENDIX H:

EDUCATIONAL HANDOUT

Basic Metabolic Index: is a measure of body fat based on height and weight.

Weight Status	Percentile Range
Obese	Equal to or greater than the 95th percentile
Overweight	85th to less than the 95th percentile
Healthy	5th percentile to less than the 85th percentile
Underweight	Less than the 5th percentile

Can cause:
- ◊ Hypertension
- ◊ T2 diabetes
- ◊ Obstructive sleep apnea
- ◊ Anxiety
- ◊ Depression
- ◊ Low self-esteem

My _____ -year old's……

BMI is _____. Therefore, my child is_____.

Daily caloric intake should be _____.

Recommended daily intake of the following food groups is:

1. **Fruit** _____
2. **Vegetables** _____
3. **Grains** _____
4. **Protein** _____
5. **Dairy** _____

Should be ½ of every plate served.

Recommended daily intake of **water** is _____ **8 oz cups.**

Recommended daily intake of **sodium** is_____ **mg (0.3 tsp).**

Recommended daily intake of **sugar** is_____ **g (6 tsp).**

Recommended daily intake of **fat** is_____ **% of calories.**

For _____ calorie diet = _____ g

(# cal per day) x (% of cal) / 9 = g per day

- ◊ Polyunsaturated fatty acids
- ◊ Monounsaturated fatty acids
- ◊ (fish, nuts and vegetable oils)

Lifestyle Tips for 2-5 -year old's:

- < 1 hour of **screen time** per day.
- > 1 hour of **exercise** per day.
- **During mealtimes** = Eat together as a family at the dinner table and turn off the TV!

MyPlate https://www.choosemyplate.gov/MyPlatePlan
American Heart Association https://www.heart.org/en/healthy-living/healthy-eating/eat-smart/nutrition-basics/dietary-recommendations-for-healthy-children

The Nutrition Facts Label

Look for It and Use It!

Information you need to make healthy choices throughout your day

Found on all packaged foods and beverages

Use it to compare foods!

Choose the foods that are high in nutrients to get more of, and low in nutrients to get less of.

If you consume more calories than you burn, you gain weight.

400 calories or more per serving is high; **100** calories per serving is moderate.

Calories

Check the serving size on food packages. The information listed on the Nutrition Facts Label is based on **one** serving. Servings are shown in common measurements like cups, ounces, or pieces.

One package may contain more than one serving! If you eat multiple servings – you're getting "multiples" on calories and nutrients, too.

Serving Size & Servings Per Container

2SERVINGS=CALORIESX2

Nutrition Facts

Serving Size 1 package (272g)
Servings Per Container 1

Amount Per Serving	
Calories 300	Calories from Fat 45
	% Daily Value*
Total Fat 5g	**8**%
Saturated Fat 1.5g	**9**%
Trans Fat 0g	
Cholesterol 30mg	**10**%
Sodium 430mg	**18**%
Total Carbohydrate 55g	**18**%
Dietary Fiber 6g	**25**%
Sugars 23g	
Protein 14g	
Vitamin A	80%
Vitamin C	35%
Calcium	6%
Iron	15%

* Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs:

	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Saturated Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Nutrients

Nutrients To Get More Of

Get 100% DV of these:

- Calcium
- Dietary Fiber
- Iron
- Vitamins A & C

Nutrients To Get Less Of

Get less than 100% DV of these:

- Cholesterol
- Saturated Fat
- Sodium

TIP Sugars and *Trans* Fat are nutrients to get less of, but they have no %DV. Use grams to compare!

To meet these goals, eat a variety of foods, including:

- fruits and vegetables
- whole grains
- fat-free or low-fat milk/ milk products
- lean meats and poultry
- eggs
- seafood
- beans and peas
- soy products
- unsalted nuts and seeds

%DV

When comparing nutrients in foods, use %DV.

%DV = Percent Daily Value

5% DV or less per serving is low

20% DV or more per serving is high

%DV is based on **"Daily Values"** – the amounts of nutrients recommended for Americans aged 4 and older to eat every day.

Nutrition Facts Read the Label

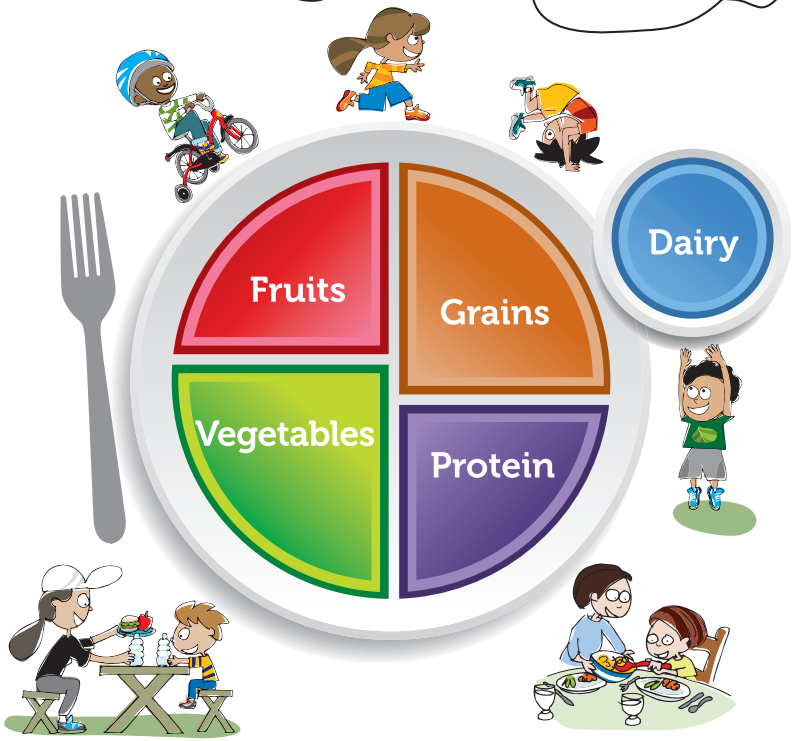
FDA

www.fda.gov/nutritioneducation

Percent Daily Values on the **Nutrition Facts Label** are based on a 2,000 calorie diet; however, your Daily Values may be higher or lower depending on your calorie needs. Calorie needs vary according to age, gender, and physical activity level. Visit **www.choosemyplate.gov** to find your caloric needs.

USDA
United States Department of Agriculture

Healthy Eating for Preschoolers



ChooseMyPlate.gov

Get your child on the path to healthy eating.

Offer a variety of healthy foods.

Choose foods from each MyPlate food group. Pay attention to dairy foods, whole grains, and vegetables to build healthy habits that will last a lifetime.

Be mindful of sweet drinks and other foods.

Offer water instead of sugary drinks like regular soda and fruit drinks. Other foods like hot dogs, burgers, pizza, cookies, cakes, and candy are only occasional treats.

Focus on the meal and each other.

Your child learns by watching you. Let your child choose how much to eat of foods you provide. Children copy your likes, dislikes, and your interest in trying new foods.

Be patient with your child.

Children enjoy food when eating it is their own choice. Some new foods take time. Give a taste at first and wait a bit. Let children serve themselves by taking small amounts. Offer new foods many times.

Cook together.
Eat together.
Talk together.
Make meal time family time.

Food and Nutrition Service
USDA is an equal opportunity provider and employer.

Based on the Dietary Guidelines for Americans.

FNS-451
Revised December 2016

Healthy Eating for Preschoolers Daily Food Checklist

Use this Checklist as a general guide.

- This food checklist is based on average needs. Do not be concerned if your child does not eat the exact amounts suggested. Your child may need more or less than average. For example, food needs increase during growth spurts.
- Children's appetites vary from day to day. Some days they may eat less than these amounts; other days they may want more. Let your child choose how much to eat. Throughout a day, offer amounts shown below.

Food group	2 year olds	3 year olds	4 and 5 year olds	What counts as:
Fruits Focus on whole fruits	1 cup	1 – 1½ cups	1 – 1½ cups	**½ cup of fruit?** ½ cup mashed, sliced, or chopped fruit ½ cup 100% fruit juice ½ small banana 4-5 large strawberries
Vegetables Vary your veggies	1 cup	1 – 1½ cups	1½ – 2 cups	**½ cup of veggies?** ½ cup mashed, sliced, or chopped vegetables 1 cup raw leafy greens ½ cup vegetable juice 1 small ear of corn
Grains Make half your grains whole grains	3 ounces	3 – 5 ounces	4 – 5 ounces	**1 ounce of grains?** 1 slice bread 1 cup ready-to-eat cereal flakes ½ cup cooked oatmeal, rice, or pasta 1 tortilla (6" across)
Protein Foods Vary your protein routine	2 ounces	2 – 4 ounces	3 – 5 ounces	**1 ounce of protein foods?** 1 ounce cooked meat, poultry, or seafood 1 egg 1 Tablespoon peanut butter ¼ cup cooked beans or peas (kidney, pinto, lentils)
Dairy Choose low-fat or fat-free milk or yogurt	2 cups	2 – 2½ cups	2½ cups	**½ cup of dairy?** ½ cup milk 4 ounces yogurt ¾ ounce cheese

Some foods are easy to choke on while eating. Children need to sit when eating. Foods like hot dogs, grapes, and raw carrots need to be cut into small pieces the size of a nickel. Be alert if serving 3- to 5-year-olds foods like popcorn, nuts, seeds, or other hard foods.

There are many ways to divide the Daily Food Checklist into meals and snacks. View the "Meal and Snack Patterns and Ideas" to see how these amounts might look on your preschooler's plate at www.ChooseMyPlate.gov/preschoolers-meal-and-snack-patterns.

APPENDIX I:

EDUCATIONAL OUTLINE

Topic 1: Definitions stated on handout

- Body Mass Index (BMI)
- Obesity
- Overweight
- Healthy weight

Topic 3: Importance of overweight and obesity prevention

- What obesity can cause – stated on handout

Topic 4: Child's current BMI and weight status

Topic 5: Child's daily caloric intake

- Based off of MyPlate Plan website
- Use child's current age, gender, and daily activity level in MyPlate calculation.

Topic 6: Recommended daily intake of food groups

- Fruit, vegetables, grains, protein, dairy – based on MyPlate calculation
- Discuss that ½ of every plate should be fruit and vegetables.

Topic 7: Recommended daily intake of water

- 2 8oz cups for 2 year old's
- 3 8oz cups for 3 year old's
- 4 8oz cups for 4 year old's
- 5 8oz cups for 5 year old's

Topic 8: Recommended daily intake of sodium

- No more than 1500 mg for ages 2-18 years old

Topic 9: Recommended daily intake of sugar

- No more than 25 mg for ages 2-18 years old

Topic 10: Recommended daily intake fat for 2 to 5 year old children

- 35% of calories

Topic 11: Recommended daily screen time for 2 to 5 year old children

Topic 12: Recommended daily exercise for 2 to 5 year old children

Topic 13: Recommended tips for mealtimes

Topic 14: References

Topic 15: How to read a nutrition label – discuss sections on infographic

- Calories
- Serving size and servings per container
- Nutrients
- % DV

Topic 16: Healthy eating infographic

- Lifestyle behaviors
- Daily food checklist for preschoolers between the ages of 2 to 5 years old

APPENDIX J:

INFORMATIONAL FLYER

Invitation to participate in an Educational Improvement Project

For a DNP project on

Pediatric Weight Management in Primary Care Practice

By Kaseymichelle Qualman, MS-RN, DNP-PNP student

In order to participate:

1. Your child must be between the ages of 2 to 5 years old.
2. A parent or guardian must accompany the child.
3. Your child must be being seen for a well-child or post condition well-child exam.
4. Your child must have a BMI considered to be normal, overweight, or obese (this will be determined during your well-child check-in).

Education about:

1. Weight management for a 2 to 5 year old child.
2. Nutritional intake and dietary recommendations for a 2 to 5 year old child.
3. Reading a nutritional label.
4. Healthy lifestyle recommendations.

*********PLEASE NOTIFY CHECK-IN STAFF IF INTERESTED*********

You can also contact Kaseymichelle Qualman for more information:
Phone: 650-922-8383
Email: kqualman@email.arizona.edu

APPENDIX K:

PROJECT INTRODUCTION SCRIPT

To be read by the front office desk staff checking in patients:

Hello ____*(parent or guardian's name)*___,

Today we have a Pediatric Nurse Practitioner student from the University of Arizona conducting a short educational improvement project about pediatric weight management. The project will help all of us help parents with their child's weight management. Your child meets the criteria for this project so I will be placing information about the project in your check-in packet. After reading through the information provided, and if you decide to participate, please fill out the pre-test and demographic questionnaire I have included for you. Let me know if you have any questions.

APPENDIX L:

THE UNIVERSITY OF ARIZONA INSTITUTIONAL REVIEW BOARD APPROVAL LETTER

THE UNIVERSITY OF ARIZONA
Research, Discovery & Innovation

Human Subjects Protection Program

1618 E. Helen St.
P.O.Box 245137
Tucson, AZ 85724-5137
Tel: (520) 626-6721
http://rgw.arizona.edu/compliance/home

Date:	October 18, 2019
Principal Investigator:	Kaseymichelle Qualman
Protocol Number:	1910080142
Protocol Title:	PEDIATRIC WEIGHT MANAGEMENT IN PRIMARY CARE PRACTICE
Determination:	Human Subjects Review not Required

Documents Reviewed Concurrently:

HSPP Forms/Correspondence: *Kaseymichelle QUalman_IRBform2019.pdf*

Regulatory Determinations/Comments:

- Not Research as defined by 45 CFR 46.102(l): As presented, the activities described above do not meet the definition of research cited in the regulations issued by U.S. Department of Health and Human Services which state that "Research means a systematic investigation, including research development, testing, and evaluation, designed to develop or contribute to generalizable knowledge. Activities that meet this definition constitute research for purposes of this policy, whether or not they are conducted or supported under a program that is considered research for other purposes. For example, some demonstration and service programs may include research activities. For purposes of this part, the following activities are deemed not to be research."

The project listed above does not require oversight by the University of Arizona.

If the nature of the project changes, submit a new determination form to the Human Subjects Protection Program (HSPP) for reassessment. Changes include addition of research with children, specimen collection, participant observation, prospective collection of data when the study was previously retrospective in nature, and broadening the scope or nature of the study activity. Please contact the HSPP to consult on whether the proposed changes need further review.

The University of Arizona maintains a Federalwide Assurance with the Office for Human Research Protections (FWA #00004218).

REFERENCES

Alonso-Alvarez, M. L., Cordero-Guevara, J. A., Terán-Santos, J., Gonzalez-Martinez, M., Jurado-Luque, M. J., Corral-Peñafiel, J., … Gozal, D. (2014). Obstructive sleep apnea in obese community-dwelling children: The NANOS study. *Sleep*, *37*(5), 943-949. https://doi-org.ezproxy4.library.arizona.edu/10.5665/sleep.3666

Althubaiti A. (2016). Information bias in health research: Definition, pitfalls, and adjustment methods. *Journal of Multidisciplinary Healthcare*, *9*, 211–217. https://doi.org/10.2147/JMDH.S104807

American Academy of Pediatrics. (2016). *American academy of pediatrics announces new recommendations for children's media use*. Retrieved from https://www.aap.org/en-us/about-the-aap/aap-press-room/Pages/American-Academy-of-Pediatrics-Announces-New-Recommendations-for-Childrens-Media-Use.aspx

America's Health Rankings. (2019). *Health of women and children*. Retrieved from https://www.americashealthrankings.org/explore/health-of-women-and-children/measure/youth_overweight/state/AZ

Anderson, S. E. & Keim, S. A. (2016). Parent-child interaction, self-regulation, and obesity prevention in early childhood. *Current Obesity Reports*, *5*(2), 192-200. doi:10.1007/s13679-016-0208-9

Blissett J, Bennett C, Blissett, J., & Bennett, C. (2013). Cultural differences in parental feeding practices and children's eating behaviours and their relationships with child BMI: A comparison of black Afro-Caribbean, white British and white German samples. *European Journal of Clinical Nutrition*, *67*(2), 180-184. https://doi-org.ezproxy3.library.arizona.edu/10.1038/ejcn.2012.198

Boston University School of Public Health. (2018). *The health belief model*. Retrieved from http://sphweb.bumc.bu.edu/otlt/MPH-Modules/SB/BehavioralChangeTheories/BehavioralChangeTheories2.html

Carcone, A. I., Jacques-Tiura, A. J., Brogan Hartlieb, K. E., Albrecht, T., & Martin, T. (2016). Effective patient-provider communication in pediatric obesity. *Pediatric Clinics of North America*, *63*(3), 525-538. doi:10.1016/j.pcl.2016.02.002

Centers for Disease Control and Prevention. (2016). *Childhood obesity causes and consequences.* Retrieved from https://www.cdc.gov/obesity/childhood/causes.html

Centers for Disease Control and Prevention. (2018a). *Childhood obesity facts*. Retrieved from https://www.cdc.gov/obesity/data/childhood.html

Centers for Disease Control and Prevention. (2018b). *Defining childhood obesity*. Retrieved from https://www.cdc.gov/obesity/childhood/defining.html

Centers for Disease Control and Prevention. (2019). *Nutrition, physical activity, and obesity: data, trends and maps*. Retrieved from https://nccd.cdc.gov/dnpao_dtm/rdPage.aspx?rdReport=DNPAO_DTM.ExploreByLocation&rdRequestForwarding=Form

Chan, R. S. & Woo, J. (2010). Prevention of overweight and obesity: How effective is the current public health approach. *International Journal of Environmental Research and Public Health*, *7*(3), 765-783.

Christiana, R. W., Battista, R. A., James, J. J., & Bergman, S. M. (2017). Pediatrician prescriptions for outdoor physical activity among children: A pilot study. *Preventive Medicine Reports*, *5*, 100-105.

Cygan, H. R., Baldwin, K., Chehab, L. G., Rodriguez, N. A., & Zenk, S. N. (2014). Six to success: Improving primary care management of pediatric overweight and obesity. *Journal of Pediatric Health Care*, *28*(5), 429-437.

Daniels, S. R. & Hassink, S. G. (2015). The role of the pediatrician in primary prevention of obesity. *Pediatrics*, *136*(1), e275-e292.

Davis, M. M., Gance-Cleveland, B., Hassink, S., Johnson, R., Paradis, G., & Resnicow, K. (2007). Recommendations for prevention of childhood obesity. *Pediatrics*, *120*(Supplement 4), S229-S253.

Dawson-McClure, S., Brotman, L. M., Theise, R., Palamar, J. J., Kamboukos, D., Barajas, R. G., & Calzada, E. J. (2014). Early childhood obesity prevention in low-income, urban communities. *Journal of Prevention & Intervention in the Community*, *42*(2), 152-166. doi:10.1080/10852352.2014.881194

Dudley, D. A., Cotton, W. G., & Peralta, L. R. (2015). Teaching approaches and strategies that promote healthy eating in primary school children: A systematic review and meta-analysis. *International Journal of Behavioral Nutrition and Physical Activity*, *12*(1), 28.

Falbe, J., Cadiz, A. A., Tantoco, N. K., Thompson, H. R., & Madsen, K. A. (2015). Active and healthy families: A randomized controlled trial of a culturally tailored obesity intervention for Latino children. *Academic Pediatrics*, *15*(4), 386-395.

Forsell, C., Gronowitz, E., Larsson, Y., Kjellberg, B. M., Friberg, P., & Mårild, S. (2019). Four-year outcome of randomly assigned lifestyle treatments in primary care of children with obesity. *Acta Paediatrica*, *108*(4), 718-724.

Gerards, S. M. P. L., & Kremers, S. P. J. (2015). The role of food parenting skills and the home food environment in children's weight gain and obesity. *Current Obesity Reports*, *4*(1), 30-36.

Grossman, D. C., Bibbins-Domingo, K., Curry, S. J., Barry, M. J., Davidson, K. W., Doubeni, C. A., ... & Landefeld, C. S. (2017). Screening for obesity in children and adolescents: US Preventive Services Task Force recommendation statement. *JAMA*, *317*(23), 2417-2426.

Goodarzi, M. O. (2018). Genetics of obesity: What genetic association studies have taught us about the biology of obesity and its complications. *The Lancet Diabetes & Endocrinology*, *6*(3), 223-236.

Gu, C., Warkentin, S., Mais, L. A., & Carnell, S. (2017). Ethnic differences in parental feeding behaviors in UK parents of preschoolers. *Appetite*, *113*, 398–404. https://doi.org/10.1016/j.appet.2017.03.001

Gurnani, M., Birken, C., & Hamilton, J. (2015). Childhood obesity: Causes, consequences, and management. *Pediatric Clinics*, *62*(4), 821-840.

Hubbard, R. R., Palmberg, A., Lydecker, J., Green, B., Kelly, N. R., Trapp, S., & Bean, M. K. (2016). Culturally-based communication about health, eating, and food: Development and validation of the CHEF scale. *Appetite*, *96*, 399-407.

Jansen, E., Williams, K. E., Mallan, K. M., Nicholson, J. M., & Daniels, L. A. (2018). Bidirectional associations between mothers' feeding practices and child eating behaviours. *The International Journal of Behavioral Nutrition and Physical Activity*, *15*(1), 3. doi:10.1186/s12966-018-0644-x

Juonala, M., Harcourt, B. E., Saner, C., Sethi, M., Saffery, R., Magnussen, C. G, Burgner, D. P., & Sabin, M. A. (2019). Neighbourhood socioeconomic circumstances, adiposity and cardiometabolic risk measures in children with severe obesity. *Obesity Research & Clinical Practice*, *13*(4), 345-351. https://doi.org/10.1016/j.orcp.2019.05.004

Lopez-Sandoval, J., Sanchez-Enriquez, S., Rivera-Leon, E. A., Bastidas-Ramirez, B. E., Garcia-Garcia, M. R., & Gonzalez-Hita, M. E. (2018). Cardiovascular risk factors in adolescents: Role of insulin resistance and obesity. *Acta Endocrinologica (Bucharest)*, *14*(3), 330.

Malloch, K. (2017). Leading DNP professionals. *Nursing Administration Quarterly*, *41*(1), 29-38.

Martinez, S. M., Rhee, K. E., Blanco, E., & Boutelle, K. (2017). Latino mothers' beliefs about child weight and family health. *Public Health Nutrition*, *20*(5), 1099-1106. https://doi-org.ezproxy3.library.arizona.edu/10.1017/S1368980016002962

Militello, L. K., Melnyk, B. M., Hekler, E., Small, L., & Jacobson, D. (2016). Correlates of healthy lifestyle beliefs and behaviors in parents of overweight or obese preschool children before and after a cognitive behavioral therapy intervention with text messaging. *Journal of Pediatric Health Care*, *30*(3), 252-260.

Moore, J. B. (2018). The search for elusive progress against the epidemic of childhood obesity. *Journal of Public Health Manag Prac, 24*(3), 193-194. doi:10.1097/PHH.0000000000000814

Natale, R. A., Messiah, S. E., Asfour, L., Uhlhorn, S. B., Delamater, A., & Arheart, K. L. (2014). Role modeling as an early childhood obesity prevention strategy: Effect of parents and teachers on preschool children's healthy lifestyle habits. *Journal of Developmental & Behavioral Pediatrics*, *35*(6), 378-387.

Nepper, M. J. & Chai, W. (2016). Parents' barriers and strategies to promote healthy eating among school-age children. *Appetite*, *103*, 157-164.

Nihiser, A., Merlo, C., & Lee, S. (2013). Preventing obesity through schools. *The Journal of Law, Medicine & Ethics, 41, Suppl 2*(0 2), 27-34.

Pandita, A., Sharma, D., Pandita, D., Pawar, S., Tariq, M., & Kaul, A. (2016). Childhood obesity: Prevention is better than cure. *Diabetes, Metabolic Syndrome and Obesity: Targets and Therapy*, *9*, 83-9. doi:10.2147/DMSO.S90783

Paulis, W. D., Silva, S., Koes, B. W., & Van Middelkoop, M. (2014). Overweight and obesity are associated with musculoskeletal complaints as early as childhood: A systematic review. *Obesity Reviews*, *15*(1), 52-67.

Perrin, E. M., Finkle, J. P., & Benjamin, J. T. (2007). Obesity prevention and the primary care pediatrician's office. *Current Opinion in Pediatrics*, *19*(3), 354-361.

Polit, D. F. & Beck, C. T. (2018). *Essentials of nursing research: Appraising evidence for nursing practice* (7th ed.). Philadelphia, PA: Wolters Kluwer/Lippincott Williams & Wilkins.

Resnicow, K., McMaster, F., Bocian, A., Harris, D., Zhou, Y., Snetselaar, L., ... & Hollinger, D. (2015). Motivational interviewing and dietary counseling for obesity in primary care: An RCT. *Pediatrics*, *135*(4), 649-657.

Rhee, K. E., Kessl, S., Lindback, S., Littman, M., & El-Kareh, R. E. (2018). Provider views on childhood obesity management in primary care settings: A mixed methods analysis. *BMC Health Services Research*, *18*(1), 55. doi:10.1186/s12913-018-2870-y

Riggs, K. R., Lozano, P., Mohelnitzky, A., Rudnick, S., & Richards, J. (2014). An adaptation of family-based behavioral pediatric obesity treatment for a primary care setting: Group health family wellness program pilot. *The Permanente Journal*, *18*(3), 4.

Rural Health Information Hub. (2019). *The health belief model*. Retrieved by http://sphweb.bumc.bu.edu/otlt/MPH-Modules/SB/BehavioralChangeTheories/BehavioralChangeTheories2.htmlhttps://www.ruralhealthinfo.org/toolkits/health-promotion/2/theories-and-models/health-belief

Sahoo, K., Sahoo, B., Choudhury, A. K., Sofi, N. Y., Kumar, R., & Bhadoria, A. S. (2015). Childhood obesity: Causes and consequences. *Journal of Family Medicine and Primary Care*, *4*(2), 187-192.

Sastre, L. R., Matson, S., Gruber, K. J., & Haldeman, L. (2019). A qualitative study examining medical provider advice, barriers, and perceived effectiveness in addressing childhood obesity to patients and families from a low-income community health clinic. *Sage Open Medicine*, *7*, 2050312119834117.

Srivastava, A., Srivastava, N., & Mittal, B. (2016). Genetics of obesity. *Indian Journal of Clinical Biochemistry: IJCB*, *31*(4), 361-371. doi:10.1007/s12291-015-0541-x

Skinner, C. S., Tiro, J., & Champion, V. L. (2015). Background on the health belief model. *Health Behavior: Theory, Research, and Practice*, *75*.

Small, L. & Aplasca, A. (2016). Child obesity and mental health: A complex interaction. *Child and Adolescent Psychiatric Clinics*, *25*(2), 269-282.

Small, L., Bonds-McClain, D., Melnyk, B., Vaughan, L., & Gannon, A. M. (2014). The preliminary effects of a primary care–based randomized treatment trial with overweight and obese young children and their parents. *Journal of Pediatric Health Care*, *28*(3), 198-207.

Stankute, I., Dobrovolskiene, R., Danyte, E., Razanskaite-Virbickiene, D., Jasinskiene, E., Mockeviciene, G., Marciulionyte, D., Schwitzgebel, V. M., & Verkauskiene, R. (2019). Factors affecting cardiovascular risk in children, adolescents, and young adults with type 1 diabetes. *Journal of Diabetes Research*, *2019*, 9134280. https://doi.org/10.1155/2019/9134280

Styne, D. M., Arslanian, S. A., Connor, E. L., Farooqi, I. S., Murad, M. H., Silverstein, J. H., & Yanovski, J. A. (2017). Pediatric obesity—assessment, treatment, and prevention: An Endocrine Society Clinical Practice guideline. *The Journal of Clinical Endocrinology & Metabolism*, *102*(3), 709-757.

Subica, A. M., Grills, C. T., Douglas, J. A., & Villanueva, S. (2016). Communities of color creating healthy environments to combat childhood obesity. *American Journal of Public Health*, *106*(1), 79-86. doi:10.2105/AJPH.2015.302887

The Denver Foundation. (2019). *Identifying internal and external stakeholders*. Retrieved from http://www.nonprofitinclusiveness.org/identifying-internal-and-external-stakeholders

Tucker, J. M., DeFrang, R., Orth, J., Wakefield, S., & Howard, K. (2019). Evaluation of a primary care weight management program in children aged 2-5 years: Changes in feeding practices, health behaviors, and body mass index. *Nutrients*, *11*(3), 498. doi:10.3390/nu11030498

Turer, C. B., Montaño, S., Lin, H., Hoang, K., & Flores, G. (2014). Pediatricians' communication about weight with overweight Latino children and their parents. *Pediatrics*, *134*(5), 892-899.

U.S. Department of Health and Human Services and U.S. Department of Agriculture. (2015*). 2015-2020 Dietary guidelines for Americans*. Retrieved from http://health.gov/dietaryguidelines/2015/guidelines/

Uy, M. J. A., Pereira, M. A., Berge, J. M., & Loth, K. A. (2019). How should we approach and discuss children's weight with parents? A qualitative analysis of recommendations from parents of preschool-aged children to physicians. *Clinical Pediatrics*, *58*(2), 226-237.

Ward, S. A., Bélanger, M. F., Donovan, D., & Carrier, N. (2016). Relationship between eating behaviors and physical activity of preschoolers and their peers: A systematic review. *International Journal of Behavioral Nutrition and Physical Activity*, *13*(1), 50.

Williams, E. P., Mesidor, M., Winters, K., Dubbert, P. M., & Wyatt, S. B. (2015). Overweight and obesity: Prevalence, consequences, and causes of a growing public health problem. *Current Obesity Reports*, *4*(3), 363-370.

Woodward-Lopez, G., Gosliner, W., Au, L. E., Kao, J., Webb, K. L., Sagatov, R. D., ... & Nicastro, H. L. (2018). Community characteristics modify the relationship between obesity prevention efforts and dietary intake in children: the Healthy Communities Study. *Pediatric Obesity*, *13*, 46-55.

Wylie-Rosett, J., Groisman-Perelstein, A. E., Diamantis, P. M., Jimenez, C. C., Shankar, V., Conlon, B. A., ... & Matthan, N. R. (2018). Embedding weight management into safety-net pediatric primary care: Randomized controlled trial. *International Journal of Behavioral Nutrition and Physical Activity*, *15*(1), 12.

Xu, S. & Xu, S. (2016). Pediatric obesity: Causes, symptoms, prevention and treatment (Review). *Experimental and Therapeutic Medicine, 11*, 15-20. https://doi-org.ezproxy3.library.arizona.edu/10.3892/etm.2015.2853

Zilanawala, A., Davis-Kean, P., Nazroo, J., Sacker, A., Simonton, S., & Kelly, Y. (2015). Race/ethnic disparities in early childhood BMI, obesity and overweight in the United Kingdom and United States. *International Journal of Obesity*, *39*(3), 520.